CAN FOREIGN INVESTMENT IN REAL ESTATE IMPROVES HOST COUNTRY'S AFFORDABILITY?

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ABSTRACT

Inflows of foreign capital are necessary to complement the available domestic fund or capital of host countries. Foreign capital may also bring in management skills, latest technology and so on, which later has the potential to be transferred to local firms in host countries. It is expected that foreign capital will elevate host country's affordability. Nonetheless, this argument is very much one-way. Foreign capital is also expected to be able to exert negative consequences such as fuelling up domestic price (either stock market price, and/or real estate price) and failure to effectively transferring knowledge, skills and technologies, leading to unchanged or lower country's affordability level. Hence, this study aims at investigating the effect of foreign investment in real estate (FIRE) on host country's affordability. Using 30 emerging markets as a case for the period of 2000–2011, estimated by using fixed-effect model and complemented by 2-stage least square (2SLS) method, this study found that FIRE has a tendency to generate positive effect on countries' affordability. On the policy implication side, government can continue attracting foreign investment in real estate but it should be done cautiously as the effect is not elastic.

Keywords: Foreign investment, real estate, affordability, emerging markets

INTRODUCTION

The inflows of foreign capital can be in various forms such as foreign direct investment (FDI), foreign portfolio investment (FPI) and foreign aids (AID). Abundant literatures have recognised the importance of FDI such as; (i) to provide a long-term capital which is normally missing in the target country yet suitable for economic development, (ii) to bring new technologies that are usually not available in the target country and expected to create spill-over (and subsequently crowding-in) effects as the new technologies usually spread beyond the foreign corporations, and (iii) to improve the business environment of the target country by introducing ethical business or rules of conduct. Errunza (2001) could be among the first to study the impact of FPI on economic development and concluded that resource mobilisation, contagion and volatility are unwarranted provided some preconditions for capital market openings and liberalisation sequencing are fully abide. The impact of AID could be a bit controversial as it requires us to distinguish between the effects of different kinds of aid, or else, the standard aid-growth regression may lead to erroneous conclusions due to this strategic bias problem (Minoiu & Reddy, 2009). Among the most growing foreign capitals across the globe is foreign capital in services and one of them is foreign investment in real estate (FIRE). Unlike other types of foreign capital, FIRE is the most difficult form of foreign capital to be disentangled into short and long-term or into FDI or FPI. This point has been highlighted by Jiang, Chen and Isaac (1998), Sirmans and Worzala (2003) and He, Wang and Cheng (2011), who argued that although foreign investment in real estate is fully in the form of FDI, the objective remains the same – to earn higher returns to unit capital.[1] Hence, its impact on economic development of a host county vis-à-vis affordability level is ambiguous.

On other development, a declining affordability level in most developed countries is getting serious consideration by policy makers. In the case of developed countries, Bramley (1994) in the UK, Stapledon (2010) and Wood and Ong (2011) for Australia, Wright and Hogue (2012) for Canada, and Bernanke (2009) and Holt (2009) for the US, have highlighted the incident of price bubble to take place, which later on reduced the housing affordability level. According to Trimbath and Montoya (2002), affordability[2] is a public policy measure that has three-dimensional space measured by home prices, household income and mortgage interest rates. Although in some countries the concern is about price bubble and bursts phenomenon, identifying the factors determining the price bubble is equally important, for instance, Agnello and Schuknecht (2009) has shown that in many developed countries, house price boom is always followed by price burst. In addition, it is interesting to note that there was a longer persistence period of burst than the boom period[3] (see Table 1).

Table 1
Period of boom and burst for selected developed countries

	Country	Boom period	Burst period
1	UK	1983–1989 (7)	1990–1996 (7)
2	Japan	1986–1991 (6)	1992–2006 (15)
3	Switzerland	1983–1989 (7)	1990–1999 (10)
4	Denmark	1983–1986 (4)	1987–1993 (10)
5	Finland	1987–1989 (3)	1990–1993 (4)
6	Italy	1987–1992 (6)	1993–1998 (6)
7	Spain	1986–1991 (6)	1992–1998 (7)

Note: Figure in ( ) denotes persistence level in years.
Source: Extracted and modified from Agnello and Schuknecht (2009, Table 2, p. 19).

Although several studies highlighted the recent trend of price reduction such as Klyuev (2008) and Holt (2009), the issue is whether it is a simple cycle of price drop following price increase or it reflects a more severe price fluctuation of boom and burst. The price boom and price burst could be reflecting a significant drop in economic activities and later on translated into significantly low gross domestic product (GDP). The Organisation for Economic Co-operation and Development [OECD] (2010) supported this negative implication of house price burst by stating that the extreme developments in housing markets were a key feature of the current economic crisis and the run up to it. Of the same view, André (2010) argued that in many OECD countries, the general increase in real house prices since the mid-1980s came to an abrupt halt immediately before the crisis began. As a result, large corrections in house prices in many countries reduced households' wealth and consumption, as well as residential investment.

The experience of developed countries with regards to house price vis-à-vis affordability may offer a good lesson to countries with emerging real estate markets. In particular, the point of concern is how to have reasonable house price in order to maintain country's affordability level. This issue is particularly interesting to research on as investors are looking for suitable location or real estate to invest in. According to Bernanke (2009), the net inflow of foreign saving to the US has increased from about 1.5% of GDP in 1995 to about 6% in 2006. Mortgage interest rates were falling despite the low savings rate in the US due to the influx of saving entering the US from other countries. Most of this saving came from countries with high savings rates such as Japan and the UK and from countries with rapidly growing economies such as China, Brazil, and the major oil exporting countries (Holt, 2009). With regard to house price, foreign investments may contribute

to house price increase or if the existing price level is already high, they could contribute to price bubble or boom. Naturally, price increase by itself reflects profitability to investors and therefore, they will flow into economies with high price level by expecting the price level will continue to increase. Mihaljek (2005) highlighted this concern in several European Union countries such as Cyprus, the Czech Republic, Hungary and Slovakia. These countries have asked for a longer transitional period before they could allow for foreign investment in their real estate sector. This is due to the expectation that the impact of large-scale real estate purchases by foreign residents might cause the price to hike and the affordability to drop significantly. This issue has been highlighted by Glindro, Subhanij, Szeto and Zhu (2008) from policy implication perspective based on cyclical and bubble components of house price overvaluation. Overvaluation due to cyclical movements related to market frictions shall be mitigated if policy makers focus on strategy to reduce the magnitude and frequency of house price cycles. Among the suggested policies are such as loosening land use regulation, improving information availability (or market transparency) and strengthen property right protection. On the other hand, to counter the issue of bubble, which could be caused by market or investors' over-confidence in the housing market, the mitigating measures could include designing policies targeting at reducing investors' positive expectation on capital gains.

Moving on to the experience of several countries with emerging real estate market as shown in Table 2, countries like Austria, Bosnia, China, the Philippines and Thailand are unlikely to have a problem with house price movement as the growth rates are moderately positive. Other than these countries, they had at least once suffered from double digit growth in house price. Turkey has the most serious problem on house price, as the growth rates are persistently positive throughout the period under this study.

Nonetheless, according to OECD (2011), the experience of Austria requires a serious attention as it has been classified under the "moderate to large increase (20%–90%)" group for the period between mid-1980s to 2008. The case of China too needs a serious attention although the figure revealed in Table 2 could be the overall house price index thus did not reflect the critical issue of house price in this country. Equally surprising is the case of huge drop in house price in Kazakhstan between 2001 and 2002. Unfortunately, not much can be discussed due to limited information and past study on Kazakhstan which surely warrant urgent research to be undertaken. The U-shaped growth pattern in the case of Romania, inverted U-shaped pattern in the case of Vietnam and upward trending growth pattern in the case of Lithuania suggest that investigating the factors pushing the pattern is very crucial.

Table 2
House price and GDP growth rates in the selected emerging real estate market (in %)

	Austria	Bosnia	Bulgaria	China	Kazakhstan	Latvia	Lithuania
2001	3 [0.86]	6 [4.40]	9 [4.20]	3 [8.30]	-22 [13.50]	2 [8.04]	-1 [6.74]
2002	1 [1.69]	-2 [5.30]	0 [4.70]	1 [9.10]	-6 [9.80]	5 [6.47]	-3 [6.86]
2003	2 [0.87]	-1 [4.00]	3 [5.50]	3 [10.00]	3 [9.30]	3 [7.20]	6 [10.25]
2004	3 [0.87]	0 [6.10]	4 [6.70]	6 [10.10]	12 [9.60]	8 [8.68]	3 [7.35]
2005	5 [2.59]	4 [5.00]	6 [6.40]	3 [11.30]	5 [9.70]	10 [10.60]	6 [7.80]
2006	3 [2.40]	2 [6.20]	5 [6.50]	2 [12.70]	2 [10.70]	12 [12.23]	7 [7.84]
2007	4 [3.67]	-4 [6.84]	5 [6.40]	3 [14.20]	5 [8.90]	3 [9.98]	21 [9.84]
2008	1 [3.71]	4 [5.42]	11 [6.20]	2 [9.60]	4 [3.30]	46 [-4.24]	12 [2.93]
	Mexico	**Philippines**	**Romania**	**Thailand**	**Tunisia**	**Turkey**	**Vietnam**
2001	4 [-0.16]	2 [2.89]	32 [5.70]	2 [2.17]	3 [4.91]	53 [-5.70]	0 [6.89]
2002	5 [0.83]	4 [3.65]	22 [5.10]	2 [5.32]	1 [1.80]	35 [6.16]	3 [7.08]
2003	15 [1.35]	2 [4.97]	17 [5.20]	1 [7.14]	5 [5.55]	24 [5.27]	3 [7.34]
2004	8 [4.05]	4 [6.70]	12 [8.40]	0 [6.34]	6 [6.11]	17 [9.36]	8 [7.79]
2005	9 [3.21]	5 [4.78]	5 [4.17]	3 [4.60]	11 [4.02]	16 [8.40]	8 [8.44]
2006	7 [5.15]	3 [5.24]	3 [7.90]	3 [5.09]	3 [5.35]	17 [6.89]	6 [8.23]
2007	4 [3.26]	3 [6.62]	7 [6.00]	2 [5.04]	5 [6.34]	15 [4.67]	6 [8.46]
2008	7 [1.19]	3 [4.15]	10 [7.93]	2 [2.48]	5 [4.62]	14 [0.66]	5 [6.31]

Note: Figure in [ ] stands for GDP growth rate.
Source: OECD Statistics and various countries' Department of Statistics.

The next question that everyone would ask is whether house price increase will immediately lower a country's affordability? The answer is not straightforward. It depends very much on the level of income generated. It is generally believed that as long as income growth is higher than the house price growth, affordability will improve, and vice versa. As demonstrated in Table 2, it is difficult to conclude that affordability is getting better or worse over the year except for few countries such as Austria, Mexico and Turkey for apparent drop in affordability level and China for enjoying improving affordability level. While there are various possible explanations for house price increase (or drop) as well as improvement (or declining) income level in each country, what is common to both is the role of foreign capital inflows. Hence, this study attempts to investigate the role played by foreign capital on affordability level. This issue can be considered among the first as far as emerging real estate markets are concerned and therefore, by itself a contribution to the literature.

LITERATURE REVIEW

Determinants of Affordability

Income is generally believed as the primary positive determinant of house affordability. Surprisingly, Girouard, Kennedy, van de Noord and André (2006) found that from 2001 onwards, the deceleration of disposable income in the US which was partly due to series of recessions, has been accompanied by a sharp acceleration of real house prices. Finicelli (2007) concurred this finding by showing a strong correlation between real house prices and per-capita disposable income in the US. Since 1975, the two are moving in the different direction. For instance, for the period from 1975 to mid-1984 and 2003 onwards, disposable income is lower than house prices but between mid-1984 and 2003, house prices tend to be larger than disposable income. The scenario in South Korea as discussed in Kim and Cho (2010) revealed that rather than income per se, future income expectation is more powerful in determining house price behaviour. In the wake of the 1997 economic crisis, when the scenario is very gloomy and prospect of economic recovery is difficult, people started to be very concern about their future employment and income. Although lower demand has helped to bring the house prices into a more stable level, but this low demand has also an implication on supply of house. The accumulated effect of the decrease in housing production in the aftermath of the Asian crisis has led housing prices to substantially rise in the late 2001, especially in the Seoul Capital Region. In summary, this study believed that income expectation rather than income per se as crucial determinant of house affordability. Hence, it is generally hypothesised that income expectation as having a negative effect on house affordability.

Instead of claiming the role of income or income expectation, Finicelli (2007), upon observing a counter cyclical movement between house prices and disposable income in the US, has plotted the data for real mortgage interest rates. Finicelli (2007) concluded that the dramatic rise in interest rates could partly account for the housing market weakness in the first half of the 1980s. Similarly in the case of South Korea, following the privatisation of government-owned Korea Housing Bank in 1997, commercial banks are now allowed to offer mortgage loans (Kim & Cho, 2010). Combined with low demand due to an anticipation of employment and income uncertainty and thus, housing price collapsed in 1998, low interest rate was believed as one of the solutions to lure more consumers to buy house. As a result, following economic recovery after the serious setback of the 1997 economic crisis, a record low of interest rates vis-à-vis rapid expansion of consumer credit has triggered house prices upward once again. As part of government efforts to combat this issue, as far as interest rates and loans are concerned, by restricting mortgage

lending especially in the areas of 'hot' market or in the areas where the level of house price can shot down the affordability. Hot market mainly refers to big cities such as Seoul. With conjunction with interest rates, the strong relationship can be a reflection of that housing is used as collateral in mortgage lending and that house price movements affect the borrowing capacity of households and firms. There is also evidence that credit often leads house prices, consistent with the findings of Mendoza and Terrones (2008). Although European Central Bank (2003) reminded about potentially difficult to gauge the relationship between mortgage debt and house prices, partly due to interference of factors such as interest rates and expected future income, there are still some studies which able to demonstrate the association between the two variables such as Borio and McGuire (2004). In short, based on the available literature, this study hypothesised that interest rates (IR) and credit lending, as having implication on house affordability[4.]

On another note, studies by OECD (2004) for Netherlands, OECD (2005a, 2005b) in the case of UK and South Korea, and OECD (2006) for Ireland concluded that land restriction, combined with complex and inefficient local zoning regulations and slow authorisation process, is among crucial factors for rigidity of housing supply or low level of new housing construction, leading to limited new housing supply and subsequently rising house prices. Similarly, English (2013) argued that to build a house in New Zealand is very costly and to make thing worse it takes too long to build a house. This is because land is being reserved exclusively for development, making transforming the areas for housing tremendously difficult. Borrowing economic term to reflect this phenomenon, the land vis-à-vis house supply is totally irresponsive to any change in demand for house. Although it is very straightforward to think about house price to move upward owing to supply gap or shortage, the inelastic supply remained. Similar to OECD (2005b), Kim and Cho (2010) also observed similar reason of rising house price prior to 1988 in South Korea. The accumulated pressure from demand for house on the housing market has been cited by Kim and Cho (2010) as the primary driver. Unlike in the case of New Zealand, in which no clear proactive measure or response is taken to overcome the issue, Korean government responded well and capable to improve the housing conditions by introducing a radical policy of increasing the supply of houses by another two million in 1992. Throughout 1990s, housing prices remained stable and the issue of affordability has almost disappeared. House price issue reappeared in the 2000s but this time around, the source of problem is due to insufficient house supply. Although Kim and Cho (2010) did not directly link this issue with the activities of wealthy Korean in buying more than one house, we believe this could be another strong reason as according to Kim and Cho (2010) the ratio between dwellings and households does not show housing shortage as really an issue at that particular time. Girouard

et al. (2006) also revealed the same consideration with a slight different objective namely buy-to-let. This buy-to-let market has grown substantially over the past several years in the countries for which data are available. United States, United Kingdom, Australia and Ireland are among the examples. Buy-to-let strategy is partly supported by low interest rates. Lower interest rates have increased the return on rental property for investors, enhancing the attractiveness of, and demand for, housing as an investment. Buy-to-let activities actually help to push the price upwards as it absorbed house availability in the market quickly, leaving the market with likely insufficient supply of houses. Daly (2010), in particular offers a unique discussion on why affordability in Australia is dropping significantly and unlikely to fall in the near future. In explaining why Australia has three out of five most unaffordable housing markets in the world, Daly (2010) found that the insufficient supply of house to cover huge demand for house has led to house price bubble with not prospect to burst soon. In the nutshell, this study postulated that house supply gap matters and has strong negative implication on house affordability.

Finally, as point of concern and rarely discussed is regarding the role of foreign capital. According to He et al. (2011), among the important factor that drives the influx of foreign direct investment in China's real estate development are the rapid house prices, which accompanied the rapid economic growth. With diverse economic development across China, provinces with higher housing prices will automatically able to lure real estate FDI into their areas. Since the focus of this study is on the determinants of FDI in China's real estate development, whether or not this inflow contributes to accelerated house price or house affordability is not properly discussed. Nevertheless, it is expected that the inflows will exacerbate the existing house price level. In similar note to He et al. (2011), Bernanke (2009) emphasised the inflow of foreign saving into the US economy, especially to the US mortgage market, has helped to certain extent the rise in house prices and lower the house affordability. Masron and Mohd Nor (2016) has used channel approach to investigate the implication of foreign investment in real estate in several countries with emerging real estate market. General result shows that the effect of foreign capital on house price is larger than its effect on real income, implying the negative effect of foreign capital on host countries' affordability. Unfortunately, this result is based on the assumption that house affordability is seen from price-income ratio perspective, which is only partially reflecting the full picture of house affordability. Therefore, this study hypothesised that foreign capital affect house affordability negatively.

In addition to the above-mentioned factors, some studies suggested other unique determinants. For instance, Bentzien, Rottke and Zietz (2012), in investigating the issue of affordability of home ownership in Germany, found that

the removal of homeowner subsidies in 2005 is likely the primary explanation to lower or dropping house affordability. Another interesting determinant is suggested by English (2013). He highlighted the issue of non-standard way of constructing items related to housing such as window, which is largely explained by the unique industry regulation which favours single person operations. This has resulted in a stagnated of industry's productivity in the past 30 years and worryingly fall under the pre-1978 level. Unfortunately, due to difficulty in finding the timing and application of homeowner subsidies as well as industry regulation in all countries under consideration, these factors are left for future research.

Affordability Measurement

Several indicators have been used to indicate the level of house affordability such as price to income ratio (PIR), deposit to income ratio (DIR) and cost of mortgage to income ratio (MIR). The three dimensions carry their own meaning and importance. They may not be perfectly matching to each other but complementary measures. Hence, it is vital to have three of them in the analysis to find a robust conclusion. The first measurement is the most straightforward indicator. Increasing PIR means affordability *vis-à-vis* welfare of public is falling. This is because higher portion of income is now has to be channelled for obtaining a house. Therefore, Bentzien et al. (2012) argued that from a social policy perspective, high PIR implies that low-income households will be left with insufficient or may be nothing to cover their non-housing needs such as foods, clothing and education. The second DIR is another crucial indicator of affordability, owing to the theory of "wealth" and "income constraint" developed by Jackson and Kaserman (1980) and "income constraint" term introduced by Pattison, Diacon and Vine (2010). It reflects the ability of households to qualify for bank's financing. Very often, banks or any financial institutions will require households to demonstrate the ability to repay the debt by having sufficient savings or other assets which later on can be used as collateral or to cover the down-payment on the loan. Those savings will also be needed to finance implicit cost of transaction associated with the purchase of house such as taxes, legal and agent fees (Bentzien et al., 2012). Finally, income constraint concept by Pattison et al. (2010) can also be extended to discuss the importance of MIR. Summarised succinctly by Bentzien et al. (2012), MIR could be a good indicator of affordability as it represents the constraint in income due to the responsibility, not limited to include recurring expenses of the house such as tax payment, maintaining and repairing cost but more importantly, to serve principal and interest on the mortgage. In summary, the three represents a threshold in deciding the affordability level, for the government to offer its financial support and for the bank to choose the appropriate or prospective borrowers. For instance, in many developed countries, the threshold of affordability is set at one-third of

disposable household income. In other words, if the financial burden exceeds one-third of income, those households are no longer considered as within bearable state[5.]

Daly (2010), by using different names has defined or divided affordability concept into three possible angles, namely income affordability, purchase affordability, and repayment affordability. Income affordability is in essence similar to PIR, purchase affordability can be corresponding to DIR, and repayment affordability can be analogous to MIR. The importance of using various measurements to capture the fullest possible aspect of affordability is being stressed by Girouard et al. (2006). According to Girouard et al. (2006), PIR could be insufficient metric to evaluate housing affordability especially when Girouard et al. (2006) confirmed that house prices do not appear to have strong association with income by a stable long-run relationship due to ever changing cost of mortgage time to time.

Finally, National Association of Realtors (NAR) has come out with house affordability index (HAI). High HAI implies that this family is more able to afford the median priced home. The underlying idea is quiet similar to DIR except that in this measurement, median income value has been added as a benchmark. It means an index value of 100 refers to a family with the median income that has exactly enough income to qualify for a mortgage on a median-priced home. An index above 100 signifies that family earning the median income has more than enough income to qualify for a mortgage loan on a median-priced home, assuming a 20% down payment. Unfortunately, despite its well acceptability, the information on median income level is not available for all countries under study. Hence, we reserve this measurement for future research.

METHODOLOGY

Taking into account view from past studies, this study observed that the house affordability model could be specified as follows:

$$AFFORD_{i,t} = \beta_0 + \beta_1 FIRE_{i,t} + \beta_2 INCOME_{i,t} + \beta_3 IR_{i,t} + \beta_4 SSGAP_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where *AFFORD* represents house affordability, *FIRE* stands for foreign investment in real estate, *INCOME* denotes household income, *IR* represents interest rates, and *SSGAP* stands for house supply gap. All variables enter in logarithmic form. Nonetheless, the effect of FIRE on *AFFORD* can be misleading if this study does not control for other forms of foreign capital. This is particularly true in the case of FDI in manufacturing as proven to be income- (or growth-enhancing) by many

past studies. Hence, we add *FDI* in other sectors (*FDI*) to control for the potentially biased effect of FIRE on *AFFORD*. Incorporating additional *FDI* into account and after transforming all variables into log form, Equation (1) will become:

$$\ln AFFORD_{i,t} = \beta_0 + \beta_1 \ln FIRE_{i,t} + \beta_2 \ln INCOME_{i,t} + \beta_3 \ln IR_{i,t}$$
$$+ \beta_4 \ln SSGAP_{i,t} + \beta_5 FDI_{i,t} + \varepsilon_{i,t} \tag{2}$$

where ln stands for log. As discussed in the literature section, the use of all three proxies for house affordability is the most preferred option. Unfortunately, due to data unavailability for mortgage in some countries under study, this study only utilises PIR and DIR as proxies for house affordability. Deposit is later on proxied by saving[6.] Although DIR stands for domestic over income ratio, in this study we prefer to use price-deposits ratio (PDR). This is to ensure that the index is having similar feature with PIR. *FIRE* is represented by total foreign investment in real estate, *INCOME* is proxied by GDP per capita in a lagged period and *IR* is represented by long-term lending rates. This study uses lagged 1-period of INCOME for two reasons: (i) current consumption is very much depending on last period income level, and (ii) to avoid high multicollinearity with the dependent variable. The most difficult part is on the measurement of *SSGSP* in the absent of actual data on house supply gap. Ideally, one should measure the level of optimum level of house supply (OHS) by dividing the total value of house constructions (CONS) with optimum level of house price (OHP) which can bring in one-to-one ratio of house ownership. It means that at that price level of house, every citizen can afford to buy one. As all countries in this study are not homogenous in many aspects, the level of OHS, CONS and OHP will also be dissimilar. As no information available to calculate all the indicators, at this stage, this study assumes that all countries have similar level of OHS and set it as 1. Then, this study relies on CONS as a ratio of GDP to represent current level of supply. Deducting 1 (optimum OHS) with CONS/GDP will generate an indicator, which is used in this study to mirror the possible level of house supply gap. Of course, this measurement is not the most perfect one but measurable for the time being. Future study can critically identify the more appropriate proxy or measurement for house supply gap. FDI in other sector or *FDI*, will be measured by total FDI minus *FIRE*. Originally, this study wishes to focus on FDI in manufacturing sector as the most suitable candidate to be a control variable by expecting that FDI in manufacturing could be the most influential factor that brings the affordability level upwards. This intuition is in line with bulk of studies on the implication of FDI in general on GDP of host countries in which FDI is found to have a tendency to generate positive impact on host countries' income. Although it seems that the use of FDI in other sectors could be misleading, considering that FDI in manufacturing is the dominant component in total FDI, using FDI in other sectors may not be creating bias in the result. In summary, the list of measurements and source of data are shown in Table 3.

This study employs selected countries with emerging real estate market due to mainly data limitation. Hence, this study only utilises annual data for 30 countries for the period from 2000 to 2011. The countries are Austria, Bosnia-Herzegovina, Bulgaria, China, Kazakhstan, Latvia, Lithuania, Mexico, the Philippines, Romania, Thailand, Tunisia, Turkey, Vietnam, Republic Czech, Estonia, Hungary, Slovakia, South Korea, Serbia, Taiwan, Costa Rica, Croatia, Cyprus, Macedonia, Malaysia, Myanmar, Indonesia, Brunei and Lebanon.

Table 3
Measurements and sources of variables

No.	Variable	Measurement	Source
1	AFFORD PIR	House Price/Income per capita	Own calculation House Price: OECD Statistics and Country's Department of Statistics
	PDR	House Price/Domestic Savings per capita	Income and Savings: World Bank (2013)
2	FIRE	Foreign investment in real estate (as ratio of GDP)	OECD Statistics and Country's Department of Statistics
3	INCOME	Real GDP per capita	World Bank (2013)
4	IR	Interest rates on lending	Global Market Information Database
5	SSGAP	1 – (CONS/GDP)	CONS: World Bank (2013)
6	FDI	FDI – FIRE (as ratio of GDP)	FDI: UNCTAD (2013)

On the estimation procedure, considering the limited information that this study could gather, panel data approach is the option to go. Given the limited time frame, this study examines the model by using static panel data analysis. Initially, this study lets the model without any control variable to be estimated. Later on, more control variables are added to take into accounts the period specific characteristics and country's specific characteristics. In order to minimise the risk of being biased and inefficient in the presence of endogeneity issue, this study does analyse the model by using 2-Stage Least Square (2SLS). EVIEWs is used to estimate the equation.

RESULTS AND DISCUSSION

We start the analysis by looking at the simple correlation analysis as shown in Table 4. Some interesting points are worthy to be mentioned here. The negative correlations between FDI and PIR and PDR are in line with the general believe that FDI is growth- or income-enhancing and hence, should be affordability-improving

factor although the level of association is relatively poor. However, the highest positive correlation between FDI and lagged INCOME provides preliminary weak support on the important role of economic development of host country in attracting FDI inflows. The correlation between two proxies of affordability is as expected. The high but imperfect correlation justifies the complementarities role by the two variables. Positive link between SSGAP and FIRE also implies the possible complementing role of FIRE in offering infrastructure to local suppliers. The plausible implication of this contribution of FIRE could be seen from the positive association between FIRE and INCOME. Overall, none high correlation is observed and therefore, will not pose any serious threat of endogeneity problem. Regarding the contradicting correlation between FIRE-PIR and FIRE-PDR could due to the fact that FIRE helps in improving income level but that high income earned is not translated into high saving, leading to potentially lower affordability. The detail about the reasons for the later is for future study and beyond the scope of this study.

Table 4
Correlation analysis

	lnAFFORD		lnFIRE	lnINCOME(-1)	lnIR	lnSSGAP
	lnPIR	lnPDR				
lnPDR	0.9069	1.0000				
lnFIRE	-0.3333	0.3654	1.0000			
lnINCOME(-1)	0.0442	-0.1964	0.3200	1.0000		
lnIR	-0.3031	0.3233	0.1992	-0.2464	1.0000	
lnSSGAP	0.2538	-0.3322	0.2080	0.2578	-0.1160	1.0000
lnFDI	-0.0702	-0.0403	-0.3187	0.4173	-0.1510	-0.1662

Table 5 presents the results of the first AFFORD model which employs PIR as dependent variable. The analysis started by pooling the data and running with the assumption that all countries are homogeneous. In the next stage, the model has been controlled by country specific effect (or country-fixed effect)[7] and in addition, the third model is being controlled for regional effect with the assumption that those countries which belong to the same region are homogeneous. Comparing pooled, country-fixed and region-fixed models, the third model seems to outperform pooled based on several criteria such as higher adjusted-R2 and lower standard error of regression. Nonetheless, country-fixed model tends to be better than the third model with overwhelmingly high adjusted-R2. Finally, the forth model of country-random effect, which is the best in its group, is run and compared with the country-fixed effect model. In doing so, Hausman test is employed and the result

shows that fixed-effect model is superior to random-effect model. 2SLS is still introduced to minimise the risk of bias due to endogeneity problem although from correlation analysis, no serious threat is expected.

Table 5
Regression results [Dependent Variable: lnPIR]

	Pooled	Country-fixed	Region-fixed	Country-random	2SLS
Constant	1.14	-0.63***	5.16	0.11	1.04
	[-0.46]	[-3.04]	[0.44]	[0.16]	[0.35]
lnFIRE	-0.65***	-0.04*	-0.62***	0.04	-0.08***
	[-4.38]	[-1.88]	[-3.75]	[1.46]	[-3.90]
lnINCOME(-1)	-1.84**	-0.38***	-2.60	-0.48***	-2.04*
	[-2.12]	[-6.39]	[-0.48]	[-3.40]	[-1.71]
lnIR	0.74***	0.05***	0.57*	0.04	1.09***
	[2.73]	[12.85]	[1.97]	[0.97]	[3.25]
lnSSGAP	0.47	0.16	0.84*	0.42***	0.53
	[1.09]	[0.68]	[1.75]	[3.11]	[0.98]
lnFDI	-0.12	-0.02	-0.11	-0.07***	-0.18
	[-1.20]	[-0.22]	[-1.11]	[-2.95]	[-1.38]
Model Criteria					
Adj-R^2	0.24	0.90	0.26	0.16	0.25
S.E. of Reg.	1.41	0.13	1.38	0.15	1.41
F-stat (Overall)	8.74*** (0.00)	3072.12*** (0.00)	6.43*** (0.00)	8.36*** (0.00)	10.79*** (0.00)
F-stat (Redundant)	-	3157.16*** (0.00)	2.16* (0.09)	-	-
Hausman-Test	-	-	-	3.52 (0.06)	-

Notes: *, ** and *** denote significant at 10%, 5% and 1%, respectively. Figure in [ ] stands for *t*-statistic and figure in ( ) represents *p*-value. S. E. of Reg. = Standard error of regression

The results of FIRE are consistently negative for all but insignificant in the case of country-random effect model, implying the robustness of the effect of *FIRE* on *PIR*. *FIRE* has a tendency to push the house affordability upward although the size of coefficient is relatively small. The result of FIRE on PIR after controlling for the potential endogeneity issue under the 2SLS approach offers similar result as country-fixed effect model although the size of the coefficients are slightly different. This result is consistent with the earlier finding by Masron and Mohd

Nor (2016) who applied different approach in evaluating the effect of FIRE on AFFORD.

The significant negative effect of lagged INCOME on PIR, implies that the affordability-improving effect of income. The effect of INCOME can be interpreted in two ways. Firstly, the lagged INCOME could represent income in the past, which can be used to determine today's ability to buy a house. Meaning, if income level in high in the past, it has directly contributed to the level of today's ability to own a house. Secondly, it may represent people's expectation about the continuation of future income level. In other words, if people are optimistic that their income will continue to rise (or conversely down), automatically affordability will also be increasing (decreasing) by virtue of high expectation on future income. The effect of INCOME can also be expected to be much higher than normal if people are expecting that their INCOME will be consistently improving (or decreasing) for a longer period of time and this could be the explanation of high coefficient of INCOME on PIR under 2SLS approach.

The result of IR on PIR is also found to be positive and significant in all models, except country-random effect model. This result is in line with some previous studies as well as theoretical ground developed and discussed in literature review. Since IR is a cost to own a house, increasing IR surely lowers the affordability, a reflection to positive effect of IR on PIR. Hence, controlling IR is among crucial factors to maintain people affordability. Moving on to SSGAP, although it is suggested by previous studies that supply gap as among important determinants of house affordability, it is found insignificant in this study. One possible explanation is because of poor measurement of supply gap. However, the more surprising point is the insignificant impact of FDI on PIR when many studies have confirmed the positive role of FDI on economic development. Two possible explanations can be offered here. The first justification could be the poor proxy for FDI in manufacturing and the second justification could be because not all countries under study are receiving huge amount of FDI, with a special exception for China.

In the second model, as shown in Table 6, we use PDR as a proxy for AFFORD. While the overall story for model criteria is similar to PIR model, the results are a bit different. For instance, the effect of SSGAP in this model is found to be significantly influencing the level of AFFORD. The result under fixed-effect model, which is superior to the rest of static effect model, is comparable to 2SLS model although the size of the coefficient is slightly larger in the case of 2SLS, implying the lower the supply gap of housing, the higher the demand for deposit in getting the right to buy a house. Implicitly, it may signal two things. First, a higher

deposit requirement may be an automatic implication of high price due to short of supply of house although in rates, they remain the same. Secondly, house suppliers demanded the house price increment and the level of demand for higher price will be stronger if the gap is very significant. Regarding why the *SSGAP* is only significant in the second model could probably because the ability to get sale and purchase (S&P) is very much depending on the ability to pay the down payment, which reflected in the saving behaviour of the citizens in each country. In other words, people may have the ability to pay the monthly instalment but fail to get a house due to the failure to pay the deposit or down-payment which normally, as in the case of Malaysia, set to be around 10% of total selling price. On the result of FIRE, the results are consistent with the first model that FIRE is significantly strengthened positively the affordability level of host country.

Table 6
Regression results [Dependent Variable: lnPDR]

	Pooled	Country-Fixed	Region-Fixed	Country-Random	2SLS
Constant	7.61***	0.78	1.26	2.03	11.83***
	[2.95]	[1.43]	[0.54]	[1.13]	[3.61]
lnFIRE	-0.66***	-0.05*	-0.54***	0.10	-0.27***
	[4.38]	[2.13]	[6.67]	[1.16]	[4.14]
lnINCOME (–1)	-3.21***	-0.54***	-2.10**	-0.62	-4.58***
	[-3.55]	[-4.08]	[-2.25]	[-1.61]	[-3.22]
lnIR	0.98***	0.06	1.03***	0.50***	0.77
	[3.20]	[1.28]	[7.09]	[3.06]	[1.60]
lnSSGAP	0.84*	0.31**	0.06	1.01***	0.74*
	[1.81]	[2.33]	[0.24]	[2.70]	[1.75]
lnFDI	-0.17	-0.06***	-0.03	-0.10	-0.28***
	[-1.61]	[-3.51]	[-0.75]	[-1.53]	[-4.87]
Model Criteria					
Adj-R^2	0.34	0.92	0.75	0.24	0.35
S.E. of Reg.	1.39	0.32	1.17	0.35	1.44
F-stat (Overall)	12.30*** (0.00)	586.12*** (0.00)	38.57*** (0.00)	2.36*** (0.00)	11.18*** (0.00)
F-stat (Redundant)	-	541.37*** (0.00)	7.01*** (0.00)	-	-
Hausman-Test	-	-	-	1.50 (0.08)	-

Notes: *, ** and *** denote significant at 10%, 5% and 1%, respectively. Figure in [ ] stands for *t-statistic* and figure in ( ) represents *p-value*. S. E. of Reg = Standard error of regression.

The results of this study demonstrate that FIRE in general is affordability-enhancing. Hence, any country which wishes to have more FIRE to inflow should treat this inflow with cautious. Does it mean that we should entertain the inflow of FIRE? The answer is surely difficult to be confirmed. Comparing the primary source of affordability in both models may hint the possible answer. In the first model, if we compare the effect of IR and FIRE, in which both have a contradicting effect, we observe that the effects of IR in cross-fixed and 2SLS models tend to higher than FIRE. This implies that in order to improve country's affordability level, government should focuses more on reducing interest rates. In the second model, the discussion is more interesting. Although the impact of IR is no longer significant, there are now SSGAP and FDI (in other sectors) emerged as another crucial factors determining the level of affordability. On the positive note, FDI has a consistent result of income-improving and the size of coefficient is slightly higher than FIRE. This means that if we combine these two variables' effect, the overall effect on host countries is positive. Whether or not FIRE is suitable and what its connection with FDI, this study borrows results from Masron and Fereidouni (2012). Masron and Fereidouni (2012) in their study concluded that FDI and FIRE are cointegrated and inflows of FIRE might be bringing more FDI in other sectors as FIRE serves to provide more facilities to enhance business environment. More inflows of FIRE also implicitly imply that the business environment is now becoming more conducive. Although that study has several limitations, its finding provides a preliminary results which useful as reference for the time being. In addition, SSGAP is also observed as having high impact in lowering affordability level. Hence, focusing on increasing the supply of houses may help in improving the level of affordability.

CONCLUSION

This study aims at investigating the implication of inflows of FIRE into several developing countries. This research is of particular important especially when several countries, which received huge inflows of FDI in manufacturing sectors are no longer in that position. This is partly due to the emergence of new locations such as China, India, Vietnam and few others. The proponents of FDI in services (FDIS), including real estate markets tend to conclude that FDIS or FIRE could easily replace FDIM to continue developing host countries with a similar effect. This conclusion is too simplistic and without proper justification. Or, this statement could be drawn over an analysis focusing solely on income generation perspective. While this is still valid, the more proper analysis should also take into account its implication from cost perspective. This study attempts to fill in this gap by considering both perspectives into account. Hampered by limited information, this

study managed to gather several countries, which have a breakdown statistics on *FIRE*. Many countries do not segregate the information on foreign capital flows into sectors, which disallowed us from utilising these countries as part of the samples.

Overall, this study found that FIRE tends to exert a positive consequence on host country's affordability in both models. Although FIRE exhibits affordability-upgrading, to immediately rush to attract *FIRE* may not be wise idea. This is particularly true for two reasons. Firstly, apart from FIRE, supply gap and interest rates are also playing significant role in influencing the level of affordability. Secondly, referring to Masron and Fereidouni (2012) who found cointegration between FIRE and FDI, the inflows of FIRE could serve as additional factor to attract more inflows of FDI. At this point, what this study can suggest is for host countries to be more caution when dealing with foreign capital in the real estate market.

ACKNOWLEDGEMENT

NOTES

1. Generally, FDI is done due to the desire to have a control over the operations or to exploit fully some kind of production technology or managerial know-how (He et al., 2011).
2. Affordability can be on various items such as medical treatment, school attainment and so on. In this study, the focus is on house affordability. Another major issue is regarding the measurement of affordability. The use of aggregate information such as national affordability level may not be fully captured the true reality of affordability in that particular country especially when the country facing a serious variation of affordability level across states or cities (Jones, Watkins, & Watkins, 2011). We put aside this issue as there will be another research to be conducted to solve this issue.
3. From the same table of Agnello and Schuknecht (2009), only Sweden and Netherlands are found to have boom period longer than burst period. In addition to UK, Italy is also demonstrated a similar persistence.
4. This point can be classified under cost of construction. English (2013), for instance, is among studies that stressed the importance of construction input prices. English (2013) argued that one of the critical factors contributing to the affordability problem in New Zealand is input cost of housing or building. Relative to its neighbouring country, Australia, the cost of building materials in New Zealand is obviously higher.

Apart from cost of building materials, English (2013) also stated that the structure of infrastructure financing and the timing levies are to be paid, has partly explained the rising market price for housing.

