UNIVERSITY OF LIVERPOOL

"Capital structure dynamics of firms listed on The London Stock Exchange's Main Market and Alternative Investment Market"

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Abstract

Companies have an optimal capital structure that they are always striving to achieve. An optimal capital structure allows a company to finance its operations at the least cost of capital. In order to achieve an optimal capital structure, a company must consciously shift from their current capital structure towards the optimal (target capital structure). There are different factors that might influence the speed of this adjustment, as shown in previous studies. However, there still exists a fundamental gap in literature. Literature lacks the of examination of how dynamic capital structure, in particular Speed of adjustment, have changed over Years, industries, and Indexes. More specifically, there is limited amount of literature on the capital structure of AIM and most studies on Private SMEs and Main markets.

The uniqueness of AIM firms is formed through their financial characteristics, as well as regulatory, governance, and ownership frameworks. In brief, AIM firms are publicly listed SMEs on the highly reputable LSE, which reveals the first difference in their capital access compared to other private SMEs. Despite such greater exposure to the investor pool, AIM firms maintain their young, risk-seeking, and fast-growing SMEs that clearly distinguish them from the characteristics of the LSE's main market firms (e.g. FTSE 350). Those characteristics cause the differences in financing decisions between AIM firms and main market firms. Other distinctive aspects of AIM firms include their international profile, lax admission requirement into the LSE, a second governance layer, i.e. the nominated advisors (NOMADs), and a block-holder ownership structure. All these have justified the need to examine the capital structure dynamics for AIM firms exclusively. In spite of crowded literature on this key finance topic, the gap remains, and the fact is that research in this field cannot be one-size-fit-all or generalised for all firms.

This research attempts to fill these literature gaps by investigating the determinants of leverage and Speed of adjustment of AIM companies relative to Main firms and noting whether the specific characteristics of AIM companies would result in different drivers of the decision. In addition to this, the section also fills this gap by assessing the determinants of leverage across market of quotation; in particular, by specifically investigating the capital structure across firms' sizes in the AIM and Main market.

Consequently, this thesis contains three main research studies. The first empirical study is to examine the determinants of leverage of AIM firms. A number of determinants have been

tested following the suggestions of previous studies' findings: firm size, tangibility, growth, liquidity, dividend and firm risks. The second empirical study is to examine the determinants of a SOA towards a target leverage level of AIM firms. There are four determinants being tested: firm size, leverage deviation, financial flexibility, and growth opportunities. The last is a comparison study of those determinants of leverage and SOA between AIM firms and Main market firms largest 100 companies (FTSE 100), largest 250 companies (FTSE 250), and largest 350 companies (FTSE 350). The thesis employs a dataset comprising AIM-listed firms covering 2006–2019 for research Studies 1 and 2. An additional set of data for firms listed on FTSE100, FTSE250, and FTSE350 over the same period is employed in the research Study 3.

The empirical results of the first study showed that firm size and tangibility had a significant positive influence on the debt adoption in firms operating in the AIM. However, growth opportunity, liquidity, dividend pay-out, operating risk, and bankruptcy risk reveal significant negative influences. For the second study, the result showed that firm size and leverage deviation negatively affect the SOA. In the AIM-FTSE comparison study, the findings revealed that compared to the AIM firms, the positive effects of firm size, tangibility, intangibility, and ownership concentration and the negative effects of operating risk, bankruptcy risk, and cash flow ratio on leverage, are stronger for main market firms. Furthermore, the negative effect of growth on leverage becomes positive for main market firms, and the positive effect of profitability on leverage becomes negative for main market firms. Besides, the negative influence of dividend pay-out on leverage lost its effect for main market firms. Overall, despite the members of the LSE, the distinguishing characteristics between AIM and largest 100 companies (FTSE 100), largest 250 companies (FTSE 250), and largest 350 companies (FTSE 350) firms have led to different decisions on leverage level and leverage speed of adjustment (SOA).

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List of abbreviations

Abbreviations	Stand for
AIM	Alternative Investment Market
LSE	London Stock Exchange
SOA	Speed of Adjustment
SMEs	Small-Medium Firms
OLS	Ordinary Least Square
FE	Fixed-Effect Model
GMM	Generalized Moments of Method
Std Error	Standard Error
FTSE 100	largest 100 companies
FTSE 250	largest 250 companies
FTSE 350	largest 350 companies
Industry Dummy	Dummy Variables by industry
VIF	Variance Inflation Factor
Nomads	Nominated Advisors
M&M	Modigliani and Miller
BLEV	book leverage ratio
MLEV	market leverage ratio
CV	coefficient of variation
LSDV	Least square dummy variable approach
GFC	Global financial crisis

CHAPTER 1: INTRODUCTION

1.1. Aim and Scope of the Study

Firms have to decide whether to finance their operations using debts or equity. There are different determinants which influence whether a firm is going to use debts or financing, one being the cost of equity, or the cost of debt. If the cost of debt is high to an unmanageable level, a firm will opt for equity to finance its operations. If the cost of equity is higher than the cost of debt, then the firm will opt for debt to finance its operations. However, in most cases, the cost of debt is cheaper compared to the cost of equity because debtholders carry lower risk than shareholders, hence, require lower rate of return. This makes debts cheaper for financing operations compared to equity. Debt is cheaper compared to equity in most cases due to several reasons.

The main reason, however, is because debts come without tax. This refers to as the tax shield property of debt. When a firm chooses to finance its operations using debt, the interests accruable are counted as expenses and are thus subtracted from the revenue before interest and tax. When the interest is subtracted, the company pays less income tax, compared to if the company was dealing with equity financing. Equity financing on the other hand, requires that the company pays dividends to its shareholders. Dividends are subtracted after interests and taxes (from the net income), and thus cost the company's profits. The taxes come before the company has paid the dividends on equity, and therefore the income tax is higher compared to if the company had used debt financing, and the subtractions would have been computed as part of business expenses. It is for this reason that companies which are mindful about the cost of debt versus the cost of equity are more likely to go with debt financing. Although debt finance is cheaper in comparison to equity, it carries higher risks for firms since the service of debt, i.e. interest and repayment, is an obligation (Bradley et al., 1984). Therefore, there is a limit and great caution as to how much debt a company can take because higher leverage is equivalent to a higher risk of bankruptcy (Kraus & Litzenberger, 1973). In other words, there are trade-offs between the adoption of equity and debt funds. This brings the discussion down to one of the most prominent debates raised by Myers (1984) regarding the capital structure decision of firms. Despite the acknowledged importance of capital structure in corporate finance and an extensive research body on the subject, this debate is far from conclusive. Many theories have provided contrasting suggestions on capital structure dynamics including the

optimal leverage level a firm should adopt and the speed of adjustment (SOA) towards a target leverage in the case of a leverage divergence. Among many theories, theoretical propositions on capital structure are traced back from irrelevance theory (Modigliani & Miller, 1958). Under the perfect capital market assumptions, including the absence of corporation tax and bankruptcy risk, they propose that a firm's value is independent of its capital structure, and hence, any random choice of capital structure would not matter. Accordingly, firms do not exhibit a target capital structure deemed to be optimal for maximising the firm's value. Nevertheless, because of the impracticality concerns, the assumptions of tax and bankruptcy absence are relaxed. This leads to the emergence of trade-off theory, which supports the existence of an optimal leverage level whereby the benefits of debt's tax shield equal the bankruptcy costs (i.e. the trade-off between debt's benefits and costs). As a result, corporations should have a target leverage level and hence, devote efforts to pursuing such a target, i.e. the firms exhibit an SOA towards a target leverage.

In contrast to trade-off theory, agency theory, pecking order theory, and market timing theory do not support either an optimal leverage or target leverage SOA. In particular, agency theory (Jensen & Meckling, 1976) argued over the existence of the conflict of interest for managers, creditors, and shareholders. Briefly, the theory advises that firms choose a level of leverage that best suits the agency-related circumstances of the firms at that moment. For example, higher debt is encouraged when firms have a higher risk of agency conflicts, such as higher levels of free cash flow. Meanwhile, pecking order theory suggests an order of finance rather than an optimal level of capital structure. In particular, Donaldson (1961) indicated that companies tend to prefer to finance their capital with internal sources, such as retained earnings, in comparison to external sources. Nevertheless, in the demand for external sources (depletion of internal sources), debt is preferred to equity because the market is highly sensitive to financing-related information. Pecking order theory has achieved noticeable significance in the field of corporate finance in reference to the application of the firm's capital structure. Yet the market timing theory proposes that the biggest task for a company involves the selection of appropriate timing to increase their capital made by having external financing, In particular, equity finance (Baker & Wurgler, 2002). Baker and Wurgler argued that it is a common practice within corporate finance to time the equity issuing when share prices are expected to be the highest, whilst repurchasing them at the time of lowest prices. Overall, despite various theoretical views, the dynamic trade-off model has been at a prime position in the literature. It has widely been applied in many empirical studies in which determinants of corporate capital

structure dynamics, including leverage level and leverage SOA, are explored (e.g., Deesomsak et al., 2004; Drobetz al., 2015; Mac et al., 2010; Mateeva et al., 2013; Michaelas et al., 1999; Ozkan, 2001; Rajan & Zingales, 1996; Sogorb, 2005). Those studies obtained findings that support the existence of an optimal leverage and hence, each firm exhibits a convergence rate towards the target (optimal) level. Following this research stream, the current thesis is built on trade-off theory to investigate determinants of corporate capital structure (leverage level) and leverage SOA of firms listed on the Alternative Investment Market (AIM). The AIM is a submarket of the LSE of which firm members carry unique characteristics compared to firms listed on the LSE's main market. Despite its importance and uniqueness, academic attention to this topic on the market remains lacking. To further add to the literature, the thesis also presents a comparison study of the differences in determinants of leverage choice and Speed of Adjustment (SOA) between the AIM and the Main market.

The primary scope of this study is the focus on the AIM. The AIM market is one of the most successful stock markets and offers rich opportunities for growth firms with few resources (Gerakos et al., 2013). The AIM was formed in 1995 to help SMEs enhance their access to external funds (Mallin & Ow-Yong, 2012). Under the AIM, regulation activities are carried out through the establishment of a monitoring and regulatory that enhances the validity of the admissions. There is no minimum size or age limit for joining the AIM. In addition to these, other requirements that show its relaxed regulation frameworks are not requiring the approval of shareholders for entry into the market and no limitations on the free float (Nielsson, 2013). Therefore, the key advantage of the AIM is that it offers a less restrictive regulatory standardisation. Due to the more relaxed admission and regulatory framework compared to the main market, AIM firms are subjected to a requirement of an extra governance layer, so-called nominated advisors (Nomads). Nomads are nominated and tasked with regulating and monitoring AIM firms' operations and activities to protect investors by ensuring that the firms follow the rules of the market (Espenlaub et al., 2012). The market had considerable growth, and it has a large proportion of listed foreign firms and a high level of market capitalization compared to similar markets (Nielsson, 2013). Most investors on the AIM are institutional investors looking for high-reward investments and generally have a much larger risk appetite. The AIM is a more flexible and less restrictive market than the main markets like the UK main market. The free float rate of the AIM is lower (25%) than that of the main markets. Overall, given the uniqueness of firms listed in the AIM in comparison to other private SMEs and firms on the main market of the LSE regarding their capital access and financial characteristics,

interest is triggered in exploring the capital structure dynamics of AIM firms and a comparison study between the AIM and main market firms. Consequently, this leads to three empirical studies' being investigated in the current thesis:

Study 1: An investigation of determinants of the capital structure of AIM firms.

Study 2: An investigation of determinants of the SOA towards optimal leverage of AIM firms.

Study 3: A comparison study on the determinants of capital structure and SOA between AIM firms and main market firms.

1.2. Research motivation

Capital structure is an important consideration for any company (Harris and Raviv, 1991). Companies must find the best balance between the use of debts, and the use of equity to finance their activities. Firms strive to achieve an optimal balance between debts and equity which will help them to maximize shareholder wealth (Rajan and Zingales 1995; Titman and Wessels 1988). The balance between the use of debts, and the use of equity to finance the firms' activities is influenced by various factors which have come to be known as determinants of capital structure (Ozkan, 2001). The extensive nature of capital structure, and the numerous determinants of capital structure has led to a never-ending debate in literature (Ozkan, 2001; Serrasqueiro and Caetano, 2015). This ongoing debate has contributed a lot to the question initially asked by Myers (1984), regarding the specific factors that determine how a company chooses their capital structure. Nonetheless, literature already agrees that firm characteristics are the main determinants of capital structure in an organization. Harris and Raviv (1991), for example, showed that the characteristics of a firm have a lot of influence on the debt and equity ratios that a company decides to maintain. However, different theories, with different conclusions (trade-off theory and pecking order theory) have different predictions on how specific firm characteristics influence the decision of the company regarding the debt-equity ratio to maintain. In addition to this, the existing studies have different conclusions on how specific firm characteristics affect the decision of firms regarding their equity-debt ratio (Khémiri and Noubbigh, 2018). Given these differing conclusions, and theories, it means that it is not possible to generalize the results of a single study to all markets. As such, it becomes necessary to conduct research to investigate the determinants of capital structure in specific markets.

It is based on this background that this study sought to undertake an investigation into the determinants of capital structure in the AIM firms. This study focuses on the firms listed in the AIM due to the different characteristics it has with other firms that are listed in the main markets, and other small and medium sized companies that are not publicly traded. The specific unique characteristics of the firms operating in the AIM include the risk profile of the investors in the AIM, the risk profile of the firms in the AIM, the regulations of the AIM, the growth stage of the companies operating in the AIM, and the governance structure of firms operating in the AIM. Firms operating in the AIM, for example, have two governance layers since the regulations of the AIM requires that firms operating in this market have an extra layer of governance known as nominated advisors to oversee the operations for the firm. This is not a requirement in other market. Further unique characteristics are discussed in the last chapter of this study. Nonetheless, the existing literature regarding determinants of capital structure has focused on other countries, markets, and industries, and none is yet to focus on companies operating in the AIM. Given that the review of existing literature has already shown that the determinants of capital structure are different from one country to another, from one market to another, and from one industry to another (Khémiri and Noubbigh, 2018) it thus becomes necessary to investigate the determinants of capital structure specifically for companies operating in the AIM.

1.3. Research questions and contributions

1.3.1 Empirical study 1: Determinants of capital structure of AIM firms

An extensive research body has investigated factors that influence the leverage level of firms (i.e. capital structure). These studies examined the research question using samples of a single market, of multiple markets internationally, across firm sizes such as small and medium enterprises[1], firm life cycles[2], and sectors[3]. Nevertheless, the literature has yet to cover a unique market with many distinct characteristics in comparison to those that were studied, that is, the AIM. Academic researchers have been well-aware that the area of capital structure (or financing decision) cannot be generalised for all markets, not even for markets of the same

[1] Michaelas, Chittenden, and Poutziouris (1999), Hall, Hutchinson, and Michaelas (2000), Cassar and Holmes (2003), Sogorb (2005), Psillaki and Daskalakis (2009), Abor and Biekpe (2009), Bhaird and Lucey (2010), Mateeva et al. (2013), La Rocca et al. (2010), La Rocca et al. (2011), Benkraiem et al. (2013), Palacín-Sánchez, Ramírez-Herrera, and Di Pietro (2013), Huang, Boateng, and Newman (2016), D'Amato (2019).

[2] La Rocca, La Rocca, and Cariola (2011), Robb and Robinson (2014)

[3] Morri and Cristanziani (2009), Harrison, Panasian, and Seiler (2011), Upneja and Dalbor (2001), Karadeniz et al. (2009), Pacheco and Tavares (2017), and Li and Singal (2019), Lim (2012), Drobetz et al. (2013).

country. Different corporations are characterised by different financial and ownership traits, which can lead to different financing decisions. This explains all the valuable effort that has been put into the investigation of different markets.

The uniqueness of AIM firms is due to the financial characteristics, regulatory, governance, and ownership framework of the AIM. In particular, AIM firms are SMEs, which are young and fast-growing (Mallin & Ow-Young, 2009). Unlike private small-medium firms (SMEs), AIM SMEs have great access to external capital financing because of their listing status in the LSE. Furthermore, AIM firms also exhibit an additional layer of governance, the NOMADS, which monitor and supervise the operation and regulatory compliance of firms. This governance layer does not exist for private SMEs or the LSE's main market, such as largest 100 companies (FTSE 100) or largest 350 companies (FTSE 350). According to Jensen and Meckling (1976), different corporate governance influences the level of agency conflicts, hence, leading to different financing decisions which are deemed to tackle the agency issues as stated by agency theory. As a result, AIM firms are a research agenda worthy of investigation to complement the capital structure literature. In Chapter 2, more information will be provided regarding the speciality of the AIM that can justify its worthiness for investigation, and hence, support the contribution of the current study, in particular, and of the whole thesis, in general.

The main research question of the first empirical study of this thesis is:

Research Question 1: *What are the determinants of the capital structure of AIM firms?*

1.3.2 Empirical Study 2: Factors Associated with Firm Variations in SOA

In addition to investigating the determinants of capital structure in the AIM, another objective of this study is to investigate the determinants of the speed of adjustment (SOA) towards the target leverage of AIM firms. The study focuses on firm size, leverage deviation, financial flexibility, and growth opportunities (Aybar-Arias et al., 2012) on the determinants of the SOA of small-medium enterprises. The trade-off theoretical perspective and empirical studies suggest that firms tend to exhibit optimal debt levels and strive to achieve such optimal capital structure (target leverage, e.g. Flannery & Rangan, 2006; Hovakimian et al., 2001). However, compared to the area of determinants of leverage level, determinants of the SOA receive much less attention. In this regard, extending the first empirical study of this thesis, the second study on the determinants of SOA of AIM firms provided a more complete picture of the capital structure dynamics of this unique market as explained in Section 1.2.1 and Chapter 2.

The main research question of the second empirical study of this thesis is:

Research Question 2: *What are the determinants of the SOA towards a target leverage of AIM firms?*

1.3.3 Empirical study 3: A Comparison Study in Determinants of Capital Structure Between Firms Listed in Alternative Investment Market (AIM) and Main Market

The third objective of this study is to determine the cross-sectional differences in the determinants of capital structure between the Alternative Investment Market (AIM) and Main market firms, especially firms listed on FTSE 100, FTSE 250), and FTSE 350. The study provides a clearer picture on the differences in financing decisions of firms listed on the submarket and main market of the LSE. Despite the trading status on the same stock exchange and different market listings with different admission criteria and regulatory frameworks, the characteristics (both financial and nonfinancial) of firms in the two markets are filtered and heterogeneous. Many of those differences, including differences in investor characteristics, firm size, lifecycle, debt capacity, and governance,[4] are the causes of differences in the determinants of capital structure and SOA. Consequently, the third empirical study aims to present answers to the following questions:

Research Question 3: *Are there differences in the determinants of capital structure across firms listed on AIM and on the main market of the LSE?*

Research Question 4: *Are there differences in the determinants of leverage SOA across firms listed on AIM and on the main market of the LSE?*

1.3.4 Contributions

Overall, the study carries a number of novel aspects and adds into the literature the following ways:

1) The first empirical study, to my best knowledge, is the first work that investigates the determinants of capital structure of firms listed on the sub-market of the London Stock Exchange, i.e. the AIM. The novelty that an exclusive study on this sub-market brings will be thoroughly discussed in Section 2.2.
2) Extant empirical studies on the determinants of speed of adjustment remains limited and far less than that of capital structure. As a result, more attention from academic researchers is valuable in this area. Therefore, the second empirical study of this thesis adds to the relatively scarce literature a fresh examination of determinants of speed of adjustment of firms listed on the AIM.

[4] See Chapter 2 for more information

3) Thus far, the focus has been on the AIM market and many arguments are put on the unique characteristics of the AIM (Section 2.2). These are claimed to potentially cause distinct findings on the determinants of financing decisions of those firms. Consequently, the last empirical study of this thesis attempts to clarify such claims by conducting a comparison study on the determinants of leverage adoption and leverage speed of convergence between the LSE's main-market firms and the AIM firms. Once again, this comparison study is the key contribution of this third piece of research.

1.4. Data sample and estimation models

The implementation of the thesis involves employment of the financial data of AIM-listed firms and firms listed on FTSE 100, FTSE 250, and FTSE 350 covering 2006–2019. This period has been selected since the study can also take into account the impacts of the 2007–2009 global financial crisis (GFC). The final sample size for AIM comprises 7,751 firm-year observations; for FTSE100 it is 1,263 firm-year observations; for FTSE250 it is 2,793 firm-year observation; and for FTSE350 it is 4,056 firm-year observations.

The main (baseline) estimation methodology employed in the study is the OLS robust standard error. It is a standard error that is used to ensure that the results have unbiased standard errors of OLS coefficients due to heteroscedasticity. This method is used in the study to identify the determinants of firms' capital structure and leverage SOA. In addition to the baseline method, robustness checks are conducted to take into account potential issues of endogeneity, including the fixed effects model with the support of the Hausman test, lagged approach, and the generalized method of moment (GMM). More discussion regarding these methods will be provided in Chapter 5.

1.5. Main Findings of this thesis

The study sought to determine the determinants of capital structure and SOA in the AIM and compare the AIM and Main market. To achieve this, the first empirical study evaluates various firm characteristics and their relationship with the capital structure of AIM firms. These firm characteristics were firm size, tangibility, operating risks, bankruptcy risk, dividend pay-out policy, liquidity, and growth with the control of variables. The second study also sought to determine how firm characteristics, in particular, firm size, leverage deviation, financial flexibility, and growth opportunity affect the SOA towards a target capital structure/leverage.

The following is a description of the key findings of the study regarding this study objective. The OLS lagged approach, the fixed effect and GMM models are employed to tackle different sources of endogeneity. The results of the different models are compared, and the research finds that the results in all the models are similar, and significant. As such, the results are assumed to be reliable and valid, and form the conclusion of this study in regard to the study's objectives.

The first empirical study found that firm size had a significant positive influence on the debt adoption of AIM firms. This is explained through trade-off theory, which asserts that the larger the firm size, the more ability it has to take debts because it can leverage them with its assets. Other studies have had similar results thus further supporting the results of this study (e.g., Antoniou et al., 2008; D'Amato, 2019; Dang & Garrett, 2015; Drobetz et al., 2013; Frank & Goyal, 2009; Gonzalez, 2015). The results of the study also showed positive significant influences of tangibility in the AIM firms. Tangibility influences a firm's ability to take debt against its assets, and hence the higher the tangibility the more debt a company is able to acquire, as explained through the trade-off theory. The results of this study are similar to those of other studies in regard to the influence of tangibility on capital structure (e.g., Andres et al., 2014; Benkraiem et al., 2013; Dang & Garrett, 2015; Degryse et al., 2012; Frank & Goyal, 2008; Frank & Goyal, 2009; Harris & Raviv, 1991; Heyman et al., 2008; Huang & Song, 2006).