5. In the case of developed countries, state support is mandatory in order to help these households to own a house.

6. We fully aware about the different meaning for deposit account and deposit for buying house but still believe that the two carry similar implication on house affordability. Higher savings or deposits mean higher affordability to pay the down payment to buy a house.

7. Time-fixed effect and combination of both (time and cross effects) models are also tested but country-fixed effect model found to be the best. Similar case is for random effect model. Although all are tested but country-random effect model is observed to be outperforming the rest.

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PRO-CYCLICALITY OF SMALL AND MEDIUM ENTERPRISE (SME) LOANS ACCORDING TO FINANCING TYPE BASED ON PURPOSE: EVIDENCE FROM KOREAN BANKS

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ABSTRACT

An empirical analysis is conducted on the pro-cyclicality of SME loans based on purpose, which has not been examined in previous research. In this study, the purpose of SME loans is divided into four types: total SME loans, long-term loans for investment in equipment, long-term loans for R&D investment, and short-term loans for working capital. The aim of the study is to determine whether pro-cyclicality exists in the four types of loans. In particular, it is expected that because of the high-risk weight considered in estimating credit risk, the number of long-term loans may have decreased in the economic distress experienced since 2006, when the Basel II accord came into effect. At that time, most banks adopted the advanced internal rating approach to calculate borrowers' credit risks. This study is based on the assumption that the risk weight of long-term loans is different from that of short-term loans. The GMM model is adopted to test the pro-cyclicality of long-term and short-term loans. The test results showed significant pro-cyclicality in long-term loans for investment in equipment and R&D. Second, there was no pro-cyclicality in short-term loans for purchasing raw materials. Third, the financial characteristics affecting the lending behaviour of banks were indicators of profitability and financial soundness of credit. Based on the results, effective policies are recommended, such as credit enhancement through credit guarantees, in order to alleviate the effects of pro-cyclicality on long-term loans.

Keywords: pro-cyclicality, the purpose of SME loans, advanced internal rating approach, lending behaviour

INTRODUCTION

In the banking sector, pro-cyclicality is defined as variations in the granting of credit according to variations in the real business cycle. Thus, the phenomenon of granting credit is increased or decreased when the business cycle is expanded or depressed, respectively. Bernanke and Gertler (1990) showed that information asymmetry between borrowers and lenders leads to pro-cyclicality. In particular, small- and medium-sized loans, such as SME loans, have information asymmetry because little information is available to judge the credit condition of an SME. From the bank's perspective, a high credit risk indicates the probability of default on the loan. Craig, Davis, and Pascual (2006) and Seo (2013) found evidence of pro-cyclicality in SME loans. Craig et al. (2006) pointed out that excessive pro-cyclicality was the main reason for financial crises.

In response to the financial crisis of 2008–2009, a new capital regulation called Basel III has come into effect. Basel III includes the steps required for the regulation of capital buffers and of loan-to-deposit ratios to alleviate the effects of pro-cyclicality. In particular, the regulation of capital buffers to alleviate pro-cyclicality requires banks to secure capital in addition to the minimum amount of capital against future financial crisis, as suggested by the Bank for International Settlements (BIS). According to the regulation of capital buffers, until 2019, Korean banks are supposed to secure additional capital that is 2.5% of the capital buffer. The loan-to-deposit ratio regulation has been in effect as the macro-prudential regulation by the Korean financial authority for the management and evaluation of Korean banks since November 2008. This regulation requires that the range of average loan balances is restricted to 100% of the average deposit balance in order to sharply reduce the number of SME loans during the economic depression.

However, despite Basel III, Korean banks have a high sensitivity to credit risk because they tend to retrieve SME loans quickly when the risk management strategy detects signs of default. The banks' risk aversion behaviour is based on their adoption of the advanced internal rating approach, which occurred after the regulations of Basel II were implemented in 2006. The advanced internal rating suggested by Basel II regulates banks to estimate expected losses by multiplying exposure at default by probability of default and the 1-recovery ratio. Thus, banks encounter big differences between the expected losses of long-term loans and short-term loans even though borrowers have the same credit rating; the only difference is the extent of the loan period. Hence, compared with short-term loans, the expected losses on long-term loans will be higher than on short-term loans because of the higher balances and lower recovery ratios of long-term loans.

Under Basel III, the regime of advanced internal rating in credit risk management is still effective. Accordingly, in order to alleviate pro-cyclicality, Korean banks may manage credit risk using risk-aversion because of the internal rating scheme initiated by Basel II despite new regulations, such as the capital buffer and the loan-to-deposit ratio. In the light of the feature of credit risk management within Korean banks, it assumed that a difference exists between the pro-cyclicality pattern of long-term loans and short-term loans in the Korean SME loan market. Thus, the lending behaviour of Korean banks differs according to the loan period.

The current study analyses the pro-cyclicality of SME loans according to the purpose of the loan. Most SMEs raises funds to invest in equipment and research and development (R&D) on the long-term basis. Generally, short-term loans are used to pay salaries, and are used for working capital. Banks also established internal regulations to increase the flexibility of SME loans by restricting the maximum loan period depending on the usage of the loan. Loans for working capital and R&D are one year and up to ten years, respectively. Based on the internal regulation of Korean banks, the current study classifies loans into four categories: (1) total loan (*SME*); (2) loans for working capital used to purchase raw materials (*WorkM*); (3) loans for equipment investment (*InvE*); and (4) loans for R&D (*InvRD*). These categories are used to analyse lending behaviour in business cycles under the Basel regulations.

THEORETICAL BACKGROUND

Basel II, the new Basel accord, provides guidelines that banks must use to estimate minimum requirement capital by subdividing the credit ratings of borrowers, which were used before the implementation of the accord. Since 2006, most Korean banks estimate risk weights by using the loan balance upon bankruptcy, expected default rate, and loss in default. It is assumed that this advanced internal rating approach increased risk sensitivity because long-term loans are more disadvantageous in estimating risk weight than short-term loans are. Thus, the implementation of Basel II leads to intensifying the risk aversion to SME loans in Korean banks depending on business cycles.

However, risk-aversive lending behaviour by Korean banks may exacerbate the pro-cyclicality of loans. The pro-cyclicality of SME loans may be distinctive, depending on the loan period (Borio, Furfine, & Lowe, 2001; Sala & Saurina, 2002; Lowe, 2002; Bliss & Kaufman, 2002; Catarineu-Rabell, Jackson, & Tsomocos, 2003; Pain, 2003; Kashyap & Stein, 2004; Estrella, 2004; Lindquist, 2004;

Allen & Saunders, 2004; Berger & Udell, 2004; Jimenez & Saurina, 2006; Craig et al., 2006; Seo, 2011). Previous empirical studies found that adherence to the new Basel accord intensified the pro-cyclicality of SME loans. In their panel regression of 300 banks in 11 Asian countries, Craig et al. (2006) found evidence that the pro-cyclicality of SME loans had been exacerbated by the new Basel accord. In a recent study using Korean data from 1999 to 2008, Seo (2013) showed that the pro-cyclicality of SME loans increased, but there was no pro-cyclicality in large enterprise loans. Previous research examined the effects of lending behaviour on pro-cyclicality by classifying enterprise loans into SME loans and large enterprise loans.

Based on their research, Cavallo and Majnoni (2001), Segaviano and Lowe (2002), and Seo (2012) recommended that the provision system should be changed to alleviate the pro-cyclicality of bank loans. In particular, Seo (2012) suggested a forward-looking provision system, in which banks would reserve sufficient provisions on bad debt based on the expected loss when the economy expanded. Seo (2012) also showed evidence that the forward-looking provision system contributes to alleviating the pro-cyclicality of SME loans that have high credit risk and information asymmetry. This evidence implies that banks without sufficient provisions based on expected losses would show risk-aversive lending behaviour in response to the high-risk sensitivity of SME loans.

Craig et al. (2006) and Seo (2013) recommended the estimation method for pro-cyclicality by testing the significance of coefficient of loan change rates to gross domestic product growth rates. Based on a review of the relevant literature, Seo (2013) also pointed out that banks' financial characteristics affect the lending behaviour of Korean banks, including capital adequacy, financial soundness, and profitability. Berrospide and Edge (2010) argued that capital adequacy, such as the BIS, ratio plays a pivotal role in alleviating the uncertainty of bank loans. Ryu and Park (2010) supported the findings of Berrospide and Edge (2010). Aggarwal and Jacques (2001) insisted that financial soundness, such as the non-performing loan ratio, affects loan changes because it is an influential factor in estimating credit risk. In addition, Stolz and Wedow (2011) argued that the profitability of banks affects the minimum required capital and the level of capital buffer.

Previous theoretical studies on the pro-cyclicality of SME loans found that it has increased since the implementation of the new Basel accord. However, after the announcement of Basel III, few studies have examined the pro-cyclicality of SME loans depending on the purpose of the funds. Accordingly, the current study conducts an analysis to determine whether the purpose of the funds has affected pro-cyclicality of SME loans use since the adoption of Basel III.

DATA AND MODEL

Data

The current study used raw data on bank loans, the macro economy, and financial market in Korea in order to determine whether the pro-cyclicality of SME loans is affected by the purpose of the funds. The data were collected the Statistics Database of Small and Medium Business Administration, the Economic Statistics System of the Bank of Korea, and the Financial Statistics Information System of the Financial Supervisory Service. Raw data on bank loans to SMEs executed by 15 banks were collected for the period 2006, when the new Basel accord was implemented, to 2014. The data analysis focuses on the subdivisions of borrowers' credit ratings.

The dependent, independent, and control variables are presented in Table 1. As the table shows, the dependent variables are Total SME loans, loans for working capital used to purchase raw materials, loans for equipment, and loans for R&D. Each dependent variable represents the loan change according to the purpose of the loan in terms of SMEs. Natural logarithms are used to calculate the differential variables in the loan data. The independent variables of GDP rate, BIS ratio, net interest margin (NIM), and non-performing loan ratio (NPL) are included in the empirical test model. The market rate and default rate are used as control variables, and the business survey index is applied as an instrumental variable in the generalised method of moment (GMM).

Table 1
Definitions of variables

Variables	Definition	Contents
$\Delta SME_{i,t}$	Differentials of total SME loan	Dependent variable representing the change in total small and medium enterprise bank loan i with time t. It is calculated through adding natural logarithm to transform the variable into differentiated standardisation for data analysis as follows: $\Delta SME_{i,t} = \ln(SME_{i,t}) - \ln(SME_{i,t-1})$
$\Delta WorkM_{i,t}$	Differentials of SME loan for raw materials	Dependent variable representing the change in small and medium enterprise bank loan i with time t for raw materials as working capital. It is calculated through adding natural logarithm to make the variable transformed into differentiated standardisation style for data analysis as follows. $\Delta WorkM_{i,t} = \ln(WorkM_{i,t}) - \ln(WorkM_{i,t-1})$

(*continued on next page*)

Table 1: (*continued*)

Variables	Definition	Contents
$\Delta InvE_{i,t}$	Differentials of SME loan for investment in equipment	Dependent variable representing the change in small and medium enterprise bank loan i with time t for investment in equipment. It is calculated through adding natural logarithm to make the variable transformed into standardisation style for data analysis as follows. $\Delta InvE_{i,t} = \ln(InvE_{i,t}) - \ln(InvE_{i,t-1})$
$\Delta InvRD_{i,t}$	Differentials of SME loan for R&D investment	Dependent variable representing the change in small and medium enterprise bank loan i with time t for investment in research and development. It is calculated through adding natural logarithm to make the variable transformed into differentiated standardisation style for data analysis as follows. $\Delta InvRD_{i,t} = \ln(InvRD_{i,t}) - \ln(InvRD_{i,t-1})$
$BizCycle_t$	Business cycle for an independent variable	Proxy variable representing the business cycle or economic condition. It is calculated as the 1st differential of $\ln(GDP_t)$ removing seasonality. The proxy variable is adopted from Craig et al. (2006) and Seo (2013).
$BIS_{i,t}$	Capital adequacy ratio of bank	Proxy variable for the capital adequacy ratio based on Bank for International Settlements (BIS) rule in bank i with time t. The calculation method is as follows: $BIS_{i,t} = Capital(tier1 + tier2)_{i,t} \div Risk - weighted\_Asset_{i,t} \times 100$
$NIM_{i,t}$	Net interest margin of bank	Proxy variable for the net interest margin as the main source of profitability in bank i with time t. The calculation method is as follows: $NIM_{i,t} = (Interest\_Income - Interest\_Paid)_{i,t} \div$ $\quad Interest\_Bearing\_Asset_{i,t} \times 100$
$NPL_{i,t}$	Non-performing loan of bank	Proxy variable for financial soundness of bank i with time t. The proxy variable is adopted from Lee and Seo (2013). The calculation of the ratio is as follows: $NPL_{i,t} = Bad\_Debts_{i,t} \div Total\_Loans_{i,t} \times 100$
$Control(M)_t$	The level of market rate	Level of market rate, i.e. call rate, is as a control variable.
$Control(R)_t$	The level of default	Default rate in the country is a control variable.
$Gindex$	An instrumental variable	First differential of $\ln(Business\_Cycle\_Index)$ removing seasonality as an instrumental variable used in the generalised method of moment.
$Crisis\_Dum_t$	Dummy variable for financial crisis	Dummy variable for the global financial crisis from 2008 to 2009. The value is 1 or 0 if the financial crisis period is applied.

Model

The current study uses panel GMM methodology as expressed in Equations (1) and (2). Panel data, not time series data, are analysed because the bigger sample size of panel data, compared to time series data, increases the degree of freedom to contribute to raising the efficiency of estimation (Frees, 2004). Panel data analysis also mitigates potential problems in multicollinearity and estimation bias caused by omitted variables.

Moreover, GMM methodology is the most reliable estimation method because it does not required the distribution of residual terms. GMM methodology requires an instrumental variable (Z_i) and the orthogonality condition, $E[\mu_{i,t} Z_i] = 0$. The current study adopts the differentials of the business survey index as the instrumental variable. The appropriateness of the instrumental variable is proved by using the Sargan test, which is related to over-identification restrictions, as suggested by Arellano and Bond (1991). The test results confirmed that there was no bias in using the selected instrumental variable if the null hypothesis is that no correlation exists between the instrumental variables, and the residual term cannot be rejected statistically.

Equations (1) and (2) were designed for empirical testing. Equation (1) was used to test the pro-cyclicality of total SME loans or short-term SME loans for working capital, such as raw materials. Equation (2) was used is to determine whether pro-cyclicality existed in long-term SME loans, such as bank loan for investment in equipment or R&D. The results of Equations (1) and (2) are shown in Table 4 and Table 5.

$$\Delta SME_{i,t} \, (\Delta WorkS_{i,t}) = \hat{\beta}_0 + \hat{\beta}_1 \, BizCycle_t + \hat{\beta}_2 \, BIS_{i,t} + \hat{\beta}_3 \, NIM_{i,t} + \\ \hat{\beta}_4 \, NPL_{i,t} + Control(M)_t + Control(R)_t + \\ Z_{i,t} + \upsilon_t + u_{i,t} \tag{1}$$

$$\Delta InvE_{i,t} \, (\Delta InvRD_{i,t}) = \hat{\beta}_0 + \hat{\beta}_1 \, BizCycle_t + \hat{\beta}_2 \, BIS_{i,t} + \hat{\beta}_3 \, NIM_{i,t} + \\ \hat{\beta}_4 \, NPL_{i,t} + Control(M)_t + Control(R)_t + \\ Z_{i,t} + \upsilon_t + u_{i,t} \tag{2}$$

where:
i, t and υ_t refers the numbers of cross-sectional data, time series data, and time effect to consider the time series effect of dependent variables in GMM methodology, respectively.
$Control(M)_t$ and $Control(R)_t$ mean the control variable for levels of market rate and default rate, respectively.
$Z_{i,t}$ means an instrumental variable.

RESULTS

Basic Statistics

Table 2 shows the basic statistics of the variables used in the study. No variable except for BIS was normally distributed because all Jarque-Bera statistics were significant. The mean of the change rate of total SME loans was 5.00% in a positive direction. However, the change rate of short-term loans had an average value of −2.67%, which was a negative value. In the case of long-term loans, the average change rates of SME loans for investment in equipment and R&D were −43.54% and 17.73%, respectively.

The mean GDP rate representing the business cycle was 0.8571%. The bank characteristics of capital adequacy ratio, net interest margin, and non-performing loan ratio had means of 13.88%, 2.45%, and 1.27%, respectively.

Table 2
Descriptive statistics

Variables	Mean	Median	Standard deviation	Minimum value	Maximum value	Jarque-Bera Statistic
ΔSME	0.0500	0.0538	0.0803	-0.1658	0.3248	6.0200**
$\Delta WorkM$	-0.0267	0.1441	0.3867	-1.0430	0.4383	51.5504***
$\Delta InvE$	-0.4354	0.0292	1.2147	-3.4913	0.5426	82.1622***
$\Delta InvRD$	0.1773	0.2768	0.4655	-0.6210	0.8486	8.2912**
$BizCycle_t$ (%)	0.8571	0.8500	0.6123	-0.3500	1.5750	9.7796***
BIS (%)	13.8831	13.8200	1.6408	10.7100	18.0500	1.6275
NIM (%)	2.4496	2.5200	0.5850	0.2000	3.4800	31.6329***
NPL (%)	1.2704	1.1800	0.4829	0.3600	3.3400	196.2540***
Control(M) (%)	3.2064	3.0750	1.0700	4.7825	1.9850	11.8577***
Control(R) (%)	0.1726	0.1425	0.0922	0.1092	0.3883	61.0120***

Note: ** and *** means statistically significant at 5% and 1%, respectively.

Table 3 shows the result of Pairwise correlation analysis, and especially there is the positive significance between business cycle and the change rates of SME loans for R&D.

Table 3
Pairwise correlations analysis

Variables	ΔSME	ΔWorkM	ΔInvE	ΔInvRD	BizCycle
ΔSME	1.0000				
ΔWorkM	-0.0291 $(p < 0.7685)$	1.0000			
ΔInvE	-0.0612 $(p < 0.5353)$	0.9129 $(p < 0.0000)$	1.0000		
ΔInvRD	0.2037 $(p < 0.0371)$	-0.5515 $(p < 0.0000)$	-0.5262 $(p < 0.0000)$	1.0000	
BizCycle	0.0937 $(p < 0.3420)$	-0.1387 (0.1581)	0.0333 $(p < 0.7359)$	0.6022 $(p < 0.0000)$	1.0000

Note: Parentheses () mean the *p*-value.

Test Results

Table 4 presents the results of testing the existence of pro-cyclicality in total SME loans and short-term loans in relation to the business cycle. Model 1 and Model 2 indicate the test results using the changes in total SME loans and short-term SME loans as the dependent variables. Model 1 shows that pro-cyclicality existed in total SME loans depending on the business cycle, regardless of the inclusion of the dummy variable for the financial crisis stage: the estimated coefficients were 0.1141 and 0.1702 at 5% significance. However, no pro-cyclicality was found in the relation of short-term SME loans to the business cycle in Model 2: the estimated coefficients were insignificant at −0.1073 and −0.3532. Regarding short-term SME loans for purchasing raw materials the results showed that the pro-cyclicality of SME loans in relation to the business cycle had been mitigated since 2006 when the new Basel accord was implemented.

The bank characteristics of profitability and financial soundness were related to the change in short-term SME loans: the coefficients of NIM in and NPL were 0.0826 and −0.0488, respectively. However, no significance was found in the relationship between bank characteristics and loan change in Model 1 regardless of specification.

The Sargan test for robustness (Arellano & Bond, 1991) indicated that the selected instrumental variables were appropriate because the null hypothesis was not rejected. Furthermore, no *z*-statistic rejected the null hypotheses that there is no correlation in the residual term.

Table 4
Analytical results of effects of pro-cyclicality on total loans and short-term loans

	Model 1 (Dependent Variable=$\Delta SME_{i,t}$)		Model 2 (Dependent Variable = $\Delta WorkM_{i,t}$)	
	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Intercept	0.2028	-0.6829	-0.8926***	-0.5043***
	(1.01)	(-1.52)	(-14.63)	(-3.17)
(1) $BizCycle_t$	0.1141**	0.1702**	-0.1073	-0.3532
	(2.14)	(2.45)	(-0.46)	(-1.20)
(2) $BIS_{i,t}$	-0.0078	-0.0078	-0.0018	-0.0018
	(-0.79)	(-0.79)	(-0.21)	(-0.21)
(3) $NIM_{i,t}$	0.0674	0.0674	0.0826**	0.0826**
	(1.48)	(1.48)	(2.33)	(2.33)
(4) $NPL_{i,t}$	0.0088	0.0088	-0.0488***	-0.0488***
	(0.70)	(0.70)	(-2.87)	(-2.87)
(5) $Control(M)_t$	Included	Included	Included	Included
(6) $Control(R)_t$	Included	Included	Included	Included
(7) $Crisis\_Dum_t$	Excluded	Included	Excluded	Included
Time_effect	Yes	Yes	Yes	Yes
Firm_effect	Yes	Yes	Yes	Yes
Sargan_Test (χ^2)	4.63	4.63	3.98	3.98

Notes: ** and *** means statistically significant at 5% and 1%, respectively. The hypothesis of the Sargan test is that there is no correlation between the instrument variable and the residual term, and it cannot be rejected. The hypothesis of the Z test that there is no autocorrelation in the residual term, and it cannot be rejected.

Table 5 shows the results for the existence of pro-cyclicality of long-term SME loans according to the business. In Model 3 and Model 4, these results imply that long-term loans are pro-cyclical in relation to economic conditions. The estimated coefficients of the business cycle were significant at 1% regardless of the specification. Thus, the positive values of 0.4518, 0.6297, 0.3350, and 0.3391 imply that changes in long-term SME loans correspond to economic conditions in the same direction, which is called pro-cyclicality. Contrary to the changes in short-term loans, the results showed that SME loans for investment in equipment and R&D were affected by economic conditions, which was expected. Based on this result, it can be inferred that the existence of the pro-cyclicality of long-term loans is attributed to the high sensitivity of credit risk since the new Basel accord was implemented.

The bank characteristics of net interest margin and non-performing loan ratio were significantly correlated with changes in long-term loans. The coefficients were 0.0826 and -0.0488, respectively, in Model 3 and Model 4. The more the financial soundness was improved, the greater the increase in the long-term SME loan. This result aligns with Aggarwal and Jacques' (2001) finding that the non-performing loan ratio was a significant factor in loan change.

Table 5 shows the results of the Sargan and Z tests for robustness. No bias was found in estimating the coefficients by using the GMM methodology.

Table 5
Analytical results of effects of pro-cyclicality on long-term loans

	Model 3 (Dependent Variable = $\Delta InvE_{i,t}$)		Model 4 (Dependent Variable = $\Delta InvRD_{i,t}$)	
	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Intercept	-0.2016***	-0.4826***	-0.1423***	-0.1488***
	(-24.29)	(-51.80)	(-4.20)	(-4.39)
(1) $BizCycle_t$	0.4518***	0.6297***	0.3350***	0.3391***
	(27.48)	(23.50)	(7.39)	(7.47)
(2) $BIS_{i,t}$	-0.0018	-0.0018	-0.0018	-0.0018
	(-0.21)	(-0.21)	(-0.21)	(-0.21)
(3) $NIM_{i,t}$	0.0826**	0.0826**	0.0826**	0.0826**
	(2.33)	(2.33)	(2.33)	(2.33)
(4) $NPL_{i,t}$	-0.0488***	-0.0488***	-0.0488***	-0.0488***
	(-2.87)	(-2.87)	(-2.87)	(-2.87)
(5) $Control (M)_t$	Included	Included	Included	Included
(6) $Control (R)_t$	Included	Included	Included	Included
(7) $Crisis\_Dum_t$	Excluded	Included	Excluded	Included
Time_effect	Yes	Yes	Yes	Yes
Firm_effect	Yes	Yes	Yes	Yes
$Sargan\_Test$ (χ^2)	3.98	3.98	3.98	3.98

Notes: ** and *** means statistically significant at 5% and 1%, respectively. The hypothesis of the Sargan test is that there is no correlation between instrument variable and residual term, and it cannot be rejected. The hypothesis of the Z test that there is no autocorrelation in the residual term, and it cannot be rejected.

CONCLUSION

The current study was conducted to determine the pro-cyclicality of SME loans according the purpose of the loan. Previous studies found that the pro-cyclicality of SME loans was related to the business cycle because of the high credit risk and

asymmetrical information about SMEs. However, the results of the current study showed that SME loans are classified according to the loan period, and that the pro-cyclicality of long-term and short-term SME loans differed. This study examined the lending behaviour of Korean banks since 2006 when the Basel II accord was implemented. The sample consisted of data were collected for the period 2006 to 2014. The current study classified loan type according to the loan period based on the purpose of the loan. The advanced internal rating approach was used to examine the effect on the changes to SME loans, which was attributed to the high sensitivity to credit risk of SMEs.

The main test results are follows. First, pro-cyclicality in total SME loans existed even though some steps were taken to mitigate it, such as new regulations about the implementation of capital buffers and the reinforcement of the loan-to-deposit ratio recommended in the Basel III accord. Second, as expected, long-term SME loans also showed significant pro-cyclicality in relation to the business cycle. Thus, the advanced internal rating approach leads to high credit risk sensitivity; therefore, economic conditions and changes in SME loans are directly linked. Third, the pro-cyclicality of short-term loans for purchasing raw materials has been mitigated since the implementation of the Basel II accord. Contrary to total SME loans and long-term SME loans, the banks' lending behaviour with regard to short-term SMEs differed in terms of the linkage between economic conditions and changes in SME loans. Fourth, the bank characteristics of profitability and financial soundness affected loan change. In particular, the deterioration in financial soundness resulted in decreasing the number of both short-term and long-term SME loans. This evidence supports the research results of Aggarwal and Jacques (2001).

The lending behaviour of Korean banks has mitigated the pro-cyclicality of short-term loans. However, pro-cyclicality persists in long-term loans and total SME loans. The reason could be that the banks' lending behaviour with regard to SMEs differs according to the loan period, which could be attributed to differences in risk exposure and recovery rate according to default. Based on the results of this study, effective policies, such as credit enhancement through credit guarantees, are recommended to alleviate the effects pro-cyclicality on long-term loans.

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DEBT MATURITY AND STOCK RETURNS: AN INTER-SECTORAL COMPARISON OF MALAYSIAN FIRMS

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ABSTRACT

This firm-level study examines whether the effects of financial leverage on stock returns of 12 Bursa Malaysian sectors can be explained by debt maturity. When total leverage is used, only 3 out of 12 sectors exhibit a significant relationship with stock returns. However, when the leverage is divided by using short-term and long-term debt, regressions in 9 out of 12 sectors reveal that either form of disaggregated leverage exhibits a significant relationship with returns at least at a 5% significance level. The results suggest that the return-leverage relationship could be indirect in terms of maturity. The panel regressions also show that sector-specific analysis is more meaningful and practical due to the mixed relationship identified. The empirical conclusions are further supported by using two indicators of financial leverage, i.e. book leverage and market leverage. The results are robust when the firm and the time effects are taken into consideration.

Keywords: Financial leverage, debt maturity, stock returns, sector-specific firm-level analysis.

INTRODUCTION

In the literature of financial leverage, different proportions in capital structure are generally claimed to have different impacts on the firm's value, financial performance or profitability of a firm. Despite various capital structure theories that have tried to rationalise the impact of leverage, past literature often provides mixed empirical evidence on the role of leverage in return predictability. Among some well-known studies, Hamada (1972), Masulis (1983), and Bhandari (1988) in early years found that stock returns are positively associated with leverage. Fama and French (1992), as well as Strong and Xu (1997), later discover the negative relationship between book leverage and returns, but the relationship becomes insignificant when book-to-market is considered. Gomes and Schmid (2010) find returns to be positively related to market leverage, but have no effect when book leverage is used. On the other hand, the works by George and Hwang (2010), and later by Muradoglu and Sivaprasad (2012), suggest a negative relation between leverage and returns.

Over the years, many studies have been proposing a reasonably straight forward relationship between financial leverage and stock returns, by considering leverage as a whole. Nevertheless, other than how much debt is owed by firms, an equally important issue is when the debt should be repaid to debt holders. Existing literature has acknowledged that the maturity decisions could carry various implications on the firm's performance and its value. Theories and empirical findings have suggested that maturity selection is a crucial financing decision. Kose (2012) argues that the opposite directions separated by maturity help explain why the relation between leverage and returns has been mixed in previous studies. The study shows that the positive short-maturity return spread is significant and not explained by factors like size or book-to-market ratio.

Using micro data across major Bursa Malaysian sectors, this study aims to provide empirical evidence of the relationship between financial leverage and stock returns in consideration of debt maturity by using short-term and long-term debt. As highlighted, the impact of financial leverage is often found mixed on the firm's returns. This study tries to explain such mixed results by adopting sector-specific analysis and by disaggregating the total leverage into long maturity (more than a year) and short maturity (less than a year). If there is discrepancy between the impacts of long-term and short-term leverage, investors, managers, or financial policy makers should be more aware of the choices of debt maturity other than purely focusing on the conventional debt-equity capital structure decisions.

Debt maturity plays a role if firms are to consider flexibility in financing, cost of financing, and refunding risks. The liability structure of firms may also be purposely aligned to the asset structure. A firm that funds its projects with short-term debt may face financial stress if the debt cannot be extended, or the cost of debt unexpectedly surges. Similarly, a firm that finances its short-term investments with long-term debt may unnecessarily risk mismanagement of resources after project life. This is generally known as maturity mismatch and widely claimed as one of the main factors that exaggerated the Asian financial crisis in the 1990s. This paper acknowledges the importance of debt maturity decision from the perspective of shareholders' value creation by considering the general current and non-current definitions of debt in a firm's financial statements.

Though debt maturity structure has yet to receive extensive attention, in recent years, researchers have been interested in how the choice between short-term and long-term debt is determined. The theories of debt maturity were first considered during the 1980s and the empirical studies to assess the related hypotheses only started during the mid-1990s (for e.g. Barclay & Smith, 1995; Stohs & Mauer, 1996; Stephan, Talavera, & Tsapin, 2011; Terra, 2011). Based on theories, different debt maturities are claimed to have their respective advantages and disadvantages in the context of firm value creation. For instance, the tax-based theories explain the increasing present value of tax benefits due to long-term debt. Assuming a tax advantage to corporate borrowing, Brick and Ravid (1985, 1991) show that firm value is increasing in the amount of long-term debt when the term structure is upward sloping. Based on the tax minimisation objective, the interest tax shield can be enhanced by increasing the proportion of debt payments allocated to long-term debt.

In contrast, the theories based on signalling, information asymmetry, and agency costs generally favor the use of short-term debt (see Myers, 1977; Barnea, Haugen, & Senbet, 1980; Flannery, 1986; Leland & Toft, 1996). Myers (1977) argues that maturity matching can control agency conflicts between shareholders and debtholders by ensuring that debt level are reduced to match the decline in the value of assets in place. At the same time, short-term debt is less sensitive to shifts in the risk and imposes more frequent monitoring by investors. It also mitigates the underinvestment problem or debt overhang in the firm's investment decisions (Myers, 1977; Diamond & He, 2014). Studies by Titman and Wessels (1988), Barclay and Smith (1995), and Guedes and Opler (1996) support such arguments and find that smaller firms with more growth opportunities have a smaller proportion of long-term debt. Besides, higher business risk stocks in the industries with higher earnings volatility tend to have higher short-term debt.

The signalling explanation states that issuance of short-term debt is a positive signal of the high-quality firms with low credit risk (Flannery, 1986; Diamond, 1991). Flannery argues that a firm's choice of debt maturity structure can signal insiders' information about firm quality. Undervalued firms choose high priority claims (e.g. secured short-term debt) to indicate their creditworthiness, while their low-quality counterparts prefer long-term debt because they cannot afford to roll over short-term debt due to positive transaction costs. Debt maturity is therefore negatively related to firm quality, strongly supported by the findings of Goyal and Wang (2013). Chen, Xu and Yang (2012) further conclude that firms with high systematic risk generally favour longer debt maturity.

While short-term debt allows for a reduction in borrowing costs when a firm receives good news and the debt is refinanced, Diamond (1991) argues that short-term debt exposes the firm to liquidity risk and develops a model focusing on the liquidity risk associated with short-term debt. The trade-off leads to interesting cross-sectional predictions and arguments about the type and maturity of debt that firms employ conditional on their private information on credit rating (see Custódio, Ferreira, & Laureano, 2013; Gopalan, Song, & Yerramilli, 2014). He and Xiong (2012) further warn that short-term debt may intensify the rollover risk of firms when the market liquidity premium becomes high. Johnson (2003) also proposes that firms trade off the cost of underinvestment problems against the cost of liquidity risk when selecting short maturity.

Decisions on debt maturity also gain considerable attention from the macro-level perspective (see Kim, Mauer, & Stohs, 1995; Diamond & Rajan, 2001; Antoniou, Guney, & Paudyal, 2006; Benmelech & Dvir, 2013). As such, in understanding the leverage maturity-returns relationship, the industry effect should not be ignored due to its significance on firm performance (Cheng, Fung, & Lam, 1998; Goddard, Tavakoli, & Wilson, 2009). Even since very early years, Schwartz and Aronson (1967) and Baker (1973) have agreed that financial leverage ratios across different firms within a similar industry show similarity. Therefore, firms are found to actively adjust their debt ratios toward the industry average (Hovakimian, Opler, & Titman, 2001). Zhang (2012) concludes that pooling all firms from different industries in a regression analysis may simplify the estimation process but indeed ignore the industry-related heterogeneities, which is not financially sensible.

The similarity of firms' financial structures within a specific industry can be partly explained by industry-related factors (Mackay & Phillips, 2005). Factors that have received research attention include, but are not limited to, product market strategy, characteristics of product inputs (see Harris & Raviv, 1991; Campello, 2003), concentration of supplier and customer (see Kale & Shahrur, 2007), barrier of entry (Hou & Robinson, 2006), regulation (Ovtchinnikov, 2010), etc. For instance, a decline in firm leverage is found following deregulation. This is consistent with a study by Muradoglu and Sivaprasad (2012), which further reveals the doubt that mixed empirical evidence on firm leverage and stock returns is mainly attributable to ignorance of industry leverage.

While many empirical studies have been done in order to validate the various theories by looking into the determinants of debt maturity, this paper attempts to focus on the possible impacts of maturity on stock returns, which is a direct and real return to shareholders. Based on the existing literature, the mixed impacts of debt with different maturities on firm value could therefore be expected. For example, long-term debt should be in a positive relationship with returns under normal yield shapes due to tax benefits. However, the effect could be more than offset by the underinvestment cost as proposed by the agency theory. Similarly, higher short-term debt is desirable in reflecting the credibility of a firm, but at the same time accompanied by higher liquidity risk. In respect to the context of industry characteristics, long-term leverage should be more favourable in the capital-intensive industries, which usually involve long-life investment assets. Short-term leverage is expected to be more desirable, from the perspective of maturity matching, in certain project-based industries, which usually emphasise short-term rollovers for working capital needs.

Generally, this study emphasises the relationship between firm-level financial leverage and stock returns. Specifically, it attempts to address a basic yet regularly overlooked issue by disaggregating financial leverage into short-term and long-term debt. If the impacts of leverage on returns are found to be due to maturities, market practitioners and researchers should manage borrowings with greater care. We examine the return-leverage relationship within the 12 selected sectors as the literature has suggested that pooling all firms would not be practical in terms of financing policy applications. Both indicators, book leverage and market leverage, are covered to provide a more comprehensive set of empirical evidence. Last but not least, this study looks into the Malaysian market, as one of the highest market capitalisations among emerging markets, which is not covered much in previous research. The rest of this paper is organised as follows: methodology and data; empirical results and discussion; and conclusion with recommendations.

METHODOLOGY AND DATA

Empirical Model

In this study, the hypothesis is that a relationship exists between stock returns and firm-level financial leverage. The common direct relationship can be expressed as:

$$R_{it} = \beta_1 LEV_{it} + \varepsilon_{it} \qquad (1)$$

where R_{it} is the firm-level adjusted returns, LEV_{it} is the firm-level financial leverage, and ε_{it} is the error term. Besides the conventional definition of firm leverage, it is of interest of this study to determine the separate impact of long-term leverage (more than a year) and short-term leverage (less than a year) on equity returns, i.e.:

$$R_{it} = \beta_0 + \beta_1 LLEV_{it} + \beta_2 SLEV_{it} + \varepsilon_{it} \qquad (2)$$

where $LLEV_{it}$ is the long-term financial leverage and $SLEV_{it}$ is the short-term financial leverage. However, there are other factors that would affect the stock returns' expectations as suggested by the previous literature.

First, the impact of overall market conditions on firm-level stock returns can be taken care of by using the market risk premium as a proxy for overall macro environment impacts. Most of the firm-level returns are expected to be positively related to market risk premium. Second, book-to-market ratio can be used as a risk factor to account for the difference between book and market equity, which can also be used as a proxy to growth opportunities (see Rajan & Zingales, 1995). Previous studies largely confirm its importance as the determining factor of stock returns (Rosenberg, Reid, & Lanstein, 1985; Chan, Hamao, & Lakonishok, 1991; Fama & French, 1992; Penman, Richardson, & Tuna, 2007; Dempsey, 2010). Additionally, size effect is found to be significant in many stock return studies in the U.S. market (see Banz, 1981; Basu, 1983; Fama & French, 1992) and Asian markets (see Wong, 1989; Rouwenhorst, 1999; Shum & Tang, 2005). Lastly, the price-to-earnings ratio, or the reciprocal of earnings yield, is a conventional stock valuation that has drawn attention since early years (Basu, 1977, 1983; Jaffe, Keim, & Westerfield, 1989). The ratio contains effects on the value strategy (Li, 2009) and the empirical evidence suggests a significant predictive power of earnings yield. Moreover, the ratio can demonstrate the efficiency of markets, which is especially a controversial issue in emerging markets. Thus the models extended from Equation (1) and Equation (2) respectively can now be expressed as:

$$R_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_3 MRP_t + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 EY_{it} + \varepsilon_{it} \qquad (3)$$

$$
\begin{aligned}
R_{it} = \ &\beta_0 + \beta_1 LLEV_{it} + \beta_2 SLEV_{it} + \beta_3 MRP_t + \beta_4 SIZE_{it} \\
&+ \beta_5 BM_{it} + \beta_6 EY_{it} + \varepsilon_{it}
\end{aligned} \tag{4}
$$

where R_{it}, LEV_{it}, $LLEV_{it}$, $SLEV_{it}$ and ε_{it} are as defined above, MRP_t is the market risk premium, $SIZE_{it}$ is the firm size, BM_{it} is the ratio of book-to-market value, and EY_{it} is the earnings yield.

Estimation Methods

In this sector-specific analysis, the relationship between leverage and returns is examined on individual stocks by adopting panel regressions. According to a survey by Petersen (2009), 42% of the finance papers did not adjust the standard errors for possible dependence in the residuals. In normal finance data sets, there are two generally seen forms of dependence. Firm effect is seen when the residuals of a given firm are correlated across several years. Likewise, if the residuals of a given year are correlated across different firms, time effect is noticed. Unawareness of these correlations of error terms across firms or across time may cause the estimated standard errors to be biased, so as the analysis results. T-statistics can be over- or underestimated and make the inferences less meaningful. This study will contribute to the empirical evidence by considering both the firm and the time effects by clustering the standard errors accordingly in panel regressions to avoid biased standard errors if there is presence of firm fixed effect or time effect (Petersen, 2009). If the standard errors estimated under different adjustments are found to be robust, then the robustness of this leverage maturity analysis can be verified.

The Data

Financial data covering from 1986 to 2012 for 815 listed firms in the Main Market of Bursa Malaysia is collected from Thomson Reuters DataStream. The firms are grouped into 12 sub-sectors with codes according to the Industrial Classification Benchmark of Dow Jones and the FTSE (see Table 1). As industry classification is a good proxy for business risks and industry factor has high influence on leverage ratios (Bradley, Jarrell, & Kim, 1984; Hou & Robinson, 2006), panel regressions are run for data across different industries. All financial companies, including banks, investment companies, insurance, and life assurances, are excluded because the debts found in their balance sheets do not carry similar financing meanings as for ordinary nonfinancial firms. The analysis for these financial firms should be treated in a different way and are thus not covered by this study. Due to the filtering process, the sample is not free of survivorship and selection bias. In some circumstances, there might be missing values in the time series of firm characteristics used to run the regressions.

Generally, financial leverage is defined as the ratio of debt, including but not limited to, total assets to total equity, total liabilities to total equity, total debt to total equity, or total long-term debt to total equity. Most of the previous studies focus on a single measure of leverage due to the robustness claims on key results under different alternative (but similar) sense definitions. Particularly, this study defines financial leverage as total financing to total equity, as shown in Equation (5).[1]

$$\text{Leverage}, LEV_{it} = \left[\frac{\text{Total Equity} + (\text{Long-term Debt} + \text{Short-term Debt})}{\text{Total Equity}} \right]_{it} \quad (5)$$

As discussed in this study of leverage maturity, the firm leverage will be further broken down into long-term and short-term as shown in Equation (6) and Equation (7) respectively:

$$\text{Long-term Leverage}, LLEV_{it} = \left[\frac{\text{Total Equity} + \text{Long-term Debt}}{\text{Total Equity}} \right]_{it} \quad (6)$$

$$\text{Short-term Leverage}, SLEV_{it} = \left[\frac{\begin{array}{c} \text{Total Equity} + \text{Short-term Debt} + \\ \text{Current Portion of Long-term Debt} + \\ \text{Long-term Debt} \end{array}}{\text{Total Equity}} \right]_{it} \quad (7)$$

The leverage is then adjusted to accommodate market value and book value, where book leverage and market leverage can be calculated. Accounting equity is used as the total equity to compute book leverage, while market capitalisation is substituted as the total equity to compute market leverage. In the empirical studies of financial leverage or capital structure, either book leverage or market leverage is widely adopted.[2] In this study, both measures are considered and reported.

Book leverage represents cash flows generated by the financing activity and refers to assets already in place. In contrast, market leverage is important in presenting future growth opportunities (Myers, 1977). Since market values are difficult to predict, supporters of book leverage do not agree that market leverage is suitable as a guide for financial policy. It is also not a usual practice to rebalance leverage in response to market fluctuations (Graham & Harvey, 2001). Nevertheless, advocates of market leverage argue that book equity is merely a plugged accounting number and is not much relevant to managerial decisions (Welch, 2004). The forward-looking market is more critical than the backward-looking market. Therefore, there is no reason as to why these two measures should match and be interpreted as the same (Barclay, Morellec, & Smith, 2006).

The dependent variable of interest is the firm-level adjusted stock returns. Previous studies have used various proxies of returns, such as return on assets (Hall & Weiss, 1967), accounting profit (Hamada, 1972), inflation-adjusted returns (Bhandari, 1988), risk-adjusted returns (Dimitrov & Jain, 2008; Korteweg, 2010), and abnormal returns (Muradoglu & Sivaprasad, 2012). This study adopts the adjusted firm-level stock returns in excess of the risk-free rate because it is straightforward and could be easily applied.

Control variables are calculated using the annual data covering the sample period. Market risk premium is the excess return of the market portfolio to the risk-free rate, where the market index FBMKLCI is used as the proxy of overall market portfolio and the market deposit rate is taken as the risk-free rate. Firm size is commonly represented by a firm's market value, which is taken as the natural logarithm of market capitalisation or market value of equity. Market capitalisation is computed by multiplying the closing share price by the total number of ordinary shares outstanding. The book-to-market value is measured by dividing a company's net asset per share by the closing share price. Earnings yield, which represents the firm's accounting profitability to market capitalisation, can also be obtained by calculating the ratio of earnings per share-to-share price.

EMPIRICAL RESULTS AND DISCUSSION

Table 1 displays the descriptive statistics of adopted variables of interest and control variables employed in the firm-level analysis. Tables 2 and Table 3 mainly report the regression results with the respective adjusted standard errors clustered by firm. Leverage is represented as book leverage in Table 2 and total market leverage in Table 3. In each table, regression results using total leverage and disaggregated leverage (into long-term and short-term) are reported for the selected sectors.

As can be observed from the overall results presented in Table 2 and Table 3, leverage exhibits a significant relationship with stock returns in most of the sectors when it is defined as total leverage, short-term leverage, or long-term leverage. This is partly consistent with the previous literature such as by Hamada (1972), Masulis (1983), Bhandari (1988), George and Hwang (2010), and Muradoglu and Sivaprasad (2012), that total leverage has a direct significant relationship with returns. The results also suggest that the control variable of book-to-market may not be able to fully capture the effects of financial leverage on stock returns alone, as suggested by some previous researchers (see Fama & French, 1992; Strong & Xu, 1997; Penman et al., 2007; Lewellen, 2015). The mixed impacts of financial leverage across sectors confirm the importance of sector-specific analysis. This is

consistent with claims that much of the variation in firm leverage can be explained by industry classifications (Baker, 1973; Bradley et al., 1984; Hovakimian et al., 2001; Mackay & Phillips, 2005; Muradoglu & Sivaprasad, 2012; Zhang, 2012). This could also be the factor to which the mixed empirical results are attributed. If the analysis is carried out in an aggregate manner by grouping all firms, the results may not provide meaningful inferences.

The results also ratify that the use of market leverage and book leverage in such a study is equally important as both exhibit significance in the analysis but may carry different impacts in terms of magnitude of effects and signs of coefficients. As indicated in Tables 2 and 3, control variables in the models are mostly significant or within expectations. Market risk premium exhibits a strong direct relationship to stock returns as claimed by most of the empirical findings whereas for size and earnings yield, the impacts and significance levels show some mixes. For some industries, investors value growth more than value. For others, the opposite holds true. Overall results confirm the validity of our model specifications.

As shown in Table 2, when total book leverage is used, only two out of twelve sectors exhibit a significant relationship with stock returns at least a 5% significance level. They are food and beverage and technology. In these two sectors, aggregated book leverage provides a better guide in financing policy. The negative relationship reveals that firms within these two sectors should reduce the total leverage level at best to improve shareholders' returns. The other nine sectors, at the same time, indicate that total leverage does not show a significant relationship with returns after controlling for the previously discussed factors. Firm size, book-to-market, earnings yield, and market risk premium serve to become better determinants for stock returns across industries.

Nevertheless, Table 2 also reveals that in order to better understand the impact of leverage, it should at least be divided into two simple classifications, i.e. short-term and long-term. In the sectors of chemical, construction and materials, automobile and parts, travel and leisure, utilities and telecommunication, long-term leverage exhibits a negative relationship with returns. Only the retail sector exhibits a positive relationship whereas basic resources, industrial goods and services, food and beverage, personal household and goods, real estate, and technology do not show a significant relationship. However, in the sectors of chemical, and automobiles and parts, short-term leverage shows a positive association with returns while in basic resources and real estate, it shows a negative association. In other words, in eight out of 12 sectors, leverage impact is only identified when it is disaggregated into long-term and short-term leverage. The leverage impact is

not fully absorbed by the other control variables when it is specified in different maturities.

When market leverage is adopted, Table 3 suggests a consistent conclusion on the importance of debt maturities. Only the sector of utilities and telecommunication shows that total leverage has an important direct impact on stock returns. However, as many as eight out of 12 sectors reveal that disaggregated leverage, in either form of long-term or short-term, carries a significant relationship with returns. Basic resources and retail sectors indicate that long-term leverage has a positive correlation with returns. Construction, automobile and parts, travel and leisure, and utilities and telecommunication show the opposite. Short-term leverage, at the same time, shows a positive relationship with returns in automobile and parts, and travel and leisure, but is negative in industrial goods and services, and real estates.

When the results are analysed on a sectoral basis (referring to both Table 2 and Table 3), disaggregated book leverage is dominant in chemical sectors, i.e. negative long-term leverage impact accompanied with a positive short-term leverage impact on returns. Returns are less correlated with market value of leverage. The coefficient of long-term leverage is −0.0520 whereas the short-term leverage coefficient is +0.0344. Both are at a 1% significance level. Such relationship implies that a unit increase in long-term leverage (or 100% by definition) would associate with a decrease of 5.2% in annual return on average. Nevertheless, an increase of short-term leverage by 100% would see an increase of average annual return by 3.44%.

The similar relationships are found in the construction and materials sector, but are significant for both book leverage and market leverage. Long-term leverage is not favourable with a coefficient of −0.0881 and −0.0691 as compared with a short-term leverage of +0.0314 and +0.0142. The positive effect of short-term debt over long-term debt, for both book and market measures of leverage, is perhaps consistent with the nature of the construction business, which usually rolls over the borrowed funds during stages of projects rather than having its own huge cash pile in place ready for use from time to time. Having long-term funds in place to finance short-term rollovers could be viewed as inefficient capital management. Automobile and parts displays the identical characteristics. Long-term leverage carries a negative impact with coefficients of −0.2755 and −0.1410 for book and market leverage respectively, while the short-term leverage coefficients are 0.1790 and 0.1023.

Table 1
Descriptive statistics of each sector

Sector (Code)	Chemical (1300)	Basic resources (1700)	Construction and materials (2300)	Industrial goods and services (2700)	Automobile and parts (3300)	Food and beverage (3500)	Personal and household goods (3700)	Retail (5300)	Travel and leisure (5700)	Utilities and telecommunication (6500 and 7500)	Real estate (8600)	Technology (9500)
Return												
Mean	0.0180	0.0061	-0.3751	-0.0039	0.0094	0.0858	0.0070	0.0512	0.0801	0.0989	0.0321	0.0163
S.D.	0.3880	0.4978	0.4559	0.4351	0.4390	0.4416	0.4823	0.5295	0.6021	0.5188	0.5053	0.6315
Minimum	-0.8970	-0.9945	-1.0318	-0.9901	-0.9373	-0.9464	-1.0019	-0.8722	-0.8962	-0.9723	-1.0028	-0.9310
Maximum	1.1750	1.8850	1.7235	1.4772	1.5536	2.8715	3.7766	3.1776	4.7150	2.4534	2.6012	3.3199
Long-term Leverage												
Mean	1.3028	1.3272	1.2542	1.2435	1.1387	1.1643	1.1652	1.5375	1.4691	1.8048	1.2857	1.3090
S.D.	1.8090	0.9396	0.4619	0.5105	0.2098	0.5351	0.3442	1.7768	0.7193	0.8573	0.5563	0.7234
Minimum	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum	25.9844	16.6097	6.2932	7.9263	2.3462	10.4222	4.5674	18.8165	8.5652	4.3798	7.6578	8.1187
Short-term Leverage												
Mean	1.5894	1.5819	1.4569	1.4006	1.2688	1.2686	1.3631	1.5624	1.4202	1.3131	1.4202	1.3641
S.D.	2.5247	1.0203	0.8474	0.6878	0.4476	1.0427	0.5660	1.3012	1.6913	1.3892	0.3666	0.8145
Minimum	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum	31.6474	15.6264	8.8299	9.3644	4.8381	28.7403	7.9995	11.9088	30.4552	19.8305	5.0101	9.4473
Book to Market												
Mean	1.1878	1.3582	1.4423	1.3627	1.8091	1.0782	1.5469	1.2719	2.6458	0.8461	1.2092	1.0321
S.D.	0.9222	1.0884	1.0644	0.9676	2.1262	0.8842	1.5758	1.0018	8.2723	0.5889	1.2679	0.7596
Minimum	0.0596	0.0333	0.0174	0.0285	0.1518	0.0545	0.0155	0.0728	0.0140	-0.1705	0.0096	0.0284
Maximum	5.8449	6.9696	7.4218	8.0641	13.0418	10.0470	14.3403	5.9513	76.2365	3.2930	7.6376	4.4344

Table 1: (*continued*)

Sector (Code)	Chemical (1300)	Basic resources (1700)	Construction and materials (2300)	Industrial goods and services (2700)	Automobile and parts (3300)	Food and beverage (3500)	Personal and household goods (3700)	Retail (5300)	Travel and leisure (5700)	Utilities and telecommunication (6500 and 7500)	Real estate (8600)	Technology (9500)
Firm size												
Mean	12.2878	12.1868	11.8094	11.7251	11.9755	12.6315	11.3229	12.6054	13.5541	14.659	12.2390	12.286
S.D.	1.4957	1.1281	1.3561	1.3827	1.5359	1.4091	1.4653	1.3734	1.5877	1.9599	1.0552	1.3908
Minimum	9.1661	8.8893	8.3891	8.5811	9.3057	9.6561	8.4791	8.6305	9.7780	9.7241	8.9753	7.6285
Maximum	15.4530	15.6269	15.8510	17.8335	15.9424	17.6132	16.3853	15.743	17.5393	17.621	15.4789	15.8813
Earnings Yield												
Mean	0.0316	0.0247	-0.0464	0.0264	0.0513	0.0461	0.0039	-0.0274	0.0677	0.027	0.0002	-0.1111
S.D.	0.2063	0.2671	0.6555	0.2367	0.2306	0.1913	0.3238	0.7038	0.5221	0.192	0.4373	0.7979
Minimum	-1.9977	-2.2299	-16.8636	-2.3109	-1.8411	-3.1649	-2.3345	-4.4133	-1.5865	-1.4686	-10.6041	-6.7970
Maximum	0.7686	1.1845	1.9031	0.9932	0.4946	1.5923	2.5742	8.3915	6.2035	0.2915	0.6619	1.5158
Market Risk Premium												
Mean	0.0430	0.0363	0.0428	0.0505	0.0506	0.0439	0.0551	0.0416	0.0353	0.0458	0.0368	0.0462
S.D.	0.2435	0.2440	0.2415	0.2354	0.236	0.2407	0.2338	0.2446	0.2495	0.2424	0.2476	0.2415
Minimum	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041	-0.5041
Maximum	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011	0.4011
Number of observation	197	474	930	1285	210	913	553	285	373	188	742	240

49

In travel and leisure, both long-term book and market leverage carry adverse impacts, having coefficients of −0.0634 and −0.0523 respectively. However, short-term leverage is at least harmless where short-term market leverage shows a positive relationship of +0.0664 at a 5% significance level. It is also similarly exhibited in the sector of utilities and telecommunication. The impacts of long-term book and market leverage stand at −0.0629 and −0.0844 respectively at a 5% significance level. Short-term leverage, however, does not show any significant coefficients. The findings are not consistent with the consensus understanding that the sectors are normally associated with long-term infrastructure investment, financed mainly by long-term debt, accompanied by long-term stable returns. Such findings suggest that the sector in the emerging countries like Malaysia may perform differently from those in developed markets. In contrast, short-term leverage is more favourable perhaps due to the positive signals of firm creditworthiness supported by the nature of stable earnings with low liquidity risk.

In contrast, in the basic resources sector, short-term leverage is not favourable as compared to long-term leverage. The negative associations are found at −0.0459 for short-term book leverage and at −0.0409 for market leverage. At the same time, long-term market leverage shows a positive relationship of +0.0669. Such an observation is perhaps due to the fact that many firms are operating in the vulnerable steel and timber industries under this sector. Investments are generally capital intensive and long-term in nature. Short-term leverage is highly unwelcomed and it could also mean that the firms are less protected from the highly fluctuated raw material costs in the competitive business environment, exposing these firms to high liquidity risk.

Similarly, in the real estate sector, we should be more concerned of the high short-term obligations due to the long-term nature of business development. The sector is less impacted by long-term financing where land banks are usually purchased and held for years. No significant relationship is observed between long-term leverage and returns, while the short-term leverage coefficient is estimated at −0.1161 and −0.0781 respectively for book and market measures of leverage. Comparable observations are found in the sector of industrial goods and services, which may engage in heavy industry, industrial manufacturing and processing, port operations, postal service, and logistics. The negative relationship between short-term market leverage and returns may suggest that short-term debt financing should be reduced whenever appropriate while long-term debt financing displays no significant relationship with returns.

In the retail sector, which includes stores and distributers, long-term leverage, including both market and book leverage, generally improves returns.

Table 2
Regression results for each sector by adopting book leverage

Leverage used: Book leverage divided into long-term and short-term portion

Coefficient Estimates	Chemical	Basic resources	Construction and materials	Industrial goods and services	Automobile and parts	Food and beverage	Personal and household goods	Retail	Travel and leisure	Utilities and telecommunication	Real estate	Technology
Long-term Leverage	-0.0520 (0.0097)***	0.0201 (0.0185)	-0.0881 (0.0201)***	0.0035 (0.0229)	-0.2755 (0.1136)**	-0.0262 (0.0226)	-0.0944 (0.0528)*	0.0229 (0.0107)**	-0.0634 (0.0290)**	-0.0629 (0.0266)**	0.0005 (0.0155)	-0.0333 (0.0354)
Short-term Leverage	0.0344 (0.0091)***	-0.0459 (0.0158)***	0.0314 (0.0169)*	0.0040 (0.0176)	0.1790 (0.0497)***	-0.0074 (0.0099)	0.0283 (0.0294)	-0.0236 (0.0210)	0.0139 (0.0111)	-0.0167 (0.0128)	-0.1161 (0.0321)***	-0.0074 (0.0369)
Book to Market	0.0633 (0.0389)	0.0178 (0.0158)	0.0625 (0.0116)***	0.0583 (0.0118)***	0.0260 (0.0066)***	0.0300 (0.0187)*	0.0295 (0.0195)	0.0119 (0.0147)	-0.0006 (0.0026)	0.0071 (0.0818)	0.0251 (0.0153)	0.0116 (0.0431)
Firm size	0.0498 (0.0087)***	-0.0041 (0.0153)	0.033 (0.0083)***	0.0087 (0.0064)	0.0346 (0.0106)***	0.0227 (0.0096)**	0.0229 (0.0096)**	-0.0284 (0.0223)	-0.0016 (0.0136)	-0.0302 (0.0187)	-0.0033 (0.0137)	0.0476 (0.0226)**
Earnings Yield	-0.2631 (0.0567)***	-0.0075 (0.0849)	0.0679 (0.0430)	0.1838 (0.0582)***	-0.0447 (0.0976)	0.1211 (0.0446)***	0.0731 (0.0533)	0.2024 (0.0589)***	0.0121 (0.0548)	-0.1803 (0.1893)	-0.0666 (0.0740)	-0.0917 (0.0864)
Market Risk Premium	0.9429 (0.0915)***	1.403 (0.0680)***	1.1844 (0.0469)***	1.0736 (0.0495)***	1.0765 (0.1222)***	1.0561 (0.0723)***	1.0393 (0.1036)***	1.2333 (0.1019)***	1.3641 (0.1398)***	1.0749 (0.1521)***	1.4182 (0.0509)***	1.4385 (0.2098)***
Constant	-0.6856 (0.1406)***	0.0316 (0.1993)	-0.4973 (0.1141)***	-0.2505 (0.0928)***	-0.4112 (0.2218)*	-0.2514 (0.1449)*	-0.2862 (0.1484)*	0.3601 (0.3148)	0.1318 (0.2039)	0.6270 (0.3664)	0.1237 (0.1927)	-0.5972 (0.3137)*
No. of observations	197	473	924	1280	210	913	550	285	373	187	740	239

(continued on next page)

51

Table 2: (*continued*)

Coefficient Estimates	Chemical	Basic resources	Construction and materials	Industrial goods and services	Automobile and parts	Food and beverage	Personal and household goods	Retail	Travel and leisure	Utilities and telecommunication	Real estate	Technology
Leverage used: Book leverage as total leverage												
Total Leverage	-0.0220	-0.0147	-0.0019	0.0037	0.0646	-0.0133	-0.0076	0.0048	-0.0058	-0.0317	-0.0266	-0.0196
	(0.0150)	(0.0110)	(0.0112)	(0.0134)	(0.0692)	(0.0038)***	(0.0265)	(0.0064)	(0.0040)	(0.0147)*	(0.0144)*	(0.0064)***
Book to Market	0.0583	0.0229	0.0659	0.0583	0.0240	0.0349	0.0268	0.0116	-0.0006	-0.0103	0.0300	0.0110
	(0.0374)	(0.0147)	(0.0119)***	(0.0118)***	(0.0047)***	(0.0186)*	(0.0198)	(0.0150)	(0.0027)	(0.0856)	(0.0165)*	(0.0437)
Firm size	0.0436	0.0054	0.0318	0.0087	0.0312	0.0226	0.0164	-0.0259	-0.0021	-0.0374	-0.0029	0.0472
	(0.0092)***	(0.0121)	(0.0083)***	(0.0064)	(0.0107)**	(0.0096)**	(0.0089)*	(0.0219)	(0.0146)	(0.0180)*	(0.0134)	(0.0229)*
Earnings Yield	-0.2795	-0.0170	0.0628	0.1838	-0.0282	0.1141	0.0775	0.1954	0.0119	-0.2290	0.0051	-0.0978
	(0.0607)***	(0.0817)	(0.0405)	(0.0583)***	(0.1068)	(0.0413)***	(0.0516)	(0.0620)***	(0.0560)	(0.1932)	(0.0794)	(0.0937)
Market Risk Premium	0.9621	1.3959	1.1832	1.0735	1.0963	1.0556	1.0353	1.2320	1.3606	1.0743	1.4305	1.4348
	(0.0911)***	(0.0784)***	(0.0469)***	(0.0493)***	(0.1161)***	(0.0721)***	(0.1054)***	(0.1019)***	(0.1380)***	(0.1530)***	(0.0498)***	(0.2045)***
Constant	-0.5864	-0.1088	-0.5487	-0.2466	-0.5464	-0.2705	-0.2675	0.3181	0.0760	0.6806	0.0136	-0.127
	(0.1566)***	(0.1545)	(0.1057)***	(0.0894)***	(0.1975)**	(0.1413)*	(0.1379)*	(0.3059)	(0.2098)	(0.3600)*	(0.1745)	(0.3185)*
No. of observations	194	474	924	1280	210	913	550	285	373	187	742	239

Note: The results is obtained by regressing the yearly firm-level data of stock returns on the book leverage, book-to-market ratio, firm size, earnings yield and market risk premium, with standard errors clustered by firm. A total of 483 firms are classified into 12 sectors according to the Industrial Classification Benchmark of Dow Jones and FTSE, for a sample period of 1986–2012. Book leverage is refined as short-term leverage, long-term leverage, and total leverage. The numbers in parentheses are adjusted standard errors. The asterisks ***, **, and * indicate rejection of the null hypothesis at the 1%, 5%, and 10% significance levels respectively.

Table 3

Regression results for each sector by adopting market leverage

Leverage used: Market leverage divided into long-term and short-term portion

Coefficient Estimates	Chemical	Basic resources	Construction and materials	Industrial goods and services	Automobile and parts	Food and beverage	Personal and household goods	Retail	Travel and leisure	Utilities and telecommunication	Real estate	Technology
Long-term Leverage	0.0137	0.0669	-0.0691	0.0207	-0.1410	0.0074	-0.0261	0.0560	-0.0523	-0.0844	0.0049	-0.0490
	(0.1158)	(0.0194)***	(0.0193)***	(0.0194)	(0.0181)***	(0.0302)	(0.0346)	(0.0143)***	(0.0229)**	(0.0294)**	(0.0093)	(0.0397)
Short-term Leverage	-0.0203	-0.0409	0.0142	-0.0231	0.1023	-0.0168	0.0204	-0.0079	0.0664	0.0228	-0.0781	0.0307
	(0.0651)	(0.0205)*	(0.0077)*	(0.0100)**	(0.0432)**	(0.0241)	(0.0275)	(0.0144)	(0.0305)**	(0.1255)	(0.0293)***	(0.0660)
Book to Market	0.0596	0.0217	0.0686	0.0638	0.0220	0.0387	0.0279	-0.0242	0.0113	0.0598	0.0438	0.0180
	(0.0333)	(0.0201)	(0.0132)***	(0.0133)***	(0.0070)***	(0.0214)*	(0.0239)	(0.0198)	(0.0097)	(0.0709)	(0.0159)***	(0.0477)
Firm size	0.0411	-0.0063	0.0319	0.0064	0.0312	0.0233	0.0191	-0.0402	0.0042	-0.0297	0.0000	0.0448
	(0.0098)***	(0.0131)	(0.0086)***	(0.0066)	(0.0108)**	(0.0093)**	(0.0095)**	(0.0216)*	(0.0130)	(0.0185)	(0.0137)	(0.0245)*
Earnings Yield	-0.2710	0.0707	0.0069	0.1678	-0.0178	0.1213	0.0765	0.2730	-0.0147	-0.0934	-0.0569	-0.0507
	(0.0585)***	(0.0666)	(0.0202)	(0.0534)***	(0.1105)	(0.0494)**	(0.0599)	(0.0643)***	(0.0898)	(0.1880)	(0.0762)	(0.0889)
Market Risk Premium	0.9490	1.3917	1.1899	1.0733	1.0712	1.0576	1.0370	1.2527	1.3689	1.0735	1.4111	1.4464
	(0.0891)***	(0.0792)***	(0.0473)***	(0.0490)***	(0.1208)***	(0.0724)***	(0.1054)***	(0.1047)***	(0.1379)***	(0.1486)***	(0.0507)***	(0.2119)***
Constant	-0.5749	-0.0199	-0.4894	-0.2108	-0.4211	-0.2901	-0.3102	0.4798	-0.0449	0.553	0.0099	-0.6002
	(0.1725)***	(0.1750)	(0.1103)***	(0.0918)**	(0.1705)**	(0.1408)**	(0.1368)**	(0.2996)	(0.1754)	(0.4196)	(0.1840)	(0.3236)*
No. of observations	197	473	930	1285	210	913	553	283	369	188	740	240

53

Table 3: (*continued*)

Leverage used: Market leverage as total leverage

Coefficient Estimates	Chemical	Basic resources	Construction and materials	Industrial goods and services	Automobile and parts	Food and beverage	Personal and household goods	Retail	Travel and leisure	Utilities and telecommunication	Real estate	Technology
Total Leverage	-0.0097	0.0058	0.0068	-0.0099	-0.0017	-0.0066	0.0071	0.0137	0.0192	-0.0663	-0.0085	-0.0141
	(0.0279)	(0.0121)	(0.0076)	(0.0102)	(0.0241)	(0.0204)	(0.0206)	(0.0071)*	(0.0231)	(0.0212)**	(0.0099)	(0.0113)
Book to Market	0.0596	0.0218	0.0603	0.0622	0.0223	0.0390	0.0202	-0.0081	-0.0111	0.0519	0.0350	0.0208
	(0.0325)*	(0.0192)	(0.0141)***	(0.0132)***	(0.0054)***	(0.0215)*	(0.0229)	(0.0165)	(0.0128)	(0.0682)	(0.0167)**	(0.0443)
Firm size	0.0414	0.0059	0.0335	0.0076	0.0273	0.0237	0.0159	-0.0309	0.0007	-0.0359	-0.0028	0.0446
	(0.0098)***	(0.0141)	(0.0088)***	(0.0064)	(0.0105)**	(0.0094)**	(0.0089)*	(0.0206)	(0.0141)	(0.0165)*	(0.0134)	(0.0237)*
Earnings Yield	-0.2681	0.0271	0.0009	0.1681	-0.0694	0.1293	0.0893	0.2524	0.0088	-0.1566	0.0153	-0.0954
	(0.0563)***	(0.0742)	(0.0261)	(0.0570)***	(0.1043)	(0.0440)***	(0.0558)	(0.0704)***	(0.0699)	(0.1372)	(0.0806)	(0.0907)
Market Risk Premium	0.9477	1.3939	1.1861	1.0782	1.0999	1.0579	1.0425	1.2359	1.3648	1.0754	1.4276	1.4347
	(0.0884)***	(0.0783)***	(0.0470)***	(0.0489)***	(0.1149)***	(0.0722)***	(0.1047)***	(0.1008)***	(0.1372)***	(0.1492)***	(0.0495)***	(0.2020)***
Constant	-0.5765	-0.1543	-0.5775	-0.2138	-0.4023	-0.2992	-0.2757	0.3835	0.0024	0.6633	-0.0196	-0.6015
	(0.1487)***	(0.1806)	(0.1100)***	(0.0876)**	(0.1502)**	(0.1381)**	(0.1311)**	(0.2847)	(0.1924)	(0.3194)*	(0.1754)	(0.3260)*
No. of observations	197	474	929	1271	210	913	553	285	349	188	742	240

Note: The results is obtained by regressing the yearly firm-level data of stock returns on the market leverage, book-to-market ratio, firm size, earnings yield and market risk premium, with standard errors clustered by firm. A total of 483 firms are classified into 12 sectors according to the Industrial Classification Benchmark of Dow Jones and FTSE, for a sample period of 1986–2012. Market leverage is refined as short-term leverage, long-term leverage, and total leverage. The numbers in parentheses are adjusted standard errors. The asterisks ***, **, and * indicate rejection of the null hypothesis at the 1%, 5%, and 10% significance levels respectively.

The relationship is estimated at +0.0229 and +0.0560 respectively at 1% and 5% significance levels. Such a relationship is consistent with the nature of capital intensive investment by firms in land, property, and buildings to generate long-run returns. The certainty of returns of such investments in retailing business is usually relatively high and therefore, the holding of long-term debt is probably widely accepted and welcomed by the market.

In the food and beverage sector, including some renowned consumer brands like Ajinomoto, Carlsberg, Dutch Lady, Fraser and Neave, Nestle, and Spritzer, as well as some plantations firms, the use of total book leverage is generally associated with negative returns. The results may also suggest that the market expects a relatively stable nature of business, where many of the firms are able to generate internal cash flows to finance growth and dividend pay-outs. It could also indicate that demand growth for their products is relatively steady in the long term and therefore firms should only raise significant external borrowings when there are substantial expansion opportunities. Moreover, this is the sector that usually preferred by investors who are more risk adverse.

A similar phenomenon is found in the technology sector, i.e. the results suggest that the use of total debt financing should be reduced. This is largely consistent with the outperformance of technology firms usually associated with low capital gearing with ample funding capacity. However, the sector of personal and household goods, where consumer good providers are usually found, (including apparel, jewellery, tobacco, furniture, electrical appliances, and similar items) is the only sector where leverage does not seem to play any direct significant role to returns at a 5% level, regardless of the use of book leverage or market leverage. A further investigation on the impact of leverage on returns could be based on other perspectives.

Robustness Tests

If the residuals in the panel data sets are correlated across firms or across time, then the ordinary least squares standard errors estimated can be biased. This could be observed in the data set used in corporate finance and asset pricing empirical work. As such, Petersen (2009) suggests that panel data analysis in empirical finance research should adjust the standard errors for possible dependence in the residuals. In the effort to provide support to the robustness of results for this firm-level study, different adjusted standard errors are compared to consider the possibility of the existence of time and the firm effects.

As shown in Table 4 and Table 5, different standard errors are estimated to tend to pose an impact on the significance of coefficients. This may be due to the fact that for some sectors, firm fixed effects are more prominent and in others, time effects may be present. Nevertheless, in most of the sectors, the different adjusted standard errors are not widely deviated among each other. This is one of the criteria indicating a large robustness of results. White corrected standard errors and panel corrected standard errors are included for comparison purposes.

Table 4

Regression results for each sector by adopting book leverage

Coefficient (t-statistic)	Long-Term Leverage			Short-Term Leverage		
	White adjusted	Clustered by time	PCSE / GLS	White adjusted	Clustered by time	PCSE / GLS
Chemical	-0.0520 (0.0224)**	-0.0520 (0.0225)**	-0.0520 (0.0203)***	0.0344 (0.0192)*	0.0344 (0.0188)*	0.0344 (0.0147)**
Basic resources	0.0201 (0.0248)	0.0201 (0.0260)	0.0201 (0.0138)	-0.0459 (0.0176)***	-0.0459 (0.0187)**	-0.0459 (0.0162)***
Construction and materials	-0.0881 (0.0222)***	-0.0881 (0.0184)***	-0.0881 (0.0250)***	0.0314 (0.0168)*	0.0314 (0.0182)*	0.0314 (0.0138)**
Industrial goods and services	0.0033 (0.0219)	0.0033 (0.0180)	0.0033 (0.0194)	0.0040 (0.0228)	0.0040 (0.0240)	0.0040 (0.0150)
Automobile and parts	-0.2755 (0.1011)***	-0.2755 (0.1220)**	-0.2755 (0.0952)***	0.1790 (0.0665)***	0.1790 (0.0664)**	0.1790 (0.0363)***
Food and beverage	-0.0262 (0.0342)	-0.0262 (0.0452)	-0.0262 (0.0288)	-0.0074 (0.0131)	-0.0074 (0.0174)	-0.0074 (0.0153)
Personal and household goods	-0.0944 (0.0493)*	-0.0944 (0.0420)**	-0.0944 (0.0728)	0.0283 (0.0324)	0.0283 (0.0349)	0.0283 (0.0241)
Retail	0.0229 (0.0172)	0.0229 (0.0182)	0.0229 (0.0127)	-0.0236 (0.0269)	-0.0236 (0.0338)	-0.0236 (0.0254)
Travel and leisure	-0.0634 (0.0297)**	-0.0634 (0.0312)*	-0.0634 (0.0265)**	0.0139 (0.0101)	0.0139 (0.0106)	0.0139 (0.0119)
Utilities and telecommunication	-0.0629 (0.0292)**	-0.0629 (0.0264)**	-0.0629 (0.0315)**	-0.0167 (0.0138)	-0.0167 (0.0140)	-0.0167 (0.0317)
Real estate	0.0005 (0.0259)	0.0005 (0.0249)	0.0005 (0.0242)	-0.1161 (0.0424)***	-0.1161 (0.0446)**	-0.1161 (0.0426)***
Technology	-0.0333 (0.0522)	-0.0333 (0.0492)	-0.0333 (0.0199)*	-0.0074 (0.0561)	-0.0074 (0.0553)	-0.0074 (0.0207)

Notes: The results is obtained by regressing the yearly firm-level data of stock returns on the long-term book leverage, short-term book leverage, book-to-market ratio, firm size, earnings yield and market risk premium, with adjustments for white standard errors, standard errors clustered by time, and with panel corrected standard errors (PCSE) / generalized least squares (GLS) estimates (see Petersen, 2009). A total of 483 firms are classified into 12 sectors according to the Industrial Classification Benchmark of Dow Jones and FTSE, for a sample period of 1986–2012. The figures in parentheses are adjusted standard errors. The asterisks ***, **, and * indicate rejection of the null hypothesis at the 1%, 5%, and 10% significance levels, respectively.

Table 5

Regression results for each sector by adopting market leverage

Coefficient (t-statistic)	Long-Term Leverage			Short-Term Leverage		
	White adjusted	Clustered by time	PCSE / GLS	White adjusted	Clustered by time	PCSE / GLS
Chemical	0.0137 (0.0906)	0.0137 (0.1145)	0.0137 (0.0846)	-0.0203 (0.0555)	-0.0203 (0.0551)	-0.0203 (0.0636)
Basic resources	0.0669 (0.0330)**	0.0669 (0.0347)*	0.0669 (0.0147)***	-0.0409 (0.0244)*	-0.0409 (0.0254)	-0.0409 (0.0146)***
Construction and materials	-0.0691 (0.0199)***	-0.0691 (0.0124)***	-0.0691 (0.0205)***	0.0142 (0.0068)**	0.0142 (0.0069)**	0.0142 (0.0064)**
Industrial goods and services	0.0207 (0.0221)	0.0207 (0.0240)	0.0207 (0.0210)	-0.0231 (0.0113)**	-0.0231 (0.0109)**	-0.0231 (0.0123)*
Automobile and parts	-0.1410 (0.0320)***	-0.1410 (0.0400)***	-0.1410 (0.0358)***	0.1023 (0.0444)**	0.1023 (0.0337)***	0.1023 (0.0288)***
Food and beverage	0.0074 (0.0380)	0.0074 (0.0522)	0.0074 (0.0317)	-0.0168 (0.0246)	-0.0168 (0.0303)	-0.0168 (0.0259)
Personal and household goods	-0.0261 (0.0372)	-0.0261 (0.0387)	-0.0261 (0.0380)	0.0204 (0.0261)	0.0204 (0.0172)	0.0204 (0.0181)
Retail	0.0546 (0.0268)**	0.0546 (0.0264)**	0.0546 (0.0151)***	-0.0079 (0.0185)	-0.0079 (0.0241)	-0.0079 (0.0218)
Travel and leisure	-0.0523 (0.0245)**	-0.0523 (0.0228)**	-0.0523 (0.0189)***	0.0664 (0.0361)*	0.0664 (0.0416)	0.0664 (0.0186)***
Utilities and telecommunication	-0.0844 (0.0361)**	-0.0844 (0.0318)**	-0.0844 (0.0324)***	0.0228 (0.1485)	0.0228 (-0.1452)	0.0228 (0.1422)
Real estate	0.0049 (0.0147)	0.0049 (0.0162)	0.0049 (0.0138)	-0.0781 (0.0313)**	-0.0781 (0.0313)**	-0.0781 (0.0323)**
Technology	-0.0490 (0.0418)	-0.0490 (0.0381)	-0.0490 (0.0266)*	0.0307 (0.0786)	0.0307 (0.0616)	0.0307 (0.0268)

Notes: The results is obtained by regressing the yearly firm-level data of stock returns on the long-term market leverage, short-term market leverage, book-to-market ratio, firm size, earnings yield and market risk premium, with adjustments for white standard errors, standard errors clustered by time, and with panel corrected standard errors (PCSE) / generalized least squares (GLS) estimates (see Petersen, 2009). A total of 483 firms are classified into 12 sectors according to the Industrial Classification Benchmark of Dow Jones and FTSE, for a sample period of 1986–2012. The figures in parentheses are adjusted standard errors. The asterisks ***, **, and * indicate rejection of the null hypothesis at the 1%, 5%, and 10% significance levels, respectively.

While we could not say that all findings are perfectly consistent to the results in Table 2 and Table 3 where the standard errors of the coefficients are clustered by firms, we can still confidently conclude from Table 4 and Table 5 that the overall findings, including the significance of the leverage coefficients estimated, remain robust. As can be observed from the tables, book leverage is still dominant in determining the returns in the chemical sector. Short-term leverage remains as a major threat for the sectors of basic resources, industrial goods and

services, and real estate. Long-term leverage is especially not preferred in the sectors of construction and materials, automobile and parts, travel and leisure, and utilities and telecommunication. Firms within sectors of food and beverage, personal and household goods, and technology remain less concerned with the problem of debt maturities.

CONCLUSION AND RECOMMENDATION

Using panel regressions together with the suggestion by Petersen (2009), this firm-level study emphasises the importance of debt maturity on stock returns in Malaysia based on industry classifications. In nine out of 12 sectors analysed, (i.e. chemical, basic resources, construction and materials, industrial goods and services, automobile and parts, retail, travel and leisure, utilities and telecommunication, and real estate) disaggregated leverage according to maturity measured in either book leverage or market leverage, is significant in the relationship with firm-level stock returns. The results suggest that the return-leverage relationship could be indirect in terms of maturity and the disaggregated leverage according to maturity may provide some insights to the relationship.