Meanwhile, other factors reveal significant negative influences on the firms' leverage level. These are growth opportunity, liquidity, dividend pay-out, operating risk, and bankruptcy risk. These findings are consistent with findings of previous literature. Studies have found a negative relationship between leverage and dividend pay-out (e.g. Antoniou et al, 2008; Bokpin, 2009; Chen & Steiner, 1999; Dang & Garrett, 2015; Frank & Goyal, 2007; Lemmon et al., 2008; Rozeff, 1982), other studies have found a negative relationship between liquidity and leverage (e.g. D'Amato, 2019; Khemiri & Noubbigh, 2018 Morellec, 2001; Myers & Rajan, 1998; Ozkan, 2001), others have found a negative relationship between growth and leverage (e.g. Arsov & Naumoski, 2016; Billett et al., 2007; Frank & Goyal 2009; Fosu 2013; Gaud et al., 2005; Huang 2006; Kayo & Kimura 2011; Rajan and Zingales, 1995; Shah & Khan 2007), and lastly other results have also found a negative relationship between risk and leverage (e.g. Bradley et al., 1984; Cassar & Holmes, 2003; D'Amato, 2019; Kester, 1986; Michaelas et al., 1999; Titman & Wessels, 1988). These findings are supported both theoretically and empirically, which can be explained by the AIM firms' unique characteristics and traits.

The study also sought to determine the factors that influence the speed of adjustment towards the target capital structure for firms operating in the AIM. The factors influencing the speed of adjustment in the AIM (as found in this study), are similar to those that have been found in other studies. The results, show a significant negative influence of firm size over the SOA. This is in line with the results of other studies such as Aybar-Arias et al. (2012), Dang et al. (2012) and Banerjee et al. (2004). The results also showed a Negative relationship between leverage deviation and the SOA.

In the third empirical study, which tested for the moderating effects of the main market listing status, the results indicate that the effects of firm size, tangibility, growth, dividend pay-out, operating and bankruptcy risks, cash flow ratio, and ownership concentration on leverage adoption were found to be significantly moderated by the main market listing status of firms. In particular, the findings of the baseline OLS indicated that compared to the AIM firms, the positive effects of firm size, tangibility, intangibility, and ownership concentration and the negative effects of operating risk, bankruptcy risk, and cash flow ratio on leverage are stronger for main market firms. Furthermore, the negative effect of growth on leverage becomes positive for main market firms, and the positive effect of profitability on leverage becomes negative for main market firms. Besides, the negative influence of the dividend pay-out on leverage lost its effect for main market firms. In other words, dividend pay-out ratio is not a determinant of main market firms' capital structure. Regarding the SOA, out of the four investigated determinants of SOA, the effects of firm size, leverage deviation, and growth opportunity on SOA are found to be different across AIM firms and main market firms. In particular, the negative size SOA association is stronger for main market firms. Meanwhile, the effects of leverage deviation (negative) and growth (positive) on SOA are weaker.

1.6. The content and structure of thesis

The thesis comprises nine chapters. The **first chapter** is the introductory chapter. It provides the aim and scope of the study, the main estimation methodology, and the main finding of the thesis. The **second chapter** provides details information and background on the AIM, with the goal of addressing and justifying the contributions of the current thesis by focusing on the AIM. The **third chapter** discusses the various theories that have informed this study. The theories presented in the chapter are the irrelevance Modigliani and Miller model, trade-off theory, agency theory, signalling theory, pecking order theory, and market timing theory. This chapter establishes the theoretical framework and foundation which form the basis of the study. The

fourth chapter thoroughly discusses the extant literature the formed the basis for the main hypotheses. The chapter reviews previous studies in line with the research variables and compares their findings. Depending on the results of the previous studies regarding the study variables, expected findings are derived to form the basis of the research hypotheses. The **fifth chapter** of the study discusses the research methodology. It outlines the data collection method, the type of data collected, and the statistical techniques used to analyse the collected data and answer the set research questions of the three empirical studies. The **sixth chapter** is the first chapter to offer a discussion of the empirical results of the first study in line with the study objectives. The chapter discusses the various determinants of capital structure in AIMs. The **seventh chapter** is the second chapter to offer empirical results of the second study. The chapter focuses on the determinants of leverage SOA in AIMs. The **eighth chapter** is the third chapter to offer the empirical results of the study and compares Alternative Investment Market (AIM) with those of the main markets regarding determinants of capital structure and leverage SOA. Lastly, the **ninth chapter** is the conclusion. It gives a summary of the key contributions and discusses the key limitations and areas that need further research.

CHAPTER 2: AIM BACKGROUND

2.1. Introduction

Major financial markets in different countries often operate under strict governmental monitoring that employs inflexible regulatory systems. This has resulted in a globally growing need for establishing new financial markets with alternative regulatory paradigms that may facilitate raising capital for business firms with specific characteristics. One of the most prominent examples of alternative financial markets today is the Alternative Investment Market (AIM) in the United Kingdom (Gerakos et al., 2013).

The AIM was established by the LSE as an alternative exchange market tailored to the needs of smaller firms. The main goal of establishing this market was to create a market in which smaller firms can raise capital without the costly requirements often found in traditional stock exchange markets. To adhere to this vision, the AIM does not work in accordance with EU directives concerning investment, but instead is subject to oversight and supervision of the London Stock Exchange (LSE) authority.

What sets the AIM apart and gives it its uniqueness is that it strikes a balance between the characteristics of the large financial markets and the flexibility of the smaller ones. Specifically, the AIM adopts a flexible low-cost system, unlike markets such as the NYSE, while implementing certain protection measures, unlike, for example, the Pink Sheets (OTC) market (United States), which lacks such measures. In other words, the system governing the AIM is designed such that it incorporates a level of monitoring and oversight similar to that found in traditional markets while providing the advantages of low costs and work flexibility (Gerakos et al., 2013).

Based on the above, the researcher believes it is of importance and benefit to present a detailed discussion of the AIM. The main purpose of this chapter is to present an overview of the AIM. Especially, the first section (Section 2.2) will summarise all the distinct aspects of the AIM in comparison to other private SMEs and the LSE's main market. This section primarily justifies and supports the contributions of this thesis in examining the corporate capital dynamics of firms listed on the AIM.

2.2. Why AIM?

In this section, the academic contributions of the current focus on the AIM will be discussed. The study aims at examining two financing-related decisions of firms, including (1) capital structure, i.e. leverage level, and (2) leverage SOA. A comparison between the UK's main market and the AIM is also implemented. The primary rationale of investigating those financing aspects on the AIM in a stand-alone and independent study is the uniqueness of the market in comparison to studies that examined the topic in the listed main markets across different countries, on private and public small and medium-sized firms (SMEs), on different industries and specific ownership firms (see Chapter 4). In particular, the AIM exhibits a combination of many distinctive characteristics that previous studies in the field have not been able to cover, especially on the leverage SOA. These unique characteristics include the international market, small and medium-sized firms, the risk profile of AIM firms and their investors, i.e. the risk of the firm and the risk propensity of investors, corporate governance, and ownership structure. More information regarding the AIM will be provided and discussed thoroughly later on in this chapter (Section 2.3 onward). In brief, the value-added contributions of the AIM on the topic, i.e. capital structure (leverage), and SOA are four-fold.

First, AIM firms are characterised by both their small and medium size and by their young and fast-growing stage (Mallin & Ow-Young, 1998). These firms are offered public access to a great pool of investors on the LSE for capital raising due to the market's light regulatory environment with its lower admission barrier. As a result, a study on the capital structure of AIM firms is different from the extant studies on SMEs[5] because they have different access to both debt and the equity capital market. Although AIM firms are also SMEs which have been reported to have lower access to external financing (both debt and equity) compared to bigger firms due to their lower transparency and lower creditor protection in bankruptcy and higher internal sources from personal savings and network funds (Bhaird & Lucey, 2010; La Porta et al., 1998; Serrasquerio et al., 2016), the access level is likely to be different for AIM SMEs. Specifically, compared to private and less acknowledgeable public stock exchange-listed SMEs, SMEs with an official standing on the LSE through the AIM tend to be more acknowledged by the market participants, i.e. greater visibility, hence, exhibiting better access

[5] Michaelas, Chittenden, and Poutziouris (1999), Hall, Hutchinson, and Michaelas (2000), Cassar and Holmes (2003), Sogorb (2005), Psillaki and Daskalakis (2009), Abor and Biekpe (2009), Bhaird and Lucey (2010), Mateeva et al. (2013), La Rocca et al. (2010), La Rocca et al. (2011), Benkraiem et al. (2013), Palacín-Sánchez, Ramírez-Herrera, and Di Pietro (2013), Huang, Boateng, and Newman (2016), D'Amato (2019)

to the equity market. Furthermore, the AIM SMEs are subjected to the LSE's governing regulations regarding information transparency as well as a firm's performance and governance (Mallin & Ow-Young, 1998). Consequently, they can be considered as less risky and less informationally opaque than the general SMEs portfolio. This can lead to increased access of the AIM SMEs to the debt and equity capital market.

Nevertheless, such a risk profile of AIM firms cannot be comparable to firms listed on the main market for two reasons. First, regulations faced by AIM firms remain more lenient than the main market (both in the UK and internationally). Second, unlike mature firms, the AIM firms are in their growing stage of the business cycle with many profitable investment opportunities, hence taking relatively higher risk is critical and essential for their development. The different corporate risk profiles may also be reflected by the financing choices, i.e. the level of capital needed and the use of internal funds or external funds (debt or equity). The AIM firms are likely to have a lower level of an internal fund compared to the firms of the main market, while more potential projects are available. Therefore, decisions on external fund arrangements are important for AIM firms. Notably, with a higher risk profile and block holder ownership,[6] debt finance may be preferable for AIM firms. Chen et al. (2014) reported a positive relationship between block holders and leverage level. This is sensible because, with block holder ownership, shareholders tend to be averse to ownership dilution. Accordingly, it is apparently important to empirically test for this prediction through a comparison study between the AIM and the main market.

The second contribution of the AIM relates to its potential investor pool, which has distinguishing characteristics from the main market. Associated with a property of the AIM that firms listed in the AIM are younger, smaller, fast-growing, and risky, shareholders/investors who target this market for their investment portfolio are likely to be more risk-seeking and aim for different investment objectives. In particular, shareholders of AIM firms tend to look at the growth prospective of the firms rather than a stable dividend income. That is the key reason the AIM does not attract as much market scrutiny on their dividend pay-out policy as does the main market due to their strong growth opportunities and hence their levels of free cash flow (Doukas & Hoque, 2016). Therefore, such an investment

[6] The block holder is an ownership type where shareholders own a large proportion of a company shares, and thus exhibit more voting power. Unlike the main market, which has an ownership limit of 30%, there are no ownership limitation for AIM firms (Mortazian et al., 2019).

objective requires investors to exhibit a relatively high level of risk tolerance to achieve higher returns as indicated by the risk-return trade-off theory (Kim et al., 1993).
With such risk taking of the AIM's investors, the level of debt can be higher to take advantage of the value-enhancing property of debt finance, i.e. tax shield, as they are, in general, more tolerant to the higher downside bankruptcy risk. However, more risk-averse investors include firms listed in the main market, such as FTSE100, for the purposes of hedging rather than speculating (Mian, 1996). Consequently, an aggressive financing structure with a high leverage level is often not favourable to the shareholders.

Third, an imperative and exclusive property that can only be found in the AIM is its additional governance layer. Previous studies working on a vast number of firms with various characteristics and settings did not exhibit this unique governance layer. This property plays a key role in explaining the potential difference in the capital structure and optimal leverage ratio (hence, leverage deviation and leverage SOA). To begin with, the AIM offers lighter admission regulations for the market members causing investor concerns in terms of trust, credibility, and investor protection. Accordingly, an additional monitoring layer of governance was put into place to ease such concern to a certain extent. Therefore, AIM firms exhibit two facets of corporate governance: (a) the conventional internal governance and (b) the nominated advisors (Nomad). The latter is indeed the core concept of the AIM. The roles of the Nomad are discussed in detail in Section 2.6. AIM companies are required to nominate an advisor in a monitoring role as an external governance function (Malling & Ow-Young, 1988). In brief, this additional governance layer provides extra monitoring to ensure the decisions made by firms' executives, so that the agency conflicts (firms, shareholders, and debtholders) can be minimised, including conflicts arising from capital financing decisions.[7] With such tougher control through a different governance code, the capital structure, especially the leverage deviation and leverage SOA, as well as their determinants may be varied compared to those of the main market. More specifically, under more scrutiny, AIM firms may adopt a capital structure that is closer to the optimal level, i.e. smaller leverage deviation.

[7] According to agency theory, the managers of an organization would choose the financing decision that easily meets the needs of the shareholders while at the same time it can also provide assurance to their current debtholders (i.e. the debt covenances). The firm can decide to engage in more debt under the tax shield effects of debts. However, at the same time, the firm would try to ensure that the debt taken does not make the organization at risk of bankruptcy. Hence, the Nomad can influence capital structure decisions so that agency conflicts are minimized. More explanation on agency theory is provided in Section 3.1.4.

2.3 Background on the AIM market

Traditional stock exchanges have been the leading force in financial markets around the world, including the United Kingdom. Such exchanges are characterized by the adoption of strong regulatory frameworks that govern the activities of listed firms as well as investors. However, entering such exchanges may be considered costly for a large group of business firms, especially growth and small firms. This indicates the need for the existence of alternative markets with more flexible requirements that take the needs of these firms into consideration. The awareness of this need has resulted in the establishment of several alternative exchanges around the world. One of the most eminent examples of such exchanges is the AIM in the United Kingdom.

The AIM was established in mid-1995 by the LSE for the purpose of serving medium- and small-sized firms (Mallin & Ow-Yong, 2012). It was established as the successor to the Unlisted Securities Market (Carpentier et al., 2010). Its original purpose was to create a stock exchange market that is more suitable for the needs of smaller firms, which often encounter difficulties in meeting the stringent requirements of listing in the United Kingdom's main stock exchange market, the LSE. Despite the fact that the AIM imposes more relaxed regulatory rules, it has a notable regulatory requirement, which is the appointment of what is known as "nominated advisors" (Nomads). Not only do Nomads perform the responsibilities of financial advisors, but they are also responsible for a variety of other regulatory activities, such as the certification of applicant firms as well as monitoring the activities of firms for the purpose of ensuring that they meet the rules and requirements of financial behaviour in the market (Espenlaub et al., 2012).

Many firms in the United Kingdom are seeking to obtain capital through attracting investments. However, the initial invested capital, in several cases, may be inadequate. For this reason, many firms aim at entering financial markets in order to have improved opportunities for accumulating sufficient financial resources. However, a firm may find itself lacking the necessary requirements for entering the traditional destination for investment in the United Kingdom, which is the main financial market. Newer (younger) firms would often seek alternative sources for attracting investors that do not have the same strict regulations and rules imposed by the traditional market (e.g. requirements concerning corporate governance, financial disclosure). The AIM is the market filling this gap in the United Kingdom.

To maintain the flexibility of the AIM's structure and suitability for the needs of smaller firms, the market's regulatory framework was designed to be independent of the investment directive established by the European Union, and instead, the market is operating under the regulation and oversight of the LSE authority. The regulatory framework adopted by the AIM is a customized one, and its administration is the responsibility of the private sector.

Since its inception, the AIM has witnessed constant growth and development as well as continuous success. One of the main reasons why the AIM has managed to attract significant international attention from investors is the relative flexibility of its regulatory framework. This regulatory framework was originally designed in order to meet the investment needs of small and growing firms. The rules governing the operation of the AIM are less stringent than those implemented in other investment markets that are more tailored to the needs of larger companies (Khurshed et al., 2016).

From the time of the establishment of the AIM until the year 2000, the LSE authority was the agency responsible for regulating and supervising the AIM with regards to admission of firms applying for listing. Starting from 2000, however, this regulatory role has become a responsibility of the UK Listing Authority, which is affiliated with the UK Financial Services Authority (Doukas & Hoque, 2016).

It has been noted that firms listed in the AIM differ drastically from those listed in the main market with regards to the formation of capital structure. Doukas and Hoque (2016) demonstrated a comparison in that regard and showed that firms listed in the main market have relatively larger ratios of debt in their capital structure than firms listed in the AIM. Accordingly, the authors concluded that firms listed in the main market are characterized by being more capable than those listed in the AIM to issue debt. Another aspect of the difference between firms listed in the two markets concerns the structure of equity ownership. Equity in firms listed in the AIM is more closely held (e.g. more concentrated ownership) than firms listed in the main market. With regards to the ownership of fixed assets (tangibility), it is considerably higher in firms listed in the main market. Despite the difference in capital structure between AIM and main market firms, determinants of capital structure of AIM firms, and the comparison between the two markets in such determinants remain overlooked.

2.4 Requirements of listing on the AIM

The AIM adopts relaxed controls and rules for regulation. The AIM is not subject to direct regulation by the Financial Conduct Authority in the United Kingdom (Farinha et al., 2018). Moreover, the regulatory system adopted and implemented by the AIM gives it the freedom of operating without the necessity to adhere to the European directives concerning the requirements for listing. The financial regulatory system of the AIM is not obliged to follow the markets in the Financial Instruments Directive. As such, the AIM enjoys the freedom and flexibility to operate without accordance with the restrictions imposed by the EU-based financial regulations. The listing requirements of the AIM are generally considered lower compared to those of other similar markets, such as the NASDAQ.

The listing requirements in the AIM are less constrained compared to the main market. It is not required that a firm be of minimum size or meet a minimum age limit. It is also not required for a firm to belong to a certain economic sector. The AIM does not impose any requirements concerning free float. Unlike in traditional exchange markets, it is not required for a firm entering the AIM to acquire the approval of shareholders in the vast majority of transactions (Nielsson, 2013).

In the context of firm admission procedures, a firm is required to present a document containing a disclosure of background information on the firm's manager, the firm's financial position, and the nature of its activities. It also is required for the firm's stock to be considered appropriate for listing. Determining whether a firm's stock is appropriate or not is a decision made by the firm's Nomad, and it mainly relies on the firm's ability to make sound judgments. The disclosure requirements are not limited to those concerning the presentation of the admission documents because there are other disclosure-related requirements that the firm has to meet. Certifying the firm's extent of commitment to meeting these obligations is also the responsibility of the firm's Nomad (Espenlaub et al., 2012).

The ‘race to the bottom’ effect is not only caused by patterns of behaviour by firms in the AIM because the Nomads also play a role in that effect. Because the requirements for listing a firm in the AIM are relatively low, Nomads would typically aim at exploiting that situation by approving more firms, regardless of their level or quality, to capture the benefits associated with the approval of new listings. This would create a market with a large number of low-

quality firms within a competitive environment. As a result, the reliability and trustworthiness of the AIM would be severely shaken (Piotroski, 2013).

To understand how flexible and relaxed the listing requirements of the AIM are, it is important to draw a direct comparison between them and those of other similar/related financial markets (see Table 1).

Table 1: A comparison between the listing requirements of the AIM market and those of other similar/related markets (Espenlaub et al., 2012)

The below table shows the differences between the AIM firms, and other firms listed in the NASDAQ market, The OTCQX Market, and the London Stock Exchange Market (Main Market). The differences are based on free float, record of trading, minimum limit of market capitalization, profitability, and advisors.

MarketArea ofComparison	***AIM Market***	***London Stock Exchange Market (Main Market)***	***The OTCQX Market***	***NASDAQ Market***
Free Float	No requirements	A minimum of 25% of shares must be owned by public investors	No requirements	A minimum of 300 shareholders owning 1 million shares with a value of 4-5 million dollars
Record of Trading	No requirements	A record of trading for three years	No requirements	A record of trading for 0-2 years
Minimum Limit of Market Capitalisation	No requirements	A minimum value of 10 million pounds	A minimum value of 5 million dollars	A minimum value of 50 million dollars
Profitability	No requirements	No requirements	No requirements	No requirements or a value of net income of 750k dollars, and that is depending on the implemented standards

Advisors	Nominated advisors are appointed for regulating and monitoring transactions	No requirements	Advisors for disclosure are designated for overseeing all transactions	No requirements
Documents for Admission	United Kingdom Literacy Association carries out the document review process	United Kingdom Literacy Association dies not carry out the document review process	U.S. Securities and Exchange Commission does not carry out the document review process	U.S. Securities and Exchange Commission does carries out the document review process

2.5 AIM characteristics

There are several characteristics that make the AIM a unique exchange market. These characteristics may be attributed to the unique model adopted for operating the AIM. Discussing these characteristics is of importance for understanding the reasons for the AIM's major strengths and drawbacks.

The AIM is generally less restrictive and demanding with regards to several requirements, compared to the UK's main market. Examples include the following (Doukas & Hoque, 2016; Khurshed et al., 2016; Mortazian et al., 2019; Nielsson, 2013):

1. **Firm size:** Compared to other prominent financial exchange markets around the world, such as the NYSE and Euronext, the AIM is small in terms of the total value of listed firms. The difference in size is expected, as the AIM was originally established for the explicit purpose of providing a financial investment hub for firms of smaller sizes, such as medium and small-sized firms. Moreover, the AIM has witnessed significant growth since its establishment, unlike other major exchanges, which have witnessed periods of notable delisting during the lifetime of the AIM (Nielsson, 2013).
2. **Regulation:** The AIM is considered an ‘exchange-regulated’ market. Unlike the main market, the AIM is not regulated or under the oversight of the Financial Conduct Authority, but rather regulated by the London Stock Exchange Authority (Khurshed et al., 2016).

3. **Block holder ownership**: The LSE market does not allow the listing of firms in which block holders own shares exceeding 30% of the total value of the firm. In the AIM, there are no limits for block holder ownership. Therefore, it is possible to find firms with a high concentration of ownership in the AIM.
4. **Corporate governance**: In the LSE, all firms are required to adhere to the requirements defined by the UK Corporate Governance Code. In the AIM, however, firms are not required to adhere to the requirements defined by the Code. Therefore, the level of investor protection in the AIM is notably lower than that in the LSE. Nevertheless, the adoption of nominated advisors (Nomads) is viewed as a protection shield to investors, which will be discussed in Section 2.6.
5. **Dividend policy:** Firms listed in the AIM do not have the same level of need to pay dividends for avoiding market scrutiny as in the main market. This is a source of considerable benefit and support for smaller firms. If a firm does not have to pay dividends, it will be more capable of using cash flow in investments that can help the firm exploit its available growth opportunities. This is especially notable for firms that have significantly strong growth opportunities but do not possess adequate cash flow to be allocated for dividends (Doukas & Hoque, 2016).