For some sectors (retail, utilities and telecommunication), long-term leverage is more prominent in relation to stock returns while in others (industrial goods and services, real estate), the regression results indicate that short-term leverage could be more important. For sectors including chemical, basic resources, construction and materials, automobile and parts, as well as travel and leisure, both long-term and short-term measures of leverage are important but may carry opposite impacts. Such discoveries, especially in the absence of direct impact of total leverage, suggest that the study of return-leverage would be more meaningful when debt maturities are put into consideration. The claim of which short-term debt carries a higher risk, therefore, should be compensated with higher returns needs further investigation. Robustness tests on possible correlations of residuals across firms or time confidently confirm such a conclusion.

Besides, while the overall conclusion is largely consistent with the use of both book leverage and market leverage, the results also recommend that the considerations of market leverage and book leverage are equally important despite their respective rationalities. Both measures exhibit significance in the analysis but may deliver different impacts and levels of significance. In the firm-level financing policy, researchers and practitioners should put more attention to debt maturity mix rather than the conventional debt-equity solutions. Industry-specific factors, at the same time, should not be overlooked since the results show that

completely opposite effects could take place with the same maturity decision. It further confirms the significance of sector-specific analysis.

This study provides a platform for the analysis of financial leverage on stock returns from the basic perspective of debt maturity. While maturity mismatch has been widely discussed since the last Asian financial crisis, this analysis could provide relevant empirical evidence from the standpoint of a shareholder's valuable creation based on industry classifications. Holding the importance of leverage maturities, further a detailed leverage analysis can be proposed. For instance, outcomes can be more valuable if the debt maturities can be further broken down rather than the conventional definitions of long-term (more than a year) and short-term (less than a year). Various cash flow elements, growth issues, dynamic changes in maturity mix, and other specific issues can also be included to provide a more comprehensive leverage research in the future.

NOTES

1. The inclusion of total equity in the numerator is to avoid the ratio becomes negative when net debt is considered in the analysis, of which the results are not reported in this paper. However, the application and interpretation of the leverage would be the similar like equity multiplier. Instead of total liabilities, debt is used in the numerator.
2. Market equity is used when examining the dynamic effect of leverage because market leverage will fluctuate due to market conditions and reflect the changing relative costs of equity and debt. Book equity is useful in better representing the ability of managers because it reflects firms' actual financing needs.

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MANAGEMENT, CONTROL AND GOVERNANCE OF HAWALA NETWORKS IN THE GULF COOPERATION COUNCIL REGION

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ABSTRACT

Prior research has focused on the transactional aspects of the Hawala Networks (i.e. Invisible Funds Transfer Networks). However, little is known about the structure of this networked "organisation" especially about its governance and management control systems. Clan-based Organisations and Actor Network Theories were utilised to provide the theoretical base on which a research farmework was built. In total, 20 indepth interviews were conducted with Hawaldars (Hawala service providers) using a semi-structured questionnaire. As the study focused on the Gulf Cooperation Council region, data were collected from Qatar, UAE and Kuwait. The data indicated that there were no formal governance and management control systems in place for managing Hawala Networks (HNets); there were no explicit formal processes and mechanisms for evaluating performance and there was no formal performance measurement and tracking system in place to provide the information about network functionality. Results also showed that trust acted as the most important control mechanism impacting the efficiency, effectiveness and the relatively lower transaction costs associated with HNets operations.

Keywords: Hawala, governance structure, networked organisation, trust

INTRODUCTION

Hawala Networks (HNets) is a worldwide informal funds transfer phenomenon commonly used by expatriates wanting to send money home, businesses in import/export, for foreign exchange transactions and for travel. It is estimated that every year over USD500 billion flows through HNets (Thompson, 2011). HNets exist due to a number of reasons which include; anonymity, cultural friendliness (Chene, 2008), low transaction costs (Maimbo, 2003), less transit time (Schramm & Taube, 2002), enhanced level of trust (Schramm & Taube, 2002) and increased efficiency (Ballard, 2003).

Research Background

Very limited (if any) research has been conducted to specifically look at the governance mechanisms and management control systems in HNets. A review of the existing research in the area of HNets reveals that most of the research has focused on defining what HNets do and describing the general mechanics of how money is transferred through the system (e.g., Ballard, 2003; El-Qorchi, Maimbo, & Wilson, 2003; Maimbo, 2003; Passas, 1999; 2006; Schramm & Taube, 2002; Wilson, 2002). The current research on Hawala provides basic information on how the network operates and how the linkages among network members function (Ballard, 2005a); but leaves a number of important questions unanswered such as how these informal networks are governed, coordinated or how controls are established and exercised. Unlike "formal" transnational economic activities that operate from relatively static identifiable entities (such as banks and other multinational corporations) and which are regulated by national and international governmental institutions, the Hawala economy is constituted by networks of spatially dispersed heterogeneous actors with no specific centre. While one might think that as an enterprise that exists in the "grey" area of legality, the default rate and default risk would be high, fraud would be rife, and exploitation a common occurence, there is a surprising consensus among scholars that the HNets have a history of being reliable, speedy and convenient (Ballard, 2005a; Schramm & Taube, 2003).

HNets in the Gulf Cooperation Council (GCC) Region

HNets are thriving in the Gulf Cooperation Council (GCC) region due to low transaction costs and simple transfer procedures (Pathak, 2003). Furthermore, HNets reach parts of the world (such as rural areas) where formal institutions such as banks do not exist. Appropriately, they are labeled "poor man's bank". These networks provide a useful service to low income workers from the Indian sub-

continent in the GCC region for sending their money to remote areas. Furthermore, majority of the Indian sub-continent (to include India, Pakistan, Bangladesh and Nepal) based Hawala deals are being currently initiated and managed in the GCC region. The key reasons for this "situation" are large population of workers from the sub-continent, their inability to use formal monetary transfer system, and the proximity of GCC to the sub-continent region (Ballard, 2005b). Other supporting factor for thriving Hawala network in the GCC region are to do with local currency peg to the dollar and the unrestricted access to global financial system. HNets are flourishing in the GCC region (including Qatar, UAE, Bahrain, Oman and Saudi Arabia) and play a crucial role in billions of dollars of money transfers out of GCC. In fact, Dubai is labelled as a part of the "Hawala Triangle" where India and Pakistan represent other vertices (Pathak, 2003).

The GCC region is fast developing and expanding its financial sector. In particular, United Arab Emirates and Bahrain are striving hard to become financial centres of the Middle East. With these ambitions in progress, any monetary leakages or financial irregularities related to the utilisation of the informal channels of money tranfer can (and do) disrupt these plans. Hence, governments in the GCC region are seriously interested in curbing the use of Hawala. To start with, the profits related to the formal remittance system are being eroded as a result of HNets provding an alternative and a cheaper money transfer option (Passas, 1999). The financial divergance through HNets also results in taxation losses for the government as money is moving outside the formal financial channels and remains untaxed (El-Qorchi, 2002). Another problem associted with the money moving out of the formal financial channels is its undetecable usage. There have been cases (even though quite rare) where illegal businesses and criminal activity have been known to be funded through Hawala transfers (Passas, 1999). The minimal transaction record with no legal coverage has resulted in fraud (very few cases) due to the untraceable nature of the Hawala tranfers (Schramm & Taube, 2002; Farooqi, 2010). Additionally, the speed of Hawala transaction completion (in most cases) is faster than fromal channel transfers. The typical Hawala transaction can take anywhere from hours to a day or two at the most. HNets also provide deeper transfer penetration as comapred to formal remittance system. HNets have been known to reach remote and rural areas where conventional fianncial institutions do not exist. The formal transfers (mostly through banks) take longer as the funds need to be converted into foreign exchange depending on the termination country and the number of banks invloved in the transfer process. Hence, slow transfer through formal remitance channels also motivates the money sender towards HNets.

In the GCC region, despite of their negative and adverse effect on formal remittance system, HNets are a prominent exemplar of the informal systems used

for transferring money from GCC member countries to foreign locations (mostly the the Indian sub-continent). Even roots of HNets can be traced to this region and that is why they are also known as the 'Eastern Union' (as opposed to Western Union) to signify their origins. Usually HNets, found in the GCC region, operate outside mainstream banking channels which results in minimal transaction related documentation and paperwork. This 'informality' is also associated with the ability of HNets to provide the lowest transactions costs, cultural friendliness, lower delivery time, enhanced trust and increased efficiency. These positive service aspects favor 'working class' population in the GCC region who can have easy and inexpensive access to these informal channels to transfer their money (Hanieh, 2010). HNets are credited with the ability to move billions of dollars annually involving thousands of discrete transactions. However, still little is known about how these networks are managed, controlled and governed.

OBJECTIVES OF THE STUDY

The key issue addressed by this research is how HNets, despite being geographically dispersed, are highly proximate in creating mutually beneficial relationships. More specifically, the study examined the following key interrelated questions:

1. How do various actors enter into the HNet?
2. How do relationships (both vertical and horizontal) develop within the HNets?
3. What are the forces that bind the HNet actors to one another, including the role of trust?
4. What are the practicalities associated with managing the HNet multinational and crossnational relationships?

LITERATURE REVIEW

Conceptually the research is grounded in two streams of theory: (i) Ouchi (1980) framework for studying clan-based organizations; and (ii) actor network theory (ANT) (Latour, 1987) that focuses on the multiple associations, the elaborate translocal business linkages and sociocultural ties that make up socioeconomic networks.
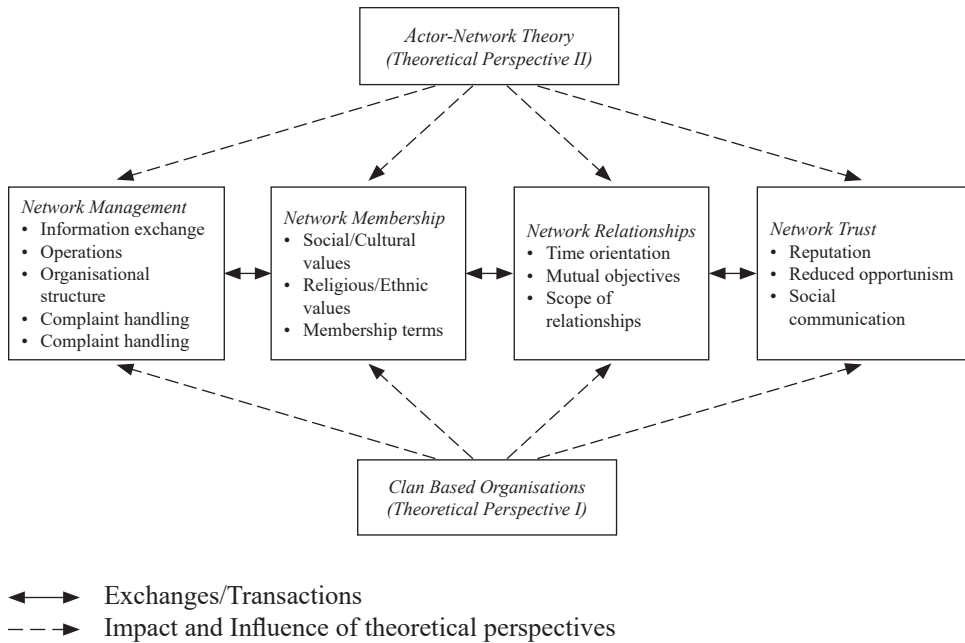
*Actor-Network Theory
(Theoretical Perspective II)*

Network Management
- Information exchange
- Operations
- Organisational structure
- Complaint handling
- Complaint handling

Network Membership
- Social/Cultural values
- Religious/Ethnic values
- Membership terms

Network Relationships
- Time orientation
- Mutual objectives
- Scope of relationships

Network Trust
- Reputation
- Reduced opportunism
- Social communication

*Clan Based Organisations
(Theoretical Perspective I)*

◄───► Exchanges/Transactions
– – ► Impact and Influence of theoretical perspectives

Figure 1. Research Framework

Theoretical Perspective I: Clan Based Organisations

Ouchi (1980, p. 140) defines an organisation as, "any stable pattern of transactions between individuals or aggregations of individuals". Ouchi (1980) used the transaction cost approach to look at intermediation forms and identified three basic mechanisms of mediation or control; markets, bureaucracies and clans. Ouchi suggested that the normative requirements for clan-based organizations in the 20th century were reciprocity, legitimate authority and common values and beliefs. Ouchi posited that the norm of reciprocity underlies all exchange mechanisms and has been found to be universal among all societies across time (Gouldner, 1961). In its absence the cost of the exchange, involving contractual terms, auditing and performance evaluation tasks, would make the transaction prohibitively expensive and not worthwhile. Legitimate authority can take the rational/legal form in the case of a bureaucracy while it can take the traditional form in clan based organisations. Common values and beliefs in the clan form eliminate the possibility of opportunistic behaviour among clan members as cheating another member would be like cheating oneself. A value system that is mutually acceptable

to the Hawala service provider and the service user is fundamental in sustaining the system. HNets are largely driven by the code of honor, reputation (of the Hawaldar), trust and personal relationships connecting HNet members and Hawala service users (White, 2003). According to Tilly (2005), a combination of honor, reputation and personal relationships results in 'noble value'. Within the HNets clan, noble value creates a belief of trust and individuals (both service providers and service users) engage in transactions with reduced fear of opportunism (Tilly, 2005).

Theoretical Perspective II: Actor Network Theory (ANT)

Actor Network Theory (ANT) has been used to look at a variety of accounting phenomenon involving complex relationships (Briers & Chua, 2001; Chua, 1995; Gendron & Barrett, 2004; Miller, 1991; Preston, Cooper, & Coombs, 1992; Robson, 1992) such as "interfirm alliances" as well as to study the social implications of relationships (Callon, Law, & Rip, 1986). Recently, ANT has been applied to the study of how economic markets are organised (Caliskan & Callon, 2009; Callon, 1991; 1998). Callon (1991; 1998) argued that economic markets are networks and to understand how market transactions are governed and stabilised; we need to examine the "processes of economizing" that takes place within the economic markets. The processes of economizing refers to "the processes that constitute the behaviours, organizations, institutions and, more generally, the objects in a particular society which are tentatively and often controversially qualified, by scholars as 'economic'" (Caliskan & Callon 2009, p. 370). Given that HNets are engaged in transnational economic activities, the proposed research draws on the ANT to investigate the "processes of economising" that leads to their effectiveness in transfering funds around the globe.

RESEARCH METHODOLOGY

Through the multiple informants at multiple levels in the HNets a variety of network members were interviewed to gain a better appreciation of how these networks were governed and what management control systems were employed in governing a multinational "organisation" that was indeed a true network or a clan organisation.

Data collection was done using interview based field research which allowed for the understanding of phenomenon in their natural setting (Patton, 1990; Yin, 1989). This methodology gave researchers an opportunity to follow the relevant actors to develop an understanding of the management activities and

actions within the HNets (Callon, 1991; Latour, 1996). The study involved using various sources of information including Hawaladars at different levels, formal value transfer operators and HNet experts. Using multiple information sources enabled the maintenance of the "critical distance" necessary as defined by Law (1991). Gathering data from the multiple sources was consistent with the extant field studies in management research (for details see Ferreira and Merchant, 1992) and was also in consonance with Yin's (1989) commentary on improving the construct validity of field data.

Interpretive methodology involving in-depth interviews was utilised to collect the data. Adopting this semi-structured interviewing approach provided an opportunity for investigating emergent and new issues that were not selected prior to the study but proved to be relevant. The semi-structured and flexible questionnaire format, especially in the early stages of the field work, reduced the number of predetermined questions (which may not have been a relevant question to ask) and hence this 'improvised' approach helped with the identification of fitting and appropriate questions. The flexibility generated through the semi-structured interviewing questionnaire created a room for further improvements (Arthur & Nazroo, 2003). Since, semi-structured research designs have been criticized as leading to diffuseness and data overload (Miles & Huberman, 1994), the looseness of the investigation was bounded by the semi-structured questionnaire which facilitated a focused approach to the research. In the interview process, care was taken not to evaluate the respondents' professional competence but to understand how they actually manage the networked environment in which they operate (Chua & Mahama, 2007). Where needed, appropriate language was used to facilitate the ease of communication between the respondent and the researcher. Research team was fluent in Arabic, English, Hindi, Punjabi and Urdu. These were the languages spoken and understood by most of the Hawala actors within the GCC region.

To support data collection and maximise the number of contacts made, chain referral sampling was utilised. This sampling method was considered as the most appropriate for sample identification in networked individuals and firms (Sudman, 1976). Use of chain referral sampling tends to optimise the chances of reaching a wider part of the suitable and the appropriate sample through the contacts which have been already identified. As these contacts were familiar and knowledgeable about the HNet membership, their referrals resulted in an appropriate and a fitting respondent identification (Taylor, 1985). Another reason for adopting chain referral sampling was related to the semi-scattered nature of HNet members where Hawaladars were temporally and spatially displaced. Through chain referral sampling it was possible to make connections with HNet actors through other HNet actors.

As described in the literature (Browne, 2005), chain referral sampling starts with a contact list (see Tables 1 and 2) containing individuals who are not only willing to furnish the required information but willing and comfortable in pointing out and even arranging meetings with suitable HNet members. Hence, to optimise the chances of reaching a suitable and an appropriate sample set, existing and newly developed connections were used from the academic and Hawala community. In particular, individuals (especially Hawaladars who are or have been a part of the HNet or service users who have been sending money through HNet) having an experience of and familiarity with HNet were approached with the referral requests (Taylor, 1985).

While chain referral sampling is an effective and an efficient sampling strategy for research within organisations, it has a drawback of creating a narrowly defined sample which may not be a balanced representation of the population under investigation (Holstein & Gubrium, 2004). To overcome this limitation, a diverse location approach (i.e. sample to be dispersed over different geographic locations to include different parts of Qatar, United Arab Emirates and Kuwait) was taken to maximise the geographical spread of the data. At different locations various leads (through various types of contacts to include respected community members, prominent Hawala network members, distinguished Hawala service users and local Hawala researchers and academics) were approached to create a large pool of contacts representing different segments of the population. Other inadequacies (such as interviewer bias, misunderstanding of context, language initiated problems and intentional mis-directions) commonly related to qualitative semi-structured in-depth interviewing were minimised by complementing interviews with informal discussions. Cross referencing of formal (interviews) and informal (casual discussions) data helped with content clarification and reduction in error.

A trip was made to the Hawala zone (a place from where Hawaladars operate) prior to data collection to acquaint and familiarise with Hawala settings and rituals in order to understand the fundamental social mechanics surrounding Hawala business. The purpose of this pre data collection trip was to soak in Hawala social environment in order to feel comfortable within the HNet atmosphere when interviewing started.

As HNets mostly operate within a restricted environment where access can be limited to a selective audience and Hawaladars tend to be secretive about their dealings, a recording device or note taking were not utilised during interviews. This caution was necessary to ensure that the respondents were comfortable and relaxed and there were minimal hesitations in sharing data and information. Even though mental note taking may have introduced certain errors into the research,

it was preferred that the respondents were fully engaged, unintimidated and open with their views and expressions. Team interviewing (with two researchers) was adopted to reduce the level of disinformation likely to result from the mental note taking. Cross referencing of collected data was done to minimise the amount of mistakes which could have been the outcome of memory lapse or inadequacy in remembering the respondent's answers and comments.

Table 1

A list of Hawala academics and professionals

Position	Organisation	Location	Expertise
President	A major mutual fund	Karachi	Investments, international money transfers, banking
Vice President	Habib Bank Ltd.	Dubai	Banking, International Transactions
Owner	A major foreign exchange dealer	Islamabad	Money transfer, prior banking experience
Partner	A major money transfer company	Karachi	Money transfer, prior investment banking experience
Managing Director	Amana Investment Limited	Colombo, Sri Lanka	Informal transfers
Group Financial Controller	National Bank of Kuwait	Kuwait	International Finance
Vice President	Abu Dhabi Islamic Bank	Abu Dhabi	Corporate Finance
Deputy General Manager	Banque Sardar	Beirut, Lebanon	International Banking
Board Member	Arab Finance Investment House	Beirut, Lebanon	International Transactions
CEO	Eastern Trust	Dubai, UAE	Islamic Investments
Head of Direct Investments	Al-Safat Investment Company	Kuwait	Rural Business Development
General Manager	Dhofar Investment Holding Company	Salalah, Oman	Financial Advising
Currency Transfer Manager	Dubai Exchange Centre	Dubai, UAE	Foreign Transfers
Internal Auditor	Ahalia Exchange Bureau	Abu Dhabi, UAE	Internal Financial Auditing
Financial Specialist	The World Bank	Washington DC, USA	Developing Nations Financial Systems

Table 1: (*continued*)

Position	Organisation	Location	Expertise
Director Islamic Banking	State Bank of Pakistan	Karachi, Pakistan	Informal Financial Systems
Board Member	Central Bank of the Republic of Turkey	Ankara, Turkey	Hawala Networks
Professor	Mustafa Kemal Universitesi	Ankara, Turkey	Informal Finance
Professor	Northeastern University	Boston, Massachusetts, USA	International Finance
Researcher	London School of Economics and Political Science	England, UK	Developmental Economics
Special Advisor	Financial Transactions and Reports Analysis Centre, Government of Canada	Toronto, Canada	Informal Financial Institutions

Table 2

A list of Hawala actors (individuals who were connected to or were a part of a Hawala Network)

Position	Type of Business	Location	Type of Actor
Bank Compliance Officer	Banker	Dubai	Banker, compliance issues, risk management issues, dealt with business people (using Hawala) and Hawala operators in pre-regulation period.
Insurance Officer	Insurance company	Dubai	Involved in the Insurance business and the financial services sector, dealt with business people (using Hawala) and Hawala operators in pre-regulation period.
Hawaladar	Hawala	Dubai	Previously involved in IVTS business in the pre-regulation era. Currently involved in international trade. Very familiar with all aspects of Hawala business, both as a user and a facilitator.
Senior Bank Officer	Banker	Dubai	Has dealt with Hawaladars extensively as well as business people in Pakistan and GCC who have used the Hawala route before the new regulatory environment came into place.
Bank Manager	Banker	Abu Dhabi	Has dealt with Hawaladars extensively as well as business people in Pakistan and GCC who have used the Hawala route before the regulatory environment came into place.

Table 2: (*continued*)

Position	Type of Business	Location	Type of Actor
Former banker who moved into remittance business	Hawala	Abu Dhabi	Experienced banker who left position with an international bank and moved into the remittance business. The company is a legally registered funds transfer business and has expanded significantly over the last nine years under his stewardship.
VP Foreign Exchange	Banker	Abu Dhabi	Experienced banker in the FX transaction area. Extensive contacts with business people as well as with various players in the money transfer business.
Managing Director	Money Transfer	Doha	Experienced professional with over 30 years of experience in the Gulf financial sector) running a successful nationwide money exchange business in the Gulf region. Extensive interaction with business community, financial institutions as well as the central banks of various Gulf countries.
Branch Manager	Banker	Doha	Experience banker with over three decades of experience in the gulf countries. Currently managing one of the busiest branches of a local bank and dealing with all kinds of business and personal accounts. Knowledge about formal and informal transactions and offered useful insights into the management of the network.
Commercial Manager	Banker	Doha	Currently working in the banking sector. Experience in the private sector and with funds transfer business in the Gulf countries.
Hawaladar	Hawala	Doha	Retired Hawaladar. Extensive experience in the Hawala business since 1968
Customer	Customer Former	Doha	Not directly involved in the business but has knowledge of people who were working in the area and were a part of the community.
Managing Director	Hawala Operator	Doha	Businessman, born and raised in Doha. Has been dealing with other businesses for over 30 years and has a fair bit of information on the Hawala practice.
Customer	Former Customer	Doha	Worked in Doha for over 30 years. He was a client of the Hawala business before it became illegal in Qatar. Since then has been using the banking channels. Had contacts with people who used to run the business who have now left the country.
Customer	Former Customer	Doha	Lived in Doha for over a decade. Lived in Dubai before the move and is familiar with the Hawala business.
Senior Banker	Banker	Doha	Veteran banker with over 20 years of experience working in Pakistan and Doha and dealing with Hawaladars, exchange houses, businessmen and high net worth individuals.

Data Analysis

The gathered data were maintained in NVivo and manual folders. NVivo was utilised for keyword/key phrase analysis. NVivo is a software package designed to organise qualitative data in a retrievable form. This software provides a database for the evidences gathered in the field through interviews and observational notes and memos. It helps the researcher to work efficiently with unstructured data such as interviews, documents, audio, video and pictures so as to enable better analysis and presentation. Maintaining such databases allow for a chain of evidence to be established such that external readers can follow the field report to the evidence upon which the report is based.

Preliminary interviews were conducted in Qatar, UAE and Kuwait with the view of identifying emergent themes relevant to the research. For pre-testing the questionnaire, three respondents who had experience and exposure in the area were interviewed. These interviews led to the revision of the final questionnaire. The three pre-test interviews were not included in the final data set. A total of 20 in-depth interviews with Hawala actors were completed. The average time per interview was 105 minutes. The data were collected in two rounds conducted during summer 2013 and summer 2014.

Empirical Analysis

The HNets money transfer market is unregulated, yet there is evidence to suggest that they have been highly successful in money transfers at the lowest transaction cost with high level of efficiency (compared to the formal banking system). Mostly the Hawala transactions occur between people who could be described as total strangers, yet there is very limited evidence of fraud and conflict. More so, the HNets member initiating the transfer may have no direct personal or business contact with the other member who finally delivers the money to the receiver, yet the delivery is speedy and accurate. In fact, HNets have evolved into heterogeneous multinational "organisational networks", the operations of which are not yet well known and reported in the literature. Hence, the general research question was how are HNets governed, managed and controlled. Furthermore, the proposed research drew on Ouchi's framework for studying clan-based organizations and on Actor Network Theory's (ANT) notion of relational networks.

The analysis showed that there were no formal control mechanism underpinning the operations of HNets; there were no formal organisational structures and no legal contractual basis for conducting operations. Rather HNets were constituted as flat networks of heterogeneous participants who operated

through relational (social) contracting and with influence dispersed throughout the network. The data analysis indicated that trust acted as the most important control mechanism underpinning the efficiency, effectiveness and the relatively lower transaction cost of HNets operations. By operating through flat network structure, HNets have not only been able to reduce the cost of bureaucracy evident in the formal banking system but have also been able to effectively hold the network together through reliance on trust. In addition, the flatter network structure added to the speed with which decisions and delegations were made and lead to effective information sharing. At somepoint in the relationship, trust lead to open communication where confidential and sensitive information was shared between network actors with minimum of checks.

The data indicated that the operational aspects of the network were not uniform as they were not required to be so; neither was there a monitoring system in place which required the use of a standardised process for conducting business in the network. As such the operational aspects of the business varied from network to network and at times from person to person. The lower costs and service efficiencies could be related to the absence of third part monitoring or requirements to follow a prescribed or a standardised procedure for transferring funds. The lack of these compliance costs reduced the transaction costs. In addition, the speed with which transactions took place increased in the absence of bureaucratic processes found in the formal transfer systems. As a relevant analogy, HNets operated by finding connections similar to the World Wide Web which can find indirect pathways through connections via intermediary nodes (in the case of Hawala, trust based relationships). Hence, HNets are constituted as flat networks of heterogeneous participants who operate through relational (social) contracting and with a positive influence dispersed throughout the network. The following section presents a discussion about how trust emerges and becomes instantiated as an effective control mechanism in HNets.

Material Arrangements of HNets: Building and Consolidating the Network

Actor-network theorists suggest that rather than taking the material composition and arrangement of a network as given and then proceeding to analyse how the network is governed and controlled, one should start the investigation of governance and control by examining the patterning of such networks. That is, governance and controls are not add-ons to the network but constitute part of the processes of building and enacting the network. In this sense, the material composition and arrangement of a network may inhibit particular governance and control elements that both enable the network to be constituted and become stabilised during its operations. The study found evidence of control (informal in

nature) simultaneously emerging with the very composition and patterning of the networks in a process that can be described as "heterogeneous engineering" (Law, 1991). It was heterogeneous engineering in the sense that it assembled a network of human actors (Hawaladars) and non-human elements (such as traditions, values and beliefs) from diverse and disparate origins into a network (HNets) that operated like a single actor (Hawala). It was within this heterogeneous engineering process that trust became the most effective control mechanism in the HNets that were studied. How trust was established as a control mechanism is explained next.

The composition of HNets was based on the careful screening for the trustworthiness of the potential network members. An individual's trustworthiness was established at two levels: (i) personal ties with existing Hawaladars and (ii) position within one's community. To become a part of a HNets, individual needed a long standing personal tie with one or more Hawaladars in the HNets who were willing and able to vouch for the joining member trustworthiness through a thorough system of referencing. References were essential ingredients in convincing existing HNets members that the new entrant was reliable and dependable and that he/she could be trusted to deliver when called upon to do so. Referees played an important role in case of any discrepancy, serious complaints or defaults. In such cases the referees were called upon to honor the commitments of the new entrant for whom reference was provided. It was usually over a considerable period of time involving numerous transactions that the supporting role of referees diminished. In the very rare cases of serious fraud, the Hawala Network took the collective responsibility of covering the losses of the service users. Especially, the reference providers or the guarantors (of the offender) take the lead in finding an amicable solution for recovering the losses and minimizing the reputational damage (Schramm & Taube, 2002). This consolidatory behaviour exhibited by the Hawaladars is indicative of a desire to preserve collective reputation of the Hawala system (Humphrey & Schmitz, 1996). The offender, if caught, had to face the Hawala jury who then decide on the appropriate course of corrective action or punishment (Farooqi, 2010). A point worth highlighted is that according to the interviewed respondents, and based on the key findings of this study, there were no reported acts of financial misconduct impressing the high level of trust and confidence that exists within HNets. However, a couple of Hawaladars talked about rare cases where a *wakil* (an adjudicator) was nominated through mutual consensus to resolve matters of financial misconduct (Thompson, 2011).

All interviewees in this study emphasised the importance of the reference system. For this reference system connected people to distant others whom they have never met and possibly will never meet but were willing to engage with them as a part of an extended network. For example, a number of the interviewees noted:

They are connected through a system of reference. A knows B and B knows C thus based on the common relationship to B, A and C would be able to transact business after an introduction by C.

(Respondent 1)

The Hawaladars involved in the business are known to the local community as such it is easy to identify them. Once a new Hawaladar identifies a niche market that is not being serviced or has been able to identify a critical mass of customers that they can attract, they get connected to the known WH (Wholesale Hawaladar) in the region to facilitate their transactions. Personal introductions play a very important role in making these connections as it is only after getting a clean reference are the players in the Hawala Network willing to deal with the new person. Once one link is established and based on satisfactory dealings, the Hawaladar is able to leverage this connection to make other connections in the Network.

(Respondent 4)

In cases where trust references were not highly reliable and dependable, the fostering of trust occurred in a stepwise fashion where trust growth took time and transactions progressed from lower to a higher financial value. Hence, trust and reputation gaps were filled with risk-aversion approaches based on the incremental and careful induction of the (uncertified) new Hawaladar into the HNet. As an additional precautionary measure, Hawaladars (mostly new) facing trust deficit were also subjected to "upfront monetary deposits" and "capped financial transactions" over a period of time (involving numerous exchanges). As stated by a respondent:

Someone initially starting out and not well known to the WH (Wholesale Hawaladar) may need to put a deposit before getting started in the business. This allows them (i.e. new Hawaladars) to conduct the business up to the value of the deposit.

(Respondent 13)

With successful transactions the "worth to transact" was increased. It was highly unlikely that the new and untested Hawaladar would suddenly jump from low to a high value transaction overnight. Moreover established members

of the network would not conduct large transactions with the new entrant before his/her credibility, in terms of the efficient execution of transactions and the financial ability to conduct large sum transactions was well established. This mechanism of risk management was a common practice within HNets. Due to the well-connected and tightly knit nature of the HNets, incidences of fraud and dishonesty were instantaneously communicated throughout the network to warn other members. This connectedness of HNets resulted in a rapid transfer and spread of information which played a pivotal role in creating awareness about any significant event (especially unpleasant) within the network.

Mutual dependency (i.e. A depends on B and B depends on C and A depends on C) would be weakened within the HNets if there were no safety nets and support structures for troubled network members. For instance, where cases of financial hardship were verified (resulting in Hawaladars not being able to dispense or service their financial obligations or commitments), other network members come to their rescue (even though the bailout was agreed upon a certain set of conditions mostly set by the senior Hawala members). These acts of mutual support (sacrifices) propagated trust amongst HNets members and created an expectation of helping each other out should the bad times fall on a HNet member. Hence reciprocity and dependability kept and reinforced the fabric of HNets.

In cases where the new entrants had no personal ties with the existing Hawaladars, references could be secured from trusted and distinguished community members. As stated by two interviewees:

Initial introduction can be through a trusted and mutually known third party. This third party does not have to be in the Hawala business but could be somebody that is equally respected and trusted by both parties. The established Hawaladar basically uses this reference to start a relationship with the new Hawaladar. The introducing party knows that if there are any issues with the new Hawaladar then they (the third party) will be held responsible for the actions of new Hawaladar. Once the relationship develops (between the new and the established Hawaladar) then the established Hawaladar is able to provide the new Hawaladar with further access to his network.

(Respondent 6)

The element of trust is initially based on the personal connections and the third part references. As the Hawaladars business gets established, their reputation also gets known and they are then able to interact with many more members of the network.

(Respondent 8)

The importance attached to the personal ties could be explained with reference to Granovetter (1973) thesis on the strength of ties. Granovetter (1973, p. 1362) notes that "the stronger the ties connecting two individuals, the more similar they are, in various ways". This resonated with the way the reference system generates information about the trustworthiness of potential Hawaladars. Generally, when clean references are provided, they reflect the trust that the referee has in the other person with whom they have personal ties. Given that the referee is trusted by the existing member(s) of the network, the network members may consider the potential entrant trustworthy on the basis of the trust they have with the referee and thus consider him for membership of the network. Granovetter (1973, p. 1362) reflects this when he writes: "if strong ties connect A to B and A to C, both C and B, being similar to A, are probably similar to one another, increasing the likelihood of a friendship once they have met". In a sense, the strength of personal ties as reflected in the reference system that underlie the formation and composition of HNets is a significant source of trust and constitute a careful "leap of faith" for engaging with potential new entrants.

Apart from taking a careful "leap of faith", in most HNets certain checks and controls operated to reduce risk (in particular associated with inducting a new member). For instance, WH kept a "transaction record" of all members to monitor their performance (mostly judged by volume and frequency of monetary amounts transacted). In the case of new members the monitoring was more strict and rigid transaction limits were set. These checks were relaxed once the trust equity went over a certain threshold. In most cases (both for the new and established members) the transaction limits were not removed. What usually happened was a change in the regularity and thoroughness of the scrutiny. Hawaladars (in particular WH) were constantly monitoring the level of risk exposure that may result from the actions of other network members. Hence, HNets incorporated risk aversion measures as a safety cushion. As stated by Respondent 15:

WH (mostly) knows the worth of Hawaladars in terms of their trust status, strength of personal ties and business performance. Where appropriate (especially with new and untested Hawaladars), WH keeps a tab to ensure that the business transactions are kept

within safe limits. Induction of new Hawaladars can be a complex process. There may be some new connections (Hawaladars) that do not require any guarantees while there may be some who may require either financial or personal or both types of guarantees.

(Respondent 15)

Whereas the reference system was used in generating the trust required to become a member of a HNets, it was also important that the potential new entrant was able to demonstrate strong ties with and within the community it sought to operate in. Strong community relations were important as they formed the basis for being able to attract customers (clientele) to the network. Strong community relations were an indication of the trustworthiness of the potential new entrant and also served as an indication of the customer base that the potential member was likely to build. Such relational ties acted not only as guarantees for trustworthiness but also served as security (or soft collateral) for participation in the network. This was partly because strong personal and family ties made the Hawala member more visible and subject to community sanctions when he/she violated the norms of expected behaviour. Community ties thus served as an important means of reducing potential knowledge asymmetry that existed. Speaking about the importance of community ties in the composition of HNets, some of the respondents noted:

> One of the most important qualifications for someone to start the Hawala business is to be a sociable person, to have extensive contacts in the community, should have had a track record of being involved with the community which will serve as his customer base. An elementary qualification is that he should be a trust worthy individual in the eyes of the community/customers.

(Respondent 13)

> One has to have a link to the community that the Hawaladar wants to service, i.e. he has to have the customer base and this is possible if the person is a sociable person and has connections within the local community. The community could be the Pakistani or Indian or Bangladeshi community or a subset thereof. The person should also have some connections back home in order to be able to terminate the Hawala transactions in the country where the remittance will be sent.

(Respondent 8)

In emphasising the importance of community relations to both the security of customers and other HNets participants, the respondents explained that effective community engagement was constitutive of the number of years one lived in a community, the level of trust and reputation with which one was associated in the community, and clean community references. On this, Respondent 4 narrated:

> One of the important qualifications for getting involved in the Hawala business is the level of engagement of the person with the local community (by community we mean their ethnic community). Number of years the aspirant has lived in that community and the level of trust that that person enjoys. These qualifications are important not only from the point of view of the customers who would be transacting their business through the Hawaladar but also from the point of view of the other Hawaladars that this new Hawaladar will be doing business with. It is important that people both within and external to the community will be able to get good and clean references about this person from the people of the local community.
>
> (Respondent 4)

Even though not explicitly outlined, indirect references were made to the existence of noble value which further facilitated the ease of doing Hawala business. In the eyes of the Hawala service users and service providers a powerful value (i.e. noble value) resulted from the mixing of various other social values (to include clan and religious congruency, honour within the clan, social and moral norms and reputation within the clan). Noble value was fundamental in instilling trust within the Hawala system (Tilly, 2005). In addition, Nobel value was not only related to risk reduction but was also viewed as a master value which reinforced service user's belief in the credibility of the Hawala system (Humphrey & Schmitz, 1996; Grief, 1994).

Within HNets, the relationship orientation was mostly upstream, from supplier (Hawaladar) to customer (a person who wanted to send the money). However, the downstream relationships (customer to supplier) could not be ignored by the Hawaladar as they played a vital role in spreading his trust status and reputation within the community. Customers (i.e. Hawala service users) become carriers of trust and Word-of-Mouth (WoM) becomes instrumental in building 'trust equity' of a Hawaladar. Hawala communities (containing Hawaladars and their clientele) were mostly tightly knit and extensions of personal ties. Such an

environment resulted in a rapid spread of WoM which was considered as a useful 'qualifier' of a Hawaladar. Respondent 7 summed this up by saying:

> Once the community (predominantly the group of customers receiving Hawala service) is happy with their transactions not only do they become regular customers but also (and more importantly) they relate their positive experiences to the community at large including the prospective new clients". Some Hawala Networks are run from a 'cover business' (some examples of such cover businesses can be barber shops, coffee shops, travel agents and grocery shops). The cover business acts as a point where community members can access the Hawala Network. Cover businesses also act as social platforms for developing community relations and getting to know each other.

> (Respondent 7)

The interview data also indicated that the controls were also embedded in the material arrangement (i.e., the pattern of connection established among and between network member) of HNets. Basically, the data showed that HNets were composed of clans nested within a wider network. Typically, HNets comprised Retail Hawaladars (RH) and Wholesale Hawaladars (WH). Within a geographical location or a community, a clan of RHs was built around a major WH. The WHs were large and well-resourced Hawaladars who were capable of dealing with large volumes of transactions involving significant amounts of money. They were also highly reputable within their communities and beyond and had global business ties. Given the significance of the WHs, minor players who constituted themselves into RHs generally congregated around the WHs who acted as a spokesperson for the RHs or served as a conduit through which the RHs may gain global reach.