Based on the above, it is clear that the AIM is characterized by many distinct characteristics setting it apart from other exchange markets, especially the main market of the same stock exchange, the LSE. These characteristics can be attributed to the nature of the framework adopted for the AIM. This framework has managed to turn the AIM into an attractive international hub for investment. This may explain the significant diversity of firms in the market, both in terms of countries of origin and economic sector. It is also noteworthy that the philosophy of the AIM encourages and supports retail investors, making the market an ideal destination not just for small business firms but also for small investors. As a result, the AIM has become one of the fastest-growing exchange markets in the world.

2.6 Role of Nomads

Most major exchange markets around the world are regulated by the governments of their respective countries. The AIM differs in that regard. It is distinctive for implementing a private sector-based regulatory framework, making the market not be influenced by governmental rules or restrictions. However, this does not mean that the AIM does not employ regulatory practices. In fact, the AIM

adopts a unique regulatory framework of which the central element is what is known as a ‘nominated advisor’ (Nomad). According to Piotroski (2013), the core purpose of the AIM's regulatory framework is not to create an exchange environment with more lenient monitoring but to create a regulatory environment characterized by low costs that is customized and tailored to the needs of listed firms.

A Nomad is a private entity (e.g. professional firm) that undertakes the responsibility of regulating the activities of a firm in the AIM as well as determining whether a new firm is eligible for listing in the market or not. The Nomad-based regulatory framework makes the AIM more flexible than its competitors. The tremendous growth of the AIM was associated with changes in the AIM's regulatory framework and how the role of Nomads is organized.

The role of a nominated advisors (NOMADs) is not limited to being a regulatory role, as it also provides help in attaining improved growth opportunities. Many of the firms listed in the AIM are firms managed and owned by entrepreneurs, of which a large number lack the needed experience in finance-related issues. Moreover, an important part of Nomads' work concerns the provision of advice on corporate governance. The movement towards the implementation of sound corporate governance practices helps a firm in becoming more professional and exploiting its available resources (e.g. managerial time) more efficiently (Revest & Sapio, 2013).

During the process of a firm's application and towards the final admission, a Nomad assists the firm in the following ways (LSE, 2018):

1. Evaluating the firm and defining whether it is suitable for admission into the AIM.
2. Providing explanations of the rules governing activities and transactions in the AIM; this involves making sure that the firm's manager builds a complete understanding of the obligations and responsibilities associated with listing in the market.
3. Working on coordinating among professionals who are responsible for preparing the firm to enter the AIM. Such professionals mainly include lawyers and accountants.
4. Consulting the firm's management on the required documents for the admission process; and
5. Provision of continuous support and consultancy on the adherence to the rules governing the operation of the AIM after the admission.

To fully understand the role of a NOMADs, it is important to note that it is similar and linked to another role, which is that of a broker. Any firm listed in the AIM is required to appoint, at all times, both a Nomad and a broker. This requirement is not imposed in the main market. The broker's role is ongoing because it is not limited to the floatation process but continues after the firm's admission and for as long as the firm is listed in the AIM. For example, AIM's Rule 35 obliges all listed firms to maintain the appointment of a broker at all times. According to Rule 17, in case a broker is dismissed by the listed firm or resigns, the firm is obliged to notify the LSE authority promptly (Khurshed et al., 2016).

Due to the seeming similarity, the roles of a NOMADs and a broker can be easily confused, especially if one entity is appointed for both roles. However, the two roles are significantly different. For example, a Nomad undertakes the responsibility of evaluating the firm's situation and deciding whether it is eligible to be listed into the AIM and provides the firm with continuous advice for the purpose of assisting it in maintaining adherence to the AIM rules. The broker's role is significantly different. The broker works on ensuring the incoming of liquidity into the AIM and maintaining the fostering of demand on the firm's stocks. An entity performing both the roles of a Nomad and a broker is known as an 'integrated house.' In such cases, the entity should separate the two roles and outline the limits of each of them clearly. While the nominated advisors (NOMADs) plays the role of a mediator between the firm and the AIM, the broker plays the role of a mediator between the firm and investors (Khurshed et al., 2016).

Despite the numerous positive effects associated with the role of the Nomad, it has been subject to scrutiny in recent years on the ground of cases of failure and scandals, sparking outraged debates on Nomads' competence in performing their oversight responsibilities. The LES responded to this problem by issuing a new guideline book concerning the rules governing the work of Nomads in 2007. This was accompanied by the introduction of harsh penalties, including public censure and fines, which would severely affect the Nomad's reputation. Such punitive measures have become an increasing necessity because the scope of misconduct in the Nomad's work is ample (Espenlaub et al., 2012).

2.7 Success of Alternative Investment Market (AIM)

The success of the AIM is evident in its performance in attracting new firms compared to the UK's main market. For example, from 1995–2014, the vast majority of listings of new firms (3,578 out of 4,579 firms, or approximately 78.1%) were in the AIM, while the rest were in the main market (Acedo-Ramírez & Ruiz-Cabestre, 2017; Doukas & Hoque, 2016).

The AIM was established as a stock exchange market tailored for the needs of smaller firms. It achieved tremendous success in achieving that goal. Today, it is considered the most successful and prolific secondary exchange market in the entire European Continent. It also represents the exemplar model based on which other stock exchanges in the European Continent design and build their secondary markets (Colombelli, 2010).

The success of the AIM has inspired the establishment of other exchange markets adopting a similar structure. The LSE, along with the Tokyo Stock Exchange, cooperated in a joint venture for proposing a framework for establishing a new alternative financial market in Tokyo, with a design and structure similar to those of the AIM, included in the nature of the regulatory system as well as in the incorporation of Nomads as an essential element of the market. The operational objectives of this market are to provide smaller companies with a hub for obtaining external finance and also for attracting the investment of both foreign and local investors (Espenlaub et al., 2012).

The success of the AIM has inspired the establishment of other exchange markets adopting a similar structure. In 2008, the AIMItalia market was established, which is an exchange market adopting an operation approach similar to that of the original AIM and is located in Italy. In 2009, the Tokyo AI was established in Japan for the same purpose. The establishment of the Tokyo AIM is an outcome of cooperation and coordination between the Tokyo and London stock exchanges (Gerakos et al., 2013).

Impressive about the success of the AIM is it is the only financial market in Europe to become the centre of considerable international attention. However, the success enjoyed by the AIM should not be understood as an outcome of a weakness in the U.S.-based exchange markets. The bulk of foreign firms entering the AIM are mainly from specific geographical locations, which include tax-haven regions in the UK (e.g. Jersey), countries with historically strong

relationships with the United Kingdom, such as the United States and Canada, and Israel. Firms from countries in the AIM that do not belong to the aforementioned territories are severely limited (Vismara et al., 2012).

One of the reasons that the AIM is considered a suitable market for the needs of smaller firms is that it also caters to the needs of small investors. In the AIM, small investors have the opportunity to direct their investments to a large number of firms with strong performance and high growth prospects, which are often accessible only to affluent investors in other markets (Gerakos et al., 2013). This, in turn, helps firms in accessing capital that is often unavailable in other stock exchange markets.

2.8 Historical overview of the Alternative Investment Market (AIM) market

The AIM has witnessed long periods of growth and decline since its establishment in 1995. Table 2 presents a historical overview of the changes in the number of firms (both local and international) in the AIM.

Table 2: Historical Overview of the Number of Firms in the AIM Market (LSE, 2020)

Year	Number of Companies			Market Value (£m)	Number of New Issues			Money Raised (£m)		
	UK	International	Total		UK	International	Total	New	Further	Total
19/06/1995	**10**	**0**	**10**	**82.2**						
1995	118	3	121	2,382.40	118	3	121	71.2	25.3	96.5
1996	235	17	252	5,298.50	129	14	143	522.1	297.1	819.2
1997	286	22	308	5,655.10	94	13	107	344.1	350.1	694.2
1998	291	21	312	4,437.90	68	7	75	267.5	317.7	585.2
1999	325	22	347	13,468.50	96	6	102	333.7	600.2	933.9
2000	493	31	524	14,935.20	265	12	277	1,754.10	1,338.30	3,092.40
2001	587	42	629	11,607.20	163	14	177	593.1	535.3	1,128.40
2002	654	50	704	10,252.30	147	13	160	490.1	485.8	975.8
2003	694	60	754	18,358.50	146	16	162	1,095.40	999.7	2,095.20
2004	905	116	1,021	31,753.40	294	61	355	2,775.90	1,879.50	4,655.30

2005	1,179	220	1,399	56,618.50	399	120	519	6,461.20	2,481.20	8,942.40
2006	1,330	304	1,634	90,666.40	338	124	462	9,943.80	5,734.30	15,678.10
2007	1,347	347	1,694	97,561.00	197	87	284	6,581.10	9,602.00	16,183.10
2008	1,233	317	1,550	37,731.90	87	27	114	1,107.80	3,214.50	4,322.30
2009	1,052	241	1,293	56,632.00	30	6	36	740.4	4,831.10	5,601.60
2010	967	228	1,195	79,419.30	75	27	102	1,200.80	5,649.00	6,849.90
2011	918	225	1,143	62,212.70	68	22	90	613.9	3,680.80	4,294.70
2012	870	226	1,096	61,747.70	49	24	73	712.1	2,451.30	3,163.40
2013	861	226	1,087	75,928.60	78	21	99	1,190.90	2,715.70	3,906.70
2014	885	219	1,104	71,414.30	94	24	118	2,604.30	3,122.40	5,726.70
2015	845	199	1,044	73,076.60	47	14	61	1,240.00	4,216.00	5,456.00
2016	809	173	982	80,814.10	55	9	64	1,103.70	3,661.90	4,765.50
2017	808	152	960	106,882.30	69	11	80	1,585.60	4,788.20	6,378.80
2018	780	142	922	91,253.10	52	13	65	1,563.10	3942.3	5505.4
2019	740	123	863	104227.96	20	3	23	489	3347.9	3836.9
March 2020	724	119	843	74,349.6	7	0	7	55.3	824.2	879.5
				Launch to date	**3,185**	**691**	**3,876**	**45,440.2**	**71,091.8**	**116,562.1**

Table 2 shows that the AIM witnessed a steady growth in the number of listed firms, both local and international, from the time of its establishment on June 19, 1995, until the end of the year 2007. The total number of UK-based firms had grown from merely 10 at the time of the inception of the market to 1,347 firms in 2007, while the number of foreign firms had grown from zero to 347 firms during the same period. The total number of listed firms at the end of 2007 was 1,694 firms, which was the highest year-end number of listed firms in the history of the AIM. This indicates that the total number of listed firms had grown by 16940% during that era. This had been reflected in the total market value. The total market value of firms listed in the AIM had grown from £82.2 million on June 19, 1995, to £97.5 billion at the end of the year 2007. Also, this was the highest level of total market value for listed firms in the history of the

AIM at that time. Thus, the total market value of firms listed in the Alternative Investment Market (AIM) had grown by 118,687.3% during that era.

However, since 2008, the number of listed firms, both local and international, has witnessed a steady decline. The total number of UK-based firms listed in the AIM has dropped from 1,347 from the beginning of 2008 (end of 2007) to 740 by the end of 2019, while for international firms the number has dropped from 347 to 123. Thus, in total, the number of listed firms has dropped from 1,694 to 863. Thus, the total number listed in the market has dropped by almost 51%. As of March 2020, the numbers of listed firms in the year 2020 so far are 724 for UK-based firms and 119 for an international firm with a total of 843 firms. The initial decline may be attributable to the global financial crisis of 2007-2008. The early years of the crisis witnessed a significant decline in the number of listed firms. The total number of firms dropped in 2008 and 2009 by 114 and 181, representing a decline of 8.5% and 14.7%, respectively. The year 2009 witnessed the sharpest decline in the number of listed firms, both absolutely (by the number of firms) and relatively (by percentage) in the history of the AIM. This decline was reflected in the drop in the total market value of listed firms. The total market value for listed firms dropped sharply to £37,731 million by the end of 2008, representing a drop of more than 61%, which is the sharpest decline in the total market value of firms in the history of the Alternative Investment Market (AIM).

However, the situation for the total market value of listed firms has not been congruent with the total number of listed firms. Although since 2008 the AIM has witnessed a steady decline in the number of listed firms, the total market value of listed firms has witnessed overall growth. The year 2017 witnessed the total market value of listed firms reaching £106,882 million, representing the highest total market value of listed firms in the history of the Alternative Investment Market (AIM). Although the year 2019 witnessed a noticeable decline in the number of listed firms (from 922 to 863, in total), the total market value of listed firms reached a level lower than that reached in 2017 by only a small margin of 2.5% lower.

The trends for the numbers of new issues (initial public offerings, transfers to the AIM, re-admissions, and introductions) are similar. The number of new issues witnessed a long period of growth between establishing the market in 1995 until the time of the global financial crisis. The number of new issues reached the highest peak in 2005 with a total of 519 issues, of which 399 were UK-based and 120 were international. The year 2006 marked the beginning of a long

period of decrease in the number of new issues, which has remained consistent until 2019. The year 2019 witnessed 23 new issues in the AIM, with 20 of them being UK-based and three being international. This represents the lowest number of new issues in the history of the AIM, even lower than the previous record low of 2009 (during the height of the global financial crisis). As of March 2020, the total number of new issues in the AIMs stands at only seven with no international issues included.

With regards to the volume of money raised, it has also witnessed trends similar to those of new listings and new issues. The total volume of money raised reached a record high of £16.18 billion in 2007. Since then, the level of volume of money raised has witnessed a noticeable decline from the levels attained in the mid 2000s. Moreover, since 2006, a trend that has remained consistent is that the volume of money raised through further issues (e.g. placing for cash, exercise of options/warrants) exceeds that of money raised through new issues. In 2019, the total volume of money raised in the AIM was £3.8 billion with approximately only £489 million being from new issues, representing only 12.7% of the total money raised. As of March 2020, the total volume of money raised in the AIM for the year 2020 stands at £879 million with only about £55.3 million being raised from new issues.

Based on the above, it is noticed that while the number of firms listed in the AIM has witnessed a steady decline since 2008, the total market value of listed firms has witnessed an overall increase, indicating an overall trend of rising. This trend indicates that (1) the AIM is continuously attracting larger firms and (2) listed firms enjoy opportunities for attaining growth. These conclusions corroborate what is indicated by Doukas and Hoque (2016, 379). According to the results of the study, many firms that enter the AIM prefer it over the main market because the former imposes significantly lower costs with regards to an initial listing and the ongoing costs (Doukas & Hoque, 2016).

2.9 Distribution of firms listed in the Alternative Investment Market (AIM) market, by country

Since its establishment in 1995, the AIM has grown substantially and turned into a prominent international hub for investment. Currently, there are firms listed in the AIM with the main countries of incorporation located in all the main geographical regions of the world. The total number and distribution of firms listed in the AIM, by region, is illustrated in Table 3.

Table 3: Distribution of Firms Listed in the AIM Market by Region (LSE, 2020a)	
Region	**Number of Companies**
Africa	1
Asia	5
Europe	755
Latin America	2
Middle East	6
North America	53
Pacific	20
TOTALS	**842**

Table 3 shows that the main countries of incorporation for the vast majority of countries listed in the AIM are located in Europe, representing about 89% of the total number of listed firms. To have a clearer overview of the distribution of countries listed in the AIM by incorporation, it would be of benefit to demonstrate the breakdown of the distribution of firms accordingly for each main geographical region of the world. The largest group of firms listed in the AIM is those whose main countries of incorporation are located in Europe. Table 3 shows that the European main country of incorporation with the largest number of firms listed in the AIM is the United Kingdom. The number of UK-based firms listed in the AIM is 654, representing approximately 77% of Europe-based firms listed in the AIM. Firms whose main countries of incorporation are located in North America represent the second largest group of firms listed in the AIM, based on the geographical location.

2.10 Conclusion

This chapter presented an overview of the AIM in the United Kingdom. Although relatively young, the AIM has managed to secure rapid and continuous growth, turning into the world's fastest-growing, most prosperous, and most successful alternative exchange market. This tremendous success is mainly attributed to the relaxed and flexible regulatory framework

adopted and implemented for organizing the market by its parent organization, the LSE authority.

Even though AIM does not adopt an official oversight framework as in the LSE or other exchange markets located in many countries around the world, regulation is maintained in the AIM through the help of nominated advisors (Nomads). Due to the critical significance of the role of NOMADs, their work is regulated and guided by a wide variety of guidelines whose failure to be implemented is penalised by a number of strict punitive actions.

Thanks to its flexible regulatory framework and work procedures, the AIM has enjoyed growing success since the time of its inception. The number of new listings in the AIM has witnessed substantial growth when compared to that in the LSE market during the same period. This growth is evident both in terms of the number of listed firms and the total value of market capitalisation. Not only has the AIM managed to grow locally but it has also managed to attract significant international attention, which is reflected in the increasing number of foreign firms listed in the market. Moreover, the AIM's success has also been accompanied by expansion overseas through the establishment of other markets adopting the same approach adopted by the AIM as well as through the formation of affiliations with other stock exchange markets.

Recent years have witnessed the rise of many competitors for the AIM in several countries. Competing markets are mainly located in North America, Europe, and Asia. The AIM has managed to attract more foreign firms and investors from other markets, especially the United States, where regulatory controls in exchange markets are significantly stricter.

The chapter also discussed the relationship between listing in the AIM and a firm's capital structure. Based on the reviewed literature, the researcher believes that firms listed in the AIM are more likely to issue equity than raise debt. Firms in the AIM seek to exploit opportunities stemming from changes in the valuation of the firm as well as exploiting growth opportunities.

With regards to the corporate governance approach adopted for the AIM, the researcher deems it noteworthy that this approach emphasises the importance of the roles of both the firm's management and the NOMADs. The LSE has defined a list of rules guiding the corporate governance practices in firms, and these rules highlight the importance of many practices, such as the clear definition of responsibilities as well as the conducting of periodic assessments.

CHAPTER 3: THEORETICAL BACKGROUND

3.1. Introduction

Capital structure is an important area of decision-making in business firms. It also, if used wisely, may help the firm in raising its returns on investments, which means that managing capital structure helps to improve financial outcomes. The management of the processes of decision-making concerning finance options and resources enables the firm to secure improved growth and survival possibilities. A firm would typically compare the benefits of obtaining debt (e.g. tax shield, reducing the amount of free cash flow) against the costs (e.g. increased risk of bankruptcy, substitution of assets, fire sales of assets, situations of debt overhang). Firms evaluate trade-offs of several capital structures in order to arrive at the optimal one (Korteweg, 2010).

Recent decades have witnessed the introduction of several theories aiming at providing explanations for the reasons the ratio of debt in the capital structure varies from one firm to another. With the variance of the underlying philosophies among theories, they all agree on the assumption that a firm selects the ratio of debt and equity in the formation of its capital structure based on an estimation of benefits and costs of each of them (Titman & Wessels, 1988). There are various widely adopted theories pertaining to capital structure, but the most notable and prominent of them mainly include the Modigliani and Miller theorem, trade-off theory, agency theory, asymmetric distribution of information theory, pecking order theory, and market timing. These theories provide a number of hypotheses concerning the capital structure in firms as well as the roles of various determinants in defining the formation of capital structure. The main goals of the chapter are to briefly discuss the main and most prominent theories that discussed capital structure in business firms.

The researcher believes that discussing these topics will be of value as it will provide an understanding of the decisions regarding selecting certain financial resources over others and how such decisions will result in improving the financial performance of firms.

3.2. Overview of the main capital structure theories

The majority of the extant empirical literature is built on two prominent theories: (a) trade-off theory and (b) pecking order theory. Regarding trade-off theory, the origin of corporate capital

structure goes back to the classic Modigliani and Miller (1958) study of the irrelevance of capital structure. This renowned proposition suggests the independence of firm value from its capital structure in the absence of both corporate taxes and bankruptcy risk. This implies that firms do not have a target/optimal capital structure since whichever financing funds are being adopted would not influence the firm values. Acknowledging the practical prominence of these two aspects, Modigliani and Miller (1963) extended the model capturing the presence of corporate taxes but in absence of bankruptcy risk. This extended M&M model emphasises the tax benefits gained on interest payments of debt and implies that firms should maximise their leverage level, i.e. to take on as much debt as possible. Hence, the optimal leverage level firms should aim to achieve under this proposition is 100%. Nevertheless, the increase in debt level is associated with the increase in the risks of financial distress and bankruptcy (Jensen & Meckling, 1978; Kraus & Litzenberger, 1973). Therefore, trade-off theory emerged implying that firms should adopt an optimal financing structure where the difference between tax benefits (S_T) and bankruptcy costs (C_B) is maximised. In other words, firms should increase their debt levels as long as the tax-saving from debt interest payments is still higher than the costs of bankruptcy (i.e. $S_T > C_B$). Essentially, this optimal leverage level can be substantially different across firms (Myers, 1984). In particular, two firms with the same leverage levels may expose to different financial implications depending on their deviations from the optimal levels. As a result, firms commonly aim for a capital structure that can minimise their risks perceived by lenders and shareholders, and hence, minimise the overall cost of capital to obtain the ultimate value maximisation goal.

Different studies that support the proposition of the trade-off theory when it comes to finding the target leverage (optimal capital structure), have been developed. One such study was conducted by Clark, Francis, and Hasan (2009). In their study, the researchers sought to determine whether firms adjust towards target capital structure, using evidence from 26,395 firms from over 40 countries. The researchers found evidence for the trade-off theory, in which the results of their study recorded that firms in each of the countries moved towards a target capital structures, albeit at different speeds from one country to another. In another study, Lemma and Negash (2014), examined the determinants of the adjustment speed of capital structure in developing economies using a sample size of 986 firms, between the period of 1999 and 2008. The results of the study supported the trade-off theory in regard to firms seeking to adjust towards a target capital structure, with more rapidly profitable firms having a higher adjustment speed. Zhou et al. (2016), also found similar evidence when investigating the

deviation from target capital structure, and the speed of adjustment towards the target capital structure. The researchers found that leverage deviation had an impact on the speed of adjustment towards the target capital structure. Mukherjee and Wang (2013) found that firms in the U.S. market also adjusted towards a target capital structure, with overleveraged firms having the highest speed of adjustment towards the capital structure compared to the underleveraged firms. Similar results were recorded by Arias, Gracias, and Martinez (2012), and Dang, Kim, and Shin (2012).

Given the large amount of evidence that is available in literature, regarding the trade-off theory and the associated adjustment towards a target capital structure, this thesis also builds on and support the trade-off theory. This is so since, this research argues that firms exhibit a target leverage and seek to ensure that they are always moving towards the target leverage in order to achieve an optimal capital structure. It is this movement towards the target capital structure that this research seeks to investigate. It investigates the speed of adjustment towards the target capital structure, and the determinants of the speed of adjustment.