The clans that form around a WH were a socially homogenous community with similar family relations, language and ethnicity. They were also generally isolated and exclusive from the mainstream society. As a result of this, the clans were able to rely on what could be described as mechanical solidarity to produce and reinforce trust as an informal control mechanism (Newton, 1997). Mechanical solidarity is solidarity that is based on kinship ties and is usually associated with the cohesion and integration that exists in small undifferentiated social collective. This type of solidarity aligns individual interest with the collective interest of their groups without the mediation of elaborate or extensive formal controls associated with contemporary organisational forms. This was particularly evident in the data as the respondents indicated that in their everyday interaction with other members of

the clan, they believed that their ability to achieve their individual self-interest was based on the pursuit of collective interests. In essence, self-interest was subsumed under collective interests where individuals believed that collective interest was an obligatory passage point to self-interest. For example, when asked about what held the clan together, some interviewees had this to say:

> Basically trust and the fact that each member's economic survival and prosperity depends on ensuring transaction compliance, delivery and successful termination of the Hawala transaction.
>
> (Respondent 2)

> Financial incentives are solely based on mutual co-existence and trust among the members.
>
> (Respondent 3)

> Common purpose and the fact that they can only operate and make money only if they work with one another.
>
> (Respondent 6)

The idea that collective interest is an obligatory passage point to self-interest generates what Newton (1997) describes as "thick trust" that transforms Hawaladars from self-interest seeking into cooperative individuals with significant implications for HNets. First, it fosters loyalty among the members and by so doing eliminates the transaction cost associated with elaborate contracting and monitoring. These reductions in transaction cost means that HNets are able to conduct money transfers at a much lower cost compared to the formal banking system. Second, the "thick trust" generated within the clan eliminates the need for laborious processes of verification and approvals associated with the bureaucracy evident in the formal banking system as each member trusts that others will do the right thing. It is this that underlies the high speed with which HNets are able to transfer money globally compared to their counterparts in the formal banking system. Third, reinforcing existing trust involves implicit social sanctions for violation and this has led to fewer disputes among Hawaladars and more compliance with terms of transactions.

Within HNets thick trust is seen within a long-term orientation where short-term losses are mostly accepted in sight of the long-term gains. Numerous instances were reported by Hawaladars where due to unavoidable events (such as

robberies) and uncertain events (such as sudden and unexpected exchange rate changes), the Hawaladar had no option but to face (and accept) the monetary loss. Still the general thinking was that the losses incurred were worth the increase in trust status and reputation enhancement resulting from acting in an honest manner and keeping the promises and the given word. As summed up by respondent 4:

> I know Hawaladars (including myself) who took loans or liquidated their assets to honor their financial commitments. Some Hawaladars suffered financial set-back due to the exchange rate going wrong. Still they (Hawaladars) kept their word and transacted at the agreed conditions even if this meant losing money. This is done to maintain the confidence and the trust of the customer.

(Respondent 4)

Table 3 (matrix of data and theoretical anchors) below summarises the empirical data in terms of the theoretical anchors used in the study.

Table 3
Matrix of data and theoretical anchors

Theoretical concepts	Ouchi's Clan-based framework		
	Reciprocity	Legitimate Authority	Common values and beliefs
Heterogeneous engineering		Reference system	No legal contract
		Absence of formal organizational structure	Development of initial trust
		Ability to attract cleintele	Reduced risk exposure
Strength of ties	Loyalty	High interdependence	Leap of faith
	Mechanical solidarity	Safety nets	Reduced possibility of opportunism
	Lower cost of exchange		Thick trust
Flat networks	Pursuit of collective interest	No formal control	Information sharing
	Mutual support	Lower transaction cost	Risk management
	Absence of formal monitoring and audit	Speed of transactions	
	Reduced instance of fraud		

Note: The leftmost column is labelled "Actor Network Theory" spanning all theoretical concept rows.

RESULTS

The data indicated that there was no formal governance and management control system in place for managing HNets. There were no explicit formal processes and mechanisms for evaluating performance and there were no formal performance measurement and tracking systems in place to provide information about how the network was functioning. Hence, there was seldom a uniform or a standardised control system that existed across different HNets. There were controls and management practices in place which varied from network to network. This variation (resulting in flexibility and adaptability) gave way to cost savings and transactional efficiency.

Results from this study showed that trust acted as the most important control mechanism highlighting the efficiency, effectiveness and the relatively lower transaction costs associated with HNets operations. Furthermore, trust was the relational glue which held the network together and acted as an effective cohesive force. By using a flat network structure, the HNets were able to reduce the cost of the traditional bureaucracy present in the formal banking system. One of the key reasons for the reduced cost was the lack of any third party monitoring cost. In the regular remittance system there are many layers of checks and balances in order to ensure that the transaction is well recorded. All of these layers of management with a formal financial institution (such as a central bank) incur costs which have to be borne by the service user. A Hawala transaction on the other hand does not rely on any third party monitoring as Hawaladars only deal with one another. This reduces the cost facilitating a lower rate for carrying out the transaction. This flat network structure also added to the efficiency and speed with which decisions were made and transactions completed. In addition, trust was the platform on which open communication for confidential and sensitive information sharing was built.

CONCLUSION

The results of this study should help in understanding the management control and governance mechanisms of the HNets. This understanding could be significant for management accounting and organisational researchers as the clan form of organisation has been considered more of a metaphor than a practice. However, as organisations become more intertwined and independent at the same time; understanding how this clan-based structure is governed, managed and controlled could provide a unique perspective on alliance management. The results should be useful for various practice oriented stakeholders including, regulators, law enforcement agencies, formal value transfer systems, financial institutions as well as the HNets members.

Since 2001 Qatari government through their regulatory and law enforcement agencies have been actively trying to curb the use of HNets with slow and limited success (*The Peninsula*, 2008). The continued growth of these informal remittance systems in the GCC region (including Qatar) indicated the lack of impact the enhanced regulations have had on Hawala transaction volume. Existing research provides only limited information concerning the governance, control structures and mechanisms of HNets. Hence, approaches to regulation up till now can be best described as "shots in the dark" and unlikely to be successful. Understanding the current governance and control systems of these networks may well aid in understanding the nature and endurance of HNets. This research might also be useful in identifying alternate or additional mechanisms to curb the use of such networks should this be deemed a relevant public policy goal.

Developed research model could be tested in different environments (i.e. in a different set of countries or a region). For instance, the study could be rolled out to Western European and North American regions to assess and identify differences and similarities that exist between different cultural, social, ethnic and regulatory settings. These results should allow for a better understanding of this global network and examination of regulatory strategies, monitoring structures and mechanisms that may be developed and tested. It would be imprudent to declare HNets illegal. Instead, mechanisms and policies need to be developed that would incorporate the HNets self-monitoring features and ensure the system's safe and judicious use. Also, there is a growing need to estimate the global size of HNets transactions, the number of transactions, average size of each transfer and the aggregate flow of currency. Furthermore, the changing world economic environment has impacted the HNets as well. These need to be understood to make future monitoring policies effective.

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APPENDIX

Research Questionnaire

Respondent:	
Venue:	
Date:	
Profile:	

#	Questions
	Network membership
1	How does one become a Hawaladar (Hawala dealer)? What are the "Terms of Membership" of this clan-based organization?
2	How does the Hawaladar find or identify the links to other Hawaladars? (across town, across countries and borders). Is it through an introduction? Personal meeting etc.?
3	How does a Hawaladar move from a retail operation to being a bigger player in the network?
4	How has the ethnic/religious-based relationship morphed into a multinational clan-based setup?
5	What binds the Hawala network members together?
6	Are there any new constructs, which are homogenous among the network members (other than culture and ethnicity)?
	Network Trust
7	How is the element of trust established between the Hawaladars and the network?
8	Are there any guarantees (personal or financial) involved?
9	Are there any collateral or guarantee arrangements between the Retail Hawaladar (RH) and Wholesale Hawaladar (WH) operators?
	Network Relationships
10	Do RH have relationships with WH in their country of location? Or do they also have direct relationships with WH in other countries? If so, how does the settlement take place? Is the settlement directly between the Retail Hawaladar (RH) and Wholesale Hawaladar (WH) operator or are there third parties involved?

11   Is the relationship between a RH and WH exclusive or does the RH have relationships with other WH also?

12   What are the factors, which make this otherwise heterogeneous group to form a clan?

Network Management

13   What is the standard information exchanged for the Hawala transaction (name, amount etc. type)?

14   How is the transaction information communicated?

15   Who is authorized to transmit transaction details to the WH?

16   How does the WH identify the person sending the transaction details and verify the legitimacy of the transaction?

17   What kind of transaction authentication takes place between the RH and WH?

18   Do WH place limits on the volume of transactions they will carry out for any individual RH? If yes, how are these limits monitored (spreadsheet, daily- running totals etc.)?

19   What types of internal documents are maintained by the Hawaladar to monitor financial position of the business?

20   What kind of management structure do the Hawala operations have? Are they mostly sole proprietorships, partnerships or corporations?

21   Is the business carried out as an exclusive Hawala business or as an adjunct to another line of business? And why?

22   How does the network ensure transaction compliance among its members?

23   How are discrepancies among members resolved?

24   How are customer complaints handled?

25   What mechanisms are in place to identify and sideline members who are found cheating?

Network Compliance

26   What other forms of compliance does the network use?

ADJUSTMENT BEHAVIOUR OF LEVERAGE IN CHINESE FIRMS: AN EMPIRICAL ANALYSIS OF OVERALL FIRMS, STATE-OWNED AND NON STATE-OWNED ENTERPRISES

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ABSTRACT

This study investigates the adjustment behaviour and adjustment speed of Chinese firms with regards to capital structure. For this purpose, the study utilises an extensive set of data of 867 A-Listed non-financial Chinese firms over ten years from 2003 to 2012. This study adds useful insights on adjustment behaviour and speed of Chinese firms with regards to firm-specific and country level determinants of leverage policy. To find out the adjustment speed, the study uses multiple generalised method of moments (GMM) for the purpose of robustness. Both of the GMMs report positive and their adjustment coefficients are statistically significant which implies that Chinese firms follow a target level of leverage by adjusting their current leverage policy. Chinese firms take almost 3.5 years for adjustment. The analysis is extrapolated to state owned enterprises (SOEs) and non-state owned enterprises (NSOEs) and it is found that SOEs take longer time to adjust to their leverage policy as compared to NSOEs. The results are consistent for both Arellano Bond (GMM1) and Blundell and Bond (GMM2) dynamic panel data models.

Keywords: leverage, non-financial Chinese firms, generalised method of moments (GMM), capital structure adjustments, target leverage

INTRODUCTION

Capital structure has become an important subject of study since Modigliani and Miller (1958) proposed their classical theory of irrelevance, that is, the value of a company is independent of its capital structure in a perfect financial market. In the past half century, various theories have been developed to explain corporate financial decisions including the trade-off theory (Miller, 1977), the pecking order theory (Myers & Majluf, 1984), the agency cost theory (Jensen & Meckling, 1976), and the market timing theory (Baker & Wurgler, 2002).

Literature shows that limited research, both theoretical and empirical, has focused on developing countries. Factors which influence the capital structure of firms in developed countries are also relevant to firms in developing countries (Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001; Chen, Jiang, & Lin, 2014), but the institutional features can lead to distinct differences (Huang & Song, 2006; Chen, 2004; Wald, 1999). For example, in the US, more than 62% non-financial companies raise their capital through internal financing while in China, more than 50% such firms rely on equity issuance or debt financing to raise capital (Chen, 2004).

Adjustment towards optimal capital structure needs a developed capital market for equity and bonds. In the US, the bond market accounts for 175% of GDP and in Japan 198% of GDP (Saleem, 2013). Various theories have been proposed by researchers to explain capital structure adjustment and its determinants but mainly literature is focused on trade-off and pecking order theories. On the basis of these theories many key variables have been identified such as firm size, growth opportunity, profitability, tangible assets, etc. (Booth et al., 2001; Rajan & Zingales, 1995; Titman & Wessels, 1988).

Firms strive to attain the target level capital structure that they have set for themselves but the adjustment speed depends on the degree of rationality of the firm and on the costs and benefits associated with the adjustment process. Rational firms with no agency problems find it easy to adjust their target leverage but the adjustment speed depends on the cost of adjustment. When the cost of adjustment is less than the benefits gained from the adjustment, the firms will be quick to adjust their existing leverage ratio to target leverage ratio (Qian, Tian, & Wirjanto, 2009).

Being the second largest economy in the world, China is playing an increasingly influential role as an emerging economy in the global economic system. However, this economic development was achieved without a modern

financial system in the region (Chen et al., 2014). For example, the bond market in China is still in its early stages and treasury bills amount to only 3% of corporate bond issuance (Zhang, 2008).

The Chinese economy is still in a transitional phase and adapting to a market oriented economic system, even its securities markets were formed in the 1990s. According to Chen (2004), capital market development and growth of non-state owned enterprise (NSOE) sector were hampered by state monopolies. The ownership structure in Chinese listed firms has government predominance (Sun & Tong, 2003). The government controls the stocks of many listed state-owned enterprises (SOEs). Even after the split share reform in 2005, the government continues to control and influence the choice of capital structure of listed companies (Liu, Tian, & Wang, 2011). This formation provides significant support to the agency conflict between managers and investors as managers have less rights to take part in a company's capital structure decisions: with a low percentage of ownership, managers are interested in getting personal benefits rather than increasing investors' wealth and value of a company (Chen et al., 2014).

Till now, little work has been done regarding capital structure adjustments for non-financial firms in China. Keeping this in mind, this study is conducted to find out the differences between SOEs and NSOEs for the period of 2003–2012. This time period is very important as China has implemented new financial policies and Chinese firms also faced a great amount of financial distress because of financial crisis of 2007–2008.

An Overview of Chinese Market Reforms for SOEs and NSOEs

The considerable economic restructuring and reforms undergone by the Chinese economy over the last 30 years have led to a marked increase in the number of shareholding companies, Chinese firms, SOEs and NSOEs. SOEs and NSOEs differ in the nature of their ownership, agency relations, and bankruptcy risks. The emergence of the stock market has been playing a very significant role in the Chinese economy since it has overlapped with the process of privatisation of Chinese state owned enterprises. The number of listed firms in 1992 was 50; however it increased to 1,378 by 2004. The number of listed NSOEs was 353 in 2004 which made up 25% of the total listed firms. This number was smaller compared to number of listed SOEs, however the market value of these 353 NSOEs accounted for 12.1% of the total market value. A numbers of reforms have been introduced with the development of the Chinese stock market, Notably the corporatisation involving initial public offering of a minority portion of state shares to individual investors who can trade their shares freely on the Shanghai and

Shenzhen stock exchanges. These newly listed companies are still controlled by state through majority share holdings. With this position, the government enjoys two very significant rights, i.e., disposal of assets during mergers and acquisitions and appointment of CEOs. Montinola, Qian and Weingast (1995) and Faccio (2006) argue that these two rights ensure that SOEs have a low risk of bankruptcy because the government can exercise its right of subsidizing the ailing SOEs. Moreover, the government as the majority shareholder provides a number of incentives to these companies, including tax reduction, partial or full repayment of debt, swapping debt with equity and formation of state owned asset management companies to pool in funds to finance the debt burdens.

Moreover banks follow a pecking order in advancing finances to different companies as advised by government whereby SOEs are favoured in bank loans (Brandt & Li, 2003). In contrast, banks' loan granting decisions to NSOEs are based largely on financial rather than political considerations. Because of these reasons it becomes very important to study the adjustment behaviour of leverage in Chinese SOEs and NSOEs.

LITERATURE REVIEW

Capital Structure Theories and Adjustment Towards Optimal Capital Structure

Researchers have given multiple theories to determine optimal capital structure choices for firms but still the knowledge is very limited. Capital structure is a debt to equity ratio and shows how a company finances its operations. Many theories explain the corporate capital structure. It is important to know the difference of opinion among those theories about the target capital structure. In this regard, this study considers the agency theory, the theory of Modigliani and Miller, the trade-off theory and the pecking order theory. The second part of this chapter describes the various determinants of capital structure.

Modigliani and Miller theory and target capital structure

The first theorem of capital structure by Modigliani and Miller (1958) suggests that "the market value of the company is dependent on its capital structure given continued expected rate of return corresponding to its class". In other words, capital structure does not affect the amount of cash flows that the company may divide among its shareholders and debt holders and does not affect the total value of company's debt and equity (Titman & Grinblatt, 1998). This theorem also assumes

that there is a perfect capital market with full competition and no transaction costs, taxes, asymmetric information, bankruptcy costs, agency costs, or arbitrage opportunities (Berk & DeMarzo, 2007). So, this theory does not assume target capital structure for firms.

> H1: According to Modigliani and Miller, firms do not follow a target
> level of capital structure.

Pecking order theory (POT)

Pecking order theory (POT) proposed by Myers (1984) is one of the main theories of capital structure which explains the determinants that influence the capital structure decisions of firms. This theory explains how the firms finance new investments. Myers (1984) suggested that firms finance a new investment first internally or through retained earnings and then with external funds like debts or equity. Information asymmetry is a problem which is associated with external financing because managers usually possess more knowledge than the investors. So, according to Myers and Majluf (1984), firms prefer internal financing over external financing to resolve the information asymmetry problem. This is called the "pecking order" which prefers internal funds (retained earnings) over external funds and in case of external funds, debt is preferred over equity financing. This specific pattern of financing provides no reason for firms to follow a target capital structure.

> H2: According to the pecking order theory, firms do not follow a
> target level of capital structure.

Trade-off theory and target capital structure

Trade-off theory (TOT) is one of the important theories to explain the determinants of capital structure of firms. According to this theory, optimal capital structure is achieved by a trade-off between costs and benefits associated with leverage in a perfect market environment. This theory suggests that optimal capital structure is attained when marginal benefits derived from the costs of debt and benefits associated with debt financing are equivalent. This concept is known as the static trade-off theory. Optimal capital structure is a function of multiple internal and external factors and these factors change over time due to dynamic nature of the firms. So, firms achieve their target capital structure by considering the dynamic environment in which they carry out their activities (Fischer, Heinkel, & Zechner, 1989). Given the uniqueness of Chinese institutional infrastructure and economic environment, it is important to examine the determinants of the target capital

structure of Chinese firms and contribute to literature from the perspective of developing countries. Findings from China will be of particular relevance to other developing countries and emerging economies.

> H3: According to trade-off theory, firms follow optimal (target) leverage.

Agency theory

Agency theory proffers a description of changes in capital structure. This theory explains the difference between principals and agents (Jensen & Meckling, 1976) as both have their own objectives to pursue. Managers (agents) have strong incentives to invest in activities that hope to offer high payoffs if they are successful, even if the probability of success is low. If the outcome is good then managers earn the gain but if it turns out badly then investors (principals) bear most of the costs (Jensen & Meckling, 1976).

It is therefore important to find ways to control the agent, which can be done with various controlling measures. For example, there are monitoring costs and bonding costs of the agent (Jensen & Meckling, 1976). Because of the bonding costs, the agent will be more reliable in the eyes of the principal. Another option is to issue more debt so that the managers can be monitored effectively by debt holders (Ibrahimo & Barros, 2009). Considering its basic assumptions and implications, the agency theory describes the changes in the capital structure but it does not explain the concept of optimal or target capital structure.

> H4: According to agency theory, firms do not have any target level of leverage.

Empirical Literature Review of Target Capital Structure

Various theories have been proposed to determine the factors of capital structure of firms but only the trade-off theory gives clear assumptions for target capital structure. This theory states that when marginal benefits and costs of debt financing overlap each other, then firms attain their optimal capital structure. The trade-off theory can be classified into two forms: the static trade-off theory and dynamic trade-off theory. The static trade-off theory states that actual and desired leverage ratios are the same (Myers, 1984). On the other hand, the dynamic theory states that a firm defines its target leverage and makes adjustments towards achieving this target (Myers, 1984; Shyam-Sunder & Myers, 1999). Other theories (pecking

order, agency cost and market timing) assume that firms do not have target leverage so they do not make adjustment to target leverage.

Little empirical work has been done to provide evidence of target leverage and the cost of adjustment in non-financial firms of developing or emerging economies as most studies are focused on developed countries. A study by De Miguel and Pindado (2001) on a sample of 133 Spanish non-financial firms has shown how firm-specific and institutional factors affect capital structure choices by using the instrumental variable approach of Arellano and Bond (1991). They found that Spanish firms incur adjustment cost to achieve their target leverage and that this cost is comparatively lower for them than it is for the non-financial firms of the United States because of greater reliance on debt and lower development of the Spanish bond market.

In another study by Drobetz and Wanzenried (2006) on a sample of 90 Swiss non-financial firms, it is argued that growing firms adjust their target leverage easily but within a dynamic model specification when economic conditions are supportive and showing positive development. It can be assumed that adjustment costs are low and do not hinder the adjustment process. But in another study by Flannery and Rangan (2006), which reports the target leverage adjustment for US firms at 30% per year, it is mentioned that 30% adjustment speed is three times higher than what has usually been reported by other studies. Antoniou, Guney and Paudyal (2008) compare the adjustment speed of target leverage for non-financial firms in market-based economies and bank-based economies and find that non-financial firms in market-based economies adjust to their target leverage faster than those in bank-based economies. They argue that bank-based economies do not depend on debt to ensure the creditworthiness of a company to investors in the market and firms are more vigilant and have to incur the cost of being off-target against agency expenses. If this cost is more than the adjustment cost then the adjustment speed will be slow.

In another empirical study, Getzmann, Lang and Spremann (2014) have used a sample of 1301 non-financial firms listed in the Asian financial markets for the period 1995–2009 to find the capital structure determinants and adjustment speed toward target leverage by using the technique of generalised method of moments (GMM) estimation. They provide evidence that the adjustment speed of non-financial firms in Asia towards their target leverage ranges from 27% to 39%. These results are comparable to the results reported by Flannery and Rangan (2006) for US firms.

Ramjee and Gwatidzo (2012) find that the adjustment cost is low in a sample of 178 South African non-financial firms listed on the Johannesburg stock market for the period of 1998–2008. They use GMM technique to determine the cost and speed of adjustment and find that the adjustment cost of total debt is 0.345 and of long term debt is 0.198, which implies an adjustment speed of 0.665 and 0.802, respectively. These results are comparable to the results for Spanish firms in De Miguel and Pindado (2001).

Haron, Ibrahim, Nor and Ibrahim (2013) provide evidence from 590 non-financial firms listed in Malaysia that firms make adjustments to target leverage as they deviate from it. The authors have used a partial adjustment model and the GMM technique and found that the adjustment cost is lower than the adjustment speed, which are 0.43 and 0.57, respectively. A study on 148 non-financial firms listed on Borsa Istanbul for the period 1998–2010 by Arioglu and Tuan (2014) reports the adjustment speed to target leverage to be about 29%, which is quite comparable to the findings from developed markets.

A study by Chinese researchers, Qian et al. (2009), on a sample of 650 Chinese private listed firms for the period of 1999–2004, found that the Chinese private firms set their target leverage ratio but their adjustment speed is very slow. Further, they found that the relationship of firm size, tangibility and ownership structure with the firm's leverage ratio is positive while profitability, non-debt tax shields, growth and volatility are negatively correlated with leverage ratio.

Tian, Han and Zhang (2015) found that Chinese public manufacturing firms adjust their target leverage at different speeds that depend on their life cycle stages. The researchers have used a business life cycle model proposed by Dickinson (2001) for the period of 1999 to 2011 to investigate the determination of their capital structures. They found that firms in different life cycle stages behave differently to adjust their target capital structures. They also found that cash flow patterns have a stronger impact on capital structure than the firm's age.

DETERMINANTS OF TARGET CAPITAL STRUCTURE

This section explains different factors that determine the capital structure of a firm. Various studies have been carried out to explain three categories of factors determining target leverage, i.e., firm-level, industry-level and macroeconomic factors (Rajan & Zingales, 1995; Booth et al., 2001; DeJong, Nguyen, & Kabir, 2008; Jeveer, 2013) as well as adjustment rate towards target leverage (Drobetz & Wanzenried, 2006; Tongkong, 2012; Getzmann et al., 2014). Antoniou et al. (2008)

argue that different countries like the UK, the US, France, Germany and Japan share similar factors determining capital structures of firms but their importance varies because of different governance structures in each of these countries. So country specific factors are also needed in determining the capital structure of firms as firm and industry specific factors alone cannot explain the same. So, in this study, economic growth (GDP growth rate) and inflation are taken as the country specific factors to determine the capital structure of Chinese firms along with other firm level factors.

Size

Pecking order theory (POT) and trade-off theory (TOT) have similar views about adjustment towards target leverage as both consider firm size a factor in this regard. Since adjustment involves costs, which might be smaller for larger firms, therefore larger firms are expected to adjust speedily towards leverage targets.

Rajan and Zingales (1995) used four variables of tangible assets, market to book ratio, size, and profitability to determine their relationship with capital structure in the economies of G7 countries. They found a positive relationship between size and the level of debt. Wald (1999) also found a positive relationship between size and leverage for firms in the US, the UK, Germany and France.

For China, however, researchers have found mixed results for size and leverage. Chen and Strange (2005) and Huang and Song (2006) have shown that there is a positive relationship between size and leverage for the firms in China but Tong and Green (2005), Anwar and Sun (2013), and Zou and Xiao (2006) have shown that leverage and size are negatively correlated.

Growth Potential

Growth opportunities also influence the capital structure as has been suggested by different researchers and theories. For example, Myers (1977) and Titman and Wessels (1988) suggest that growing firms have more flexibility to choose their future investment. According to the pecking order theory, in the first place firms prefer to finance a new investment with internal funds and then through external financing. This predicts that growing firms have lower leverage. Deesomsak, Paudyal and Pescetto (2004) have shown that there is a negative relationship between growth opportunities and leverage. So it can be assumed that adjustment process for growing firms to achieve their optimal capital structure will be faster as growing firms would have flexible capital structure choices to gain their target capital structure.

The agency problem also applies to the relationship between growth and leverage. The choices of investment are made by managers (agents). When there is more flexibility in financial investments as suggested by Titman and Wessels (1988) then managers will also be more flexible in financing their investments. Managers have a preference for satisfying their own goals and maximizing their own utility first and only secondarily that of the shareholders (Jensen & Meckling, 1976). To mitigate this problem, control of the managers is required. A solution for this problem is to issue more debt and therefore, it suggests a positive relation between growth and leverage.

These two theories contradict each other. The empirical research parts of Rajan and Zingales (1995) and Titman and Wessels (1988) find a negative relation between growing firms and leverage. Therefore, this study assumes that there is a negative relation between growth and leverage but faster adjustment speed towards target leverage.

Profitability

Profitability also influences the capital structure. Researchers have found that there is a negative relationship between profitability and leverage (Ozkan, 2001), which is explained by the pecking order theory. Rajan and Zingales (1995) and Titman and Wessels (1988) have also found that there is a negative relationship between profitability and leverage. The pecking order theory suggests that firms prefer internal funds over outside finance (Myers, 1984). But the trade-off theory claims that as the firms are profitable so they would prefer to access external funds rather than using their internal funds to finance their projects.

Profitable firms usually have more ease to access external funds to finance their projects. TOT suggests that there's a positive relationship between leverage and profitable firms. Having all the financing options in hand, it will be easier and quicker for profitable firms to adjust their leverage targets.

Chinese researchers have shown that there is a negative relationship between profitability and leverage (Chen, 2004; Tong & Green, 2005; Huang & Song, 2006; Anwar & Sun, 2013; Zou & Xiao, 2006; DeJong et al., 2008). Therefore, a negative relationship between profitability and leverage and faster adjustment is assumed for this study.

Tangibility

Tangibility is defined as the collatralisable assets which can be used to get loans. According to Myers and Majluf (1984), issuing debt by this way helps a firm avoid associated costs. So, this finding suggests that tangibility has a positive correlation with leverage which supports the trade-off theory. Researchers have shown mixed results as some researchers find a positive relationship between tangibility and leverage (Wald, 1999; Viviani, 2008; DeJong et al., 2008; Rajan & Zingales, 1995; Titman & Wessels, 1988) and others have shown a negative relationship between these variables (Mazur, 2007; Karadeniz, Yilmaz Kandir, Balcilar, & Beyazit, 2009). Booth et al. (2001) have given evidence in their study on the firms in Pakistan, India, Brazil and Turkey that there is a negative relationship between tangibility and leverage. It is expected that firms with more tangible assets have more access to both sources of funds (debt/equity) so such firms are more likely to attain their target leverage.

Chinese Researchers like Chen (2004) and Huang and Song (2006) in their few studies on the Chinese market have found that there is a positive relationship between tangibility and leverage. Therefore, this study assumes a positive relation between tangibility and leverage.

Non-debt Tax Shield (NDTS)

According to DeAngelo and Masulis (1980), NDTS is an alternative to tax shield on debt financing. When firms' income is consistently becoming low or negative then non-debt tax shield is applicable to them. Studies have shown quite mixed results regarding the relationship between NDTS and leverage. Bradley, Jarrell and Kim (1984) have shown a positive relationship between the NDTS and leverage but Wald (1999) has shown a negative correlation between NDTS and leverage.

In China, researchers have shown that there is a negative relationship between NDTS and leverage. Huang and Song (2006) and Anwar and Sun (2013) provide evidence for negative relationship between NDTS and leverage. They provide evidence that Chinese firms consider it only in long term debt financing so tax has very low significance. In this case the adjustment speed for firms towards their target capital structure is expected to be slower.

Tax

Tax is a very important factor which determines the capital structure for firms as Modigliani and Miller (1963) have suggested that companies should gain more

debt financing because financing through debt allows firms to avail tax deductions associated with it due to interest payments on debt. So researchers like Sett and Sarkhel (2010) have found that there is a positive relationship between effective tax rate and leverage.

Chinese researchers Huang and Song (2006) have shown that there is a negative relationship between tax rate and leverage which supports the pecking order theory. But Chen and Strange (2005) have shown that there is no significant relationship of tax rate with leverage in China. However, for the purposes of this study, it is assumed that there is a negative relation between tax and leverage. So, it can be assumed that when tax rate is high (increasing) then firms are expected to be quick to adjust to their target capital structure and vice versa.

Volatility

Volatility is a very important factor to determine capital structure of firms as it measures the probability of financial distress. Researchers like Choi and Richardson (2016), DeJong et al. (2008) and Booth et al. (2001) have found that there is a negative relationship between volatility and leverage.

Chinese researchers like Huang and Song (2006) and Anwar and Sun (2013) have also confirmed the same results and have provided evidence that there is a significantly negative relationship between volatility and leverage. Therefore, this study assumes a negative relation between volatility and leverage and a slower adjustment speed to achieve target leverage.

Liquidity

Liquidity is a very important determinant of capital structure of firms. Capital structure theories take the relationship of liquidity with leverage in different ways as the trade-off theory argues a positive relationship between liquidity and leverage and proposes that firms with higher liquidity ratios should go for debt or borrowings which can facilitate companies to adjust their capital structure ratios instantly. While, on the other hand, pecking order theory shows a negative relationship between liquidity and leverage because firms with higher liquidity ratios prefer to use internal funds (retained earnings) to finance their new investment projects (Viviani, 2008). Researchers like Mazur (2007) and Qureshi, Imdadullah and Ahsan (2012) have given their findings which are consistent with the pecking order theory. Therefore, this study assumes a negative relationship between liquidity and leverage but faster adjustment speed towards the target leverage.

Economic Growth

GDP is considered as the measure of the welfare of the economy. A low GDP reflects low expenditure by firms and consumers and vice versa (Gleditsch, 2002). GDP growth is taken as the measure of economic growth in this study. Various studies have shown the relationship between GDP growth and capital structure decisions of firms. Researchers have shown that GDP growth and capital structure have negative relationship (Dincergok & Yalciner, 2011; Camara, Pessarossi, & Rose, 2014). Researchers argue that an increase in the GDP growth rate will increase the profits so firms would prefer to use their internal funds, which is a basic assumption of the pecking order theory (Gajurel, 2006). Rajan and Zingales (1995) have given evidence in their study that negative correlation of GDP growth rate and leverage would confirm the pecking order theory and positive relationship would support the trade-off theory. It can be assumed that firms in countries with sound economic growth are expected to adjust to their target capital structure quicker than firms in countries with poor economic growth.

Another study, conducted by DeJong et al. (2008) in a sample of 42 countries from 1997–2001, found that not only firm specific factors like tangibility, size, profitability and growth opportunities but country specific factors like economic growth (GDP Growth) are also important factors in determining the capital structure decisions. They have shown that there is a positive relationship of economic growth with the corporate capital structure and they further argue that in countries with stronger and sound legal systems, firms prefer debt over equity. In short, country specific factors are important while deciding capital financing options for firms. Therefore, a positive relationship between economic growth and leverage is assumed for this study.

Inflation Rate

Inflation rate is a measure to check the uncertainty in economy. It is one of the important country specific variables to determine the capital structure of firms. Researchers have found mixed results as Frank and Goyal (2009) have found that there is no relationship between inflation and capital structure of a firm but Gajurel (2006) has found that there is a negative relationship between inflation and capital structure. In this case firms will be slower to adjust their targeted capital structure. Contrary to this, researchers like Sett and Sarkhel (2010) and Hanousek and Shamshur (2011) have found that there is a positive relationship between inflation rate and leverage and it supports the TOT, which suggests that adjustment speed towards their optimal capital structure is expected to be quicker. Therefore, a positive relation between inflation and leverage is assumed for this study.

DATA AND METHODOLOGY

In this research article, annual data has been used from the financial statements of non-financial firms of China for the time period of 2003–2012. This time period exactly shows the impact of financial crisis on the capital structure of firms in China. For this research, data has been taken from very reliable Chinese databases like RESSET and CSMAR. Firm level data (Profitability, Size, Tangibility, Liquidity, Non-Debt Tax Shield and Volatility) has been accessed from RESSET and CSMAR while economic data (Economic growth, Tax Rate and Inflation) has been taken from EIU-Country Data. Table 1A (see Appendix A) shows the list of all variables and its proxy descriptions with expected relationships with leverage.

Data has been carefully selected for the firms and excludes firms on the basis of following criteria as mentioned by Harrison and Widjaja (2014):

1. Financial institutions such as banks, insurance firms, leasing firms, private equity and investment firms.
2. Newly listed or delisted firms during the period of research 2003–2012.
3. Non-availability of certain accounts to calculate variables (Profitability, Size, Tangibility, Liquidity, Non-Debt Tax Shield, Volatility, Economic growth, Tax Rate and Inflation).
4. The leverage value is larger than the total asset value.

On the basis of above criteria, there are 867 firms in total from various sectors listed on both Shenzhen and Shanghai stock exchanges (Refer Table 2A in Appendix B for the distribution of firms across industries). Further we base our model on the dynamic trade off theory as suggested by Fischer, Heinkel and Zechner (1989), Harford, Klasa and Walcott (2009), and Öztekin and Flannery (2012). Harford et al. (2009) study is based on deviation from a target level by calculating the difference between actual and estimated values. However this study uses generalized method of moments to calculate speed of adjustment for Chinese firms. For generalized method of moments this study utilizes estimation model and techniques employed by Haron et al. (2013) and Memon, Rus and Ghazali (2015) to estimate the adjustment speed of leverage in Chinese firms.

Model Development

$$
\begin{aligned}
LEV_{it} \;=\; & \gamma\beta_0 + \rho LEV_{it-1} + \delta_1 PROF_{it} + \delta_2 SIZE_{it} + \delta_3 TANG_{it} + \\
& \delta_4 LIQ_{it} + \delta_5 VOL_{it} + \delta_6 GP_{it} + \delta_7 NDTS_{it} + \delta_8 TAX_{it} + \\
& \delta_9 ED_{it} + \delta_{10} INF_{it} + \eta_i + \lambda_t + \upsilon_{it}
\end{aligned} \tag{1}
$$

where,

LEV_{it} is the total leverage which can be calculated by total debt ratio, *PROF* is the profitability, SIZE is the size of the firm, TANG is the tangibility, LIQ is the firm's liquidity, VOL is the volatility in earnings, GP is growth potential of a firm, NDTS is the non-debt tax shield, INF is the inflation, e = random error term, i = firms in the same cross-section (e.g., 1, 2, 3 ... *n*), and t = period of time (years).

During analysis we incorporate a dummy for SOE. We follow Safdar and Yan (2016) to classify firms into state-owned and non-state-owned firms. We take those firms as state owned enterprises in which government shares are at least 25%. For any given year for a firm having more than 25 % state ownership it is categorised as a state owned firm and variable SOE has the value of 1 for such firms and 0 otherwise. In order to address the issue of any possible endogeneity and problems associated with a target level of capital structure the study uses a dynamic model based on the following equation (Oztekin & Flannery, 2012; Haron et al., 2013).

$$LEV_{it} - LEV_{it-1} = \gamma(LEV^*_{it} - LEV_{it-1}) \tag{2}$$

In Equation 2, $(LEV^*_{it} - LEV_{it-1})$ shows the adjustment required by a firm to adjust to a target level. γ is the coefficient of adjustment. Values of this coefficient ranges from 0 to 1. If γ is equal to zero then $LEV_{it} = LEV_{t-1}$ which implies that the firm does not try to achieve an optimal level of a leverage due to the associated costs and wants to remain with its current policy. However if γ is equal to 1 then $LEV_{it} = LEV^*_{it}$. In this case the firm wants to achieve a target level of leverage.

By putting Equation 1 into Equation 2 we get the following equation:

$$
\begin{aligned}
LEV_{it} = \ &\gamma\beta_0 + (1-\gamma)LEV_{it-1} + \gamma\beta_1 PROF_{it} + \gamma\beta_2 SIZE_{it} + \gamma\beta_3 TANG_{it} \\
&+ \gamma\beta_4 LIQ_{it} + \gamma\beta_5 VOL_{it} + \gamma\beta_6 GP_{it} + \gamma\beta_7 NDTS_{it} \\
&+ \gamma\beta_8 TAX_{it} + \gamma\beta_9 ED_{it} + \gamma\beta_{10} INF_{it} + \eta_i + \lambda_t + \gamma e_{it}
\end{aligned} \tag{3}
$$

In Equation 3, corresponds to firm specific effects while are the time specific effects. Simplifying Equation 3 following equation results.

$$
\begin{aligned}
LEV_{it} = \ &\gamma\beta_0 + \rho LEV_{it-1} + \delta_1 PROF_{it} + \delta_2 SIZE_{it} + \delta_3 TANG_{it} + \\
&\delta_4 LIQ_{it} + \delta_5 VOL_{it} + \delta_6 GP_{it} + \delta_7 NDTS_{it} + \delta_8 TAX_{it} \\
&+ \delta_9 ED_{it} + \delta_{10} INF_{it} + \eta_i + \lambda_t + \upsilon_{it}
\end{aligned} \tag{4}
$$

All other variables are mentioned and described in Table 1A (see Appendix).

Data panelling methods and random effect model have been used in this model. The RE model applies a different intercept for each data unit in both cross-section and time series in order to maintain the level of degrees of freedom. Data has been analysed and run through Stata to examine the presence of significant correlation between the independent variables (Profitability, Size, Tangibility, Liquidity, Non-Debt Tax Shield, Volatility, Growth Potential, Economic growth, Tax Rate and Inflation) and the dependent variable (total leverage).