Regarding pecking order theory, while trade-off theory states that firms exhibit a well-defined target level of leverage, pecking order theory suggests otherwise (Myer, 1984). It states that firms exhibit an order of preference for their financing options. Specifically, in the presence of information asymmetry between firms and external stakeholders (shareholders in particular), investors tend to perceive equity issuance by firms as negative news as they think it signals overvalued stocks, and hence, put downward pressure on the new shares' prices. This causes the values of current shareholders to be transferred to new shareholders. Therefore, if internal financing is available, firms would undertake the profitable investment without such loss in equity value. If debt is available (at some cost), Myers (1984) suggested that it is a more optional choice than equity. Overall, pecking order theory predicts that in the presence of lucrative investment opportunities, firms are expected to choose the available financing sources with the lowest sensitivity to adverse selection costs. In other words, they prefer internal resources (e.g. retained earnings) to debt, short-term to long-term, and debt to equity. Nevertheless, the theory is exposed to an extreme implication such that firms should never issue equity if other sources remain available (Alves et al., 2015). To address this critique, pecking order advocates have argued that firms' debt capacity is limited in practice; hence, the issuance of new equity is allowed (Lemmon & Zender, 2010). Overall, according to pecking order theory, firms do not have a target capital structure because their financing decisions

depend on their available internal funds hold, followed by the maximum level of leverage the firms can take.

Regarding another capital structure theory, building on the early work of Fama and Miller (1972), and Jensen and Meckling (1976), agency theory posits that firms' decisions on capital structure are related to agency cost arising from conflicts of interest. In line with trade-off theory, this theory provides an additional benefit of debt, that is, to alleviate agency costs. The mitigating effect of debt on the agency problems can be achieved in several ways. First, when debt level increases suppressing the equity base, the ownership held by managers increases. Therefore, managers are more motivated to behave in line with owners' interests. Second, higher leverage is associated with a higher bankruptcy probability. Hence, managers are less likely to exploit firms' resources and are further motivated to increase their efficiency to protect their jobs (Grossman & Hart, 1982). Finally, the periodic interest payments on debt reduce the level of free-cash-flow causing lower temptation to be entrenched and tempted, consume perquisites, or overinvest. As a result, firms with optimal capital structure should be able to minimise agency conflicts. In other words, managers that adopt suboptimal capital structure (e.g. very low level of leverage) may signal a weak corporate governance quality.

3.2.1 Details of capital structure theories

This section provides readers with more detailed information related to the three main theories of capital structure and other theories. Capital structure has been a major topic of interest for corporate finance theorists. Scholars have sought to understand the capital structure as a construct and how it influences a firm as well as the factors influencing it. Although the theoretical contributions of scholars in capital structure theory are numerous, their contributions are, in general, categorized under several specific theories, and these theories are the Modigliani and Miller (M&M) theorem, trade-off theory, agency theory, information asymmetry theory, pecking order theory, and market timing theory. Each of these theories focuses on certain areas of discussion, with certain areas of overlap among these theories.

3.2.2 Modigliani and Miller theorem

Until a few decades ago, no theories existed for explaining the capital structure in firms or the factors influencing it. Decisions concerning finance options were viewed as decision for securing finance needs in firms. However, starting from the second half of the 20th century, researchers have started to become more aware that the formation of capital can significantly

influence a firm's value. The first attempt at explaining this influence was the seminal Modigliani and Miller theorem. Modigliani and Miller's (MM) theorem (1958) is widely considered as the starting origin of modern thought on corporate finance (Bevan & Danbolt, 2002). Prior to this theory, there were no endorsed theories concerning the capital structure in business firms. This theory adopted a hypothesis of the irrelevance of a firm's capital structure. This is so in line with assuming the existence of perfection of markets (Bevan & Danbolt, 2002; Frank & Goyal, 2005).

The M&M theorem neglects a variety of factors, such as bankruptcy possibilities as well as corporate taxes (Warner, 1977). However, since the inception of the theorem, there has been growing consensus among researchers that these two particular factors influence the formation of a firm's capital structure (Berk et al., 2010). From that perspective, there is no such thing as an optimal ratio of equity to debt in a firm's capital structure. The main factors that the theorem takes into consideration are the assumptions of the rational behaviour of the investor as well as that markets are in a perfect state, and as such the formation of the capital structure does not have any impact on the firm's value. This view was also supported by other researchers, such as Stiglitz (1969), who suggested that a firm's value does not vary by the probability of bankruptcy unless there are certain costs to be incurred as a result of that probability (Warner, 1977).

The propositions set forth by the M&M theorem represent the ideal state of the market. If these propositions are to be realized in the real world, the needs and desires of investors, regardless of their diverse natures, will be met, and the cost of achieving that will be minimal. Moreover, firms in the market will enjoy equal opportunities for accessing capital, and what will constitute and determine the cost of capital is the level of risk. Under such circumstances, movements and use of capital will be directed towards investments in the most effective manner (Myers, 2001).

Modigliani and Miller (1963) discussed a new version of the theorem, which was an attempt to 'correct an error' in the previous paper. In the modified version of the theorem, the researchers argued that the variance of the structure of a firm's capital will have an influence on the value of the firm because of the existence of the effect of corporate taxes. The paper explained that conclusion by stating that two firms with the same amount of expected return will not necessarily have the same amount of actual return if their leverage ratios differ. This is attributed to the fact that the increase in the ratio of debt in the capital structure promises tax

advantages, thereby leading to increasing the market value of the firm after the imposing of taxes (Modigliani & Miller, 1963).

The M&M theorem has been subject to criticism since its inception. Many scholars have tested its empirically. According to Weston (1963), the assumption that leverage does not have an effect on the cost of capital is unrealistic as this effect is noticed when taking the growth of earnings into consideration. Davenport (1971) indicated that leverage has an effect on the cost of capital and in that relationship the cost of capital changes in a U-curve pattern (Levati et al., 2012).

Based on the above, the researcher noticed the breakthrough that the M&M theorem has brought to corporate finance research. It supposes that the capital structure influences the firm's rate of return thus its value. The modification of this theorem in later research was of considerable significance, as it addressed notable shortcomings in the first version. Even though the M&M theorem made a significant contribution t corporate finance theory, it was far from comprehensive, as there were many topics and factors not considered or discussed. These shortcomings have encouraged the development of new theories that address issues not addressed by the M&M theorem.

3.2.3 Trade-off theory

Although the M&M theorem continued to garner support and endorsement since its inception, it also received criticism and was subject to fierce debates over what was considered forms of imperfection in it. Even after its modification by its original authors, the M&M theorem still presented unrealistic assumptions on the nature of decisions made regarding the formation of capital structure, as the theory did not assume the existence of any side effects associated with the selection of any finance source for raising a firm's capital. This was seen as a major weakness in the theorem that had to be addressed. As a result, the school of thought of trade-off theory has emerged in response to the shortcomings of the M&M theorem (Frank & Goyal, 2005).

Trade-off theory proposes the necessity of adding the offsetting cost of debt to the theoretical assumptions of the M&M theory with bankruptcy being the main example of this cost. Based on the early theoretical assumptions proposed within the school of thought of trade-off theory, arriving at the more appropriate capital structure entails making a certain trade-off between the

benefits (tax shield) and costs (possibility of bankruptcy) of debt. In particular, the evaluation of debt can be conducted by comparing its benefits (e.g. tax shields) and adverse consequences, such as the possibility of bankruptcy, thereby arriving at an optimal balance (Frank & Goyal, 2009; Serfling, 2016). Myers (1984) agreed, and suggested that the ideal capital structure is set by a firm as a targeted ratio of debt to firm value, and the firm gradually changes the formation of its capital structure in accordance with that ratio. The 'target' is defined through striking a certain balance between costs of potential bankruptcy and tax shield advantages associated with raising debt (Frank & Goyal, 2005).

Trade-off theory also suggests that modifying the formation of capital structure is not random; it aims at attaining a capital structure with specific ratios. Specifically, a firm aims at attaining the 'target capital structure,' which is a capital structure formation with a specifically targeted ratio of debt. The theory suggests that deviation from that target ratio entails incurring certain costs, and thus the firm's decisions concerning finance options revolve around the minimisation of these costs as much as possible (Chang & Dasgupta, 2009). This is referred to as the 'cost of deviation'.

Consequently, a firm would constantly aim at adjusting its financial options to maintain its target capital structure. However, this adjustment process entails incurring the aforementioned costs, which is referred to as the cost of adjustment. These costs significantly impact how a firm acts in accordance with the assumptions of trade-off theory. In fact, many firms would choose to make the necessary adjustments on an occasional basis rather than on a constant basis, and as such the adjustment process would be carried out only in cases when its benefits exceed its costs (Hovakimian & Li, 2011).

Based on this, the researcher believes that trade-off theory was a major and much-needed addition to the corporate tax theory. The main contribution around which this theory revolves is the incorporation of taxes as the main factor influencing a firm's decisions regarding the formation of a capital structure. This presents a more realistic view of capital structure formation considerations compared to the relatively abstract M&M theorem. However, the researcher notices that trade-off theory focuses primarily on factors and considerations influencing the decision to seek debt financial while generally ignoring considerations concerning the selection of other finance sources, such as equity. The theory assumed that the trade-off entailed by the selection of debt as a source of finance revolves around comparing the

benefits and costs of debt while ignoring the possible role of costs and benefits of equity in selecting or avoiding debt as a component of the formation of capital structure. Other theories, such as pecking order theory and agency theory, pay particular attention to the factors influencing the decisions to select equity for securing finance.

3.2.4 Agency theory

Unlike other corporate finance decision theories, such as the M&M theorem and trade-off theory, agency theory pays attention to the factors influencing external finance sources, both debt and equity. The theory suggests that what drives and guides decisions of selecting finance resources is the comparison of agency costs associated with these resources. As a result, a firm would make its order of priority of capital formation decisions based on the agency costs associated with each resource. Understanding this theory necessitates discussing its main tenets and its suggested assumptions regarding the effect of agency costs on the behaviours of firm managers.

Upon obtaining finance from external sources, managers will be constantly required to provide explanations for decisions and actions to external parties such as shareholders. By nature, a manager would not like to be constantly monitored and questioned. Such problematic situations are the centre of interest for agency theory (Jensen & Meckling, 1976). Myers (2003) also contributed to the theory. He highlighted that agency theory, like pecking order theory, classifies finance resources by a hierarchical order. For example, because external finance sources differ in their agency costs, these sources would normally be selected in a pecking order with a preference for sources with fewer agency costs (Frank & Goyal, 2005).

Jensen and Meckling (1976) considered the conflict between managers and shareholders to be one of the two main types of conflicts in business firms with the second being that between shareholders and debt holders. Intrinsically, the relationship between shareholders and managers is highly prone to be marred by conflicts of interest. The contributions of shareholders will result in a situation in which the management cannot enjoy 100% of the firm's residual claims. The relationship between shareholders' contributions and yielded gains is not proportional as the gains of investments will be distributed between managers and shareholders, but the costs associated with these investments will be entirely borne by managers. In other words, increased equity is associated with the costs, entirely borne by managers, of abandoning the activities and benefits associated with perquisites for the purpose

of working on producing gains, which are not entirely captured by managers. As an excepted outcome, managers will have lower incentives to manage the firm's financial resources for maximizing the firm's benefits and, instead, direct them to their own benefit (Harris & Raviv, 1991).

A significant area of interest for agency theory concerns the reasons a firm would choose to acquire additional external financial resources and grow its capital structure even if its size is considered optimal. According to Jensen (1986), this is attributed to the fact that with the increase of the size of the firm's capital, managers' control power increases. Moreover, the growth of the size of the capital structure is often associated with increases in managers' wages because a larger capital structure helps in generating larger volumes of sales. Another reason firms constantly and actively seek to grow their capital structures is the promotion of employees. What is commonly the norm in firms is the promotion of employees to higher job positions, rather than paying annual bonuses, so growing the capital structure becomes a necessity for adapting to the changes associated with implementing such compensation and promotion systems (Jensen, 1986).

3.2.5 Pecking order theory

The contemporary world of business has significantly transformed in recent years and become highly competitive. This nature demands that managers be careful with how to ensure that their organizations possess a sound capital structure, which relies on securing reliable and appropriate sources of finance. Making decisions in that regard is a complex process and necessitates careful planning to arrive at selections that will help in maximizing the value of the firm. Decisions concerning determining capital structure have been the centre of interest for several theories of corporate finance, one of the most notable of which is pecking order theory.

This theory started to receive significantly increased attention upon being popularized by Myers and Majluf (1984). The updated version of the theory involved the discussion of information asymmetry as a factor influencing the preferences for sources of finance (Leary & Roberts, 2010). The asymmetry of information would often compel a firm's managers to refrain from seizing investment opportunities, even if potentially profitable, to focus on serving the interests of old shareholders, and that is at the expense of the interests of new shareholders (Chatzinas & Papadopoulos, 2018).

To avoid these difficulties, the first source a firm will seek is internal finance because internal finance is a finance source that is characterized by the absence of the issue of information asymmetry or any associated costs, making it the first and primary source for composing the firm's capital structure (Bhama et al., 2016). When the firm depletes internal earnings, it will move towards seeking external sources of finance while taking into consideration their order based on the level of risk. As a result, the firm will select debt first before seeking equity. In raising debt, the firm will often first seek, as much as possible, sources with lower levels of risk before moving to those with higher levels of risk, starting with the safest debt sources and moving gradually to the riskiest (Fama & French, 2005).

This indicates that the theory emphasizes the role of the level of risk in defining the hierarchy of selections of finance source. Therefore, internal sources would be selected first since they are not associated with risks. This will be followed by debt sources from which those with the lowest levels of risk are prioritized. Issuing equity is the finance source associated with the highest level of risk, and thus the least preferred. This behavioural pattern is intended for the favour of the firm. It aims at avoiding situations in which the value of the firm would decrease.

As Myers (1984) suggested in the context of pecking order theory, the avoidance of issuing equity is an outcome that any firm by nature avoids, as much as possible, the movement of its wealth to external stakeholders. Moreover, issuing equity is often associated with adverse business effects. One of the most notable of these effects is undervaluation.

As Myers and Majluf (1984) suggested, this undervaluation is an outcome of the significant asymmetry of information available to managers/owners on one hand and investors on the other. For managers, the information available is sufficient for building a clear view of the firm's value as well as its growth and investment horizons. The situation is much different for investors. Investors do not possess as much information on the firm's value or the basis of distributing its profits, leading to a situation in which investors rely on speculation in valuing the firm. As a result, the firm's value may be underestimated or overestimated. In this case, the valuation of the firm mainly depends on how much information is available to investors. As an example, on the negative effects of information asymmetry associated with issuing equity, when a firm decides to issue equity, investors will typically and naturally assume that the firm has made that decision as a response to its having become overvalued. Therefore, this will be

considered a negative sign of organizational weakness, leading to a decrease in the value of the firm and its equity.

Another important criterion influencing the choices of external finance sources is transaction costs. Transaction costs differ between debt and equity. In the contemporary world of finance, the transaction costs associated with equity are often higher than those associated with debt. This difference also stands when increasing any of them. The costs associated with increasing equity are generally higher compared to those associated with increasing debt. Thus, debt will be deemed a preferable choice over equity for securing finance. However, as Holmes and Kent (1991) and Hamilton and Fox (1998) suggested, in selecting debt sources, a firm will often tend to select options with the smallest impacts on management control over the firm. Thus, managers would first select short-term options and prefer this over long-term debt because the former is not associated with risky financial commitments such as collateral. The last option is the issuance of equity, which is selected only if it is the only available choice and if acquiring additional finance is urgently needed.

Despite its significance in corporate finance theory, it is important to note that pecking order theory, as a school of thought, has been subject to heavy criticism. First, there are several points of similarity between this theory and trade-off theory with the main point being the assumption that the use of debt for financing promises advantages in the form of using free cash flows as well as eschewing agency issues that may arise as a result of resorting to other external financial resources, especially equity. However, despite the similarities, there has been a notable lack of cooperation between proponents of these two theories even as there has been a long and significant split between the two schools with theorists of each school directing criticism at the opposing side (Yang et al., 2014).

Thus, the researcher believes that pecking order theory provides a holistic and comprehensive view of capital structure in firms in contemporary business environments. As the theory indicates, defining the selection of finance sources constituting the capital structure is based on a hierarchal order in which sources characterized by safety and lower costs are preferred. Moreover, the theory linked finance source selection to a number of determinants that may increase or decrease a firm's prosperity towards either seeking or eschewing external sources of finance.

3.2.6 Market timing

The market timing theory adopted a unique perspective for explaining decisions concerning the formation of a firm's capital structure. The theory suggested that these decisions are primarily based upon temporal, situational factors related to the market's conditions at the present time. In other words, conditions in the market influence making decisions pertaining to capital structure as well as the timing of these decisions. The theory suggested that the careful consideration and monitoring of the conditions in the market may help a firm grow its capital structure. Moreover, the researcher believes that another unique aspect of this theory is that its main point of focus is on equity. The theory is mainly interested in how decisions regarding the timing of issuing equity may help a firm in exploiting opportunities for raising new capital. Moreover, the study did not ignore the possible effects of the current capital structure on the firm's decisions concerning seeking external finance sources.

Market timing theory (Baker & Wurgler, 2002) states that firms engage in equity market timing, a set of practices through which a firm issues equity at relatively high prices then repurchases them from buyers again at lower prices in the future. The purpose of adopting such practices is to take advantage of the fluctuations of the costs of equity, thereby growing the firm's capital structure. This theory strikingly contrasts with the M&M theorem in that the former adopts the assumption that the costs of the various types of capital can vary independently of each other thereby supporting the idea that switching between the types of external sources of finance may yield benefits (Baker & Wurgler, 2002).

In this theory of capital structure, the timing factor is the primary criterion that market timing theory adopts for determining the type and amount of capital to be sought. The timing factor is so important that decisions to obtain external finance can be deferred even if additional finance is urgently needed in the present time, and such decisions are made when the timing seems favourable even if a new finance resource is not genuinely needed. As expected, market timing theory assumes that a firm will seek the type of finance for which the present conditions seem favourable and promise positive outcomes. Capital structure decisions are based on situational opportunities, not actual needs. The theory also pays much attention to the effects of other important factors such as the firm's price-to-book and leverage. This means that capital structure itself may influence decisions related to the formation of capital structure, but the nature of this influence also relies on the favourability of conditions at the present time for obtaining either or all types of external finance. Therefore, the researcher believes that the

philosophy indicated by this theory concerning the selection of finance sources represents an unhealthy approach for managing a firm's capital structure. The researcher believes that selecting external finance sources should be carried out based on an objective assessment of the firm's actual needs and a careful comparison of the benefits and costs associated with the selection of each source.

CHAPTER 4:
LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

4.1. Introduction

The chapter aims to discuss the extant literature in detail, based on the contributions as well as the hypotheses of the three empirical studies, to identified, and developed them. In particular, Section 4.2 provides a discussion of the literature related to the determinants of capital structures in different settings such as an international setting, firm size setting, lifecycle, and industry settings. Section 4.3 presents the development of hypotheses testing in the first empirical study of this thesis. Subsequently, the literature review relates to the determinants of leverage Speed of Adjustment will be presented in Section 4.4. This section justifies the relevance of the second empirical study in investigating the determinants of leverage SOA for Alternative Investment Market firms. Four determinants are proposed leading to four hypotheses being developed which will be discussed in Section 4.5. Finally, hypotheses for a comparison study between the AIM and the main market of the LSE, will be developed and presented in Section 4.6.

4.2. Literature review: Determinants of capital structure

This section provides and discusses a thorough review of the extant literature investigating determinants of a firm's financing decisions. Because the literature on the determinants of capital structure is extensive and wide, the section is structured by the various settings which have been studied. This review provides a solid foundation for the contributions of the current study, i.e. academic added values of studying the financing decisions of firms listed on the Alternative Investment Market. Furthermore, based on these extant studies, a comprehensive set of critical factors influencing the capital structure are determined.

4.2.1. International setting: Determinants of capital structure across different countries

Rajan and Zingales (1995) investigated the determinants of corporate capital structure using large international, publicly listed firms in major industrialized countries. The study employed a dataset from the G-7 countries from 1987–1991 with a sample size of 8,000 firms collected from the Global Vantage database. The authors used two measures of financial leverage, i.e. book value and market value leverage and total debt divided by total book-value and market value of equity. Regarding the determinants of the financing choices, a number of explanatory

variables, including tangible assets, market to book ratio, log sales, and return on assets, were employed. The authors found that the market-to-book ratio significantly negatively influences the leverage level (both measures) across all countries of investigation. They justified this finding that since firms exhibit a market value that is proportionately higher than their book value, they tend to have better access to the equity market, and hence, a higher tendency to issue more equity capital. This leads to a lower leverage level for firms. Furthermore, tangibility and firm size are positively associated with both the book and market leverage level. In particular, it is argued that firms holding more tangible assets, which are often easier to collateralise, can achieve a lower agency cost of debt. Specifically, with the provision of higher collateral, creditors can be more assured about the lending, thus, offering firms a lower cost of debt due to a lower chance of moral hazard (Jensen & Meckling, 1976). Intriguingly, Berger and Udell (1994) suggested that a close relationship between creditors and firms can indeed substitute for the physical collateral to earn a creditor's trust. Regarding the firm size effect, it is often argued that as large firms are extensively followed by the market participants such as financial analysts, the regulators, and media, informational asymmetries between firms and the capital market are relatively lower compared to firms of a smaller size. As a result, larger firms exhibit a larger capacity in issuing informationally sensitive securities, such as equity, resulting in a lower debt. However, Rajan and Zingales reported a positive effect of firm size on leverage. This may because larger firms tend to be more credible in terms of asset values and market standing. Consequently, they can have larger access to the debt market and would use such access to acquire the tax shield benefit of debt finance. Finally, the authors found that firms with higher profitability tend to issue a lower level of debt relative to their equity capital, i.e. a negative association. This may be because those highly profitable firms have more retained earnings and thus a lower demand for external financing. This finding is on hold if, in the short run, debt financing is the primary borrowing source of firms together with a stable dividend pay-out and investment policies.