Table 1
Descriptive statistics

Variable	Overall			SOEs			NSOEs		
	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	S.D.
TD	8790	0.61	0.60	4586	0.55	0.29	4204	0.68	0.81
TAX	8790	0.23	0.08	4586	0.23	0.08	4204	0.22	0.08
NDTS	8790	0.02	0.03	4586	0.02	0.03	4204	0.01	0.03
VOL	8790	0.17	0.49	4586	0.14	0.40	4204	0.21	0.57
PROF	8790	0.09	0.23	4586	0.08	0.21	4204	0.09	0.26
LIQ	8790	1.34	0.97	4586	1.31	0.93	4204	1.37	1.00
TANG	8790	0.30	0.19	4586	0.32	0.19	4204	0.28	0.18
SIZE	8790	21.78	1.28	4586	21.94	1.17	4204	21.62	1.38
GP	8790	1.43	1.27	4586	1.30	1.15	4204	1.56	1.37
GDP	8790	10.45	1.77	4586	10.48	1.76	4204	10.42	1.77
INF	8790	3.08	2.09	4586	3.08	2.09	4204	3.07	2.10

Notes: TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured by the standard deviation in EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets with total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate. S.D. = Standard Deviation

RESULTS AND DISCUSSION

In this section, we provide results of our analysis. Table 1 represents the descriptive statistics. It indicates that the mean value of leverage ratio is higher for the non-state owned enterprises than for the state-owned enterprises in China. However, the corporate tax rate is higher for the state-owned enterprises which might imply that state owned enterprises have better and efficient utilisation of leverage as compared to non-state owned enterprises. But the profitability rate is almost equal

between state owned and non-state owned enterprises. The non-debt tax shield is slightly higher for state owned enterprises. State owned enterprises report a higher tangibility ratio compared to non-state owned enterprises. The liquidity position has good prospects for SOEs and NSOEs as both have almost equal liquidity ratio compared to overall firms. Table 1 reports similar size for both state owned and non-state owned enterprises, which excludes size biasness from the analysis of separate sub samples of SOEs and NSOEs.

Table 2 shows the correlation matrix, the star sign indicates a significance of correlation between variables at 95 % significance level. The table indicates that there is no significant positive correlation between independent variables that can lead to the problem of multicolinearity.

Table 2
Correlation matrix

Variables	TD	TAX	NDTS	VOL	PROF	LIQ	TANG	SIZE	GP	GDP	INF
TD	1										
TAX	0.040*	1									
NDTS	-0.134*	0.052*	1								
VOL	0.2270*	0.062*	-0.138*	1							
PROF	-0.002	0.019	0.013	0.014	1						
LIQ	-0.334*	-0.122*	-0.087*	-0.144	0.069*	1					
TANG	-0.030*	0.122*	0.449*	0.0056	-0.035*	-0.342*	1				
SIZE	-0.188*	-0.034*	0.182*	-0.191	0.098*	-0.118*	0.1084*	1			
GP	0.055*	-0.053*	-0.121*	0.0975	0.123*	0.2288*	-0.106*	-0.402*	1		
GDP	0.008	0.1004*	0.0513*	0.0141	0.0277*	-0.054*	0.0584*	-0.137*	0.1633*	1	
INF	-0.007	0.036*	0.0257*	-0.002	0.0233*	-0.0043	0.0079	-0.041*	-0.0151	0.4397*	1

Notes: * represents significance at 95% significance level. TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured by the standard deviation in EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets with total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

Regression Analysis

Tables 3, 4 and 5 represent regression output for overall, state owned and non-state owned firms respectively. Results include the impact of firm and country level characteristics on the leverage policy of Chinese Firms. Columns 1 and 2 of Tables 3, 4 and 5 represent the results of Arellano Bond (GMM1) and Arellano, Bond and

Bundell (GMM2) regressions, respectively, for the dynamic model of our study. Columns 3 and 4 represent results for fixed effects with an autoregressive term (FE [AR]) and simple fixed effects (FE), respectively. Table 3 pertains to overall firms, while Tables 4 and 5 represent results for state owned and non-state owned enterprises respectively. The use of GMM (Generalised Method of Moments) is to estimate the adjustment speed for firms. By adjustment speed we mean with what speed the firm is going to change its leverage policy.

Adjustment Behaviour in Chinese Firms

Two GMM models were used to determine the adjustment speed of leverage policy in Chinese firms. This adds robustness to our study. GMM1 (Arellano Bond) indicates an adjustment coefficient of 0.936 for overall firms. This indicates an adjustment speed of approximately 0.07 (1–0.936). This speed according to our GMM2 (Arellano, Bond and Blundell) is approximately 0.35 (1–0.65) which indicates that Chinese firms take almost 3.5 years to adjust to their target leverage policy. Adjustment speed for Chinese firms before and after the 2008 crisis provides some important insight and empirical findings. Tables 6 and 7 represent results for leverage adjustment and its determinants before and after the 2008 crisis. According to Table 6, the coefficient for lagged leverage (Lev1) is positive for both GMM1 and GMM2, however it is statistically insignificant, but if we look at the findings of Table 7, it provides some interesting findings. The adjustment speed is 0.23 (1–0.77) according to GMM1 (Table 7). GMM2 reports an adjustment speed of 0.12 (1–0.88) (see Table 7). This shows that reliance on trade off model of capital structure decreases after the 2008 crisis. It means after the 2008 crisis, Chinese firms were more inclined to follow a trade-off model of financing rather than target leverage.

Adjustment Behaviour of State owned and Non-state owned enterprises

Columns 1 and 2 of Tables 4 and 5 represent results for our generalised method of moments (GMM) models for state-owned and non-state owned enterprise. The results indicate that GMM1 and GMM2 report higher adjustment coefficients for state owned enterprises and report a lower coefficient for non-state owned enterprise. This shows that state owned enterprises take longer to adjust to their target level of leverage than non-state owned enterprises. Results of both GMM1 and GMM2 are consistent with our findings, which add robustness to our results. GMM1 reports an adjustment coefficient of 0.48 (1–0.52) for state owned enterprise, while for non-state owned enterprises it reports a coefficient of 0.11 (1–0.89), which is lower than the coefficient for state owned enterprise indicating a lesser time taken by non-state owned enterprises to adjust to their target level of leverage policy.

Table 3
Regression results for overall firms

	GMM1	GMM2	FE(AR)	FE
Lev(l1)	0.936***	0.657***		
	(0.008)	(0.018)		
TAX	-0.042	-0.045	-0.047	-0.06***
	(0.038)	(0.033)	(0.058)	(0.065)
NDTS	-0.238	-0.313	-0.024*	-0.737**
	(0.103)	(0.105)	(0.110)	(0.151)
VOL	0.027**	0.042**	0.008	0.023
	(0.011)	(0.011)	(0.010)	(0.009)
PROF	0.027**	0.021**	0.030**	0.01
	(0.014)	(0.013)	(0.010)	(0.015)
LIQ	-0.088**	-0.086	-0.11**	-0.153**
	(0.008)	(0.008)	(0.006)	(0.005)
TANG	-0.056**	-0.073***	0.152	0.084***
	(0.033)	(0.042)	(0.038)	(0.037)
SIZE	-0.052**	-0.021***	-0.15**	-0.067**
	(0.009)	(0.009)	(0.009)	(0.006)
GP	0.002	-0.002	0.023	0.029***
	(0.003)	(0.003)	(0.003)	(0.004)
GDP	-0.007**	-0.003**	-0.01**	-0.012**
	(0.001)	(0.001)	(0.002)	(0.002)
INF	0.000	0.000	0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.002)
CONSTANT	1.404***	0.839	4.208	2.369***
No of instruments	55.000	47.000		
Abond Test	0.062	0.173		
Sargan Test	62.660	42.318		
Adj. R-square			0.122	0.179
Bhargava et al. (Ramaswami, Srivastava, & Bhargava, 2009)			0.805	
Baltagi-Wu LBI			1.084	
Hausman Test			186.040	134.090

Notes: *, **, *** shows significance at 90%, 95% and 99% respectively. Standard errors are given in parentheses (). TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured by the standard deviation in EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets with total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

Table 4
Regression results for state owned enterprises

	GMM1	GMM2	FE(AR)	FE
Lev(L1)	0.528***	0.301***		
	(0.008)	(0.009)		
TAX	-0.055	-0.039	-0.013	-0.384
	(0.031)	(0.027)	(0.054)	(0.588)
NDTS	0.202**	0.201**	0.25**	0.87***
	(0.087	(0.084)	(0.101)	(1.300)
VOL	-0.07***	-0.07***	-0.070	-0.17***
	(0.011)	(0.013)	(0.011)	(0.063)
PROF	0.04***	0.045***	-0.008	0.161**
	(0.011)	(0.012)	(0.011)	(0.142)
LIQ	-0.087**	-0.078*	-0.08**	-0.10***
	(0.008)	(0.007)	(0.005)	(0.036)
TANG	0.127**	0.087***	0.081**	0.067**
	(0.027)	(0.027)	(0.034)	(0.260)
SIZE	-0.003**	-0.023***	-0.04**	-0.002**
	(0.006)	(0.007)	(0.009)	(0.046)
GP	0.002**	0.004**	0.009*	0.037**
	(0.002)	(0.002)	(0.003)	(0.029)
GDP	-0.003**	-0.001**	-0.03**	-0.01***
	(0.001)	(0.001)	(0.002)	(0.021)
INF	0.000	0.000	0.001	0.003
	(0.000)	(0.000)	(0.001)	(0.013)
Constant	0.387	0.027	-0.382	0.820***
No. of Instruments	55.000	47.000		
Abond Test	0.237	0.489		
Sargan Test	52.010	46.230		
Wald chi^2		1474.070		
Adj R-square			0.161	0.221
Bhargava et al.			0.94	
Baltagi-Wu LBI			1.15	
Hausman Test			131.09	104.37

Notes: *, **, *** shows significance at 90%, 95% and 99% respectively. Standard errors are given in parentheses. TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured by the standard deviation in EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets with total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

Table 5
Regression results for non-state owned enterprises

	GMM1	GMM2	FE(AR)	FE
LEV(L1)	0.899***	0.644***		
	(0.010)	(0.019)		
TAX	-0.010	-0.016	-0.047	0.679
	(0.052)	(0.049)	(0.101)	(1.066)
NDTS	0.257	0.243	0.246	-3.556**
	(0.164)	(0.175)	(0.204)	(2.527)
VOL	0.001	0.039	0.008	0.069
	(0.013)	(0.016)	(0.016)	(0.095)
PROF	0.087**	0.072**	0.050***	-0.351
	(0.015)	(0.016)	(0.018)	(0.299)
LIQ	-0.119**	-0.110**	-0.168**	-0.136**
	(0.012)	(0.011)	(0.009)	(0.081)
TANG	0.064	0.019	0.143***	2.043**
	(0.054)	(0.074)	(0.064)	(0.590)
SIZE	-0.122***	-0.065**	-0.169**	-0.187**
	(0.013)	(0.015)	(0.011)	(0.084)
GP	0.016****	0.009**	0.035**	0.104**
	(0.003)	(0.004)	(0.005)	(0.044)
GDP	-0.014***	-0.008**	-0.014**	-0.036**
	(0.002)	(0.002)	(0.004)	(0.035)
INF	0.000	0.000	0.002	0.015
	(0.001)	(0.001)	(0.002)	(0.026)
Constant	3.005	1.850	4.595	4.347***
No of Instruments	55.0	47.0		
Abond Test	0.4	0.7		
Sargan Test	67.0	57.3		
Wald chi^2		2277.0		
Adj R-square			0.18	0.10
Bhargava et al.			0.77	
Baltagi-Wu LBI			1.08	
Hausman Test			123.07	107.65

Notes: *, **, *** shows significance at 90%, 95% and 99% respectively. Standard errors are given in parentheses. TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured through the standard deviation of EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets to total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

Table 6
Regression analysis before crises for overall firms

	GMM1	GMM2	FE(AR)	FE
Lev(L1)	0.438	0.008		
	(0.111)	(0.033)		
TAX	0.056	-0.105	-0.103*	-0.156
	(0.155)	(0.085)	(0.104)	(0.107)
NDTS	0.137**	0.536	0.09**	0.084**
	(0.251)	(0.334)	(0.176)	(0.204)
VOL	-0.083	-0.059	-0.01**	-0.04**
	(0.041)	(0.035)	(0.019)	(0.015)
PROF	-0.024	-0.087	-0.021	-0.01**
	(0.024)	(0.029)	(0.015)	(0.019)
LIQ	-0.095**	-0.093**	-0.10**	-0.121
	(0.013)	(0.015)	(0.009)	(0.008)
TANG	0.108**	0.062**	0.130	0.147
	(0.123)	(0.085)	(0.055)	(0.053)
SIZE	-0.170	-0.029**	-0.16**	-0.2***
	(0.072)	(0.035)	(0.019)	(0.014)
GP	-0.013	0.003	0.043	-0.004
	(0.012)	(0.011)	(0.006)	(0.006)
GDP	-0.039	-0.012*	-0.01**	-0.04**
	(0.010)	(0.005)	(0.005)	(0.003)
INF	-0.005	-0.005	-0.021	0.007
	(0.006)	(0.006)	(0.005)	(0.006)
_cons	4.175**	0.943**	4.389**	5.629
No of Instruments	43	35		
Abond Test	0.235	0.392		
Sargan Test	53	31		
Wald chi^2		1234		
Adj R Square			17.05	18.12
Bhargava et al.			1.29	
Baltagi-Wu LBI			1.86	
Hausman Test			136	119

Notes: *, **, *** shows significance at 90%, 95% and 99 % respectively. Standard errors are given in parentheses. TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured through the standard deviation of EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets to total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

Table 7

Regression analysis for overall firms after crises–2008

	GMM1	GMM2	FE(AR)	FE
Lev(L1)	0.774***	0.884***		
	(0.035)	(0.014)		
TAX	-0.029	-0.021	-0.251**	-0.150
	(0.053)	(0.056)	(0.115)	(0.116)
NDTS	0.513***	0.423**	0.793***	0.238
	(0.181)	(0.167)	(0.222)	(0.209)
VOL	0.017	0.015	0.060**	0.030
	(0.022)	(0.021)	(0.023)	(0.019)
PROF	-0.020	-0.007	-0.044**	-0.04**
	(0.019)	(0.019)	(0.025)	(0.023)
LIQ	-0.073**	-0.072**	-0.112**	-0.12**
	(0.010)	(0.011)	(0.013)	(0.010)
TANG	-0.140**	-0.141**	0.030	0.044
	(0.052)	(0.054)	(0.095)	(0.076)
SIZE	-0.022	-0.048***	-0.203**	-0.16**
	(0.016)	(0.013)	(0.028)	(0.018)
GP	0.004	0.004	0.033**	0.019**
	(0.005)	(0.005)	(0.009)	(0.008)
GDP	0.000	-0.008**	-0.055**	-0.03**
	(0.005)	(0.004)	(0.016)	(0.006)
INF	-0.001	0.001	0.017***	0.009**
	(0.001)	(0.001)	(0.006)	(0.002)
_cons	0.762**	1.346**	5.734**	4.584**
No of Instruments	37	41		
Abond Test	0.21	0.43		
Sargan Test	57	66		
Wald chi^2		1342		
Adj R Square			14	25
Bhargava et al.			0.997	
Baltagi-Wu LBI			1.79	
Hausman Test			143	112.08

Notes: *, **, *** shows significance at 90%, 95% and 99% respectively. Standard errors are given in parentheses. TD is the total debt to asset ratio. TAX is the corporate tax rate measured through the ratio of company' income to the tax paid. NDST is the non-debt tax shield. VOL is the volatility in EBIT measured through the standard deviation of EBIT. PROF is the profitability measured through return on equity. LIQ is the liquidity measured through networking capital. TANG is the tangibility measured through the ratio of fixed assets to total assets. SIZE is firm's size measured by taking the natural log firm's total assets. GP is the growth potential of each firm measured by taking the ratio of firm's total market value and book value. GDP is the real annual growth in GDP. INF is the inflation rate.

GMM2 (Arellano, Bond and Bundell GMM) of column 2 in Tables 4 and 5 also indicates that state owned enterprises take longer time to adjust to their leverage policy. It reports an adjustment coefficient of 0.70 (1–0.30) for state-owned and 0.66 (1–0.36) for non-state owned enterprises. This again shows that state owned enterprises take more time to adjust to their target leverage ratio.

Table 8 provides the mean difference analysis through ANNOVA. It clearly indicates that difference of means for leverage between SOEs and NSOEs is statistically significant.

Table 8
Annova analysis for SOEs and NSOEs

Variable	Mean of leverage
SOE	0.55
NSOE	0.68
F-value	31.07
Probability of F	0.000

Firm and Country Level of Determinants of Leverage in Chinese Firms

Results for overall firm (Table 3) show negative and statistically significant coefficients for TAX, SIZE, and LIQ. This shows that higher tax forces the firms to adjust their leverage policy to a downward point. VOL is negatively related to leverage and the relationship is statistically significant. This shows that higher the volatility in earnings (EBIT), lesser is the firm reliance on debt. Similarly volatility in EBIT is also a sign of an uncertain position that compels firms to take less leverage in order to avoid risks associated with financial distress. Growth potential (GP) showed a positive and significant coefficient for overall firms. This shows that bigger sized firms have greater following and lower information asymmetry. They have greater access to the debt market. Moreover if such firms have growth potential it will lead these firms to raise more and more debt. Similarly profitability shows a positive relationship with debt which shows that profitable firms are at a safer position to raise more debt and thus profitability positively influences the leverage level in Chinese firms. Firm's liquidity has a negative and statistically significant relationship with leverage in Chinese firms which implies that liquid firms tend to raise less debt as compared to firms with low level of liquidity.

As far as the country level determinants of leverage are concerned, GDP shows an astonishingly negative and statistically significant relationship with leverage. One explanation in this regard might be that GDP growth in most of the

years covered by this study is negative and thus it can be inferred that firms tend to lower their leverage with the prospect of a slow growth rate. Moreover inflation is found to have no relationship with leverage policy for overall firms in China.

Results in Tables 4 and 5 correspond to state owned and non-state owned enterprises respectively. Table 4 shows that NDTS shows a positive and statistically significant relationship with leverage policy. The positive relationship of growth potential with leverage implies that even in time of higher growth prospect the leverage policy of state owned enterprises shows an upward trend. Firm's size, liquidity, and tangibility show a negative and statistically significant relationship with firm's leverage. Profitability shows a positive relationship with leverage for SOEs. SOEs with profitability are at greater ease to raise more funds through debt. Similarly tangibility also adds to firms' ability to raise more debt since the fixed assets can be used as collateral to raise funds.

For NSOEs, results in Table 5 indicate that NDTS and SIZE have a negative and statistically insignificant relationship. This is in contrast to state owned enterprises. This shows these two factors might not be applicable while considering the upward trends in a leverage policy of non-state owned enterprises. Liquidity also shows a negative and statistically significant relationship with leverage of non-state owned enterprises. The growth potential shows a positive and statistically significant relationship with leverage of non-state owned Chinese enterprises and thus implies that in time of growth opportunities non-state owned enterprises tend to raise more funds through debt. GDP shows negative and statistically significant relationship with leverage for both state owned and non-state owned enterprises, while inflation is found to have no relationship with leverage for both state owned and non-state owned enterprises.

CONCLUDING REMARKS

This study is intended to find out the relationship of leverage with country and firm level characteristics. This study is unique because it not only estimates the adjustment speed in leverage policy for Chinese firms but also finds the adjustment speed for SOEs and NSOEs. For this purpose the sample for overall firms is divided into state owned and non-state owned enterprises. To find out the adjustment speed the study used multiple GMM for the purpose of robustness. Both of the GMM report a positive and statistically significant adjustment coefficient, which implies that current leverage is dependent on past leverage and that Chinese firms follow a target level of leverage by adjusting their current leverage policy. It was further found that state owned enterprises report a high adjustment coefficient than non-

state owned enterprises, which implies that non-state owned enterprises take longer to adjust to their target level of leverage.

Apart from adjustment speed, firm and country level determinants of leverage were also tested for their relationship with leverage policy in Chinese firms. It is found that firms' size, profitability, growth potential, and tangibility have a significant influence on firms' leverage policy. Small sized firms and firms with higher growth prospect tend to raise more debt to finance their investment decisions. Moreover firms having profitability and greater tangibility are at ease to raise more debt. Volatility in earnings reported a negative and statistically insignificant relationship which indicates that in times of higher volatility firms tend to reduce their debt level in order to cope with financial distress risk associated with higher level of debt. GDP is found to have a negative relationship since in most of the years covered by this study the real growth in GDP is negative. Inflation shows no relationship with leverage policy of Chinese firms.

Thus this study adds useful insights on the adjustment behaviour of Chinese firms with regard to their leverage policy and also the firm specific and country level determinants of leverage policy. The study provides useful evidence on the adjustment behaviour of Chinese state owned and non-state owned enterprises having policy implications for the managers of these companies.

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APPENDIX A

Table 1A

Independent variables, their description and expected relationship with leverage in Chinese firms

Variable name	Model name	Proxy	Effect on leverage (+/-)
Tax rate	TAX_{it}	Effective rate %	-
Non-debt tax shield	$NDTS_{it}$	Depreciation expenses/total assets	-
Volatility	VOL_{it}	Standard deviation of EBT/total equity	-
Profitability	$PROF_{it}$	Profit before tax/total equity	-
Liquidity	LIQ_{it}	Current assets/current liabilities	-
Growth potential	GP_{it}	Tobin's Q (ratio of market to book value of assets)	-
Tangibility	$TANG_{it}$	Net fixed assets/total assets	+
Firm size	$SIZE_{it}$	ln(total assets)	+
Economic growth	EG_t	% change of GDP	+
Inflation rate	INF_t	Average of consumer price index and producer price index	+
Ownership	O	Dummy = 0 for non-state owned firms and 1 for state owned firms	+

APPENDIX B

Table 2A
Distribution of firms across industries

Industry Code	Industry Name	No. of firms
A01	Farming	22
A02	Forestory	6
A03	Animal Husbandary	13
A04	Fishery	11
A05	Service industry for farming, forestry, animal husbandry and fishery	2
B06	Coal mining and washing	26
B07	Exploitation of petroleum and natural gas	7
B08	Extracting and dressing of ferrous metal mines	6
B09	Extracting and dressing of non-ferrous metal ores	22
B11	Mining support activities	15
C13	Agro-food processing industry	42
C14	Foodstuff manufacturing industry	32
C15	Wine, soft drinks and refined tea industry	36
C17	Textile industry	69
C18	Leather, fur, down and related products and footwear	16
C20	Timber processing, wood, bamboo, cane, palm fibre and straw products	7
C21	Cabinet making industry	9
C22	Paper making and paper product industry	28
C23	Printing and reproduction of recorded media	7
C24	Culture, education, engineering beauty, sports and entertainment goods industry	14
C25	Petroleum refining, coking and nuclear fuel	21
C26	Chemical feedstock and chemical manufacturing industry	203
C27	Medicine manufacturing industry	179
C28	Chemical fibre manufacturing industry	25
C29	Rubber and plastic products industry	49
	Total	867

DYNAMICS OF CORPORATE CASH HOLDINGS IN CHINESE FIRMS: AN EMPIRICAL INVESTIGATION OF ASYMMETRIC ADJUSTMENT RATE AND FINANCIAL CONSTRAINTS

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ABSTRACT

Grounded in the notion of speed of adjustment this study investigates the adjustment rate of corporate cash holdings and financial constraints in Chinese firms. For this purpose data of 867 A-listed Chinese firms over a 14 years period (2001–2014) is analysed. The study applies Arellano and Bond (GMM2) and Blundell and Bond (GMM1) dynamic panel data model to investigate asymmetric speed of adjustment. We report considerable evidence about asymmetric adjustment of corporate cash holdings, i.e., downward adjustment rate is significantly higher than upward adjustment rate. This higher downward adjustment rate holds even after controlling for financial constraints. Moreover financial constraints also play an important role in dynamic cash adjustment. Financially unconstrained firms are found to adjust faster to their target cash holdings as compared to financially constrained firms. The high speed of adjustment for above target cash level firms holds even after controlling for financial constraints.

INTRODUCTION

Based on the work of Modigliani and Miller (1958), it can be argued that in frictionless market firms are at ease in securing funds and there is no need to accumulate cash for future liquidity concerns. However in practical world capital markets are not frictionless and firms are not always able to raise as much funds as they need. Firms have to search for optimal external sources. This scarcity of funds and search for funds sources are very likely to affect firms' cash management practices.

The general purpose of hoarding cash is to support operating activities and ensure that these activities run smoothly, and to ensure that firm is able to invest in times of shocks or scarcity of funds. However holding cash have some associated costs. Most prominent costs include the lower return on most liquid assets and agency costs associated with agency conflicts between managers and shareholders. Although Opler, Pinkowitz, Stulz and Williamson (1999) comprehensively examined the determinants of cash holdings; however, the motive to hoard cash is a highly debatable topic of corporate finance. The research studies conducted in the strands of pecking order theory (Myers & Majluf, 1984) propose that high cash reserves enable the firms to invest in high Net Present Value (NPV) projects especially when external financing sources are more costly (Almeida, Campello, & Weisbach, 2004; Denis & Sibilkov, 2009). This indicates firm's cash reserves are determined by investing, financing and payout patterns. On the other hand agency theory (Jensen, 1986) advocates a weakness in discipline for managers and CEOs in time of high cash holdings and misappropriation of high cash reserves in value decreasing projects (Dittmar, Mahrt-Smith, & Servaes, 2003; Faulkender & Wang, 2006; Dittmar & Mahrt-Smith, 2007). This indicates neither the pecking order nor the agency theory explain adjustment of cash holdings. Actually it is in the perimeter of trade off theory to explain adjustment of corporate cash holdings to an optimal level based on a tradeoff of benefits and costs associated with certain level of cash. Based on these costs and benefits an optimal level of cash is determined and when cash deviates from this level firm tries to adjust its cash towards that optimal level. There are considerable research studies which provide empirical support for the presence of optimal (target) level of cash holdings for firms. These studies include Kim, Mauer, and Sherman (1998), Opler et al. (1999), Ozkan and Ozkan (2004), Garcia-Teruel and Martinez-Solano (2008), and Rehman and Wang (2015). Despite extensive research very little evidence exists on the asymmetric adjustment (from above and below the target level of cash) of corporate cash holdings. There are numerous studies on investment (Ono, 2003; Pratap, 2003) and capital structure literature that have studied adjustment from optimal level asymmetrically (Byoun, 2008; Kim, Shin, & Dang, 2009). More

recently Hugonnier, Malamud and Morellec (2015) reports that target level of cash holdings exist such that firms use payout policies to reduce cash to maintain a reduced or optimal level of cash and utilise retained earnings and other investing strategies to increase level of cash to an optimal level of cash.

Moreover financial constraints have different implications for firms which are financially constrained. Thus cash policies of constrained firms become more attractive from research point of view. Almeida et al. (2004) advocates a high sensitivity of cash policies of finically constrained firms to cash flow volatility and other firm's specific determinants of cash holdings as compared to financially unconstrained firms.

Thus in order to investigate upward and downward adjustment of corporate cash holdings and across financial constraints in Chinese firms, this study uses an extensive set of data of 867 A-listed Chinese firms over a 14 years period (2001–2014). We employ two dynamic panel data models for the purpose of robustness i.e., Blundell and Bond (2000) system dynamic model (GMM1 from here on) and Arellano and Bond (1991) linear dynamic panel data model (GMM2 from here on). We find that speed of adjustment for cash holdings is higher for firms having cash holdings above the target level of cash holdings. We report adjustment rates of 0.621 (GMM1) and 0.46 (GMM2) for below target firms. While for above target firms GMM1 reports an adjustment rate of 0.74 and GMM2 reports an adjustment speed of 0.69. This higher speed of adjustment of above target firms holds even after incorporating financial constraints into our analysis. Moreover we report considerable evidence that speed of adjustment is higher for financially unconstrained firms than financially constrained firms.

REVIEW OF PRIOR STUDIES AND HYPOTHESIS DEVELOPMENT

The presence of market frictions and market imperfection make corporate cash holdings relevant. There is a huge debate on corporate cash holdings from the motives of hoarding cash. Many prior researchers attributed precautionary motives to be underlying factors of cash management. Keynes (1936) described transaction motive as to be the hallmark in cash management such that cash reserves will save transaction costs involved with capital rising and will present sale of assets for payment purposes. Moreover for firms having their purpose of shareholders wealth maximisation will consider the cost and benefits associated with holding cash. In this regard Opler et al. (1999) examined factors that can act as the gradient for optimal cash policy where the marginal costs and benefits of cash holdings are equal. Firms having access to capital markets and which can easily raise funds

have less liquid assets in their reserves. Similarly, Shleifer and Vishny (1993) argue that firms having assets that can easily be sold off, have the tendency to hold less cash. Firms with greater investment opportunities will try to hold more cash, so that in time of optimal opportunities they are not faced with cash shortage thus avoiding the slipping away of a better investment opportunity. Holding financial instruments can also reduce level of firm's cash holdings. Firms can easily use financial instruments for hedging and raising the required capital. Moreover firms with shorter cash conversion cycles are expected to hold less cash.

Harford, Klasa and Maxwell (2014) argue that cash holdings are also affected by firm's refinancing risk. Their arguments are based upon the precautionary motive of firm's cash holding. They report evidence that firms increase cash holdings in order to alleviate refinancing risk and saves cash from the free cash flows. Their findings are further supported by Acharya, Davydenko and Strebulaev (2013). Acharya et al. (2013) utilise the precautionary motive to explain the direct relationship between cash and credit spreads. They found that on average riskier firms accumulates higher cash. The findings in the strand of precautionary motive of cash accumulation are further supported by Bates, Kahle and Stulz (2009). While analysing the US firms they reported that there exists a dramatic increase in firms' cash holdings in the US firms during the period of 1980–2006 due to precautionary motives of firms. This behaviour of increased cash holdings was prevalent in firms which do not pay dividends, for firms which recently issued an Initial Public Offering (IPO) and for firms characterised with higher idiosyncratic risk.

In the context of financial constraints there exists some evidence to explain firms' cash holding behaviour. According to Almeida et al. (2004) firms with higher investment needs and inhabiting in a highly imperfect market tend to hoard more cash to efficiently manage their liquidity because there investment ability is constrained by market frictions. They reported that cash holdings are affected by financial constraints such that financially constrained firms are more sensitive to cash flow volatility pattern than unconstrained firms. Financially constrained firms hold more cash in time of higher cash flows while unconstrained firms are not much affected by cash flow volatility. Denis and Sibilkov (2009) argue that for constrained firms there are higher cash levels which can be associated with higher level of investment and higher investment results in higher value for constrained firms as compared to unconstrained firms. After a survey of 1050 chief financing officers (CFOs) in 2008, Campello, Graham and Harvey (2010) argued that in time of lesser liquidity and cash crunch, firms tend to cut their investment in technology, research and development (R&D), and even downsize. They further reported that in time of crises firms cut a sizable portion of their cash savings and dividend

payout. Majority of CFOs argued that financial constraints hit their pursuit of profitable investment projects. Furthermore constrained firms may sell off their assets to generate funds especially in times of liquidity crises.

H1: The adjustment rate of cash holding is higher for financially unconstrained firms than financially constrained firms.

In the context of firm's asymmetric adjustment, it can be argued intuitively, that when a firm cash level is above its optimal level, it can distribute dividends, make repayments on loans etc. to bring the cash level down to the optimal level. On the other hand if a firm cash level is below optimal level, it can slash its investment, reduce or stop payout or even raise external funds to attain the optimal cash level. Thus in time of uncertainty it will be easy to bring down cash reserve to optimal level when cash level of the firm is above target level than to increase cash level when it is below target level.

Based on the above arguments we develop following hypotheses.

H2: Downward adjustment rate is higher than upward adjustment rate of corporate cash holdings.

H3: Higher downward adjustment holds even after controlling for financial constraints.

Determinants of Cash Holdings

We follow Opler et al. (1999) for various determinants of cash holdings incorporated in our regression models. Following section provides a debate on the relationship between cash holdings and various determinants of cash holdings.

Growth opportunities

Ozkan and Ozkan (2004) argue that due to the intangibility associated with cash flows of future projects, the relevance of these cash flows is wiped out. This argument is further supported by D'Mello, Krishnaswami and Larkin (2008). According to them valuing firms with higher future cash flows will be very difficult since valuation depends upon the realisation of these cash flows. According to the arguments of pecking order theory firms with higher investment opportunities will need more cash for investment. On the other hand trade off theory advocates the need of higher cash to invest in future projects in times of financial distress. This avoidance of cash shortfall comes under the transaction motive of holding cash

(Opler et al., 1999). The motive to avoid financial distress is supported by research in the strand of precautionary motive of holding cash (Bates et al., 2009).

On the other hand many studies reported a negative relationship between cash holdings and growth opportunities. These studies include Ferreira and Vilela (2004), Jani, Hoesli and Bender (2004) and Bates et al. (2009). They base their arguments on agency theory and argue that firms may even invest in projects with negative NPV due to agency conflicts especially in firms with entrenched management and low growth opportunities.

The above arguments show an unclear relationship between cash holdings and growth opportunities. This study follows Hill, Kelly and Highfield (2010) in measuring growth opportunities. Growth opportunities are measured through the ratio of market value of assets and book value of assets.

Firm size

Titman and Wessels (1988) argue that smaller firms tend to be more financially distressed because economies of scale can be achieved through corporate cash management. Ozkan and Ozkan (2004) argue that information asymmetry is associated with smaller firms. Due to this information asymmetry it is difficult for smaller firms to raise external funds (Ferreira & Vilela, 2004). One important consideration in this regard is the better credit position of bigger sized firms and availability of credit lines to them (Opler et al., 1999). These two factors makes bigger sized firms to raise external funds at ease and hence reap the benefits of economics of bigger size (D'Mello et al., 2008). This negative relationship is based on trade off theory and corresponds to transaction motive of cash holdings (Bates et al., 2009). However according to Opler et al. (1999), Ferreira and Vilela (2004), and Jani, Hoesli and Bender (2004), higher profits are associated with bigger firms and hence these firms accumulate more cash after controlling for their investment. Thus on the basis of their arguments size positively affects cash holdings. Furthermore agency theory advocates that bigger sized firms have higher dispersion of ownership and thus managers have discretion in their financial decision making. This shows that agency theory predicts a positive relationship.

The above arguments show an unclear relationship between firm size and cash holdings. This study takes the natural logarithm of firm's total assets to measure firm's size.

Cash flow

According to Kim et al. (1998) and Ferreira and Vilela (2004) cash flow increases liquidity and decreases the need to hold extra cash. Trade off theory advocates a negative relationship between cash holdings and cash flow. However, Ferreira and Vilela (2004) argue that firms keep most of the cash from cash flows and thus pecking order theory predicts a positive relationship. Deloof (2003) argue that cash is the most liquid assets and firms that utilize liquid assets to finance their investments will thus retain most of the cash flows as cash holdings. This relationship is supported by Garcia-Teruel and Martinez-Solano (2008). They reported higher cash levels for firms having larger cash flows. These findings correspond to financing motives of cash holdings. Deloof (2003) supports precautionary motives of holding cash to finance operation in time of lower liquidity.

Thus on the basis of these contrasting views of two theories we expect cash flow to influence corporate cash holdings either positively or negatively. We follow Hill, Kelly and Highfield (2010) to measure cash flows. We calculate cash flows by subtracting interest expense, tax and any common dividend from EBIT (Earnings before Interest and Taxes). We add depreciation and amortisation to EBIT and divide it by total assets for scaling purpose.

Leverage

Leverage increases financial distress and there are chances of firms' bankruptcy with increased leverage. Firms with higher level of leverage are expected to hold more cash in order to cope with bankruptcy risk (Deloof, 2003). This corresponds to precautionary motives of holding excess cash. This is also in line with trade off theory and hence leverage is expected to have a direct relationship with corporate cash holdings. On the other hand Ferreira and Vilela (2004) and D'Mello et al. (2008) argue that firms' leverage corresponds to firms' ability to raise more debt and thus less cash is held by firms with high leverage. Thus an inverse relationship between cash holdings and leverage is expected. Research in the strands of pecking order theory advocates that raising debt is preferred after all the retained earnings are used up. Thus in a situation when firms' investment needs exceeds retained earnings firms use cash to finance their investments and thus cash level falls. In the context of agency theory Jensen (1986) advocates that more cash is held by an entrenched management when investment opportunities are lower and cash is not distributed as dividend to shareholders. During periods of poor investment opportunities the management may use cash to finance even projects having negative NPV due to managers' vested interest and such projects are immune to be scrutinised by many participants of financial markets. This shows that leverage is

expected to influence corporate cash holdings both positively as well as negatively. We measure leverage as the ratio to total debt to total assets.

Networking capital

Networking capital is a liquidity source. Ferreira and Vilela (2004) on the basis of trade off theory argue that firms having higher networking capital tend to hold less cash. Being a liquid source, networking capital can also be liquidated when needed to finance investments. This is in line with the transaction motive of holding cash. Hence trade off theory predicts an inverse relationship between cash holdings and networking capital. However in the context of cash conversion cycle (CCC) this relationship will be negative. Jani et al. (2004) argue that firms with shorter CCC holds less cash because shorter CCC frees up cash which can then be used to finance investment. Thus a positive relationship between cash holdings and networking capital (NWC) is expected. To measure NWC this study subtracts accounts payable from the sum of accounts receivables and inventories. This value is then divided by total assets for scaling purpose.

Capital expenditure

According to Opler et al. (1999) firms having higher needs of capital expenditure tend to hold more cash. Thus on the basis of trade off theory firms having higher investment needs of capital expenditure hold more cash, so that they are in a better position to finance their capital expenditure. This positive relationship is reported by Bates et al. (2009), who argue that capital expenditure is a proxy of distress and hence capital expenditure positively affects corporate cash holdings. There are two important costs that can be related to capital expenditure. One is transaction cost while other constitutes opportunity cost. According to Jani et al. (2004) these two costs become more important for firms having less cash or assets with higher liquidity. Thus firms with greater capital expenditure hold more cash. However, in the context of pecking order theory, Opler et al. (1999) advocate that firms will use cash in order to finance capital expenditure and hence such firms report lower cash levels. Their findings are supported by Jani et al. (2004). Thus pecking order theory predicts an inverse relationship between cash holdings and capital expenditure.

DATA AND METHODOLOGY

We use an extensive set of date over a 14 years period (2001–2014). We select 867 A-listed non-financial firms listed on Chinese stock market. Data is collected from RESSET, WIND and CSMAR (China Stock Market and Accounting Research)

Chinese databases. Firms codes ranges from C00002 to C601991. A total of 12063 firm level observations over a period from 2001 to 2014 are included in analysis. Data is further divided into two subsamples i.e., firms with cash holdings above target level and firms with cash holdings below the target level. The categorization of firms into above and below target firms is borrowed from capital structure literature (Hovakimian, Opler, & Titman, 2001; Drobetz & Wanzenried, 2006).

Measurement of Financial Constraints

Altman's Z score

In the first step of our analysis we identify financially flexible firms using the Altman's Z-scores index model as suggested by Bancel and Mitoo (2011). It consists of the variables that capture some unique effects of the crisis. The model is based on leverage, liquidity and profitability ratios as follows:

Table 1
Distribution of firms across industries

Industry code	Industry name	No. of firms
A01	Farming	22
A02	Forestry	6
A03	Animal husbandry	13
A04	Fishery	11
A05	Service industry for farming, forestry, animal husbandry and fishery	2
B06	Coal mining and washing	26
B07	Exploitation of petroleum and natural gas	7
B08	Extracting and dressing of ferrous metal mines	6
B09	Extracting and dressing of non-ferrous metal ores	22
B11	Mining support activities	15
C13	Agro-food processing industry	42
C14	Foodstuff manufacturing industry	32
C15	Wine, soft drinks and refined tea industry	36
C17	Textile industry	69
C18	Leather, fur, down and related products and footwear	16
C20	Timber processing, wood, bamboo, cane, palm fibre and straw products	7
C21	Cabinetmaking industry	9

(continued on next page)

Table 1: (*continued*)

Industry code	Industry name	No. of firms
C22	Papermaking and paper product industry	28
C23	Printing and reproduction of recorded media	7
C24	Culture, education, engineering beauty, sports and entertainment goods industry	14
C25	Petroleum refining, coking and nuclear fuel	21
C26	Chemical feedstock and chemical manufacturing industry	203
C27	Medicine manufacturing industry	179
C28	Chemical fiber manufacturing industry	25
C29	Rubber and plastic products industry	49
	Total	867

$$\text{Altman's Z-score} = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$$

Where:

X1 = Cash ratio minus Trade payables ratio; this is the sum of cash and cash equivalents minus the trade payables divided by the total assets to measure the liquidity of the firm.

X2 = Retained earnings/total assets; the retained earnings represent net earnings not paid out as dividends, but retained by the company to be reinvested in its core business or to pay debt.

X3 = earnings before interest and taxes/total assets; this is a ratio that measures a company's earnings before interest and taxes (EBIT) against its total net assets.

X4 = book value of equity/book value of total liabilities; this is a financial ratio indicating the relative proportion of shareholders' equity and debt used to finance a company's assets.

X5 = sales/total assets; this ratio measures the ability of the firm to generate revenues using its assets. The higher the ratio of sales to total assets, the more efficiently the company is run and the better company leadership is at managing assets.

The Altman Z-score provides zones of discrimination for interpretation; however we divide the score into three quartiles. The highest quartile corresponds to firms that are financially unconstrained while the lowest quartile corresponds to firms with financial constraints.

SA index

Hadlock and Pierce (2010) created SA index to measure financial constraints and argued that exogenous firm's factors are useful in measuring firm's financial constraints. Their SA index is based on size and age of firm. Firms with low constraints have high SA score and vice versa. Size can be measured through the natural logarithm of firm's total assets or sales. Age is calculated since the firm's listing date. We use size measure based on assets as well as sales to calculate SA index.

$$SA_1 = -0.737(Assets) + 0.043(Assets)^2 + -0.040(Firm's\ Age)$$

$$SA_2 = -0.737(Sales) + 0.043(Sales)^2 + -0.040(Firm's\ Age)$$

After calculating SA1 and SA2 we divide the values into three quartiles. Firms belonging to quartile three are the financially unconstrained firms while those firms which belong to quartile 1 are categorised as financially constrained firms.

Statistical Model and Estimation Strategy

Since the objective of this study is to investigate the dynamic adjustment of cash towards the optimal target we develop our model from the literature on capital structure adjustment (Getzmann, Lang, & Spremann, 2014).

$$CASH_{it}^* = \alpha_{01} + \beta X_{it} + \mu_{it} \tag{1}$$

Where

α_{01} corresponds to the constant term. $CASH_{it}^*$ is the target cash for firm i at time t. X_{it} is a vector term to represent the firm i independent variables at time t. μ_{it} is the error term for a firm i at time t.

Ideally a firm should operate at optimal level of cash holdings. However, the adjustment costs and the associated tradeoff may delay adjustment to an optimal level of cash holdings. Moreover optimal target level of cash depends on number of exogenous and endogenous factors. These factors changes over time and so does the speed to achieve a target level of cash holdings. Hence firms try to partially adjust to an optimal cash level through a partial adjustment model.

$$CASH_{i,t} - CASH_{i,t-1} = \delta(CASH_{it}^* - CASH_{i,t-1}) \tag{2}$$

Equation 2 can be rewritten as

$$CASH_{it} = (1-\delta)CASH_{i,t-1} + CASH_{it}^* \tag{3}$$

$CASH_{it}$ is the actual cash holdings of a firm i at time t. δ is the adjustment parameter and its value ranges between 0 and 1. If $\delta = 1$; it means firm has achieved full adjustment of cash holdings within one accounting period. The speed of adjustment depends upon costs associated with adjustment which itself depends upon different determinants of cash holdings.

Combining Equations 1 and 3 we get the following equation.

$$CASH_{it} = \alpha_{0i} + (1-\delta)CASH_{i,t-1} + \delta\beta X_{it} + \mu_t \tag{4}$$

In Equation 4, δ is the partial adjustment parameter, 1- is the adjustment rate. X_{it} is the vector form of firm specific factors (cash holdings' determinants). We incorporate financial constraints in Equation 4 to get the following Equation 5.

$$CASH_{it} = \alpha_{0i} + (1-\delta)CASH_{i,t-1} + \delta\beta X_{it} \, (financialconstraint) + \mu_t \tag{5}$$

In order to test our hypothesis we estimate Equations 4 and 5 through Blundell and Bond and Arellano and Bond dynamic panel data estimation methods.

RESULTS AND DISCUSSION

Table 2 corresponds to descriptive statistics. The statistics are for overall firms, for firms with cash level above the optimal level and for firms having their cash level below the optimal cash levels. Optimal cash level is determined by subtracting fitted value of OLS regression from actual cash values. For firms with cash above target cash levels, the subtraction value is positive and for below target firms this value is negative. Table 2 shows that mean value of cash is much higher for above target firms then below target firms.

Similarly mean values of leverage and cash flows for above target firms are much higher, suggesting that these firms hold large cash in order to cope with any financial distress. Tobin's Q is also higher for above target firms then below target firms, which again suggest that to finance higher growth opportunities, firms try to hold more cash.

Table 2
Descritive statistics

Variable	Full sample			Below target			Above target		
	Obs	Mean	STD	Obs	Mean	STD	Obs	Mean	STD
CASH	12063	0.133	0.112	7048	0.068	0.040	5015	0.224	0.118
LEV	12063	0.815	16.144	7048	0.535	0.751	5015	1.209	25.018
NWC	12063	-0.105	8.477	7048	0.009	0.262	5015	-0.265	13.142
CAPEX	12063	0.248	0.194	7048	0.247	0.205	5015	0.250	0.176
SIZE	12063	21.644	1.332	7048	21.697	1.294	5015	21.568	1.379
TOBINQ	12063	2.001	4.516	7048	1.917	4.550	5015	2.133	4.459
CFLOW	12063	0.095	1.126	7048	0.088	0.202	5015	0.104	1.730

Notes: Obs = Observations; STD = Standard Deviation

Table 3 represents correlations between variables. The last column represents values for variance inflation factor. Table 3 indicates that correlation values are within limits and there is no serious issue of correlation between independent variables.

Table 3
Correlation matrix

	CASH	SIZE	CAPEX	NWC	LEV	TOBINQ	CFLOW	VIF
CASH	1							
SIZE	-0.06	1						1.16
CAPEX	-0.17	0.12	1					1.09
NWC	0.29	0.10	-0.21	1				2.48
LEV	-0.07	-0.09	0.04	-0.70	1			3.72
TOBINQ	0.09	-0.27	-0.10	-0.15	0.54	1		2.6
CFLOW	0.08	-0.02	-0.03	0.14	-0.09	0.41	1	1.49

Notes: CASH is the ratio of firm's cash to total assets. SIZE indicates firm's size and measured by taking natural log of firm's total assets. CAPEX is total capital expenditure to total assets. NWC is the ratio of networking capital to total assets. LEV is total leverage and it is the ratio of total debt to total assets. TOBINQ is ratio of market value of firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT. VIF is the variance inflation factor.

Values for VIF (Variance inflation factor) are well in accepted range (below 10). These two facts indicate the absence of multicolinearity between independent variables.

Regression Analysis

Equations 4 and 5 are estimated using two methods of dynamic panel data estimation. One of the methods is Blundell and Bond Dynamic Panel System Estimation (GMM1), while the other method is Arellano and Bond dynamic panel data model (GMM2). Table 4 corresponds to panel data estimation of overall firms. The first three columns' results correspond to GMM1 while last three columns correspond to results of GMM2.

Table 4
Dynamic panel data regression results for overall firms

	GMM1	GMM2
Adj Rate(λ)	0.617	0.627
CASH(L1)	0.383*** (20.14)	0.373*** (8.52)
LEV	0.045*** (6.06)	0.054* (1.53)
SIZE	-0.001 (-0.29)	-0.002 (-0.37)
CAPEX	0.078*** (9.36)	0.079*** (6.13)
NWC	0.151*** (9.87)	0.162** (2.93)
TOBINQ	-0.001* (-1.58)	-0.001 (-0.51)
CFLOW	0.009*** (3.37)	0.013 (1.38)
_cons	0.040 (0.79)	-0.011 (-0.14)
Number of groups	866	866
Number of instruments	85	85
Arellano-Bond test	0.1644	0.1647

Notes: ***, **,* correspond to statistical significance at 99%, 95% and 90% respectively. t test values are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets. SIZE indicates firm's size and measured by taking natural log of firm's total assets. CAPEX is total capital expenditure to total assets. NWC is the ratio of networking capital to total assets. LEV is total leverage and it is the ratio of total debt to total assets. TOBINQ is ratio of market value of firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT.

Table 5 shows results for firms with cash holdings below and above target level of cash holdings. Above and below target of cash holdings are calculated by estimating the fitted value using OLS. These fitted values are subtracted from actual values. For firms having cash holdings above optimal level the resulting value of subtraction is positive and for firms having cash holdings below target level of cash holding a negative value is found. Table 5 incorporates results for both GMM1 and GMM2.

Tables 6 and 7 show results for firms with financial constraints. Table 6 shows results for GMM1, while Table 7 shows results for GMM2. In order to incorporate financial constraints as controlling factor we do further analysis by combining the firms asymmetry (above and below target firms) and financial constraints. Tables 8 and 9 correspond to the combine analysis of constraints and symmetric adjustment.

Adjustment Rate for Overall Firms

Table 4 shows regression results for over all firms. Table 4 reports a positive and statistically significant coefficient for lagged cash (CASHL1). Coefficient for GMM1 is 0.383, while for GMM2 it is 0.627. This shows that Chinese firms follow a target level of cash holdings in line with trade off theory. Table 4 indicates an adjustment rate of 0.617 and 0.637 for GMM1 and GMM2 respectively. This is an evidence of robustness of our results. The coefficients for lagged values of cash are not only positive but also statistically significant. This shows that Chinese firms follow a partial adjustment policy towards an optimal cash position. This corresponds to trade off theory. These results are consistent with Rehman and Wang (2015) who empirically proved that Chinese firms adjust their cash holdings to a target level. Partial adjustment also indicates that Chinese firms follow a target level of cash holding. The overall model estimated by both GMM1 and GMM2 methods are statistically significant. Sragan test value for GMM1 and GMM2 is not given because models are estimated with robust standard errors. Number of groups for both estimations is greater than number of instruments. For GMM1 and GMM2 number of groups is 866 and number of instruments are 85 each. Furthermore Arellano Bond autocorrelation test (2nd order) value for GMM1 is 0.1644 and it is statistically insignificant. The same test reports a value of 0.1647 for GMM2. Both these values are statistically insignificant which indicates the absence of 2nd order autocorrelation.

Determinants of Cash Holdings

Along with adjustment rate Table 4 also indicates the relationship of cash holdings with its determinants. Coefficient for leverage (LEV) is positive for both GMM1 and GMM2; however for GMM2 it is statistically insignificant. This is in line with empirical research in the strand of trade off theory. Highly levered firms tend to accumulate more cash to prevent bankruptcy chances and to reduce financial distress (Deloof, 2003). This accumulation of cash for prevention of bankruptcy is in accordance with precautionary motives of holding cash. Size shows a negative and statistically insignificant relationship. This may be due to the fact that bigger firms enjoy reputation and such firms are also at ease to raise external funds in time

of need. Thus bigger firms will hold less cash. Both the models show a positive and significant coefficient for CAPEX (0.078 and 0.079). Thus firms with higher capital expenditure hold more cash (Opler et al., 1999). This is in accordance with trade off theory. Our findings are also supported by Bates et al. (2009). Firm liquidity or networking capital (NWC) shows positive and significant relationship in both models. This corresponds to Jani et al. (2004). They argue that firm cash holdings may increase because of the shorter cash conversion cycle of firm. For growth opportunities (Tobin's Q) both models result in negative and statistically insignificant coefficients. For cash flow (CFLOW) GMM1 results in a positive and statistically significant coefficient. This is in accordance with the arguments of Ferreira and Vilela (2004) that most of the cash flow is reserved as cash and it acts as readily available source of liquidity (Deloof, 2003).

Adjustment Rate for Above and Below Target Level

Table 5 represents regression results for firms with cash level above and below optimal level of cash holdings. First three columns of Table 5 shows result for GMM1, while last three columns correspond to the results of GMM2. For below target level firms GMM1 shows a statistically significant adjustment coefficient equal to 0.379. While for above target firms GMM1 reports a statistically significant coefficient of 0.25. Thus adjustment rate is 0.621(1-0.379) and 0.75(0.25) for below and above target firms respectively. GMM2 reports adjustment coefficients of 0.539 and 0.31 for below and above target firms respectively. Thus adjustment rates are 0.461 (1-0.539) and 0.69 (1-0.31) for below and above target firms respectively. Hence regression results of Table 5 shows that adjustment rates of downward adjustment is higher than adjustment rates for upward adjustment. Thus there is considerable evidence in support of our hypothesis that downward adjustment rate is higher than upward adjustment of cash holdings. Numbers of groups are greater than number of instruments for GMM1 and GMM2.

Adjustment Rate of Cash Holdings across Financial Constraints

Tables 6 and 7 represent GMM regression results across financial constraints. Table 6 corresponds to GMM1 estimation while GMM2 estimation is given in Table 7. We used three measures of Financial Constraints. First two columns of Tables 6 and 7 correspond to Altman Z's Score measure of financial constraints. Middle two columns represents results for SA1 (assets based measure) and remaining two columns shows results for SA2 (Sales based measure). For all three measures of financial constraints and for both of our models adjustment coefficients are positive and statistically significant (Tables 6 and 7). Thus there is considerable evidence Chinese firms follows a target level of cash holdings both in financially constrained and unconstrained situation.

Table 5
GMM regression results for above and below target firms

Variables	GMM1		GMM2	
	Below	Above	Below	Above
Adj Rate(λ)	0.621	0.75	0.461	0.69
CASH(L1)	0.379***	0.25***	0.53***	0.31***
	(21.13)	(10.21)	(11.59)	(5.1)
LEV	0.060***	0.19***	0.055***	0.19**
	(12.61)	(9.27)	(4.27)	(3.06)
SIZE	-0.022**	0.06***	-0.017**	0.07***
	(-6.5)	(11.44)	(-2.37)	(6.34)
TANG	-0.12***	-0.05**	-0.13***	-0.06**
	(-13.39)	(-3.14)	(7.31)	(-2.19)
LIQ	0.20***	0.28***	0.21***	0.27***
	(13.58)	(11.75)	(4.91)	(4.77)
TOBINQ	-0.01***	0.04***	-0.05**	0.00*
	(-9.91)	(3.76)	(-3.41)	(1.93)
CFLOW	-0.02***	-0.04**	-0.2**	-0.03*
	(18.1)	(-4.02)	(7.95)	(-1.67)
_cons	-0.45**	-1.28**	-0.33**	-1.38**
Number of groups	834	790	827	768
Number of instruments	97	97	85	85
Arellano-Bond test	0.888	0.1864	0.147	0.830

Notes: ***, **, and * correspond to statistical significance at 99%, 95% and 90% significant level respectively. t test values are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets. SIZE indicates firm's size and measured by taking natural log of firm's total assets. CAPEX is total capital expenditure to total assets. NWC is the ratio of networking capital to total assets. LEV is total leverage and it is the ratio of total debt to total assets. TOBINQ is ratio of market value of firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT.

For Altman's Z score the adjustment coefficient is 0.237 and 0.222 (Table 6 GMM1) for constrained and unconstrained firms respectively. Thus based on GMM1 for Altman's Z score measure, adjustment rate for corporate cash holding is 0.763 (1-0.237) and 0.778(1-0.224) for financially constrained and unconstrained firms respectively.

Similarly for SA1 measure of financial constraints, adjustment rates are 0.644 and 0.743 for financially constrained and unconstrained firms respectively (Table 6). Moreover for SA2 (sales based) measure of financial constraints,

adjustment rate of corporate cash holdings is 0.568 and 0.69 for constrained and unconstrained firms respectively. Thus there is considerable evidence to accept our second hypothesis that adjustment rate for cash holdings is higher in financially unconstrained firms than financially constrained firms.

Table 6

Regression results for constrained and unconstrained firms (GMM1)

Variables	Z score		SA1		SA2	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
Adj Speed(λ)	0.76	0.77	0.64	0.74	0.568	0.690
CASH(L1)	0.23***	0.23***	0.36***	0.26***	0.43***	0.31***
	(4.5)	(4.7)	(6.7)	(7.3)	(8.7)	(7.8)
LEV	0.014	0.21**	0.02*	0.16***	0.03**	0.11***
	(1.39)	(5.99)	(1.73)	(7)	(2.97)	(4.62)
SIZE	0.027***	0.001	0.012	0.01**	0.01*	0.003
	(3.67)	(0.14)	(1.23)	(2.27)	(1.76)	(0.67)
TANG	0.026*	0.067**	0.07***	0.04**	0.06**	0.06***
	(1.81)	(2.11)	(4.09)	(2.98)	(2.59)	(4.04)
LIQ	0.059***	0.37***	0.061	0.22***	0.08***	0.22***
	(3.93)	(7.85)	(1.71)	(12.3)	(3.41)	(11.25)
TOBINQ	0.001	0.002	-0.00	0.002	-0.03**	0.004
	(-0.3)	(0.9)	(-0.6)	(1.1)	(-2.1)	(1.5)
CFLOW	-0.03***	0.006*	0.011	0.02**	-0.02*	-0.011
	(-5.3)	(1.67)	(3.20)	(2.64)	(-1.6)	(-0.42)
_cons	-0.53	-0.05	-0.20	-0.30	-0.35	-0.082
Number of groups	696	718	549	579	537	572
Number of instruments	85	85	97	97	97	97
Arellano-Bond test	0.239	0.282	0.476	0.682	0.125	0.666

Notes: ***, **, and * correspond to statistical significance at 99%, 95% and 90% significant level respectively. t-test values are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. Z score is Altman's Z score. SA1 is assets' measure of financial constraints. SA2 is sales' measure of financial constraints. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets. SIZE indicates firm's size and measured by taking natural log of firm's total assets. CAPEX is total capital expenditure to total assets. NWC is the ratio of networking capital to total assets. LEV is total leverage and it is the ratio of total debt to total assets. TOBINQ is ratio of market value of firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT.

For the purpose of robustness we also checked adjustment rate using GMM2 estimation (Table 7). Adjustment rates of corporate cash holdings for Altman's Z score are 0.76 and 0.80 for financially constrained and unconstrained firms respectively. Similarly for SA1 financial constraints adjustment rates are 0.61 and 0.78 for financially constrained and unconstrained firms respectively.

SA2 measure of financial constraints report adjustment rates of 0.55 and 0.75 for financially constrained and unconstrained firms. All the models estimations are statistically significant because for all models in Table 7 report more number of groups than instruments and all the Arellano Bond tests are insignificant showing an absence of 2nd order multicolinearity. Thus there exists enough evidence that adjustment rate of cash holdings is higher for financially unconstrained firms than financially constrained firms.

Table 7
Regression results for constrained and unconstrained firms (GMM2)

Variables	Z score		SA1		SA2	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
Adj Speed(λ)	0.76	0.80	0.61	0.78	0.55	0.75
CASH(L1)	0.24***	0.20***	0.39***	0.22***	0.45***	0.25***
	(4.50)	(4.73)	(5.90)	(5.54)	(6.91)	(5.83)
LEV	0.01	0.21***	0.02	0.16***	0.03**	0.11***
	(1.39)	(5.99)	(1.42)	(7.88)	(2.83)	(5.96)
SIZE	0.03***	0.00	0.02	0.01**	0.03**	0.00
	(3.67)	(0.14)	(1.55)	(2.25)	(2.17)	(0.71)
TANG	0.03*	0.07**	0.07***	0.05**	0.07**	0.06***
	(1.81)	(2.11)	(3.54)	(3.37)	(2.69)	(4.31)
LIQ	0.06***	0.37***	0.05	0.22***	0.07**	0.22***
	(3.93)	(7.85)	(1.43)	(12.13)	(3.39)	(11.93)
TOBINQ	0.00	0.00	0.00	0.00	0.00**	0.00
	(-0.26)	(0.86)	(0.35)	(0.88)	(-2.12)	(1.63)
CFLOW	-0.04***	0.01*	-0.01**	0.03**	-0.02	0.00
	(-5.38)	(1.67)	(2.55)	(3.11)	(-1.56)	(-0.18)
_cons	-0.53	-0.06	-0.29	-0.28	-0.50**	-0.08
Number of groups	696	718	522	578	491	571
Number of instruments	85	85	85	85	85	85
Arellano-Bond test	0.2389	0.2821	0.4375	0.9132	0.119	0.9599

Notes: ***, **, and * correspond to statistical significance at 99%, 95% and 90% significant level respectively. t test values are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. Z score is Altman's Z score. SA1 is assets' measure of financial constraints. SA2 is sales' measure of financial constraints. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets. SIZE indicates firm's size and measured by taking natural log of firm's total assets. CAPEX is total capital expenditure to total assets. NWC is the ratio of networking capital to total assets. LEV is total leverage and it is the ratio of total debt to total assets. TOBINQ is ratio of market value of firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT.

Downward and Upward Adjustment Rates across Financial Constraints

Tables 8 and 9 show regression results for asymmetric (upward and downward) cash adjustment to an optimal level across firms' financial constraints. Table 8 represents results for GMM1 while Table 9 shows results for GMM2. First 4 columns of Tables 8 and 9 corresponds to firm level observations above the target level of cash holdings while remaining four columns corresponds to below target level of cash holdings. Panel A, B and C of Tables 8 and 9 represent the financial constraints measure i.e, Altman's Z score, SA1 and SA2 respectively.

Table 8
Regression results for asymmetric speed and constraints (GMM1)

	Above		Below	
	Constrained	Unconstrained	Constrained	Unconstrained
Panel A: Z score				
Adj Speed (λ)	0.88	0.76	0.69	0.75
Cash (L1)	0.12*	0.24***	0.31***	0.25***
	(1.68)	(5.22)	(7.39)	(5.58)
Number of groups	442.00	542.00	617.00	599.00
Number of instruments	97.00	97.00	97.00	97.00
Arellano-Bond test	0.94	0.27	0.33	0.03
Panel B: SA1				
Adj Speed (λ)	0.74	0.79	0.66	0.69
Cash (L1)	0.26***	0.21***	0.34***	0.31***
	(4.45)	(3.95)	(6.31)	(6.54)
Number of groups	399.00	428.00	417.00	507.00
Number of instruments	97.00	97.00	97.00	97.00
Arellano-Bond test	0.64	0.72	0.54	0.07
Panel C: SA2				
Adj Speed (λ)	0.81	0.80	0.55	0.69
Cash (L1)	0.19***	0.20***	0.45***	0.31***
	(3.23)	(4.42)	(9.32)	(7.10)
Number of groups	398.00	421.00	475.00	480.00
Number of instruments	97.00	97.00	97.00	97.00
Arellano-Bond test	0.25	0.9941	0.40	0.26

Notes: ***, **, and * corresponds to statistical significance at 99%, 95% and 90% significant level respectively. t statistics are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. Z score is Altman's Z score. SA1 is assets' measure of financial constraints. SA2 is sales' measure of financial constraints. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets.

Table 9

Regression results for asymmetric speed and constraints (GMM2)

	Above		Below	
	Constrained	Unconstrained	Constrained	Unconstrained
Panel A: ZSCORE				
Adj Speed (λ)	0.881	0.80	0.55	0.56
Cash (L1)	0.119*	0.20**	0.45***	0.44***
	(1.540)	(3.17)	(8.19)	(6.76)
Number of groups	418.000	500.00	608.00	584.00
Number of instruments	85.000	85.00	85.00	85.00
Arellano-Bond test	0.780	0.32	0.23	0.06
Panel B: SA1				
Adj Speed (λ)	0.753	0.83	0.48	0.57
Cash (L1)	0.247*	0.17**	0.52***	0.43***
	(2.730)	(2.79)	(9.84)	(7.28)
Number of groups	357.000	423.00	459.00	504.00
Number of instruments	85.000	85.00	85.00	85.00
Arellano-Bond test	0.749	0.72	0.34	0.12
Panel C: SA2				
Adj Speed (λ)	0.852	0.86	0.43	0.60
Cash (L1)	0.148*	0.14**	0.57***	0.40***
	(1.71)	(2.64)	(8.23)	(7.20)
Number of groups	334.000	416.00	523.00	479.00
Number of instruments	85.000	85.00	85.00	85.00
Arellano-Bond test	0.478	0.8899	0.7518	0.21

Notes: ***, **, and * corresponds to statistical significance at 99%, 95% and 90% significant level respectively. t statistics are given in parenthesis. GMM1 is Blundell and Bond estimation. GMM2 is Arellano and Bond estimation. Z score is Altman's Z score. SA1 is assets' measure of financial constraints. SA2 is sales' measure of financial constraints. CASH (L1) is lagged cash variable. CASH is the ratio of firm's cash to total assets.

For Altman's Z score the above target firms report downward adjustment rates of 0.88 and 0.76 for constrained and unconstrained respectively, while for below target firms adjustment rates are 0.69 and 0.75 for constrained and unconstrained firms respectively (Table 8, GMM1). Similarly according to GMM2 (table 9) adjustment rates for above target firms are 0.88 and 0.80 for financially constrained and unconstrained firms respectively. For below target firms this rate is 0.55 and 0.56 for constrained and unconstrained firms (Table 9). This shows that downward adjustment rate is higher than upward adjustment rate even after

controlling for financial constraints. Thus based on Altman's Z score measure of financial constraints both GMM1 and GMM2 deliver estimates that are consistent with our third hypothesis. Similarly Table 8 (GMM1) shows that for the measure SA1 (Panel B) and above target firms adjustment rates are 0.74 and 0.79 for constrained and unconstrained firms respectively. This speed for below target firms is 0.66 and 0.69 for constrained and unconstrained firms respectively. Moreover according to Table 9 for SA1 measure, above target firms report adjustment rates of 0.75 and 0.83 for constrained and unconstrained firms respectively. The same measure for below target firms (Table 9) reports adjustment rate of 0.48 and 0.57 for constrained and unconstrained firms respectively. Thus based on SA1 measure of financial constraints we have considerable evidence that higher firm total assets to book value of total assets. CFLOW is cash flow calculated by subtracting interest payments, dividend and taxes from EBIT.

CONCLUSION

This study tries to empirically examine downward and upward adjustment behaviour of corporate cash holdings in Chinese firms. For this purpose we followed research studies in capital structure literature to first find out the above and below target cash holdings (Hovakimian et al., 2001; Drobetz & Wanzenried, 2006). In order to estimate adjustment rate this study utilises Arellano and Bond (GMM2) and Blundell and Bond (GMM1) dynamic panel data models. Findings indicate that downward adjustment rate is higher than upward adjustment rate. Both GMM models give robust results. We estimate upward and downward adjustment rate by incorporating financial constraints into the model. There is considerable evidence that downward adjustment rate is higher even after controlling for financial constraints. This may be due the fact that when a firm cash level is above its optimal level, it can distribute dividends, make repayments on loans etc., to bring the cash level down to the optimal level. On the other hand if a firm cash level is below optimal level, it can slash its investment, reduce or stop payout or even raise external funds to attain the optimal cash level. Thus alternatives available for downward adjustment towards optimal cash level results in higher downward adjustment rate. The results could be explained by the fact that more adjustment costs are associated with upward adjustment than downward adjustment process. In other word, the adjustment costs play an important role while adjusting for an optimal cash level.

Moreover the study further investigates adjustment rate of corporate cash holdings across three financial constraints, i.e., Altman's Z score, SA1 and SA2. All the three measures of financial constraints give results that are consistent with

our hypothesis. We found considerable evidence that those firms speedily adjust corporate cash holdings when they are financially unconstrained. This is in line with Almeida et al. (2004) that firms with higher investment needs and inhabiting in a highly imperfect market tend to hoard more cash to efficiently manage their liquidity because there investment ability is constrained by market frictions. They reported that cash holdings are affected by financial constraints such that financially constrained firms are more sensitive to cash flow volatility pattern than unconstrained firms.

The conclusion derived for the study is subject to some limitation and owing to these limitations the study can be extrapolated across various dimensions. The samples can be divided into pre and post crises era (crises-2008). For example during financial crises liquidity many companies evaporated and thus it will have an important implication for industries as a whole during crises. Furthermore Chinese stock market provides a unique setting for these studies due to the State owned and non-state owned enterprises. By dividing the sample into subsample of SOEs and NSOEs this study can further extrapolated to incorporate the sectorial level consideration especially with respect to the financing alternatives available to Chinese SOEs and NSOEs? Furthermore as per the findings of Jiang, Rapach, Strauss, Tu and Zhou (2007), China specific indicators like banks' loan expansion rate can be included as an interactive term because of the peculiar characteristics of Chinese stock market.

Industry business cycle can also be incorporated (Wu & Shamsuddin, 2012) Apart from Industry another important consideration would be firm size. It will add more pragmatism to incorporate size effects by categorizing firms into small and large cap portfolios of industries (Hou & Moskowitz, 2005; Hou, 2007).

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EARNINGS AND BALANCE SHEET CONSERVATISM IN MALAYSIA: THE EFFECT OF MALAYSIA'S CONVERGENCE TO INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

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ABSTRACT

The objective of this paper is to examine the impact of International Financial Reporting Standards (IFRS) on both earnings and balance sheet conservatism in Malaysia. Earnings conservatism has been used extensively in common-law countries such as the United States (US) and the United Kingdom (UK), which are known to have good financial reporting quality. In contrast balance sheet conservatism is more evident in code-law countries such as Japan and France, where accounting practice is highly influenced by the institutional culture similar to Malaysia such as political connection and family-firms. Since Malaysia uses international accounting standards adopted from common-law countries, we hypothesise that earnings conservatism will increase whereas balance sheet conservatism will decrease after the incorporation of IFRS in the financial reporting environment. Consistent with the hypothesis, we find that earnings conservatism and balance sheet conservatism increase and decrease respectively after Malaysia's convergence to IFRS. The results indicate that Malaysia has successfully adopted IFRS from common-law countries as earning conservatism increase after IFRS convergence.

Keywords: Earnings conservatism, balance sheet conservatism, Malaysia, IFRS

INTRODUCTION

The issue of financial reporting quality has become more prominent due to recent corporate failures that occurred in developed countries, such as the United States of America, where rules and regulations are more stringent and rigid compared to other countries. The collapse of Enron and WorldCom have drawn the attention of regulators, practitioners, auditors and researchers, both in developed and developing countries, to the issue of financial reporting transparency. These cases have shattered the whole nation, particularly the companies' shareholders, as the financial reporting of the companies were 'decorated' with promising profits, lower debts and high revenues. In financial reporting, the issue of corporate transparency is more important as information that is accurate and relevant is needed by investors in their investment decision making and at the same time to ensure the security of their investments. Regulators are also demanding corporate transparency in order to exert more control on company operations and the behaviour of managers.

Levitt (1998) defines quality as financial reporting transparency that signifies the basis of any business.[1] He further states that success of capital markets is explicitly dependent on the accounting and disclosure system where high-quality accounting standards will produce financial statements that report events in real-time. High-quality financial reporting ensures no added reserves and deferral of losses, and actual volatility is not smoothed away to portray a false representation of steady and consistent growth. Following the definition of quality as proposed by Levitt (1998), conservatism is regarded as the best measure for financial reporting transparency as this concept requires a higher level of verification in distinguishing between the good and the bad news. In this concept bad news is recognised earlier than good news and therefore earnings reflect bad news more quickly than good news. This means bad news is identified sooner than good news, thus, earnings reflects bad news faster than good ones. Francis, Lafond, Olsson, and Schipper (2004) and Vichitsarawong, Eng and Meek (2010) use conservatism as a measure of financial reporting transparency since conservatism is regarded as a desirable attribute of accounting earnings that can be used in order to avoid unexpected economic downturn and corporate failure.

There are two types of conservatism: Earnings and balance sheet conservatism. Earnings conservatism is defined as the asymmetric response of earnings to economic gains and losses as such losses are recognised immediately in the current period, whereas profit will be reflected in the financial statement gradually over a number of years (Basu, 1997). Meanwhile, balance sheet conservatism is defined as the understatement of book values of net assets and overstatement of liabilities in the balance sheet with respect to market value of the firm (Feltham

& Ohlson, 1995). Both types of conservatisms lead to understatement of assets or profit and overstatement of liabilities or losses. However, what makes these two differ is the time of recognition as earnings conservatism is applied when there is news or indication from the stock prices whereas balance sheet conservatism is persistently applied in the balance sheet when it is compared to market value of the firm without any basis or indication.

Due to the basis of recognition, earnings conservatism has been extensively used as a proxy for financial reporting quality compared to balance sheet conservatism and this type of conservatism has been tested on various applications such as litigation, contracting, corporate governance and other regulations. Most of the results provided by the previous studies (Ball, Kothari, & Robin, 2000; Ball, Robin, & Shuang Wu, 2003; Basu, 1997; Bushman & Piotroski, 2006) support that earnings conservatism play an important role in alleviating agency problems and limit the losses from poor investment decisions. In contrast, balance sheet conservatism has been criticised as it provides understatement of book value without any basis or indication and hence facilitates the creation of "cookie-jar reserves" which may lead to earnings management[2].

Investigating the effects of regulation such as IFRS on both types of conservatism is interesting as earnings conservatism is more apparent in common-law countries such as U.K which are known as having high financial reporting quality whereas balance sheet conservatism is more evident in code-law countries such as Germany and Japan where the main sources of financing are from a system of relationship-oriented capital, ownership structure which is more concentrated, less shareholder activism and a taxation policy that relies more on the lower value of assets (Black & White, 2003; Gassen, Fuelbier, & Sellhorn, 2006; Joos & Lang, 1994; Lara & Mora, 2004). Lara and Mora (2004) argue that in the so-called common-law-based countries such as UK, the degree of balance sheet conservatism will be less pronounced than in the so-called code-law-based countries. Higher financial reporting quality in common law country is recognised as timely loss recognition as compared to code law countries (Ball et al., 2003). The loss recognition is considered as more important as the nature of companies tend to disclose good news as compared to bad news. Malaysia is one of the countries that decided to adopt IFRS by the year 2012. Despite the adoption, Malaysia provides a unique institutional setting. Principally, Malaysia uses *International Accounting Standards* (IAS), adopted by common-law countries such as the US and UK which have been known as having high quality of financial reporting (Ball et al., 2003). Nevertheless, primarily, accounting practices in Malaysia are highly influenced by its institutional culture similar to the code-law countries' such as political connection and family firms (Ball et al., 2000, Muniandy & Ali,

2012). The CLSA (Credit Lyonnais Securities Asia) Asia Pacific Markets report on the overall of Malaysia's performance in Corporate Governance Watch 2007 reported that there is little confidence in the Malaysian market that independent directors are genuinely independent. Although public enforcement efforts have improved, the report blames the regulators for not having a reputation for treating companies and individuals equally. The CLSA committees make consensus that it is politics that hampers the ability of regulators to do their job properly (CLSA Asia Pacific Markets, 2007). The CLSA report in 2010 once again highlighted this issue as they pointed out that the main area of weaknesses in Malaysian corporate governance is on accountability and the number of independent audit committees. Their report highlight that Malaysia's financial reporting quality is significantly affected by culture (CLSA Asia Pacific Markets, 2010) as Malaysia's score for corporate governance culture dropped 1% from 33% in 2007 to 32% in 2010.[3] When comparing the governance score between political and regulatory and CG culture of 11 capital markets in Asia, the gap between these two scores is greatest in Malaysia which shows that CG culture still poses a threat to the corporate governance practices here even though there is improvement in the enforcement and regulatory system.

Due to unique institutional setting of Malaysia, investigating the effects of regulation such as IFRS on both types of conservatism is appealing. In addition, evidence on the impact of IFRS in Malaysia is rather limited. Wan Ismail, Kamarudin, Van Zijl and Dunstan (2013) provide initial evidence on the effects of IFRS on earnings quality in Malaysia. They found that, based on a proxy for earnings management, IFRS adoption increases the earnings quality in Malaysia. We opted for a similar approach to Wan Ismail et al. (2013). However, instead of examining the effects on accruals quality, we investigate the effects of IFRS on both earnings and balance sheet conservatism. In addition to extending an outlook on earnings quality in Malaysia, our choice of measures of conservatism will provide a support on the role of institutional settings in Malaysia.

We offer the following motivations. First, to our humble knowledge, we initiate the first investigation on balance sheet conservatism in Malaysia. We view balance sheet conservatism as a complimentary tool on earnings conservatism and as proxies for earnings quality. Evidence on conservatism (either earnings or balance sheet) is limited in Malaysia. Mohamed Yunos, Ismail and Smith (2012) provide some evidence on the relationship of various ethnic groups and earnings conservatism and found mixed evidence. The use of a single type of conservatism (i.e. earnings conservatism) may not justify the insignificant findings between ethnicity and conservatism in their study. Therefore, an investigation on the effect

of IFRS on different types of conservatism may provide a different picture on Malaysia's institutional setting and its relationship with earnings quality.

We analyse earnings and balance sheet conservatism before and after IFRS. For earnings conservatism we used the model by Basu (1997) whereas for balance sheet conservatism we opted the model by Garcia-Lara and Mora (2004). This study is motivated by Malaysia's convergence to IFRS in 2006. Malaysia has announced its full convergence to IFRS on 1 August 2008 by 2012 but the effects of IFRS convergence with local standards is still largely unexplored.

This study differs from other studies on conservatism and IFRS in several ways. First, this study is conducted specifically on Malaysia's institutional settings which could provide better and compelling evidence. Recent studies conducted utilised multiple countries by comparing the effect of IFRS adoption in code and common law countries (Callao, García, Jarne, & Gadea, 2010; Lara, Torres, & Viera, 2008) or in developing countries which have different legal systems and culture from emerging countries like Malaysia (Callao, Jarne, & Laínez, 2007; Karampinis & Hevas, 2011; Piot, Janin, & Dumontier, 2011). Second, this study investigates the effects of IFRS convergence on both types of conservatism; earnings and balance sheet conservatism. The investigation of both types of conservatism will help us to understand the uniqueness of Malaysia's institutional setting and its relation to financial reporting quality.

Our results suggest that earnings conservatism is enhanced after IFRS. We also find that balance sheet conservatism is lower after the convergence. Therefore we provide strong evidence that IFRS is one of the main determinants of conservatism supporting the argument by Watts (2003a, 2003b).

INSTITUTIONAL BACKGROUND

IFRS Adoption in Malaysia

Before IFRS was issued by International Accounting Standards Board (IASB), the standards used were International Accounting Standards (IAS) issued by International Accounting Standards Committee (IASC) from 1973 to 2001. After 2001, IASB published IFRS and, therefore, any standard in IAS that are contradictory with IFRS, will definitely be superseded by IFRS and IAS are usually disregarded.