Unlike the international study by Rajan and Zingales (1995), Panno (2003) focused exclusively on the determinants of capital structure of firms in the UK and Italy covering from 1992–1996. The author examined potential changes in financing decisions across different points of time and different financial contexts. Leverage is regarded as the ratio of long-term debt to the sum of long-term debt and the book value of equity. Long-term debt is calculated by subtracting current liabilities and shareholders' funds from total liabilities. With the employment of 87 and 63 debt and equity issuances made by the UK and Italian companies, respectively, the author

found that firm size has a positive significant impact on the decisions concerning the capital structure. They justified that large-sized companies might have the ability to acquire long-term loans. Thus, larger firms tend to adopt higher leverage. Moreover, it has been inferred that operating risk is one of the main determinants of capital structure because operating risks negatively affected the leverage ratio. This may be because lenders are more concerned about the higher uncertainty and risk of a firm's operation, leading to lower access to the debt market. Furthermore, the author found a negative relationship between asset composition, i.e. tangibility measured by the ratio of fixed asset to total assets, and the leverage level. Whilst Rajan and Zingales (1995) reported a positive tangibility-leverage association by focusing on the collateralisability of fixed assets which can give firms more debt access and capability, Panno (2003) justified the negative association from the liquidity perspective of assets. In particular, higher tangibility infers lower liquidity of the firm assets. This raises concerns of creditors on the ability of firms to meet debt payments. As a result, higher tangibility leads to lower debt utilisation. Additionally, a positive relationship between the number of directors and the proportion of equity employed; however, the association is not statistically significant. The results show a negative relationship between reinvested earnings and leverage in Italy. The high borrowing ratio led firms to issue equity. Finally, an inverse relationship exists between the leverage ratio and the P/E ratio. This relationship can be explained in a similar way with market-to-book value (Rajan & Zingales, 1995). In particular, firms with higher P/E ratios mean that investors are willing to pay more for each unit of earnings. As a result, it is more advantageous for firms to issue equity, hence, lower debt. Providing an additional critical aspect of capital structure, Panno also found that large firms, especially those listed in more efficient markets like the UK, tend to have a target/optimal leverage and aim to adjust its current leverage level towards a target rate.

In the same year, Chen (2004) investigated the determinants of capital structure in the Chinese-listed companies. The study used data from the annual report of 88 Chinese public-listed companies, i.e. DOW-China 88 Index, from 1995–2000. Chen captured a firm's leverage using the ratio of total debt and long-term debt to total assets. A common set of variables was employed, including profitability, size, growth opportunities, tangibility, tax shield, and cost of financial distress. The results suggested a new Chinese pecking order of retained earnings, equity, and debt.

Huang (2006) investigated factors using another Chinese sample that can significantly explain the variability of a firm's financing choices. With a sample of over 1,200 Chinese listed companies from 1994 to 2003, the author found that size and tangibility had a positive relationship with leverage. But leverage had a negative relationship with profitability, nondebt tax shields, growth opportunities, managerial shareholding, and industry. Further results suggested that state or institutional ownership had no significant impact on capital structure. Despite the suggestion made by Chen (2004) regarding the new Chinese pecking order of retained earnings, equity, and debt, Huang did not support such a view because the author's firm size was positively associated with leverage level. This is consistent with the conventional pecking order theory.

Employing panel data of 104 Swiss firms listed in the Swiss stock exchange for the 1991–2000 period, Gaud et al. (2005) reported a number of critical determinants of corporate capital structure. Similar to the previous studies, the researchers employed growth, size, profitability, tangibility, and financial distress as the explanatory variables. The measures used to determine the leverage of the company were the ratio of total debt to total assets, where the total assets are measured by book values and the ratio of total debt to total assets where the total asset is the sum of the book value of debt plus the market value of equity at the end of the year. The study results showed that the size of the company and the tangibility of the company had a positive relationship with the leverage of the company.

Additionally, Frank and Goyal (2009) worked on the same research question employing a sample of American publicly traded firms covering the period from 1950 to 2003. The sample used in the study consisted of U.S. firms on Compustat for a period between 1950 and 2003. The data used were annual and converted into 1992 dollars using the GDP deflator. The stock return data used were from the centre for research in security prices and the macroeconomic data from various public databases. The leverage measures used in the study were the market leverage (the ratio of total debt to the market value of assets), the book leverage (the ratio of total debt to the book value of assets), the market long-term debt ratio (the ratio of long-term debt to the market value of assets), and the book long-term debt ratio (the ratio of long-term debt to book value of assets). The factors investigated in the research were profitability, firm size, growth, industry, nature of assets, taxes, risk, supply-side factors, stock market conditions, debt market conditions, and macroeconomic conditions. Among those explanatory factors, the results indicate that firms operating in industries with higher leverage median value tend to

have higher leverage ratios. Firms with higher market-to-book value and profitability tend to adopt lower leverage, which may be due to better access to the equity market and higher perceived firm value in the eyes of shareholders. However, tangibility, asset value, and expected inflation provide a significant positive association with the leverage ratio. The authors concluded that the most significant factors are the media industry leverage, tangibility, and profitability as their effects on leverage are robust across different concepts of leverage.

Recently, Öztekin (2015) conducted a large international study examining the determinants of capital structure. She employed a dataset of 15,177 firms from 37 countries covering 1991–2006 to measure the capital structure and ratios of long-term debt and short-term debt to total asset. The author took into account an extensive set of explanatory factors, including profitability, market-to-book ratio, total asset, tangibility, and the leverage ratio of industry. Many other country-specific, industry-specific regulations factors were also considered, including a country's inflation, insolvency, and time and cost, i.e. time and cost to resolve the insolvency process; bankruptcy efficiency measured by a dummy variable that denoted unity if the bankruptcy outcome was efficient; effective tax rate measured by the proportion of total tax payment to the pre-tax earnings, creditor rights, formalism which is an index indicating substantive and procedural statutory intervention in judicial cases, enforcement which captures the relative degree to which contractual agreements are honoured, law and order, government risk, i.e. corruption level, risk of expropriation, and repudiation, to mention just a few. It can be said that this paper is an updated and comprehensive review of the determinants of capital structure for large listed firms around the globe. It is a thorough wrap-up of the topic, a good study for future study to be based on in conducting a further extension of the literature. The results of the study showed that the most critical drivers of a firm's leverage level are firm size, tangibility, industry leverage, profits, and inflation. In particular, firms of a larger size with higher tangibility and operating in industries with a higher median value of leverage tend to adopt a higher debt level. More profitable firms which operate in nations with higher expected inflation rates show evidence of lower leverage. Intriguingly, the effect of firm size was found to be dependent on the institutional settings. Specifically, the positive effect of firm size lost its statistical significance within a weak institutional environment. These results were tested at the firm, industry, and macroeconomic levels.

4.2.2. Small and medium-sized firms (SMEs) setting: Determinants of capital structure of SMEs

Besides the fact that previous studies have studied various determinants of capital structure in an international setting, academic focus also touched on firms that exhibit specific characteristics. These include small and medium-sized firms (SMEs), different sectors, and other unique types of firms (e.g. family-run businesses).

To begin with, determinants of capital structure on SMEs' settings have been extensively studied over 2 decades. Michaelas et al. (1999) investigated determinants of the corporate capital structure in UK SMEs using a sample of 3,500 firms 1986–1995. Many explanatory factors were considered including firm age, size, profitability, past growth rate, future growth rate, operating risk, asset structure, effective tax rate, nondebt tax shields (measured by depreciation charges), and net debtor. The study employed three measures of leverage: total debt-total assets, long-term debt-total assets, and short-term debt-total assets. Among these factors, those significantly positively associated with the leverage ratios are firm size, past and future growth rates, operating risk level, firm asset structure, nondebt tax shield (for long-term debt only), and net debt. The other factors, i.e. age, profitability, and effective tax rate, provided significantly negative coefficients. Notably, it is contrary to the conventional finance theory since the firm's effective tax rate is negatively associated with leverage. In particular, the higher tax rate indicates the higher tax-saving advantage that debt finance brings to firms. Hence, firms are encouraged to take on more debt for such a larger tax advantage. Nevertheless, this negative significant relationship between tax rate and leverage was also reported by Jordan et al. (1998) for small firms exclusively. They justify that a simple mechanism may be a reason for a negative relationship. Similarly, the positive effect of a nondebt tax shield is inconsistent with the prediction of DeAngelo and Masulis (1980); they interpreted this result that small firms do not seem to take the consideration of tax saving as important in their financing decisions (both long-term and short-term). The positive influences of a firm's past and future growth were expected indicating that fast-growing firms with extensive investment in research and development tend to prioritise external debt finance over equity. Younger and more profitable firms also prefer adopting a higher leverage ratio compared to older and less profitable firms. These findings are supported by pecking order theory (Myers; 1984); for small-medium firms (SMEs) specifically, they are subject to higher asymmetric information. In such an environment, corporations often try to avoid any interference with ownership, as the market influences can be critically negative, by using their own internal resources (if available),

and the other external financing source, i.e. debt. Consistent with Rajan and Zingales (1995) as explained above, larger firms can have more access to the debt capital market at a cheaper rate, and hence, higher leverage is recorded. Firms with higher net debtors tend to increase their short-term and long-term leverage for meeting financial obligations with creditors since they exhibit weaker working capital management, specifically, late payment from short-term debtors.

Hall et al. (2000) investigated the underlying drivers of SMEs' capital structure, using both short- and long-term debt. Furthermore, the authors investigated the differences in the effects of capital structure's determinants across different sectors and conducted a cross-industry comparison. The study employed a sample of 3,500 unquoted UK SMEs in 1995 that satisfy the research requirements. Using two measures of leverage ratios, i.e. long-term debt and short-term debt to the total asset, the findings indicate that asset structure, i.e. tangibility, and size are positively related to long-term debt leverage but negatively related to short-term leverage. Firm age and profitability have negative relationships to both leverage measures. This finding is consistent with pecking order theory. Besides, firms with higher growth in turnover over the last 3 years tend to adopt higher levels of short-term debt. Intriguingly, the authors also provided evidence on significant differences across sectors for most of the determinants (except the growth factor), especially for the short-term leverage.

Similarly, Cassar and Holmes (2003) employed a sample of 1,555 SMEs from 1995–1998 to examine the determinants of their financing choices. The study employed a number of measures of capital structure, including the book value ratios of total debt to assets, long-term debt to assets, short-term debt to assets, external financing to assets, and bank financing to assets. In this research, the static trade-off and pecking order claims were empirically tested using a variety of firm characteristics. These are size (total asset), noncurrent asset (noncurrent assets to total asset ratio), tangibility, profitability (return on assets), growth (growth in sales), and risk (variation in profitability). The findings indicated that asset structure, profitability, and growth were significant determinants of capital structure. In particular, asset structure and growth have a positive effect on SME financing decisions. However, the growth factor appears to be statistically insignificant for bank financing. This implies that firms with high growth may use other financing sources than banking finance. However, there was a weaker relationship for size that was mainly significant for the total debt leverage ratio and long-term leverage ratio, but not the other financing sources. Risk, however, did not show a significant

effect on firm financing structure. Furthermore, a negative profitability-leverage association was achieved, which is supported by pecking order arguments, across all five dependent variables. Overall, Cassar and Holmes concluded that the conventional financing theories, which have been evidenced on large, listed firms, seem to hold for the SMEs operation in Australia.

With similar research interest on SMEs, Sogorb (2005) investigated how the uniqueness of SMEs influences their capital structure, using evidence from Spanish SMEs. The authors examined how the firm-specific factors in SMEs operating in Spain affected their capital structure. The sample of the study included a total of 6482 nonfinancial firms, and the data were collected from 1994–1995. A set of explanatory factors was employed, including the effective tax rate (tax paid to earnings after interest and before taxes), nondebt tax shield (ratio of depreciation to taxes), growth opportunities (intangible assets divided by total assets), tangibility, size (total asset), and profitability (return on assets).

Psillaki and Daskalakis (2009) examined whether the underlying determinants of corporate capital structure, particularly for SMEs, vary across different countries and different firms with distinctive characteristics. They explored whether the financing decisions were country- and/or firm-specific. This is an interesting study as the capital structure topic has been extensively studied in the literature, yet no single standardised suggestion has been made on firms with different characteristics from different industries and countries and is listed in markets with exclusive uniqueness. The study employed a sample containing European small and medium-sized enterprises (SMEs) operating in Greece (1,252 firms with N = 6,260 firm-year observations), France (2006 firms, N = 10,030), Italy (320 firms, N=1,600), and Portugal (52 firms, N = 260) during 1998 and 2002. A relatively higher leverage was obtained for Italian SMEs, whereas French SMEs revealed the lowest use of debt. Using the seemingly unrelated regression (SUR) and pooled estimated generalized least squares (EGLS), Psillaki and Daskalakis compared the asset structure (tangibility), size (the logarithm of sales), profitability (pre-interest and pre-tax operating surplus divided by total assets), risk, and growth (the annual change on earnings) to how these may impact capital structure choices across the SMEs from the countries included in the study. The results of the study suggested that capital structure decisions in these small and medium-sized companies were similar in all companies.

Following the research stream, Bhaird and Lucey (2010) investigated different firm characteristics as determinants of the capital structure using a sample of 299 Irish SMEs. The study employed five measures of capital structure, as a proportion of total financing: personal savings and funds from personal connection, retained earnings, external equity, long-term debt, and short-term debt. Regarding explanatory factors, firm age, size, research and development (R&D), ownership, internal collateral, and owners' collateral were employed. The research employed SUR and ordinary least square (OLS) approaches to perform the data analysis. Findings on capital structure decisions of Irish SMEs obtained in this study are supported by pecking order theory and agency theory.

Furthermore, Mateeva et al. (2013) examined the factors that can explain the financing decisions of SMEs in Central and Eastern Europe. The study was conducted on seven Central and Eastern European (CEE) countries from 2001–2005, and a total sample size of 3,175 SMEs was obtained. Mateeva et al. (2013) employed two main measures of financial leverage: (a) long-term leverage measured by long-term debt to total assets and (b) short-term leverage ratio measured by short-term debt to total assets. The main explanatory variable was the cash flow ratio, and the control variables are future growth opportunities, short-term liquidity, profitability, firm size, and asset structure.

La Rocca et al. (2010) explained the institutional differences in the capital structure and debt maturity of SMEs in Italy for the year 2000. Specifically, the researchers tested for the influences of local financial development and the effectiveness of the local enforcement system whilst controlling for firm-specific characteristics. The total number of firms included in the sample was 9,515. The ratio of financial (or interest-bearing) long-term and short-term debt (excluding trade debt) divided by the total financial debt plus equity (e.g. Giannetti, 2003; Rajan and Zingales, 1995; Titman et al., 2003). The authors used the 2-stage least square (2SLS) and ordinary least OLS estimation methods to test for the impacts of various factors on a firm's leverage ratios. The debt-maturity structure of the firm is related to the fact that debt can be paid off (La Rocca et al., 2010) over different lengths of time. Debt maturity was defined as the fraction of the firm's total interest-bearing debt that matured in more than one year, i.e. the ratio of long-term financial debt to total financial debt (Antoniou et al., 2006; Scherr & Hulburt, 2001). The researchers used local financing, local banks deposits, the number of local bank branches, local enforcement system, financial rating, ownership concentration, profitability, nondebt tax shields, tangibility, age, and size as the variables.

Extending the capital structure of SMEs research geographically, Benkraiem et al. (2013) and Palacín-Sánchez et al. (2013) examined the effects of firm characteristics on the financing decisions of SMEs in France and Spain, respectively. The former employs a sample of 2,222 firms during the 2003-2006 period, whilst the latter conducted their research on a sample of Spain firms from 2004 to 2007. Benkraiem et al. found that firm size, profitability, growth, and tangibility significantly influenced capital structure decisions of French SMEs. Size had a negative influence on leverage, profitability had a negative influence on leverage, and tangibility had a negative influence on leverage. Yet growth had a positive influence on leverage. Palacín-Sánchez et al. found that age, asset structure, and profit were negatively related to leverage in Spanish SMEs and that the size and growth were positively related to leverage in Spanish SMEs. Palacín-Sánchez et al. also found a difference in the magnitude of the relationship between the variables and leverage from one Spanish region to another. Although both studies examined the capital structure of SMEs during a similar period with the use of similar dependent variables, their results are not all consistent such as firm size. This suggests that country-specific factors and analytical methods do play significant roles in the firm's financing decisions as suggested in the extant literature. Indeed, different measures employed for explanatory variables may attribute to the differences in findings.

Additionally, Huang et al. (2016) focused on the corporate governance mechanisms as significant factors that influence a firm's use of debt finance. They employed 397 Chinese firms listed on the newly established growth enterprise market (GEM) from 2009–2013. The authors focused on the governance aspects which drive the variations in the capital structure of listed SMEs, In particular, the executives' shareholding, cash compensation, and ownership (including shareholding concentration, tradeable shares, and institutional shareholders). With a final sample of 1,214 firm-year observations and the baseline two-step dynamic panel System-GMM, Huang et al. (2016) found that executives' shareholding and cash compensation ratio are found to be positively related to leverage. These findings are consistent with a number of extant researches (e.g. Chen et al., 2011; Chung et al., 2015; Berger et al., 1997; Kim & Sorensen, 2006; Stulz, 1990) and were expected by the authors. Regarding the positive influence of the management shareholding, executives tend to avoid further dilution of ownership once they hold larger stakes of the company. Hence, debt is preferred to equity. For the latter, with the instant payment of executives' compensation, the executive's future wealth is less exposed to the firm's future performance. Consequently, they are more comfortable in

making riskier financing decisions, i.e. to issue more debt. Huang et al. also explained the findings from agency theory perspective such that excessive cash compensation leads to managerial structural power (Chen et al., 2011; Chung et al., 2015). The issuance of higher debt will reduce managers' opportunistic behaviours through less available resources. In other words, debt financing plays a role in reducing agency conflicts, especially in weak corporate governance. Furthermore, the study also obtained empirical support for their prediction on the positive relationship between tradable share proportion and debt level. As explained by the authors, higher tradability of firm shares indicates lower credit risk and higher stock liquidity. Hence, firms exhibit more access to the debt capital market. Contrary to their expectations, ownership concentration shows a negative association with debt, and the percentage of shareholding by institutional does not exert a significant influence. Regarding controlling variables, the study obtained a positive influence of CEO duality and a negative influence of profitability on firm leverage.

4.2.3. Lifecycle setting: Determinants of capital structure across firm's life cycles

It is evidenced that a consensus has been achieved on the significance of exploring the capital structure topic of samples of firms with different sizes, especially on SMEs. La Rocca, La Rocca, and Cariola (2011) extended their research published in 2010 on Italian SMEs by examining their financing choices during the life cycle. The results indicate that a firm's financing decisions varied across their business cycles due to different levels of information transparency and firm characteristics. According to the conventional findings, firms at their initial stage tend to have lower access to external funds and hence be exposed to more challenging in utilising debt. Furthermore, in the case that internal funding is not sufficient for use, those young firms tend to seek internal funds from business angels and venture capital. Nevertheless, in the current study, La Rocca et al. (2011) found that debt is indeed a critical source of its capital structure. This finding is adhere to their *"reverse financial life cycle hypothesis"* such that due to the easier access to debt compared to equity, in case the internal funding is not available, as well as the advantages of debt funds, i.e. lower cost and tax shield property, young firms are likely to utilise debt funding. The authors also suggested that debt fund is not entirely external in the case of less-mature firms as lenders would require those firms to provide a guarantee for the loan. For the mature stage, supporting pecking order theory, firms tend to employ more of their retained earnings than debt. This can be explained by the common fact that more mature firms tend to have higher profitability (higher earnings).

Regarding the controlling variables, their influences on capital structure remain relatively consistent with their study in 2010. In particular, positive influences on leverage are found for firm age, size, tangibility, and growth opportunities. However, other factors including credit reliability, profitability, and ownership revealed a negative association with the firm's use of debt.

Similarly, Robb and Robinson (2014) focused on the capital structure choices of firms in their early year of operation. They employed a restricted-access data from the Kauffman Firm Survey (KFS), a longitudinal annual survey of U.S. start-ups with around 4,928 firms. These firms have started their operations since 2004 and are followed in Robb and Robinson until 2011. With such unique longitudinal study, Robb and Robinson brought a novel picture on the changes in corporate financing decisions during their years of operation. Consistent with the study of La Rocca et al. (2011), Robb and Robinson also reported that businesses tend to kick-start their operations using external debt finance and are less dependent on their personal funds, such as friends or family. This view once again is against the conventional view regarding the capital structure choices of firms at the early stage. The finding may be partially influenced by the unusual activities of the debt market at the time the research took place 2004. The authors also found that this level of debt tend to increase across the developing stages yet tend to be more balanced over time, i.e. moving away from debt, as stated by the life-cycle theories (Berger & Udell, 1998). The findings are robust after controlling for various relevant factors of capital structure. In particular, firm debt ratios were found to be significantly positively related with sales, employees, and assets, whilst profitability did not show a significant effect. The study shed light on the importance of a liquid credit market and the role of capital market friction on the establishment and success of start-ups due to their heavy reliability on debt financing.

4.2.4. Industry setting: Determinants of capital structure across different industries

In addition to studies working on exploring the determinants of financing decisions of firms of different sizes around the globe, much focus is on firms (both public and private) in different industries (e.g. real estate, financial services, hospitality, shipping). These sectors exhibit a uniqueness that has driven academic researchers and practitioners to further explore the underlying mechanisms of the corporate financing decision-making process.

For example, Morri and Cristanziani (2009) examined differences in capital structure and its drivers between real estate (REITs) and nonREIT companies using the EPRA/NAREIT Index's firms 2002–2006. The authors considered seven explanatory variables: including size, profitability, growth opportunities, the cost of debt, ownership structure, risk, and category (REITs or nonREITs). They found that profitability has a negative effect on leverage, and this is in line with pecking order theory. This result was also recorded across international markets (e.g. Fama & French, 2002, Hovakimian, 2004, Rajan & Zingales, 1995). The second factor was risk, which revealed a negative influence on leverage as supported by pecking order theory and trade-off theory (Morri & Cristanziani, 2009). The authors justified that active and high-quality firms do not prefer to raise their leverage due to their more solid standing and stronger competitive advantages in the equity market. There are relatively fewer studies that researched the impacts of ownership on firm leverage. Based Morri and Cristanziani's results, block holding ownership is positively associated with leverage; the rationale is that major shareholders do not favour the dilution of ownership and hence tend to encourage the use of debt. The REIT dummy variable has shown a negative value, which indicates that REIT firms tend to exhibit lower leverage and justified lower tax benefits. In particular, the tax-exempt status of nonREITs affects capital structure decisions. The authors also found that the size of the company was positively related to leverage in these companies. This is commonly explained by the literature because larger firms have more access to borrow at better rates due to their more solid standings in the business and stronger credibility. This negative size-leverage association has been obtained by various.

Harrison et al. (2011) explored the financing determinants of real estate investment trust (REIT) using a sample of 2,409 firm-year observations with data from the NYSE, American Stock Exchange, and NASDAQ from 1990–2008 and the baseline OLS. The dependent variable is the ratio of total book debt to the sum of book debt and the market value of equity. The authors followed the extant literature to select its main explanatory variables. The results showed that growth opportunities had a negative relationship with leverage, and these results are in line with most empirical studies for nonREIT firms. However, some studies reported a positive relationship between growth and leverage (e.g. Feng et al., 2007). The profitability has shown a negative relationship, and this is in line with pecking order theory. However, size has a positive effect on leverage as supported by trade-off theory. The rated debt is a dummy variable denoting unity if the firm has an S&P long-term issuer credit rating, and zero otherwise. The authors found a negative relationship between rated debt and leverage, and this

is inconsistent with previous studies (e.g. Boudry et al., 2010; Faulkender & Petersen, 2006). Maryland REIT takes the value of one if the REIT is established in Maryland and zero otherwise. The relationship between Maryland REIT and leverage is significantly negative. As suggested by Hartzell et al. (2008), REITs in Maryland State tend to expose to a lesser extent of external pressure. This leads to higher entrenchment of the managers who are likely to avoid taking debt. For the managers, lower debt indicates lower monitoring. Furthermore, UPREIT is a dummy variable that refers to one value if REIT is operating as an umbrella partnership form and zero otherwise. The UPREIT has a negative impact on leverage, and this is inconsistent with pecking order theory. As originally expected by Hartzell et al., UPREIT should carry a positive relationship with leverage because their book values are likely to be undervalued as the firms tend to delay market gain for tax purposes by exchanging partnerships. Therefore, to explain this obtained result, it may be that an umbrella partnership REIT exhibits a complicated organizational structure, hence, lower informational transparency and less manageable. This characteristic is not favourable by the lenders, and hence it may be harder to obtain debt. Finally, Hartzell et al. took into account the availability of revolving credit lines and the current usage of as expected, the former produced a negative influence whilst the latter showed a positive influence on the leverage level. This is because if REITs have a higher remaining credit capacity, it means that the firms have lower debt level.

Furthermore, over the last decade, an increasing number of studies have been exploring the capital structure's determinants topic in the hospitality sector, including restaurant, hotel, and tourism. These include Upneja and Dalbor (2001), Karadeniz et al. (2009), Pacheco and Tavares (2017), and Li and Singal (2019). Specifically, Upneja and Dalbor explored the determinants of capital structure in the restaurant industry. They found that the likelihood of bankruptcy was positively related to the total debt because firms with a high probability of bankruptcy are forced to lend more as their access to the equity market is lower. Upneja and Dalbor also found that the operating cash flow was significant and positively related to total debt. The explanation was that cash flows represent good liquidity of a firm in meeting the debt obligation, thus better access to the debt market. Furthermore, according to agency theory, a higher level of cash flow increases the chance for managers' opportunistic behaviours. Consequently, firms are encouraged to take on debt to reduce such resource exploiting opportunities for managers. Firm age was significant and positively related to total debt. However, when the firm's age and profitability were considered, the age has become significant and negatively related to the total debt. They justified that due to the financial growth cycle,

the old and profitable firms rely more on internal sources and less on debt financing. Lastly, the interaction variable between cash holding and firm age (Cash_Age) was significant and negative related to debt. This indicates that the cash-leverage association is moderated by firm age. In other words, firms with higher cash holding are more levered, however, such higher leverage of older firms is lower than younger firms.

Pacheco and Tavares (2017) investigated the capital structure determinants of the hospitality sector of small- and medium-sized enterprises of Portugal. The authors employed the pooled ordinary least squares (POLS), fixed effects model (FEM), and random effects model (REM) to test for the effects of those factors on leverage. The explanatory variables used in the study were profitability, asset tangibility, firm dimension, liquidity, risk, growth, tax benefits, and age. The results showed five significant factors: profitability, asset tangibility, firm dimension, liquidity, and risk. In particular, profitability and liquidity showed negative relationships with the leverage level. As repeatedly suggested by the literature, this profitability-leverage relationship can be justified by the increased internal sources, and hence external funds are less likely to be employed. However, the negative relationship between liquidity and leverage showed that SMEs in the hospitality sector preferred short-term debt compared to long-term debt, due to the lower liquidity in the SMEs companies. Regarding other factors, size, risk, and asset tangibility were positively related to leverage. Assets were positively related to leverage because firms are likely to have more collateral to take more debt. Risk and leverage were positively related because high-risk firms take on more debts to reduce their agency costs, and maybe increase their bankruptcy costs. Size and short-term debt were negatively related, whilst size is positively related to long-term debt. In other words, larger SMEs preferred to adopt long-term debt than short-term debt. This is because larger SMEs may have more solid standing and credibility in the market, hence having better access to long-term debts.

Li and Singal (2019) sought to determine the role of the asset-light and fee-oriented strategy (ALFO) on capital structure in the hospitality industry. The asset-light and fee-oriented strategies are industry-specific variables. ALFO is measured by four proxies: fixed-asset ratio (FA), capital intensity (CapInt), fee-income ratio (Fee), and degree of franchising (DOF). The authors found that ALFO had a positive influence on leverage. Since franchising fees reduce the cost of capital and offer abilities to lend more. The researchers also found a negative relationship between asset tangibility and leverage. They argued that whilst debt usage can control and reduce agency problems, higher investment in tangible assets can also diminish

such agency issues through lower free cash flow. As a result, the need for using debt is reduced. The relationship between capital intensity and leverage was negative. However, the fee–income ratio shows a significant positive relationship with leverage. This finding was predicted by the authors, as a higher fee-income ratio indicates more stable earnings and higher profitability (Sohn et al., 2003). Supported by trade-off theory, higher profitability and stable earnings mean lower bankruptcy risk, leading to a higher capacity for debt. Among the four main factors, only these two produced statistically significant results. Regarding other controlling variables, leverage is negatively related to return on asset, and positively related to market-to-book value and nondebt tax shield. These findings are supported by the literature.

Employing 115 globally listed shipping companies from 1992 and 2010, Drobetz et al. (2013) examined the corporate capital structure decisions and reported that companies in the shipping industry had higher leverages and higher financial risks than other industrial firms operating in G-7 nations. The researchers found that the size of the company, tangibility, and rating probability were positively related to the leverage of these companies. In particular, lenders feel more positive and confident to issue a loan to firms with higher tangible assets rather than to similar firms with lower tangible assets since those assets can be treated as collateral for the borrowings. Also, the larger the firm size, the easier for firms to access the debt market due to their larger asset values and stronger standing in the market. The positive relationship can be justifying that restriction firms on the debt market led to less debt. The authors also found that profitability, asset risk, inflation, dividend, and operating leverage had negative relationships with the leverage of shipping companies. Firms earning high profits prefer using lower debt in the capital structure because of their higher retained earnings. The relationship between risk and debt is linked with trade-off theory such that a higher bankruptcy risk led to less capacity for firms to take on debt. The inflation and dividend showed negative impacts on the debt ratio. Frank and Goyal (2009) explained that firms paying higher dividends may have higher retained earnings with lower opportunities for re-investment, hence lower demand for external funds.

4.2.5. Specific ownership characteristic: Family firms

Ampenberger et al. (2013) analysed the financing decisions of listed firms that are family businesses. The authors employed a sample of 660 listed German companies for 1995–2006. The primary explanatory factor being considered is the family variable that takes the value of one if at least 25% stake of the firms are held by the founding family and zero otherwise. The finding indicates that family firms had lower leverage levels compared to nonfamily firms in

Germany. The authors found that founder CEOs tended to adopt less debt ratio. Major regression equation has shown a positive relationship between size and leverage. Risk was positively related to leverage of German companies. The author justifies that high debt can lead to financial distress, therefore higher firm risk. The authors also reported that firm age, tangibility, inflation, and industry leverage had a positive relationship with the firm's debt level, while a negative relationship was found for profitability.

On the same theme, Thiele and Wendt (2017) also studied the capital structure decision of family firms. The panel data were of 691 large private firms in Germany. Employing the random effect panel and Tobit estimation methods, the authors found that family firms exhibited higher overall and long-term debt levels. This indicates a positive relationship between family ownership status and leverage adoption. The rationale behind this finding is the ability of family firms in creating trust with their creditors and this in line with Anderson et al. (2003), Sharma and Manikutty (2005), Zellweger et al. (2010), and Schmid (2013). In particular, numerous previous studies reported a number of positive qualities of family firms, such as long-term oriented behaviours, more trustworthiness, and being quality driven (Anderson et al., 2003; Aronoff & Ward, 1995; Craig et al., 2008). In other words, conflicts between creditors and family firms are generally lower due to those favourable attributes (Anderson et al., 2003; Gómez-Mejia et al., 2007; Hiebl, 2012). As a result, family firms have easier and smoother access to the debt market, leading them to adopt a higher leverage ratio and higher long-term debt. Burgstaller and Wagner (2015) supported the results that family firms have higher debt compared to nonfamily firms. Additionally, the authors only found a significant positive relationship between tangibility and debt in the case of nonfamily firms, while an insignificant finding was obtained for family firms. This mainly was because the positive images of family firms help in reducing agency conflicts with lenders. Therefore, holding tangible assets is not as important for family firms as for nonfamily firms. The results offer no support that family ownership has an effect on trade credit, and this is not in line with Lappalainen and Niskanen (2013). Regarding the controlling factors, profitability (ROA), firm-specific risk, size, age, the median of industry average, and growth were examined. Median industry leverage is found to be positively related to both debt and long-term debt ratios. However, ROA is positively significantly related to the long-term debt ratio but not the debt ratio. Last, firm size, age, and risk are negatively associated with the overall debt level.

4.2.6. Contribution of the study 1 to the literature

Through the thorough review of the literature, it is apparent that the topic of identifying determinants of corporate financing decisions has been investigated over the decades in a multitude of market settings. This includes different firms listed in different markets of different countries[8], firm size, i.e. SMEs[9], firm life cycle[10], industries[11], business types, e.g., family business[12]. Despite such extensive effort, the findings on this topic remain ungeneralizable due to the uniqueness of those diverse settings. This is to say there is still room in the literature of capital structure for academic researchers to share their works and insights on the influential and the unique markets that have not been investigated previously. Identifying the gap in the literature, the current study aims at investigating critical driving forces of the capital structure of firms listed in the AIM. Furthermore, a comparison work will also be taking place in comparing the findings across the AIM and the LSE main market. The AIM has been a rapidly emerging market with uniqueness that an exclusive study would provide a novel understanding and insights on the financing decisions of this market.

In particular, despite a great academic effort that has been devoted to the small and medium-sized firms (SMEs), Alternative Investment Market (AIM) firms are not just simply a different sample of SMEs in the UK. They are young and growing SMEs which are publicly listed in an acknowledged stock exchange in the UK (the LSE). This exclusive listing has placed those Alternative Investment Market (AIM) firms in a unique capital environment with different regulations and governance, which are evidently distinctive from the SMEs sample or main market sample employed in the extant literature. Furthermore, it is aware that studies on the capital structure's determinants have been conducted across different countries. However, to

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[8] Rajan and Zingelas (1995), Panno (2003), Deesomsak (2004), Chen (2004), Huang (2006), Gaud et al. (2009), Frank and Goyal (2009), Öztekin (2015), Belkhir, Maghvereh, and Awartani (2016).

[9] Michaelas, Chittenden, and Poutziouris (1999), Hall, Hutchinson, and Michaelas (2000), Cassar and Holmes (2003), Sogorb (2005), Psillaki and Daskalakis (2009), Abor and Biekpe (2009), Bhaird and Lucey (2010), Mateeva et al. (2013), La Rocca et al. (2010), La Rocca et al. (2011), Benkraiem et al. (2013), Palacín-Sánchez, Ramírez-Herrera, and Di Pietro (2013), Huang, Boateng, and Newman (2016), D'Amato (2019),

[10] La Rocca, La Rocca, and Cariola (2011), Robb and Robinson (2014)

[11] Morri and Cristanziani (2009), Harrison, Panasian, and Seiler (2011), Upneja and Dalbor (2001), Karadeniz et al. (2009), Pacheco and Tavares (2017), and Li and Singal (2019), Lim (2012), Drobetz et al. (2013)

[12] Ampenberger et al. (2013), Drobetz et al. (2013), Schmid et al. (2013), Thiele and Wendt (2017).

the best of this researcher's knowledge, no study has employed a sample of international firms that are listed in the same market index. This 'same market index' property is imperative since the same market listing does take into account various external environmental factors that those firms exhibit and expose to, such as the same regulations, governance structure, and investor pool, to mention just a few. For a better understanding, more justifications on the uniqueness of Alternative Investment Market (AIM) and the rationales of this study are discussed in Section 2.2.

4.3. Hypothesis Development: Determinants of Capital structure of Alternative Investment Market

Firms do not form their capital structure in a uniform manner because each firm defines its own ratios of retained earnings, debt, and equity in its capital structure based on the considerations suiting its own conditions and needs. However, decisions concerning capital structure are not arbitrary, as there are certain factors or determinants that influence decisions or actions taken regarding a certain type of finance sources. As stated, the first objective of this thesis is to investigate the financial characteristics of AIM firms as the determinants of their capital structure. Subsequently, the thorough literature review on the determinants of a firm's financing decisions in Section 3.1, the current section will systematically summarise and discuss those studies following a factor-by-factor basis with the aim of developing hypotheses being tested in this research. Building on the literature, a number of corporate financial characteristics are proposed.

4.3.1. Firm size

Size plays a significant role in determining a firm's capital structure. Size plays a role in influencing a firm's relationship with potential external providers of finance, as some opportunities and privileges may be available to firms with certain size characteristics and unavailable to others. It also entails a variety of differences in the tendency and ability to prefer certain finance sources over others. The size is commonly estimated using total assets (e.g. Cassar & Holmes, 2003; Hall et al., 2000; Michaelas et al., 1999; Sogorb, 2005). This firm characteristic has been investigated extensively in the literature as an underlying driver of capital structure. However, the findings remain inconclusive with positive as well as negative associations between firm size and leverage. Nevertheless, the majority of studies reported positive relationships indicating the larger the firm, the higher leverage adopted (e.g. Antoniou et al., 2008; D'Amato, 2019; Dang & Garrett, 2015; Drobetz et al., 2013; Frank & Goyal,

2009; Gonzalez, 2015; Hall et al., 2000; Guney et al., 2011; Michaelas et al., 1999; Öztekin 2015; Psillaki & Daskalakis, 2009; Sogorb, 2005; Wald, 1999), whereas other studies found the opposite relationship between leverage and size (e.g. Benkraiem et al., 2013; Cooley & Quadrini, 2001; Faulkender & Petersen, 2005; Haron and Ibrahim, 2012).

To justify the positive association, it has been argued that large firms enjoy more access to the debt capital market as they have higher market standing, credibility, and most importantly, higher debt rating (Bevan & Danbolt, 2002; Rajan and Zingales, 1995; Warner, 1977). Furthermore, Titman and Wessel (1988) suggested that larger firms tend to be more diversified. Hence, they exhibit smaller exposure to insolvency and default risk compared to smaller firms (Graham & Leary, 2011). Based on this argument, supporting trade-off theory, larger firms are expected to have higher debt ratios, especially with long-term debt, as they can take advantage of tax subsidy benefits and borrow at interest rates that are more favourable (Daskalakis & Psollaki, 2008). However, the studies that reported a negative relationship suggests that larger firms can disperse asymmetric information more effectively and cheaply, hence, the issues of transaction cost and information asymmetry are lesser compared to smaller firms causing larger firms to prefer equity over debt, i.e. lower leverage (Fama & Jensen, 1983). Furthermore, firms with a smaller size are reluctant to adopt external financing since they exhibit smaller capital and higher asymmetric information. Therefore, they have limited access to the capital markets, particularly for equity and long-term debt (Cassar & Holmes, 2003). In the case of limited internal finance, smaller firms tend to adopt short-term debt. Overall, the total debt ratios (total debt leverage) of smaller firms are higher than those of larger firms.

Although the findings are inconclusive, most of the results for SMEs are positive on the size-leverage relationship Bhaird and Lucey (2010). Given that the current study's sample contains AIM firms with small and medium-sized in nature, and most importantly, these AIM firms are publicly listed in a well-known stock exchange, their standings in the market are more solid than other nonlisted SMEs. As a result, access to the debt market is not a constraint for AIM firms. Therefore, supporting trade-off theory, it would seem the larger the AIM firms, the lower possibility of bankruptcy, and thus the higher the leverage ratio. Consequently, the following hypothesis is developed and tested:

H1: Firm size is statistically significant positively related to leverage

4.3.2. Tangibility

Tangibility is the extent to which a firm owns tangible assets as a part of its capital structure (Rajan & Zingales, 1995). The net property, plant, and equipment to total assets is utilized as a measure for tangibility and has been used by a number of studies (e.g. Hall et al., 2000; Mateeva et al., 2013; Michaelas et al., 1999;). What sets tangible assets apart from intangible assets is that the former is easily measurable with well-defined market value and can be liquidated (Williamson, 1996). This nature has implications for capital structure formation, as tangibility represents a potential source of security for major stakeholders. This, in turn, significantly influences a firm's ability to obtain new finance from these stakeholders, hence influencing the structure of a firm's capital (Benkraiem et al., 2013; Daskalakis & Psillaki, 2008; Hall *et al*., 2000; Harris & Raviv, 1991; Mateeva et al., 2013; Michaelas *et al*., 1999; Panno, 2003; Rajan and Zingales, 1995; Sogorb, 2005;). With extensive attention paid to this determinant of corporate financing choice, two different findings were obtained: (1) positive tangibility-leverage association ((Andres et al., 2014; Benkraiem et al., 2013; Dang & Garrett, 2015; Degryse et al., 2012; Frank & Goyal, 2008; Frank & Goyal, 2009; Harris & Raviv, 1991; Heyman et al., 2008; Huang & Song, 2006); Mac et al., 2010; Mateeva et al., 2013; Michaelas et al., 1999; Rajan & Zingales, 1995; Sogorb, 2005 and (2) negative tangibility-leverage association (Benkraiem et al., 2013; Cheng & Shiu, 2007; Daskalakis & Psillaki, 2008; Michaelas et al., 1999; Panno, 2003; Sogorb, 2005)

Regarding the positive association, the possession of tangible assets grants a firm an increased ability to secure capital resources through liquidation because these assets can be used as debt collateral. A bank would typically base its lending decisions mainly on the borrowing firm's possession of tangible assets (Chandrasekharan, 2012). Specifically, with the provision of higher collateral, creditors can be more assured about lending and so offer firms a lower cost of debt because of the lower chance of moral hazard (Jensen & Meckling, 1976). Therefore, the higher the value of the collateral is, the higher the amount of debt a firm can raise (Bevan & Danbolt, 2004). This supports trade-off theory in that debt is advantageous and preferable to equity.

Meanwhile, the leverage level is negatively associated with tangibility (or capital structure). There are two rationales justifying this relationship suggested in the literature. First, Panno (2003) explained the negative tangibility-leverage association from the liquidity perspective of

the firm assets. In particular, higher tangibility infers lower liquidity of the firm's assets. This raises concerns of lenders on the ability of firms in servicing their debt, i.e. a liquidity risk. As a result, lenders may restrict the firm access to debt financing leading to lower debt utilisation. The second rationale is related to agency-related issues such that debt utilisation can reduce the resources available for managers to conduct their opportunistic behaviours, i.e. lower agency costs (Fama & Miller, 1972; Grossman & Hart, 1982; Jensen & Meckling, 1976). The monitor costs on collateralisable assets are cheaper than those that are less collateralisable. As a result, when firms possess higher value of tangible/collateralisable assets, their agency costs are effectively lower, and hence the use of debt may not be necessary (Grossman & Hart, 1982; Salawu & Agboola, 2008). This leads to a negative relationship between tangibility and leverage.

Overall, tangibility is a determinant of capital structure on which conclusions have been mixed. Although there is an opinion supporting the assumption that tangibility leads to decreasing the need for obtaining debt, it is noticeable that the opposite assumption is more supported. Tangibility is associated with higher leverage, thus higher debt ratios because the possession of physical assets facilitates obtaining debt, and lenders, by nature, are more drawn to lending to firms with high levels of tangibility. Since the inconclusive findings obtained in the extant literature with both directions can be applied to AIM firms (SMEs nature and publicly listed in the LSE), a nondirectional alternative hypothesis was developed as follows:

H2: Firm tangibility is statistically significantly associated with leverage

4.3.3. Growth

The effect of growth on the formation of capital structure is complex and requires detailed discussions to be adequately explained. This determinant has been reported to strongly influence firm capital structure (e.g. Benkraiem et al., 2013; D'Amato, 2019; Feng, Ghosh & Sirmans, 2007; Gaud et al., 2005; Hall et al., 2000; Huang, 2006; Michaelas et al., 1999; Palacín-Sánchez et al., 2013; Rajan & Zingales, 1995).

Major capital structure theories hold different views for the explanation of the correlation between growth opportunities and capital structure. From the perspective of pecking order theory (Myers & Majluf, 1984), growth opportunities are positively associated with higher leverage ratios because firms engaging in activities associated with attaining growth are not

capable of holding retained earnings like other firms. As a result, to secure finance, these firms will resort to obtaining debt (typically preferable over equity; Frank & Goyal, 2003). Empirical studies supporting this view include Michaelas et al. (1999), Palacín-Sánchez et al. (2013), Sogorb-Mira (2005), Degryse et al., 2012, Tong and Green (2005), Deesomsak et al. (2004), Awan et al. (2010), Feng, Ghosh and Sirmans (2007), Hall et al., (2000), Cassar and Holmes (2003), and D'Amato (2019).

As expected, the perspective of trade-off theory in that regard is notably different. Studies adopting the perspective such that forecasted leverage has a negative relationship with growth comprise (Arsov & Naumoski, 2016; Billett et al., 2007; Frank & Goyal 2009; Fosu 2013; Gaud et al., 2005; Huang 2006; Kayo & Kimura 2011; Rajan and Zingales, 1995; Shah & Khan 2007). According to Titman and Wessels (1988), firm growth can be viewed as capital assets that are intangible in nature and cannot be collateralised or generate current income. Furthermore, firms with higher growth prospects encounter significantly more complex issues related to agency costs because they tend to invest their current financial resources heavily. This is attributed to these firms' being flexible in their investment decisions and selections and thus would select investments with higher levels of risk. This aggressive investing behaviour is therefore likely to lead to a higher chance of failing in servicing current debt obligations. Additionally, because the value of growth drops drastically when the firm files bankruptcy, this 'intangible' capital asset cannot support the financial distress costs (Ozkan, 2001). As a result, higher growth firms tend to exhibit lower access to debt finance because of the higher financial slack and bankruptcy risk as well as lower collateralisability (Parsons & Titman, 2009). This implies that there is a negative correlation between growth and leverage, leading to preferring equity over debt in decisions related to selecting financial sources (Ahmed & Hanif, 2012)

This factor is critical in the context of the current research because the research focus is on AIM firms that are fast-growing SMEs. Once again, the literature has provided an inconclusive finding regarding the growth-leverage association with strong support from theoretical and empirical evidence. Given that the literature has reported common support of pecking order theory from SMEs samples (Cassar & Holmes, 2003; D'Amato, 2019; Forte et al., 2013; Hall et al., 2000; Michaelas et al., 1999), it is expected that higher firm growth leads to higher leverage. Furthermore, in regard to the agency conflicts, AIM firms are uniquely characterised by an additional layer of governance, i.e. the Nomads. This implies a lower agency cost related to strategic decisions made by AIM firms. Therefore, these quickly growing AIM firms are less

likely to engage in excessive risk-seeking behaviours that cause a higher possibility of default. Consequently, it is expected that the relationship between growth and leverage in the case of AIM firms adheres with pecking order theory, leading to the following hypothesis to be tested:

H3: Growth is statistically significantly positively associated with leverage

4.3.4. Liquidity

Liquidity is another important factor reported to significantly influence firm financing decisions (D'Amato, 2019; Deesomsak et al., 2004; Ozkan, 2001). Liquidity refers to the tradability of firm assets without much influence on its price (Sharma & Paul, 2015). Therefore, it can be understood as the ability of a firm to service and meet its short-term obligation. The definition of the factor can directly link it to the use of debt finance based on trade-off theory. In particular, firms with higher liquidity reduce the risk of bankruptcy because they have more liquid resources that can timely convert into cash to satisfy their short-term financial obligation. As a result, the firms have the capacity to take on more debt, leading to higher leverage (Cole, 2013; Degryse et al., 2012; De Jong et al., 2008; Ozkan, 2001; Shleifer & Vishny, 1992; Vo 2017; Zhang & Mirza, 2015). Another explanation for this positive liquidity–leverage association is based on agency theory (Jensen & Meckling, 1976; Myers, 2003). Liquid resources comprising free cash flow can stimulate opportunistic behaviours of managers and their engagement in overvalued investment. This implies the presence of agency conflicts. According to agency theory, to suppress suboptimal behaviours of managers, debt instruments can be put in use as a disciplinary tool on management (Jensen & Meckling, 1976). This therefore leads to a higher adoption of debt by highly liquid firms.