Malaysia's early adoption of a few IAS begins since 1978 until 1997. During this period, Malaysia Accounting Standards Board (MASB) standards are already in line with standards issued by IASB. However, the IASB standards are modified to suit the local environment, thus becoming national standards. The issuances made by the Malaysian Association of Certified Public Accountant (MACPA) together with the Malaysian Institute of Accountants (MIA) were not enforceable on companies. In 1997, Parliamentary Act established MASB and confers MASB standards as a legal standing for all firms. The standards issued by MASB became enforceable by virtue of Companies Act 1965 as well as other relevant acts for specialised industries like insurance.

In 2005, as support for the IFRS issued by IASB, MASB rename the MASB standards to Financial Reporting Standards (FRS) meant to make it in line with standards issued by IASB except for some minor modifications. In January 2006, all Malaysian firms are required to converge the local reporting standards with IFRS by preparing financial statements according to IFRS. Since this year, Malaysian IFRS standards have been identical to the respective IFRS and IAS. The difference lies in the standards that Malaysia has not adopted. With the convergence, modifications of the standards are made if necessary. Instead of adopting the whole standards as a required standard to prepare financial statements, Malaysia introduced two-tier financial reporting framework whereby the IFRS framework is made mandatory for non-private entities while the private entities can continue using the old MASB standards known as PERS (Private Entity Reporting Standards) framework. Figure 1 shows the milestones for Malaysia's convergence to IFRS.
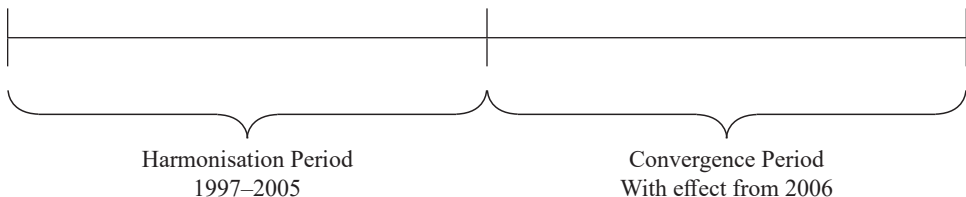

Harmonisation Period	Convergence Period
1997–2005	With effect from 2006

Figure 1. Milestones for Malaysia's convergence to IFRS

IFRS still provide various mechanisms which indirectly ensure the application of conditional conservatism. For example, recognition of probable liabilities and non-recognition of contingent asset in IAS 37, lower cost or net realisable value for inventories (IAS 2) and impairment of asset in IAS 36. Comparing IFRS with the local GAAP, IFRS introduced more stringent and systematic impairment testing rather than amortisation based on the judgement. The differences of financial reporting standards in the IAS and IFRS that would lead to more conservatism using IFRS are shown in Appendix.

Malaysia's Political Economy and Ownership Structure

Malaysia's political economy is highly influenced by family ownership and political connection (Claessens & Fan, 2002; Jaggi, Leung, & Gul, 2009). This type of political economy has enabled corporate entities in Malaysia to seek capital fund from "insiders" rather than from capital market. Faccio (2007) reports that connected firms enjoy easier access to debt financing from state-controlled banks, even though their situations do not justify additional credit. Johnson and Mitton (2003) found that politically connected public firms in Malaysia had significantly better returns even under the situation of capital control. Therefore, there is less demand of informative financial statements by the public. In addition, being politically connected facilitates firms to get private information and, hence, any information asymmetry between shareholders and managers are settled through "insider communication" rather than through "public disclosure". While compliance with approved accounting standards is mandatory, companies may send voluntary signals about their activities and performance using private information (Mohd Saleh, Che Abdul Rahman, & Hassan, 2009). This situation creates less incentive for the preparers of financial statement to enhance disclosure by adopting IAS.

The influence and dominance of family presence and ownership in Malaysia has been well documented (Claessens & Fan, 2002; Jaggi et al., 2009). According to statistics, which has been presented by South China Morning Post (SCMP), Malaysia has the second highest percentage of family ownership of listed companies in the region after Indonesia (Jaggi et al., 2009). Claessens, Djankov and Lang (2000) found that the presence of family dominance has enabled them to control firms and this represents a large percentage of stock market capitalisation in nine East Asian countries including Malaysia. This situation has led to Type II agency problem, which is the conflict between majority and minority shareholders in which minority shareholders have less power to voice out their dissatisfaction with a firm's poor governance.

Institutional background of Malaysia, which emphasises the Bumiputras privileges, has also leaved it hostile to ethnic Chinese Malaysians.[4] In order to establish their position among the Malays, Chinese businesses have responded in several ways. Chinese Malaysians with mobile capital investments have move away from active politics, engaging in high-risk, short-term speculative ventures and diversifying overseas to strengthen the concession in Malaysia's political economy. Malaysia's richest man, Robert Kuok Hock Nien, for example, has diversified his interests across Asia without any political favouritism. Some of them, for example Vincent Tan Chee Yioun from property and gambling conglomerate Berjaya Group, seeks direct ties with a Malay political party through its official

Chinese party in the UMNO coalition, the Malaysian Chinese Association (MCA) (Pepinsky, 2008).[5]

Malaysia's convergence to IFRS is seen as a step forward to produce accounting earnings characteristics closer to common-law countries such as the U.K. It is seen as good effort by the regulators to enhance transparency and give awareness to public listed companies and stakeholders on the importance of faithful and truthful financial statements. Dato' Zainal Abidin Putih, the chairman of MASB, in one of his speech on Malaysia's full convergence to IFRS in 2012, commented that since Malaysia has included the provisions of the international standards into its local accounting standards beginning 1978 and these standards have also been used by more than a hundred countries worldwide, it is believed that IFRS will facilitate comparability and increase transparency (PricewaterhouseCoopers, 2009) and thus is expected to prevail over the code law countries' characteristics.

EMPIRICAL PREDICTIONS

The concept of conservatism historically has been one of the most influential accounting principles (Sterling, 1967) and has dominated other accounting principles such as historical cost and realisation concept for centuries (Basu, 1997). Various definitions of conservatism have been proposed by the accounting authority bodies such as IASB and FASB and these definitions have also led to debate on the applications of conservatism as a proxy for financial reporting quality.

In the Statement of Standard Accounting Practice No. 2 (SSAP2): "Disclosure of Accounting Policies" conservatism is described as understatement of assets or profits and overstatement of liabilities or losses (Accounting Standards Board, 1971). Nevertheless, the general authoritative definition to some extent does not properly discuss on what is the appropriate level of conservatism and how it is determined (Hellman, 2008). Hellman (2008) illustrates that previous researchers (such as Schmalenbach [1959] and Sillen and Vasthagen [1962]) are also unclear on how far conservatism should be applied. To some extent, they argue that conservatism can play its role to protect the stakeholders, whereas in other extent conservatism may lead to manipulation and distortion of information.

Earnings Conservatism

Basu (1997) proposes an operational definition of conservatism, which provides a clearer base of assets or profits and liabilities or losses valuation, compared to the theoretical definition provided by the authority bodies. Basu (1997) defines

conservatism as reflecting bad news more quickly than good news. He states that conservatism is applied when there is news by requiring higher degree of verification for recognising good news compared to bad news. Chi, Liu and Wang (2009) state that there are two important reporting features of earnings conservatism, which are asymmetric timeliness in recognition of gains versus losses and, a systematic understatement of net assets. The term "systematic" provides an explanation that the earnings conservatism based on valuation needs a formal indication on when to recognise and how much to recognise.

Balance Sheet Conservatism

Balance sheet conservatism is consistent with unconditional or ex-ante conservatism as this type of conservatism is not dependent on the news and it is recognised before or without receiving any news (Pae, Thornton, & Welker, 2005). Givoly and Hayn (2000) use market-to-book ratio as a proxy for the degree of balance sheet conservatism. This measurement is based on the balance-sheet-oriented definition of conservative accounting suggested by the theoretical framework developed by Feltham and Ohlson (1995). Feltham and Ohlson (1995) define balance sheet conservatism as "the existence of a persistent understatement of the book value figure with respect to market's valuation of the firm". The market-to-book ratio, that is greater than one, indicates conservative accounting and, other things being equal, an increase in the ratio over time suggests an increase in the degree of reporting balance sheet conservatism.

Conservatism and IFRS

Most of prior studies have documented positive effects of IFRS. There are evidence that IFRS can reduce analysts' absolute forecast error (Ashbaugh & Pincus, 2001), have more persistent and more conditionally conservative earnings (Gassen et al., 2006), can cause an increase in market liquidity (Daske, Hail, Leuz, & Verdi, 2008), and a decrease in earnings management (Barth, Landsman, & Lang, 2008; Zéghal, Chtourou, & Sellami, 2011) and an increase in stock price informativeness (Beuselinck, Joos, Khurana, & Meulen, 2009). There are also evidences that IFRS can enhance conservatism. Lara et al. (2008) show in their results that earnings conservatism is more pronounced in common-law-based developed economies and the voluntary use of IASB standards in Europe (prior to 2005) has significantly increased the measures of earnings conservatism in adopting firms.

Previous studies (e.g. Barth et al., 2008; Daske et al., 2008) offer three arguments on why the adoption of IFRS can yield significant capital market benefits. Firstly, its reporting promotes transparency and this improves the quality

of financial reporting since the standards are more capital-market-oriented and more comprehensive than local GAAP, particularly when involving disclosures. Secondly, this practice also lowers the amount of reporting discretion in relation to local GAAPs. Thirdly, IFRS reporting has been found to improve financial statement comparisons across firms. Additionally, according to Ewert and Wagenhofer (2005), the tightening accounting standards can reduce the level of earnings management and hence improve financial reporting quality.

IFRS emphasises on fair value principle which involves a process of asset or liability recognition, initial measurement at fair value, re-measurement (again, largely, at fair value) and de-recognition. Based on this principle, losses will be valued at market value, thus, increases conservatism among managers.[6] Since the natural behaviour of humans is to be more inclined to disclose good news rather than bad news, recognition of losses is considered as more important in increasing transparency among managers**.**

Hellman (2008) proposes that the consistent understatement of assets characterised by the balance sheet approach is overcame in the IFRS as the new standards temporarily lower down the value of assets and will be reversed later due to change in accounting estimates. Hellman (2008) stresses that conservatism applied in IFRS can reduce the creation of hidden (off-balance) reserves or excessive provisions created by consistent undervaluation of asset in balance sheet conservatism.

It is believed that rules and regulations such as IFRS is one of the determinants of earnings conservatism that can induce firms to protect their shareholders and debt holders. Malaysia's convergence of local standards to IFRS is seen as a step forward by the regulators to enhance transparency and put awareness on public listed companies and the stakeholders on the importance of faithful and truthful of financial statements. Therefore, we hypothesise that:

H1: Earnings conservatism increases after IFRS convergence

Ball and Shivakumar (2005) state that there are three reasons earnings conservatism is preferable than balance sheet conservatism. First, the timely loss recognition of earnings conservatism provided by Basu's (1997) model provides an important role of conservatism in governance. Secondly, by understating the book value of assets, balance sheet conservatism reduces the opportunities of firms to account value in a conditionally conservative fashion. For example, if firms take into account balance sheet conservatism by immediate expensing assets, it eliminates their opportunity to impair the asset when the market value provides

evidence that the value has been reduced. Thirdly, balance sheet conservatism can reduce contracting efficiency as it introduces randomness in decisions based on financial information.

Due to these reasons, this type of conservatism has been subjected to criticisms and is associated with lower financial reporting quality. Ball and Shivakumar (2005) argue that conservatism "seems at best neutral if the bias of understatement is known". If the bias is unknown, then it may lead to inefficiency. Therefore, even though both of the definition of balance sheet and earnings conservatism is understood as lead to bias (higher verification of revenue compared to losses), at least the bias in earnings conservatism is known. Due to these arguments, we hypothesise that:

H2: Balance sheet conservatism decreases after IFRS convergence

Empirical research have been done by researchers (e.g. Pae et al., 2005; Beaver & Ryan, 2005; García-Lara & Mora, 2004; Givoly, Hayn, & Natarajan, 2007; Roychowdhury & Watts, 2006; Pope & Walker, 2003) to test the relationship between earnings and balance sheet conservatism and they support that there is a negative relationship between earnings and balance sheet conservatism as such balance sheet conservatism pre-empt earnings conservatism.

DATA AND RESEARCH METHODS

Sample Selection and Data Collection

Our initial sample consists of 857 firms from Bursa Malaysia listed firms over the period 2004-2009. Financial institutions, insurance and real estate companies are excluded due to different regulatory framework. PN4 companies, companies that change their financial year end and companies with missing data are also excluded from the sample yielding a final sample of 3274 observations for earnings conservatism and 4018 observations for balance sheet conservatism. The differences between the sample of earnings and balance sheet conservatism is mainly attributable to the need of one year observation of price adjusted on pre-sample period to calculate return and also to the fact that excludes all missing values for the price adjusted. The sample is divided into two periods which are pre-IRS (2004 and 2005) and post-IFRS (2006 till 2009). The year selection is based on effective date for preparing financial statements based on IFRS for all Malaysian firms which is on 1 January 2006.

Table 1
Data distribution of sample firms

Panel A: Earnings Conservatism	
Description	Number of observations
Initial sample	5142
(-) Financial institutions, insurance and real estate companies	(294)
(-) PN4 companies, companies that change financial year end and companies with missing data	(1501)
(-) Outliers	(73)
Final sample	3274
Panel B: Balance Sheet Conservatism	
Description	Number of observations
Initial sample	5142
(-) Financial institutions, insurance and real estate companies	(294)
(-) PN4 companies, companies that change financial year end and companies with missing data	(284)
(-) Outliers	(546)
Final sample	4018

Table 2
Description of variables

Panel A: Earnings Conservatism		
Variables	Symbol	Definition
Earnings/price (DV)	N	Net income before extraordinary items per share of firm i, deflated by beginning of period share price
Returns	R	Fiscal year continuously compounded return (log)
Negative returns	DR	Dummy variable that takes the value of one if return is negative, and zero otherwise
Panel B: Balance Sheet Conservatism		
Variables	Symbol	Definition
Share price	P	Share price at the balance sheet date
Net income	NI	Earnings per share
Book value	BV	Period-end book value of shareholders' equity per share (log)

Data are extracted from Compustat Global. The minimum data required for each firm-year observation are the current year's earnings, the previous fiscal year-end stock price, book value of assets and equity and returns data (Basu, 1997). Following Vichitsarawong et al. (2010) and Ball et al. (2003), accounting variables are deflated by the beginning of period price to control for heteroscedasticity. In addition, serial correlation of period SUR is reported for regressions to correct for heteroscedasticity and general correlation of observations within a cross-section. The 1st and 100th percentiles of each variable are excluded to reduce the effect of outliers. Finally, each firm-year observation with a missing value for any of the variables is excluded. Table 2 shows the definition of variables used in this study.

Model Specification

Earnings conservatism was tested using Basu's (1997) model specification. This model has been tested in Malaysia by Ball et al. (2003) and Vichitsarawong (2007). Basu (1997) uses reverse regression of annual earnings on contemporaneous returns to investigate the relationship between economic income, as measured by stock returns, and accounting income. The model is shown as follows:

$$N_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 R_{it} x DR_{it} + \varepsilon_{it} \qquad (1)$$

Where N_{it} is net income before extraordinary items per share of firm i, deflated by beginning of period share price; R_{it} fiscal year continuously compounded return; and DR_{it} is dummy variable, equalling one if R_{it} is negative, and zero otherwise. The earnings variable N_{it} is calculated, as $X_{it}/N_{it}P_{it-1}$ where X_{it} is net income before extraordinary items for firms i, N_{it} is the adjusted number of shares and P_{it-1} is the share price.

In this model, stock returns are the independent variable, while earnings are the dependent variable. The coefficient on stock returns β_2 measures the sensitivity of accounting income to positive stock returns (a proxy for economic gains). The coefficient β_3 is the main measurement for earnings conservatism which measures the incremental sensitivity of accounting income to the incorporation of bad news as measured by negative stock returns (a proxy for economic losses). The total sensitivity of accounting income to negative stock returns is measured by $(\beta_2 + \beta_3)$.

Previously, Givoly and Hayn (2000) used market-to-book ratio to examine the existence of balance sheet conservatism. Nevertheless, this measurement has been criticized as market-to-book ratio can be driven by many other factors (growth options, the possibility of monopoly rents and/or synergies, inflation, etc.). Consequently, Lara et al. (2004) investigate the effects of balance sheet

conservatism using a valuation framework provided by Ohlson (1995), which expresses price as a function of both earnings and book value of equity.

Ohlson model (1995) has been widely used in value-relevance study. Despite of that, the model has also been used to capture different properties of accounting such as conservatism. The model illustrates the effect of conservative accounting on the relation between equity value, accounting book value and future earnings (Lundholm, 2010).

This model has been utilised by Garcia-Lara et al. (2004) who investigates the effects of balance sheet conservatism using a valuation framework provided by Feltham and Ohlson (1995), which expresses price as a function of both earnings and book value of equity:

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 BV_{it} + \varepsilon_{it} \tag{2}$$

Where P_{it} is the share price at the balance sheet date, NI_{it} is the earnings after extraordinary items per share, BV_{it} is the period-end book value of shareholders' equity per share. In the particular model above, the intercept of the undeflated regression of price on earnings and book value is significantly larger, while the book value coefficient is significantly positive if the balance sheet conservatism exists and practiced in Malaysia. The coefficient B_2 is the main measurement for balance sheet conservatism.

In order to test the relationship between the adoption of IFRS and conservatism, both of the conservatism models are employed using dummy year variable for period pre (year 2004 and 2005) and post of IFRS (2006 till 2009).

$$\begin{aligned} N_{it} = \ & \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 R_{it}xDR_{it} + \beta_4 D\_IFRS + \beta_5 D\_IFRSxDR_{it} \\ & + \beta_6 D\_IFRSxR_{it} + \beta_7 D\_IFRS_{it}xR_{it}xDR_{it} + \varepsilon \end{aligned} \tag{3}$$

$$\begin{aligned} P_t = \ & \alpha + \beta_1 NI_{it} + \beta_2 BV_{it} + \beta_3 D\_IFRS_{it} + \beta_4 NI_{it}*D\_IFRS_{it} \\ & + \beta_5 BV_{it}*D\_IFRS_{it} + \varepsilon \end{aligned} \tag{4}$$

where all variables as described above, D_IFRS_{it} is dummy variable which takes the value of 1 for the period after IFRS and 0 otherwise.

In model (3), dummy variables DR_{it} capture the intercept and slope effects for the negative return sample. Our focus variable is the coefficient β_7 which measures the relationship between the level of asymmetric timeliness

of conservatism and IFRS. It is expected that the coefficient to be positive and significant, showing that earnings conservatism is increased after the adoption of IFRS.

Coefficient β_2 measures the responsiveness of earnings to good news before the IFRS adoption, while the sum of $\beta_2 + \beta_6$ is measuring the responsiveness of earnings to good news after the IFRS adoption. A positive significant coefficient β_6 implies incremental responsiveness of earnings to good news after IFRS adoption. We offer no prediction for the intercept and incremental intercept coefficients β_0, $\beta_1 DR_{it}$, $\beta_4 D\_IFRS$ and $\beta_5 D\_IFRSxDR_{it}$ in measuring earnings conservatism.

In model (4), the relationship between balance sheet conservatism is determined by the coefficient β_5 which is the coefficient of the interaction between book value and the dummy year of IFRS. It is expected that the coefficient will be significantly negative, leading to the positive effect of IFRS as it leads to a decrease in the understatement of assets relative to market's valuation.

RESULTS

Descriptive Statistics

Table 3 reports descriptive statistics for all the variables within the periods. For earnings conservatism presented in Panel A of Table 3, the mean (median) value for the dependent variable, which is earnings, and independent variable which is return are 4.427 (0.000) and 1.174 (0.990) respectively. The mean value shows that throughout the period earnings are higher than return which indicates that overall the sample do not shows earnings conservatism. Nevertheless, in term of median, earnings are lower than return which indicates the existence of earnings conservatism. Standard deviation for earnings are also far larger than the standard deviation of return which indicates that throughout the period earnings is not really a function of return. For balance sheet conservatism tabulated in Panel B of Table 3, the mean (median) for book value of shares (*BV*) is 0.808 (1.000), which is slightly lower than share price (*P*), which shows a mean of 1.742 (0.910). The result for mean indicates that balance sheet exist among the firms in the sample as the book value is lower than the share price. Nevertheless, the result for median indicates that book value is slightly higher than the share price which indicates that firms are not conservative.

Table 3
Descriptive statistics

Panel A: Earnings Conservatism					
	Mean	Median	Maximum	Minimum	SD
N	4.427	0.000	152.516	-73.638	11.895
R	1.174	0.990	14.444	0.137	1.129
R (log)	-0.064	-0.010	2.670	-1.987	0.639
DR	0.506	1.000	1.000	0.000	0.500
Panel B: Balance Sheet Conservatism					
	Mean	Median	Maximum	Minimum	SD
P	1.742	0.910	51.250	0.025	3.015
NI	0.182	0.111	15.406	-3.646	0.468
BV	0.808	1.000	1.000	0.080	0.291
BV (log)	-0.332	0.000	0.000	-2.526	0.585

Note: SD = Standard Deviation

Univariate

We run univariate analysis to test the effect of IFRS on both types of conservatism. Table 4 presents differences in the mean and median values of our measures of measures of conservatism for the periods before and after IFRS. The table shows a significant improvement in some of conservatism variables. The average of return *R* has significantly increased from 0.981 to 1.239 after IFRS. Nevertheless, the value of earnings is not significantly difference from pre to post IFRS. The result indicates that even though return is significantly increasing, the value of earnings has no significant difference. This result indicates early evidence that IFRS has some effect on earnings conservatism. The average of share price *P* decreased from 1.895 to 1.691 whereas the average of net income *NI* shows a slight decrease from 0.205 to 0.175 after IFRS. The average of book value of shareholder's equity per share also decreases after IFRS from 0.879 to 0.784. The average of share price *P* decreased from 1.895 to 1.691 and it is only significant using Mann-Whitney test. The average book value of shareholder's equity per share (*BV*) show slight decreases after IFRS which is from 0.879 to 0.784 respectively. As presented in the table, the mean values for the share price are greater than the values for book value of shareholders' equity per share. This provides evidence of the existence of balance sheet conservatism in this country throughout the sample period. The decrease in value is even more after IFRS, providing more evidence that balance sheet conservatism is decreasing after IFRS.

Table 4

Univariate analysis of differences of earnings and balance sheet conservatism in the pre- and post IFRS

Panel A: Earnings Conservatism								
	Pre IFRS (*n* = 943)			Post IFRS (*n* = 2331)			*p*-value	
	Mean	Median	SD	Mean	Median	SD	*t*-test	Mann-Whitney
N	4.379	0.000	11.861	4.444	0.000	11.910	0.815	0.690
R	0.981	0.754	1.261	1.239	1.033	1.073	0.000	0.000
R (log)	-0.307	-0.282	0.679	0.018	0.033	0.603	0.000	0.000
DR	0.733	1.000	0.443	0.430	0.000	0.495	(0.000)	(0.000)
Panel B: Balance Sheet Conservatism								
	Pre IFRS (*n* = 1976)			Post IFRS (*n* = 2042)				
P	1.895	1.000	3.486	1.691	0.890	2.838	0.105	0.003
NI	0.205	0.119	0.676	0.175	0.108	0.373	0.107	0.074
BV	0.879	1.000	0.241	0.784	1.000	0.302	0.000	0.000
BV (log)	-0.201	0.000	0.463	-0.376	0.000	0.614	0.000	0.000

Note: Significant p-values are in bolds. The figures in parentheses () denote Chi-square statistics.

Multivariate[7]

In order to test more strongly on the role of IFRS on conservatism, we run multivariate analysis. Table 5 reports the regression results for earnings conservatism. The intercept is significantly positive throughout the models as predicted by Basu (1997). We present model 1 till 6 to show one by one the effect of earnings conservatism measured by the interaction of *DR*R*. We start with the basic model of Basu's (1997). The interaction of *DR*R* which is earnings conservatism is significantly negative at 1%. The result remains negative throughout the model 1 till model 6 which indicates that overall the firms in the sample are not earnings conservative. Nevertheless, after we interact earnings conservatism with IFRS (*D_IFRS*DR*R*), the results show that earnings conservatism increases after IFRS and it is significant at 1% level. The result for *R* is significantly positive indicating that earning is more responsive to good news before IFRS adoption. Nevertheless, the positive interaction between *D_IFRS*R* is significantly negative providing evidence that earnings are less responsiveness to good news after IFRS adoption.

The results indicate that the adoption of IFRS from common-law countries such as UK brings positive effect to the financial reporting quality in Malaysia. The result is consistent with Garcia-Lara et al. (2008) who found that the effects of IFRS

on earnings conservatism is more pronounced in common-law countries compared to code law countries. The results also support previous research (Barth et al., 2008; Daske et al., 2008) which argue that IFRS reporting increases transparency, reduces the amount of reporting discretion and improves comparisons across firms.

Table 5
Earnings conservatism and IFRS

Regressions	1	2	3	4	5	6
Intercept	2.884	3.215	3.655	5.346	4.181	2.887
	1.988**	2.220**	2.450**	3.355***	2.581***	1.727*
DR	-0.319	-0.835	-0.484	-2.870	-0.450	0.010
	-0.540	-1.356	-0.814	-2.889***	-0.372	0.009
R	5.491	5.355	5.449	5.353	7.985	10.770
	7.763***	7.529***	7.699***	7.561***	7.859***	7.990***
DR*R	-4.107	-3.425	-3.950	-3.965	-4.589	-8.792
	-4.188***	-3.380***	-4.018***	-4.037***	-4.637***	-5.292***
D_IFRS			-0.909	-2.841	-1.322	0.286
			-1.939*	-3.478***	-1.423	0.266
D_IFRS*DR				2.907	-0.455	-0.745
				2.962***	-0.326	-0.534
D_IFRS*R					-3.357	-6.918
					-3.484***	-4.417***
D_IFRS*DR*R						5.955
						2.938***
Period dummies	No	Yes	No	No	No	No
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.042	0.045	0.043	0.045	0.048	0.050
F-statistic	12.111	9.499	11.506	11.297	11.292	11.128
Observations	3274	3274	3274	3274	3274	3274
Cross-sections	772	772	772	772	772	772

Note: N = net income before extraordinary items per share of firm i, deflated by beginning of period share price; R = fiscal year continuously compounded return; DR = dummy variable, equalling one if R is negative, and '0' otherwise; D_IFRS = dummy variable which takes the value of 1 for period after IFRS and '0' otherwise.
*, ** and ***denote significance at the 10%, 5% and 1% level respectively.

Joos (2008) explains that IFRS differs from a country's individual accounting principles in terms of measurement and disclosure of accounting standards. IFRS emphasises on the fair value principle which involves a process of asset or liability recognition, initial measurement at fair value, re-measurement (again, largely, at fair value) and de-recognition. Based on this principle, losses

will be valued at market value and hence increase conservatism among managers. In terms of disclosure, IFRS emphasizes on detailed footnote disclosures. It sheds light on off-balance sheet information such as pension assets and liabilities and relevant business information such as segment information, litigation, share-based compensation, related-party transactions.

Table 6 reports the result of for the relationship between balance sheet conservatism and IFRS. The intercept is significantly positive throughout the models. Consistent with earnings conservatism model in Table 5, we present model 1 till 6 to show one by one the effect of balance sheet conservatism measured by the book value coefficient. Model 1 in Table 6 indicates the basic model of balance sheet conservatism. The book value coefficient is significantly positive throughout the model indicating the existence of balance sheet conservatism among the firms in the sample. The result indicates that understatements of assets

Table 6
Balance sheet conservatism and IFRS

Regressions	1	2	3	4	5
Intercept	0.983	0.991	0.997	1.022	1.045
	5.754***	5.788***	5.788***	5.907***	6.031***
NI	2.143	2.132	2.142	1.959	1.960
	26.198***	26.011***	26.196***	15.479***	15.504***
BV	0.236	0.218	0.233	0.233	0.405
	2.827***	2.580***	2.774***	2.779***	3.244***
D_IFRS			-0.021	-0.056	-0.091
			-0.649	-1.531	-2.262**
NI*D_IFRS				0.264	0.262
				2.000**	1.988**
BV*D_IFRS					-0.236
					-1.977**
Period fixed	No	Yes	No	No	No
Industry dummies	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.259	0.275	0.259	0.259	0.260
F-statistic	118.027	90.767	108.960	101.533	95.077
Observations	4018	4018	4018	4018	4018
Cross sections	754	754	754	754	754

Note: P = share price at the balance sheet date; NI = earnings after extraordinary items per share; BV = period-end book value of shareholders' equity per share; D_IFRS = dummy variable which takes the value of 1 for period after IFRS and '0' otherwise.
*, ** and ***denote significance at the 10%, 5% and 1% level respectively

relative to market's valuation is still practised in Malaysia throughout the period. Nevertheless, the coefficient of net income is also consistently positive throughout the model indicating that earnings remain persist. The result indicates that both types of conservatism exist among the firms in the sample. Nevertheless when we interact the book value coefficient with IFRS *(BV*D_IFRS),* the result indicates that balance sheet conservatism decrease after IFRS and it is significant at 5% level. Supporting H_2, the results indicate that the consistent understatement of assets characterised by the balance sheet approach is overcame in the IFRS as the new standards temporarily lower down the value of assets and will be reversed later due to changes in accounting estimates (Hellman, 2008). The negative relationship between balance conservatism and IFRS has been a sign that Malaysia has successfully adopted IFRS from common-law countries model even though their institutional structures can still be characterized as a variant of the code law model (Ball et al., 2003). Malaysia is one of the East Asian countries that has strong common-law influence especially in terms of its accounting standards as this country has adopted accounting standards from early British colonial influence to the more recent influence of IFRS.

Clarkson, Hanna, Richardson and Thompson (2011) state that the valuation role of earnings is more pronounced in shareholder oriented financial reporting compared to stakeholder-based. Ball et al. (2000) and Soderstrom and Sun (2007) emphasise that legal systems either code or common law countries, play an important role in influencing accounting standards. This is because, in common law countries, accounting standards are set by private sector bodies and, therefore, the purpose of standard setting is to satisfy the informational needs of investors. Meanwhile, in code law countries, standards are influenced by governments and other important stakeholders. Therefore, the role of accounting is to divide the interest between those parties. Bae, Tan and Welker (2008) report that there is greater divergence between a country's individual accounting principle and IFRS in code and common law legal system.

Sensitivity Analysis

Earnings conservatism

Because many other studies have criticised Basu's (1997) measure as having econometric biases (e.g., Dietrich, Muller, & Riedl, 2007; Patatoukas & Thomas, 2011), we measure conditional conservatism beyond Khan and Watts' (2009) modified conservatism measure based on Basu's (1997) work to ensure the robustness of our findings. The measure we use is based on the Ball and Shivakumar

(2005) accruals-based loss recognition model. We modify this measure using the methodology that Khan and Watts (2009) adopted to estimate a firm-year measure of conservatism:

$$ACC_{it} = \beta_0 + \beta_{1it}DC_{it} + \beta_{2it}CFO_{it} + \beta_{3it}DC_{it}*CFO_{it} + \varepsilon_{it} \tag{5}$$

where ACC_{it} is the total accruals in year t, deflated by the year t–1 market value of equity; CFO_{it} is the cash flow from operations in year t, deflated by the year t–1 market value of equity and DC_{it} is a dummy variable that is equal to 1 if CFO_{it} is negative and is 0 otherwise. The coefficient of the interaction term between DC and CFO (β_3) measures the conditional conservatism. If economic losses are recognised in a more timely manner than gains, then β_3 will be greater than 0.

Table 7
Earnings conservatism and IFRS (Ball & Shivakumar, 2005)

Regressions	Coefficient (basic model)	Coefficient (IFRS-integrated model)
Intercept	0.000 (0.032)	0.003 (0.192)
CFO	-0.363*** (-11.374)	-0.326*** (-6.730)
DCFO	0.012 (2.267)	0.007 (0.909)
CFO*DCFO	-0.516*** (-6.402)	-0.763*** (-6.360)
D_IFRS		-0.004 (-0.772)
D_IFRS*CFO		-0.058 (-1.020)
D_IFRS*DCFO		0.009 (0.821)
D_IFRS*CFO*DCFO		0.404*** (2.647)
Period fixed dummies	Yes	No
Industry dummies	Yes	Yes
Adjusted R-squared	0.196	0.196
F-statistic	54.208***	53.968***

Note: ACC$_{it}$ = total accruals in year t, deflated by the year t–1 market value of equity; CFO$_{it}$ = cash flow from operations in year t, deflated by the year t–1 market value of equity; DC$_{it}$ = dummy variable that is equal to 1 if CFO$_{it}$ is negative and is 0 otherwise.
*, ** and ***denote significance at the 10%, 5% and 1% level respectively.

The result using Khan and Watts (2009) adopted measure of earnings conservatism in Table 7 is consistent with Basu's (1997) model. The interaction DC and CFO is significantly negative which indicates that firms in the sample are not conditionally conservative. Nevertheless, when we interact the conservatism with IFRS, the result is significantly positive indicating that IFRS enhance earnings conservatism.

Table 8
Balance sheet conservatism and IFRS (Using MTB)

Regressions	Coefficient (basic model)	Coefficient (IFRS-integrated model)
Intercept	0.995***	1.070***
	2.898	3.038
NI	2.292***	2.281***
	21.936	12.933
MTB	0.133***	0.144***
	31.060	20.365
D_IFRS		-0.092
		-1.020
NI*D_IFRS		0.020
		0.102
MTB*D_IFRS		-0.020***
		-2.596
Period fixed dummies	Yes	No
Industry dummies	Yes	Yes
Adjusted R-squared	0.495	0.494
F-statistic	263.660***	298.153***

Note: P = share price at the balance sheet date; NI = earnings after extraordinary items per share; MTB = market-to-book ratio; D_IFRS = dummy variable which takes the value of 1 for period after IFRS and '0' otherwise.
*, ** and ***denote significance at the 10%, 5% and 1% level respectively.

Previously, Givoly and Hayn (2000) used market-to-book ratio to examine the existence of balance sheet conservatism. Nevertheless, this measurement has been criticised as market-to-book ratio can be driven by many other factors (growth options, the possibility of monopoly rents and/or synergies, inflation, etc.). Despite of the criticism, using market-to-book ratio (MTB) as a proxy for the degree of balance sheet conservatism is sensible, though it is still subject to argument. Therefore we provide the result for balance sheet conservatism using MTB in Table 8 as a measure of balance sheet conservatism. Firms are conservative when MTB is larger as firms understate the book value in relevant to market value. The

result produced in Table 8 is same with the previous one and in fact, it is more significantly negative which indicates that balance sheet conservatism decrease after IFRS.

CONCLUSION

Balance sheet conservatism has been used extensively in prior research parallel to earnings conservatism as one of the proxy for financial reporting quality due to its informational and behavioural aspects. Nevertheless this type of conservatism is more evident in code law country such as Germany and Japan where the main sources of financing are from system of relationship oriented capital, ownership structure which is more concentrated, less shareholder activism and taxation policy which relies more on the lower value of assets. In contrast, earnings conservatism is more apparent in common law countries where investors' protection is very high.

This study finds strong evidence that earnings conservatism is enhanced after IFRS, whereas balance sheet conservatism is reduced after the IFRS convergence. Therefore we provide strong evidence that regulation is one of the main determinants of conservatism supporting the argument by Watts (2003a, 2003b). The results indicate that Malaysia has successfully adopted IFRS from common-law countries models even though their institutional structures are still can be characterised as a variant of the code law model resulting in a decrease in balance sheet conservatism. The results, therefore, provide a motivation for the regulators in this country on the importance of regulation enforcement. It provides an empirical evidence that the role of regulators are very important to always review our accounting and corporate governance system in order to ensure that we can provide a safe and comfortable market to the investors.

NOTES

1.   Arthur Levitt is the former Securities Exchange Commissions (SEC) in the US.
2.   Cookie jar reserves are an accounting practice in which a company uses generous reserves from good years against losses that might be incurred in bad years.
3.   CLSA (Credit Lyonnais Securities Asia) is a brokerage and investment groups focused on institutional brokerage, investment banking and asset management for corporate and institutional clients around the world.
4.   In Article 153 in the Federal Constitution of Malaysia, Bumiputras is defined as "Malay" and "aborigine", "natives" of Sarawak and "natives" of Sabah.
5.   Vincent Tan Chee Yioun is also one of the richest men in Malaysia.

6. Fair value principle is defined as "the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction" (Riahi-Belkoui, 2004).

7. Consistent with extant literature on conservatism, a number of interaction terms are used in this study. These interaction terms could give rise to potential multicollinearity issues. In some cases, the variance inflation factors are found to be higher than the preferred threshold of 10.

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APPENDIX

Differences of financial reporting standards IAS and IFRS

Financial Reporting Standards	IAS	IFRS
IAS 2	Under IAS, inventories are required to be stated at a lower cost or market (LCM), with market defined as current replacement cost. Market should not exceed net realizable value (defined as the estimated selling price in the ordinary course of business less reasonably predictable costs of completion and disposal) or be less than NRV reduced by an allowance for a normal profit margin.	Under IFRS, inventories are stated at a lower cost or net realizable value (defined as the estimated selling price in the ordinary course of business less the estimated cost of completion and the estimated cost necessary to make the sale). Under IFRS, there is no concept of reducing NRV to allow for a normal profit margin. Unlike IAS, when the circumstances that previously caused inventories to be written down below cost no longer exist or when there is a clear evidence of an increase in net realizable value because of changed economic circumstances, the amount of the write-down is reversed so that the new carrying amount is the lower of the cost or the revised net realizable value (i.e. the reversal is limited to the amount of the original write-down). This occurs, for example, when an item of inventory that is carried at net realizable value because its selling price had declined, is still on hand in a subsequent period and its selling price has increased. Any impairment or reversal is recorded as a cost of sales in the period in which it occurs.
IAS 17	In the sale and leaseback transactions, Under IAS, a gain or loss on a sale-leaseback transaction is deferred and amortized over the lease term with limited exceptions **regardless** of the leaseback classification (seller retains less than substantial all of the use of the leased asset).	In the sale and leaseback transactions, under IFRS the timing of recognition of a gain or loss on a sale and leaseback transaction differs depending on the classification of the leaseback. A gain or loss on a finance lease is deferred and amortized over the lease term. A gain or loss on an operating lease is recorded immediately if the sale price is established at fair value. Otherwise, it should be deferred and amortized over the lease term.

IAS 36	For fixed asset, impairment is calculated by comparing undiscounted cash flows to the carrying amount of the asset group. Therefore if undiscounted cash flow is lower than the carrying amount, then there is impairment being charged.	For fixed asset, impairment is charged by comparing the carrying amount with recoverable amount. Under IFRS impairment is assessed on the basis of recoverable amount, which is calculated as either fair value less costs to sell or value in use (discounted cash flows). If impairment is indicated, assets are written down to the higher recoverable amount.
		Therefore, impairment charges will likely occur sooner than under IAS. For example, assume a store's undiscounted cash flow exceeds the asset-carrying amount but value in use (i.e., based on discounted cash flows) is less than the asset-carrying amount. No impairment charge would be recorded under IAS but impairment would be recorded under IFRS.
IAS 36	An item of property, plant and equipment that qualifies for recognition, as an asset shall be measured at its cost. The cost of an item of property, plant and equipment is the cash price equivalent at the recognition date.	Under IFRS, an entity may elect to value property, plant and equipment (PP&E) using either the cost or revaluation model. Under the revaluation model, an entire class of PP&E is revalued at fair value regularly. Revaluation increases are credited to equity. Revaluation losses are charged first against any revaluation surplus in equity related to the specific asset, and any excess charged to income.
		Estimates of useful life and residual value and the method of depreciation are reviewed at least annually.