In contrast, a negative relationship between liquidity and leverage can also be explained by trade-off theory and pecking order theory. Regarding the former, Myers and Rajan (1998) argued that firms with a high level of liquid assets including free cash flow tend to expose themselves to high-risk projects with the aim of attaining higher returns. Thus, agency conflicts occur between shareholders and debtholders since shareholders prefer high-risk projects for higher returns at the expense of debtholders. Consequently, a higher liquidity ratio exerts a lower leverage level (Ozkan, 2001). From the perspective of pecking order theory, firms holding more liquid assets including free cash flow have lower demand for external financing sources, leading to a lower leverage ratio (D'Amato, 2019; Jong et al., 2008; Khemiri &

Noubbigh, 2018; Lipson & Mortal, 2009; Mazur, 2007; Morellec, 2001; Myers & Rajan, 1998; Ozkan, 2001).

Given a mixed picture in regard to the relationship between liquidity and leverage which may be applied to the AIM firms, the following nondirectional alternative hypothesis will be tested:

H4: Liquidity is statistically significantly associated with leverage

4.3.5. Dividend Pay-out Policy

Dividend pay-out is a periodic nonmandatory income earned by shareholders, measured as dividends per share divided to net income (Antoniou et al., 2008). This factor impacts a firm's capital structure because its influence on the firm retention ratio, in particular, a reduction (Aggarwal & Kyaw, 2010). Consequently, the demand for external funds, i.e. debt and equity, will enhance. Following this view, as firms earn sufficient profits to pay dividends, signalling a healthy performance and lower bankruptcy possibility, they tend to use debt for the need of external funding to take advantage of the tax-shield property. This positive dividend-leverage association is adhered to in trade-off theory and pecking order theory and is empirically supported by Mazur (2007), Tong and Green (2005), Bhaduri (2002), John and Williams (1985), Miller and Rock (1985), and Adedeji (1998).

Nevertheless, the majority of the literature supports the opposition proposition (Antoniou et al, 2008; Bokpin, 2009; Chen & Steiner, 1999; Dang & Garrett, 2015; Frank & Goyal, 2007; Lemmon et al., 2008; Rozeff, 1982). Supporting pecking order theory, Myers (1984) and Fama and French (2002) suggested that firms with a higher dividend pay-out rate tend to have higher profitability and so retained earnings. Consequently, they are more likely to use their internal sources prior to external sources and cause lower leverage. Antoniou et al. (2008) argued from a different perspective that firms' increased dividend pay-out signals an increase in future earnings. This would effectively lead to a lower cost of equity. Therefore, higher dividend-pay-out firms are better off issuing equity and causing lower leverage. Additionally, from agency theory point of view, both dividend and debt are considered effective monitoring tools for a firm management layer to prevent agency issues because they reduce the availability of free cash flow within firms (Jensen, 1986; Jensen & Meckling, 1976). Consequently, if firms have used dividends as the mechanism for reducing agency costs, the need for debt adoption decreases (Rozeff, 1982).

The focus of the current study is on AIM firms which are young, small, and medium-sized, fast-growing firms. Those firms are likely to have more profitable projects to reinvest. At the same time, if they pay higher dividends to shareholders, it signals the future growth in earnings as suggested by Antoniou et al. (2008). Therefore, AIM firms that have greater access to the equity market compared to other unlisted SMEs can borrow more from equity and take advantage of the lower cost of equity. Consequently, a negative relationship between dividend pay-out and leverage is expected, leading to the following hypothesis:

H5: Dividend pay-out is statistically significantly negatively associated with leverage

4.3.6. Firm risks: Operating and bankruptcy risks

The associations between leverage and firm risks conventionally are built on trade-off theory (Myers, 1984). It has been well-accepted that leverage increased the chance of bankruptcy for firms. Therefore, the higher the bankruptcy risk is the lower the debt capacity and, thus, the lower target debt level where the tax shield benefit equals the cost of bankruptcy (Altman, 1968; Byoun, 2008; Deangelo & Masulis, 1980; Kayo & Kimura, 2011; Myers, 1984). Furthermore, operating risk, measured by volatility of earnings, is a critical risk for firms, especially young, small to medium-sized firms (Cassar & Holmes, 2003; Michaelas et al., 1999). Firms with a higher operating risk tend to have lower ability to meet the fixed charges, leading to lower debt capacity (Bradley et al., 1984; Cassar & Holmes, 2003; D'Amato, 2019; Kester, 1986; Michaelas et al., 1999; Titman & Wessels, 1988). As a result, the following hypotheses will be tested:

H6: Operating risk is statistically significantly negatively associated with leverage

H7: Bankruptcy risk is statistically significantly negatively associated with leverage

4.4. Literature review: Determinants of Speed of adjustment to target leverage

After the examination of the determinants of capital structure of AIM firms, the current research further investigated factors associated with variations in the firms' SOA. In this section, reviews of studies that were conducted on the SOA topic will be discussed, based on which hypotheses will be developed as discussed in Section 4.5.

A key study in the literature, Flannery and Rangan (2006) investigated partial adjustment towards the capital structure. The researchers explained that other previous studies have failed to take into consideration the potential of incomplete adjustment. The data used in the study were for firms included in the Compustat database from 1965–2001. The research excluded financial and regulated utility firms from the study. The sample size was 12,919 firms with a total of 111,106 observations. The study used two different measures: market leverage and book leverage. The results of the study showed that when firms are shocked out of their targets, they are relatively quick to return to their target leverage ratios. The large firms have lower SOA because the large firms rely more on public debts. The SOA ranged between 36.6% and 40.5%. Employing analogous partial leverage adjustment models, a wide range of empirical literature has generally reported a firm's SOA to range from 0% to as high as 40% (Elsas & Florysiak, 2011). For example, Kayhan and Titman (2007) used the OLS estimation and recorded a relatively low SOA of 10% for book leverage and 8.3% for market leverage. More recent studies provided higher estimates of SOA, in particular, Huang and Ritter (2009), recorded a speed of 11-23%; Lemmon et al. (2008) found a speed of 25%; Byoun (2008) obtained a speed of 20-33% depending on the current leverage in relation to the target leverage. A number of studies reported SOAs that are beyond the common range, such as studies by Ozkan (2001) and Dang et al. (2012), which revealed a higher range of SOA of around 50%-70%. A review of each study focusing on the rate and determinants of SOA will be discussed below.

4.4.1. Determinants of speed of leverage adjustment: Single market studies

In 2001, Ozkan conducted a study on the UK sample with the aims of examining the determinants of target capital structure and the SOA towards that target. The study employed a UK firm sample covering the 1984–1996 period with a final sample size of 4,132 firm-year observations. Employing both the book and market value of equity together with the use of the system GMM, the researchers found that the firms in the UK have a large SOA which was more than 50% in most cases. This middle-point Speed of Adjustment implies that both the costs of deviating away from the target (disequilibrium position) and costs of adjustment are equally important. According to trade-off theory, costs of deviating away from the target (disequilibrium position) and costs of adjustment towards the target leverage are the two costs that influence the firm's decision to adjust their current leverage levels. If the costs of being in disequilibrium are significant, the SOA should be close to 1, i.e. firms are motivated to achieve the target leverage. However, if the costs of adjustment are significant, the SOA should be

close to zero, i.e. too costly to adjust towards the target. Therefore, an approximate SOA of 50% indicates that the two costs are equally important.

Huang and Ritter (2009) tested the theories of capital structure and estimating the Speed of Adjustment. The researchers used firm-level data from the centre for Research in Security Prices (CRSP) and Compustat. The panel data included in the study were firms listed in the United States during the period of 1963 to 2001. The number of firms used was 425, and the SOA was 9.3% towards the target book leverage for 5 years, and the adjustment speed was15.6% for 30 years of data using the OLS estimator. When a long differencing estimator was used, the results showed an adjustment of 11.5–21.1% per year towards target book leverage, and 15.6–23.3% towards target market leverage. The market timing model and the static trade-off theory were important to predict the SOA. Studies showed the existence of capital structure targets. In line with this, studies have investigated the speed at which firms adjust back to their target capital structure once they deviate away from it.

Dang et al. (2012) reported results on firm SOA exceeding 70%. Compared to the average SOA figure provided by the literature, this is an exceptionally fast leverage adjustment speed. The authors investigated the asymmetric capital structure adjustments using evidence from dynamic panel threshold models. The researcher used the dynamic panel model to test the dynamic trade-off theory considering the SOAs for companies towards their target leverage. The researchers used data collected from the DataStream database on 859 UK firms with a total of 5,393 firm-year observations from 1996 and 2003. The researchers used two-step GMM estimators to perform a regression analysis on the various factors that affect the SOA for firms to their target leverage ratio.

The results showed that firms with higher financing imbalance have a higher SOA at 75%, compared to those with a lower financing imbalance whose SOA was 50%. Financial imbalance can be understood as a financing deficit. A higher financial imbalance implies a higher financing/cash flow deficit and vice versa. Once firms experience a high deficit in cash flow, they have the motivation to obtain additional external funding to tackle such a deficit. Consequently, this additional financing requirement provides firms the opportunity to adjust their current capital structure towards the target. Accordingly, the speed of leverage adjustment is faster for deficit firms compared to financing-surplus firms (Dang et al., 2011). When considering growth opportunities, fast-growing firms are found to have an SOA of 70%,

whereas low-growth firms had a lower SOA of 54% because high-growth firms tend to have lower retained earnings and, hence, rely heavily on the external capital markets. As a result, they will need to visit the debt and equity market frequently providing more opportunities to revise their current capital structure, leading to a higher SOA.

Dang et al. also found that firms with a higher corporate investment level recorded an SOA of 77%, whereas those with small firm investments had an SOA of 59%. Nevertheless, the difference in the SOA is not statistically significant. Finally, the study suggests the effect of profitability on the SOA. In particular, firms with a high profit recorded a 74% SOA while those with low profit recorded a 64% SOA. This is because the profitable firms can use the retained earnings to make adjustments to their capital structure towards the target leverage because of financial flexibility. In other words, more profitable firms have lower internal financial constraints and hence, can issue new securities at a lower cost. This implies lower costs of adjustment, increasing incentives for adjusting their current leverage ratios. Regarding firm size, the SOA for large firms was 62% while that of small firms was 77%. This is because the large firms have less use of cash flow volatility, fewer debt covenants, and lower financial distress. In other words, the costs associated with deviating from the target leverage are low since less external pressure leads to lower SOA. The result is inconsistent with Dang et al. (2011) and Faulkender et al. (2012), who found that larger firms are associated with higher speed of leverage adjustment since the firms tend to be more mature and financially flexible with a stronger market standing and higher tangibility and profitability. Consequently, they are exposed to lower information asymmetry issues and hence, exhibit greater access to the capital market. As a result, their SOA is higher because of lower costs of adjustment. Also, it was found that the SOA for firms with high volatility was 56%, whereas those with a low vitality adjusted at a speed of 67% because according to trade-off theory, the firms with larger earnings volatility have lower access to the financial market since they have a high operating risk, causing weaker capability in meeting debt obligation.

Mukherjee and Wang (2013) examined the connection between the cost of capital structure deviation and the SOA towards the target leverage ratios. Their sample was made of firms listed on the New York Stock Exchange, the Amex, and NASDAQ, excluding financial and public utilities firms and firms with total asset values of less than $1 million. The final sample consisted of 9,314 firms which had a combined total of 115,299 firm-year observations for the 1965-2008 period. Financial leverage was measured using the book debt-to-capital ratio and

market debt-to-capital ratio. The researchers compared the SOAs between the placebo sample and the real estimate sample. This difference was considered as the pure effect of active adjustment of the capital structure. The results also showed that the U.S. firms have a SOA of 12% per year, and a half-life is 5.5 years. The researchers found that the firm SOA is positively associated with the magnitude of leverage deviation for U.S. firms. In addition to this, they reported that the SOA is greater for firms that are over-levered compared to firms that are under-levered since over-levered firms are subjected to higher bankruptcy costs. Hence, they expose a higher external pressure on lowering the leverage level closer to the target. The stronger the motivation to ensure that the capital structure is back to optimal, the faster the SOA towards the target leverage ratio by the company occurs.

Qian et al. (2009), conducted a study determining whether the Chinese publicly listed companies have target leverage ratios, and if the SOA in those firms has their target leverage ratios. The researchers used both market and accounting data from publicly listed Chinese companies using the China Stock Market and the Accounting Research Database as the sources of the data used in the study. The final employed sample comprises 3,900 firm-year observations, from 650 firms listed on the Chinese Stock Market during 1999 and 2004. The result revealed that the speed of leverage adjustment was around 18.5% per year. The authors also found that the SOA in Chinese firms was lower than that of other countries in the literature. They explained that firms in Chinese markets suffer higher transaction costs when they borrow money from banks, and this leads to higher agency costs between the creditors and the shareholders. The high transaction costs were attributed to the underdeveloped Chinese bond market as the small average of total debt ratio and long-term debt were 50.5% and 10%. The results also showed that the further away the leverage ratio was from the target leverage ratio, the faster the SOA was in the Chinese firms. This finding is inconsistent with Oztekin and Flannery (2012), Lemma and Negash (2014), and Aybar-Arias et al. (2012), who suggested that in the environments of high costs of leverage adjustment, the further the current-target leverage distance, the slower the SOA.

Contributing to the literature methodologically, Hovakimian and Li (2011) investigated the SOA when using different models in order to determine the best methods for conducting research when testing for SOA. This study used a dataset comprised of 132,665 observations covering 1970–2007. The researchers did not include firms whose sales per year were less than $1 million and excluded financial firms. Generally, the researcher reported that most of the

methods used in the literature were biased towards the developed research hypotheses. With the use of the partial-adjustment model (OLS), the study obtained an adjustment speed of 0.132 which was statistically significant. Yet when using the firm effects regression for the historical panel, the researchers found the SOA towards the target leverage ratio to be 0.169. The fixed effects regression yielded a relatively higher adjustment speed of 0.357. Alternatively, the researcher used the same experiment but with pecking order data and found a lower SOA, ranging from 0.09 with the partial-adjustment model (OLS) and the firm effects regression to 0.284 with the fixed effect models. In the last experiment, Hovakimian and Li (2011) used the flipped-coin data. A slightly different set of SOA was obtained ranging from 0.08 to 0.26. In summary, the results showed that reliant on target specification, the SOA towards the target leverage to be 13.2–35.7% per year. The regression models that are dependent on the full sample effects results are biased towards the target-adjustment hypothesis. When the biasness is accounted for, the results show that the differences in the SOAs are in the range of 5–8% per year.

4.4.2. Determinants of speed of leverage adjustment: International market studies

On the same research theme, various studies have been conducted on international samples to determine the SOA towards the optimal leverage level of firms, and a general finding was obtained indicating that there were cross-country differences in the SOA. In other words, firms operating in different nations, which often exhibit different institutional, financial, regulatory environments as well as macroeconomic conditions and legal tradition, tend to adjust their leverage levels towards the target ones at different paces (Antoniou et al., 2008; Cook & Tang, 2010; Drobetz et al., 2015; Halling et al., 2012; Oztekin & Flannery, 2012). These country-related factors are argued to influence both the costs of deviating from the target leverage level and the costs of adjusting the current leverage towards the target (Antoniou et al., 2008; Oztekin & Flannery, 2012). For example, in times of economic recession, the supply of capital is likely to be more constrained. Therefore, it is more challenging for firms to modify/adjust their capital structure, leading to lower SOA (Drobetz et al., 2015).

Antoniou et al. (2008) found that SOA in the 5G countries varied across countries with the fastest adjustment rate for France (around 40%), followed by the United States, UK, Germany, and Japan (11%). Antoniou et al. (2008) explained the reason for the slowest SOA of firms in Germany and Japan is that they have relatively easier access to debt capital owing to closer ties with creditors. It is sensible for them to adjust their debt level slowly to avoid substantial

agency costs. Furthermore, for investors in those two countries, higher debt signals firms' lower qualities. As a result, German and Japanese firms should not rely heavily on debt the way firms in the other three countries. Their findings can also be generalised that firms operating in market-based economies (the United States and the UK) have higher SOA than firms in bank-based economies (German and Japan).

Cook and Tang (2010) conducted a study on macroeconomic conditions and capital structure adjustment speed. Their purpose was to examine the different macroeconomic factors that impact the speed of capital structure adjustment towards the target leverage. The researchers used panel data from the Compustat Industrial Annual Database from 1977–2006. The final sample size of the study had 124,466 firm-year observations for analysis based on the book-value leverage and 126,920 firm-year observations for analysis based on the market-value leverage research. The results of the study showed that the SOA during the good macroeconomic stages was faster than when there was a bad macroeconomic stage. The research showed that the SOA was 46.1% during the good macroeconomic stages, whereas the SOA was 43.7% during the bad states for the book-valued leverage ratio because, during prosperous times, firms have a wider range of financing options, hence the faster adjustment to the target leverage ratio compared to when the economy is performing poorly. In the two-stage dynamic partial adjustment model, the researchers used the terms spread, default spread, GDP growth, and dividend yield to determine whether the macroeconomic environment was good or bad and found that the SOA was roughly 20% compared to the approximately 50% in the integrated.

Furthermore, Elsas et al. (2014) used a variety of analyses to create an estimate on the target debt ratios and to determine the SOA towards these targets on major investments such as acquisition and building. The authors employed a sample size of 1,841 U.S. firms and paid for 728 built events (662 firms) and 1,345 acquired investment events (1,179 firms) covering 1989–2006. The researchers omitted events after 2006 to remove the uncertain effects of the financial crisis of capital availability. The results of the study showed that the annual SOA towards a target leverage ratio was 23% per year. The researchers also found that the firms with the largest investments had a higher SOA by a speed of 43% per year. Furthermore, it found that the speed of leverage adjustment differs depending on the types of investments (built versus acquired). Specifically, firms with the acquired investments (acquisitions) had a higher SOA at 38%, compared to the firms that had built events (capital expenditure) at 26%. These

results showed support for trade-off theory and the managerial efforts to time market sentiment theory. However, they found lower support for pecking order hypothesis.

Similar findings were obtained by Drobetz et al. (2015) regarding the SOA of firms operating in market-based and bank-based economies. The study aims to analyse and determine the heterogeneity in the speed of capital structure adjustment across seven countries. The researchers used annual firm-level data both in accounting and the market from listed companies in seven countries: Japan, Italy, France, Germany, the United Kingdom, Canada, and USA. These data were collected from the Compustat global database, and the sample period was 1992–2011. The sample size was 115,537 observations from 10,772 firms. In the analysis, the researchers considered both the book average (debt in current liabilities plus long-term debt divided by total assets) and the market average (debt in current liabilities plus long-term debt divided by market value of assets). The authors used different dynamic panel methodologies. They found that the average SOA was 25% each year in the G7 nations. This positive SOA was supported by trade-off theory. However, the SOA was found to vary across countries: Canada's speed was 35.4%, UK was 32.0%, the United States was 26.1%, Japan was 19.5%, and Italy was 22.6% per year. These figures imply that firms in countries with a market-based financial system have a higher SOA compared to those in bank-based countries, which is consistent with the study of Antoniou et al. (2008). It has been argued that the market-based capital markets are more well-functioning in enhancing the market liquidity (Holmstrom & Tirole, 1993), improving the efficiency of governance mechanisms and risk management (Jensen & Murphy, 1990; Levine, 1991), compared to their bank-based counterparts. This is expected because the main difference between these two types of economies lies primarily in the functions of the securities market in allocating capital, providing liquidity, and managing investment risks (Demirgüç-Kunt & Levine, 1999). These are mainly the functions of banks in the bank-based economies yet are shared and maintained with the securities market in the market-based economies (Rajan, 1992). In other words, the "markets act to offset the inefficiencies associated with banks" (Oztekin & Flannery, 2012, p. 101) Consequently, it is easier and less costly for the market-based firms to adjust their capital structure towards the target, i.e. higher SOA. The study also found that firms' SOAs were different across different macroeconomic conditions, i.e. recessions and expansions. The researcher found that SOA was lower during bad macroeconomic conditions since it is more challenging for firms to obtain more securities or retire the outstanding ones with a more constrained capital supply.

Oztekin and Flannery (2012) investigated the institutional capital structure SOA determinants. The researchers used data from the Compustat Global Vantage database from 1991–2006. The firms included in the study were from 37 different countries, and the researchers also included the economic condition of these countries in terms of GDP, the inflation from the World Development Status data found in the World Bank database. The sample size of the study consisted of a total of 15,177 firms with 105,568 firm years of observations. Consistent with Antoniou et al. (2008) and Drobetz et al. (2015), Oztekin and Flannery found that the firms in market-based financial systems had a high SOA as the speed was 23%, while the firms in the bank-based financial systems had an SOA of 20%. The same reason specified for this was that market-based financial systems are more efficient, and hence, lead to lower costs of adjustment. Importantly, regarding the cost of leverage adjustment, equity trading costs were found to have a greater impact on the speed, compared to debt access costs (6–12%, versus 2–10%). The access to information costs was shown to affect the SOA by a magnitude of about 7.3–10.7%, the financial constraints adjustment costs were found to affect the SOA by a magnitude from 8.3–13.7%, and the aggregate costs were shown to affect the Speed of Adjustment by a magnitude from 10.6–11.6%. Furthermore, the authors found that the SOA was different in various legal traditions. It was 27% in the English tradition, 25% in the Scandinavian tradition, 22% in the German tradition, and 15% in the French tradition. The differences in the cost of adjustments between the countries when considering the legal tradition of the country were pegged by the hypothesis that some legal traditions have stronger and better protection of all stakeholders and that they offer stronger institutions. These results concluded that the English legal tradition provides stronger institutions and better protection for shareholders and creditors, and thus, there is an incentive for companies in these countries to adjust to an optimal capital structure. The researchers concluded that the SOA in different countries reflects the costs and benefits of transactions. In particular, slow adjusting firms, which tend to be a greater distance from target leverage, were less likely by 7.83%, to access the external capital market, than were fast adjusters.

A more recent cross-country (Lemma & Negash, 2014), determined the role of institutional, macroeconomic, industry, and firm characteristics on the adjustment speed of capital structure in organizations operating in the developing countries in Africa. The sample used in the study consisted of 986 firms from 1999–2008. By employing the partial adjustment model in combination with the system GMM, the findings indicated that the speed of leverage adjustment towards short-term leverage, long-term leverage, and total leverage was 53.9%,

59.0%, and 39.4%, respectively. This implied that African firms do work towards achieving target leverage levels, supporting trade-off theory. Regarding the determinants of SOA, distance to the target leverage (DIS) is claimed to influence a firm's SOA. However, the direction of the influence depends on the measure of leverage. In particular, if the DIS-SOA relationship is positive for short-term leverage, and the total leverage measure is negative for long-term leverage. This implies adjustment costs for long-term finance are prohibitively higher. Therefore, if the firm's current leverage is too far away from the target, it may be disincentivised to adjust, leading to lower Speed of Adjustment. They also found that more profitable and larger firms have better and cheaper access to external funding, lower costs of financial distress, and hence, more financially flexible and faster SOA. Furthermore, the researchers also found that the SOA varies across industries associated with their risk-taking natures. Specifically, firms operating in riskier industries, such as oil, gas, and regulated sections, tend to be more levered. When they are required to lower their leverage towards the target, they are more motivated to do so since it can also reduce their risk. Therefore, their SOA is higher. Finally, a cross-national difference in SOA was also reported. The inflation rate was found to positively influence the SOA. This finding is consistent with Wanzenried (2006) such that higher inflation is associated with the higher cost of capital because of a higher interest base rate (Mills, 1996). This indicates that firms can obtain greater benefits to reach the target leverage where the untapped tax benefits are maximised in highly inflationary environments, providing them more motivation to adjust.

Zhou et al. (2016) found the cost of deviating from the target leverage has been empirically reported to influence the SOA. Employing 12,147 firm-year observation samples from 1980–2012 collected from the North America Fundamentals annual database, the research results initially showed that the cost of equity has a positive relationship with leverage deviation. Furthermore, the authors suggested that firms with higher sensitivity of equity cost to leverage deviation (higher cost of deviation) tend to have a higher speed of leverage adjustment. In particular, firms that were in the highest quartile (ranked by the sensitivity of the cost of equity) had an SOA which was 51% faster compared to the other firms in the lowest quartile whose SOA was around 23%. These results supported the predictions of trade-off theory of capital structure.

4.4.3. Determinants of speed of adjustment (SOA): Small and medium-sized firms (SMEs)

Other studies have been conducted to determine the determinants of the Speed of Adjustment to the target leverage, particularly on small- and medium-sized corporations, such as Aybar-Arias et al. (2012). Unlike other studies (e.g. Drobetz & Fix, 2005; Flannery & Rangan, 2006; Gonzalez & Gonzalez, 2008; Lopez-Gracia & Sogorb-Mira, 2008), the authors did not treat the SOA as a constant but instead as being time-varied across different firm characteristics, such as distance to target leverage, size, and growth. They contributed to the literature by applying the system GMM estimation method to simultaneously endogenise nonobservable target leverage and the SOA. The study employed panel data covering 1995–2005 (11 years) for 947 firms with 9,114 firm-year observations that were categorized as small and medium-sized enterprises as defined by the European Commission. The research reported an average annual adjustment speed of 26%. This adjustment speed was found to be influenced by financial flexibility, growth opportunities, and size to reach the optimal ratio. The financial flexibility was shown to positively impact the SOA, and this can be interpreted that more financially flexible SMEs tend to have higher SOAs. This finding can be explained that for firms with the ability to adjust their debt ratio without incurring substantial prohibitive costs, the costs of leverage adjustment are relatively lower leading to a higher SOA. Furthermore, growth opportunities and the SOA were also found to be positively correlated, and this can be explained that growing firms have more incentives to restructure their capital structure by using external financing, especially debt. Size was found to be positively correlated with the SOA, and this interpreted that larger firms have lower costs of restructuring due to the economies of scale, and they also exhibit greater access to the capital market making it easier for them to adjust their debt composition. Therefore, larger firms have a higher SOA. Also, the study reported a negative association between the SOA and the distance to the optimal ratio such that the further the distance from the current leverage to the target leverage, the slower the SOA. As explained by the researchers, SMEs face more serious issues of information asymmetry, and the cost of adjustment can be considerable. As a result, once firms still have a long way to the target leverage, they "probably will choose (1) to give up adjusting to the target or, alternatively, (2) to reduce the SOA" (Aybar-Arias et al., 2012, p. 984; Oztekin & Flannery, 2012).

4.4.4. Contribution of the studies 2 and 3 to the literature

With a thorough review of the literature on the SOA toward target leverage, it is noticeable that the determinants of capital structure are given much more attention in comparison to the determinants of SOA. Given the importance of the topic in the finance literature, more focus is considered to provide more insights into the area. The literature in this area has been supported the trade-off theory through their obtained existence of target leverage, and hence, a speed of adjustment toward that target. In the current thesis, the investigations of determinants of speed of adjustment are also built on the trade-off theory with a belief that firms decide their own target/optimal leverage level and attempt to achieve such target, i.e., speed of convergence. Furthermore, there is a visible lack of studies conducted on SMEs which have been claimed to exhibit different financing structures. As a result, another contribution of the current research is to examine factors that are associated with the speed of leverage adjustment for firms listed in AIM. As mentioned in Section 2.2, AIM firms are not only small- and medium-sized firms but also are listed on a recognised stock exchange in the UK as well as firms with different governance structures. These unique characteristics may lead the firms to adopt different decisions in adjusting their current leverage towards their leverage target. For a clearer picture, a comparison study will be conducted to examine the differences in determinants of SOA between AIM firms and main market firms. Building on the theoretical framework (Section 3.2) and the literature review, hypotheses on the underlying drivers of firms' SOA towards target leverage will be developed in the subsequent section.

4.5. Hypothesis Development: Speed of Adjustment

The Speed of Adjustment indicates how fast an organization adjusts its current capital structure (e.g. leverage ratio) towards a predetermined target capital structure. As thoroughly discussed in the previous literature review section 4.4, the SOA has been consistently reported to vary across firms with different characteristics (see e.g. Aybar-Arias et al., 2012; Dang et al.., 2012; Lemma & Negash, 2014; Zhou et al., 2016), and operating in different industries and countries (Antoniou et al., 2008; Cook & Tang, 2010; Drobetz et al., 2015; Lemma & Negash, 2014; Oztekin and Flannery, 2012;). In the current studies of Alternative Investment Market firms, a number of factors are considered, including firm size, leverage deviation (actual-target distance), financial flexibility, growth opportunity, and industry y- and country-specific influences.

4.5.1. Firm Size and Speed of Adjustment (SOA)

Firm size was found to significantly influence the firm Speed of Adjustment towards a target capital structure (e.g. Aybar-Arias et al., 2012; Dang et al., 2012; Faulkender et al., 2012). Nevertheless, the direction of the size influence remains inconclusive. The majority of studies reported a positive size-SOA association (e.g. Aybar-Arias et al., 2012 Dang et al., 2011; Drobetz & Wanzenried, 2006; Faulkender et al., 2012; Flannery and Hankins; 2007). They justified this finding so that larger firms tend to be characterised with stronger market standing, more stable cash flow, higher tangibility, and profitability. Consequently, firms are likely to have better access to the capital markets with lower costs of borrowing because of their lower exposure to information asymmetry. This makes external funds more readily available for firms to adjust their debt composition. Together with the advantages of economies of scale, larger firms face lower costs of leverage restructuring, leading to a stronger motivation to adjust, and hence a higher Speed of Adjustment (SOA). However, a negative influence of firm size on the SOA was also obtained (e.g. Banerjee et al., 2004; Dang et al., 2012; Haas & Peeters, 2006). The explanation for this finding is related to the lower costs of deviating from the target leverage associated with larger firms because they have a lower risk of financial distress and fewer debt covenants with less use of cash flow volatility. Because of the lower external pressures, larger firms are less motivated to adjust their capital structure towards the equilibrium position.

Given that the sample of this study includes firms from the AIM which contains small and medium-sized firms. These firms are listed on the LSE and are likely to be subject to higher scrutiny by external stakeholders. Together with an additional monitoring layer, i.e. the NOMADS, the external pressure on a firm's capital structure is inherent, leading to significant costs of being in a disequilibrium position. This implies a high cost of deviating. Consequently, it can be expected that larger AIM firms with the advantages of lower costs of adjustment compared to smaller AIM firms are likely to be more motivated to adjust their leverage levels, leading to a higher Speed of Adjustment. However, it can also be argued that larger AIM firms may play an additional assurance role in the eyes of investors with their listing status and double governance layer. Therefore, AIM firms of a larger size may be exposed to lower pressure in adjusting their deviating leverage compared to smaller firms because of a lower cost of deviating. Despite their lower cost of adjustment, without the need for adjustment, larger AIM firms may not need to use their financing flexibility. Because no study has been conducted on

Alternative Investment Market firms with their unique characteristics, it is challenging to set a one-tailed hypothesis. Consequently, the following alternative nondirectional hypothesis was developed and tested:

H8: Firm size is significantly associated with the speed of adjustment of AIM firms

4.5.2. Leverage Deviation (DIS_{lev}) and Speed of Adjustment (SOA)

Leverage deviation is the distance (difference) between the actual and the target/optimal leverage of firms (DIS_{lev}). The DIS_{lev} has been found to impact the SOA because it is related to both costs of being distant from the target and costs of adjustment (Aybar-Arias et al., 2012; Lemma & Negash, 2014; Mukherjee & Wang, 2013; Zhou et al., 2016). Generally, the actual-target distance was reported to be negatively associated with the SOA (see e.g., Aybar-Arias et al., 2012; Lemma & Negash, 2014 for long-term leverage measure). They argued that in the environments where the costs of adjustment are critical, such as for SMEs, the greater the actual-target leverage distance, the lower the SOA as firms are demotivated to adjust. On the other side of the same coin, DIS_{lev} is argued to positively influence the Speed of Adjustment if the costs of deviating from the target is high (Mukherjee & Wang, 2013; Zhou et al., 2016). For example, Zhou et al. reported that shareholders would increase their required rate of return (i.e. cost of equity) if the firms were at a suboptimal level of capital structure ($|DIS_{lev}| > 0$). Costs of deviating exist. They also stated that if the costs were more sensitive to the deviation level, the SOA would be higher.

In the case of Alternative Investment Market firms, the DIS_{lev}-SOA relationship is hard to predict because, with a SME nature, they may be less motivated to adjust as suggested by Aybar-Arias et al. (2012), leading to a negative relationship. Nevertheless, for these firms publicly listed with higher external scrutiny and pressure, costs of deviating may be considerable. As a result, a nondirectional alternative hypothesis is developed:

H9: The leverage deviation level is statistically significantly associated with speed of adjustment of AIM firms

4.5.3. Financial Flexibility and Speed of Adjustment (SOA)

Financial flexibility in an organization refers to the ability of the organization to react and alter its capital compositions without incurring prohibitive costs (Aybar-Arias et al., 2012). This implies that more financially flexible firms have a better ability in adjusting their current capital

structure towards the target. Therefore, the costs of adjustment are relatively cheaper, leading to a faster SOA. This positive association between financial flexibility and SOA has been consistently supported by the literature (e.g. Aybar-Arias et al., 2012; Graham & Harvey, 2001; Clark et al., 2009; DeAngelo et al., 2010). Consequently, the current study develops the following hypothesis:

H10: Financial Flexibility is significantly positively associated with speed of adjustment of AIM firms

4.5.4. Growth Opportunities and Speed of Adjustment (SOA)

Growth opportunities show the potential for organizations to grow significantly due to the prevailing business environment and the strengths and weaknesses of the business. Elsas and Florysiak (2011) and Drobetz al. (2015) asserted that the presence of a growth opportunity makes managers take the necessary initiatives to find financing options to finance the growth and investments meant to grow the company. This leads to a change in the capital structure of the organization.

Different studies have reported a positive relationship between growth opportunities and the Speed of Adjustment of organizations (Aybar-Arias et al., 2012, Dang et al., 2012; Drobetz & Wanzenried, 2006; Fitzgerald and Ryan, 2019; Kim et al., 2006; Lopez-Gracia, 2012; Oztekin & Flannery, 2012). It is argued that growth opportunities gave firms more incentives to adjust their capital structures. This may be because high-growth firms exhibit higher needs to obtain external funds because their internal resources are likely to have run out. Consequently, more opportunities are available for them to alter their current capital structure. Nevertheless, some studies reported a negative relationship between growth opportunities and Speed of Adjustment such as Hovakimian et al. (2004), Banerjee et al. (2004), and Heshmati (2001). According to Fitzgerald and Ryan (2012), low growth firms have a higher SOA because high-growth firms maintain a large leverage ratio, thus causing less debt capacity and making it difficult for them to adjust to target leverage ratios.

Although the studies give conflicting results most of the results showed that growth opportunities have a positive relationship with the Speed of Adjustment and are related to the ability of firms to restructure their capital structure in order to exploit growth opportunities. Given that, our firms operate in the AIM where it is easy to raise finances through equity to

take advantage of growth opportunities. In this instance, a positive relationship is expected. Nevertheless, it can also be argued that highly growing AIM firms may act as a good justification for firms to ask for leeway in their risk-taking behaviours. Investors who are investing in fast-growing firms are generally more risk-seeking, and they tend to expect higher capital growth from the firms. As a result, firms are likely to face lower pressure in adjusting their leverage deviation. This leads to a lower Speed of Adjustment. Consequently, an alternative nondirectional hypothesis is developed and tested as follows:

H11: Growth opportunities are significantly associated with speed of adjustment of AIM firms

4.6. Comparison study: Determinants of capital structure and SOA across the Alternative Investment Market and the Main market

4.6.1. Determinants of Capital Structure Between AIM and Main Markets

Regarding the conduct of a comparison study on the determinants of capital structure across the Alternative Investment Market and the UK main market, the first notable differences between them are the size and their stage of the business cycle. In particular, AIM firms are characterised by their small and medium size and their young and fast-growing stage (Mallin & Ow-Young, 1998). These characteristics provide implications for the accessibility of AIM firms to the external capital market. As a result, influences of the AIM capital structure's determinants tend to be distinctive based on the literature. More information and discussion can be found in the AIM background section (i.e. Section 2). Furthermore, AIM companies are also unique because of their two-layer corporate governance structure, comprised of the traditional internal governance and nominated advisors. The latter is considered as the AIM's central concept. The Nomad's functions are reviewed in depth in the AIM background in Chapter 2. The nominated advisors (Nomad) contribute additional oversight to ensure that executive decisions are made in a way that minimizes agency conflicts across different stakeholders, e.g. managers, shareholders, and debtholders. As a result, the additional governance layer of Nomad is likely to impact capital structure decisions because the agency problems arising from financing decisions are better addressed through tougher monitoring and advising procedures (Malling & Ow-Young, 1988). Consequently, the capital structure's determinants may differ from those of the main market. Overall, it is possible to hypothesize that capital structure determinants differ between companies listed on the Alternative Investment Market and the main market. Consequently, the following hypothesis will be tested:

H12: Influences of the determinants of capital structure are heterogenous between AIM and Main Market

4.6.2. Speed of Adjustment (SOA) Across Alternative Investment Market (AIM) and Main Market

AIMs are different from other markets in several ways, which might influence the Speed of Adjustment of firms that operate in this market. One of the major differences is that it has small and medium-sized firms, unlike other major markets that have large firms. Studies have shown that smaller firms have less SOA compared to larger firms (the size effect, Section 4.5.1). Examples of such studies are Banerjee et al. (2004); Drobetz and Wanzenried (2006); Flannery and Hankins (2007), and Lopez-Gracia and Sogorb-Mira (2008). Furthermore, AIM firms are exposed to higher information asymmetry issues because they are less mature and less established compared to the main market firms, leading to greater costs of adjustments. Therefore, we would hypothesize that AIM firms have lower Speed of Adjustment compared to main markets based on the size characteristics of AIM firms and main market firms.

Nevertheless, from a different perspective, another difference between Alternative Investment Market and main market firms is the additional governance layer, i.e. the Nomad, of AIM firms. The Nomad acts as an additional monitoring channel that has control over the firm's managers which might affect their capital structure, as well as the SOA towards an optimal capital structure. Furthermore, the Alternative Investment Market firms are characterised in the young and fast-growing stage (Mallin & Ow-Young, 1998). This makes the AIM firms appear to be riskier and hence would be likely to be exposed to higher surveillance from the external stakeholders because the firms are publicly listed on the LSE (unlike other unlisted SMEs). Consequently, with the Nomad and stricter scrutiny from the public stakeholders, the costs of deviating from the target for AIM firms can be higher compared to the main market, given that AIM firms face greater information asymmetry and higher bankruptcy costs. This creates stronger external pressure on AIM firms to achieve their predetermined target capital structure. More information and discussion regarding the differences between the AIM firms and main market firms can be found in the AIM background section (i.e. Section 2.2). Given the above arguments, we expect that the Speed of Adjustment in AIMs is different from that of firms operating in the main markets, and thus the following nondirectional alternative hypothesis is developed:

H13: The speed of adjustment on AIM is statistically significant different from that of the Main market

CHAPTER 5: METHODOLOGY

5.1. Introduction

In this chapter, all information related to the empirical procedures of the thesis will be introduced and discussed. In particular, Section 5.2 provides information on the employed data sample and the sources of those data. Section 5.3 explains the construction of all variables employed in the thesis. Section 5.4 discusses the main statistical estimation models employed to test for developed hypotheses (Chapter 4). Within Section 5.4, the estimation methods of the empirical Studies 1 and 2 are presented in Section 5.4.1 and Section 5.4.2, respectively; for the last study, the estimation analyses are discussed in Sections 5.4.3 and 5.4.4. The section also presents potential statistical issues such as heteroskedasticity and endogeneity that are exposed to the model estimates (Section 5.4.5).

5.2. Data Sources AND Sample Selection

The thesis aims at examining the capital structure (empirical Study 1) and leverage SOA (empirical Study 2) of firms listed in the Alternative Investment Market. Consequently, the main set of data comprises AIM-listed firms covering the period from 2006–2019. This period has been selected because the study can also take into account the impacts of the 2007–2009 global financial crisis (GFC) because capital structure decisions have been found to vary with the market conditions (Drobetz et al., 2015). The primary source of all data related to firm characteristics is from the DataStream database, except for the ownership data, which were collected from the WRDS Boardex database. Macroeconomic data were obtained from World Bank.

Furthermore, the thesis aims at conducting a comparison study on the determinants of capital structure and Speed of Adjustment across the Alternative Investment Market and the UK main market. Consequently, the same variables were collected for the largest 100 companies (FTSE 100), largest 250 companies (FTSE 250), and largest 350 companies (FTSE 350). The final sample size for Alternative Investment Market comprises was 7,751 firm-year observations; for FTSE100 it was 1,263 firm-year observations; for FTSE250 was 2,793 firm-year observations; and for FTSE350 it was 4,056 firm-year observations. The following section will describe the computations of all variables employed in the empirical analyses of both studies. A summarised table for those measures is also presented in Table 4.

5.3. Variable Measurement

5.3.1. Dependent variable 1: Capital structure (Empirical Study 1)

Following the study of Oztekin and Flannery (2012), the current study employs two main measures of leverage: market leverage (MLEV) and book leverage (BLEV). The two measures have been employed in a number of studies, such as Belkhir et al. (2016), Oztekin (2015), and Frank and Goyal (2009). They can be mathematically described as follows:

$$BLEV = \frac{Long-term\ debt + Short-term\ debt}{Total\ assets} \quad \text{(eq. 5.1)}$$

$$MLEV = \frac{Long-term\ debt + short-term\ debt}{Total\ assets - Book\ equity + market\ equity} \quad \text{(eq. 5.2)}$$

5.3.2. Dependent Variable 2: Speed of adjustment (Empirical Study 2)

In the second empirical study, the main focus is on the leverage speed of convergence of AIM firms. Hence, while the main dependent variable in the first empirical study of a firm's leverage level, the primary dependent variable in this second study is the firm's SOA (SOA). The SOA towards a firm's target/optimal leverage is measured using the partial adjustment model employed by different scholars (e.g. Flannery & Rangan, 2006; Oztekin & Flannery, 2012; Zhou et al., 2016). The computation procedure is described below

$$L^*_{i,t} = \beta X_{i,t-1} + \varepsilon_{i,t} \quad \text{(eq. 5.3),}$$

where $L^*_{i,t}$ is the target leverage of firm i in year t, which is a function of $X_{i,t-1}$, a vector of firm characteristics. β_i and $\varepsilon_{i,t}$ are the fitted coefficient vectors to be estimated and $X_{i,t-1}$ is a vector of the firm and macroeconomic characteristics that are associated with the firm's leverage level as suggested by the literature (see e.g. Oztekin & Flannery, 2012; Zhou et al., 2016). These are firm size, tangibility, profitability, growth opportunity, nondebt tax shield, liquidity, intangibility, firm age, dividend pay-out policy, operating risk, bankruptcy risks, ownership concentration, and free cash flow. The measures of these variables will be explained in Section 5.3.3. Following the extant literature (see Section 4.4.2) macroeconomic factors, including (a) the country's gross domestic product (GDP growth), (b) inflation rate, (c) the proportion of a country's stock market capitalization to GDP, and (d) banking crisis dummy, are taken into account. These factors have been widely accepted as determinants of a firm's target leverage (Dang et al., 2012; Flannery & Rangan, 2006; Ozkan, 2001; Oztekin &

Flannery, 2012; Zhou et al., 2016). Note that these are factors explaining a firm's target leverage and are not determinants of Speed of Adjustment which the study is focused on examining. The main explanatory variables employed in this study as SOA's determinants will be explained later on in section 5.3.3, and more information regarding the tested hypotheses of this study can be found in Section 4.5.

To compute the SOA, the equation 5.3 is substituted into a general partial adjustment model (eq. 5.4), which is written as follows:

$$L_{it} - L_{i,t-1} = \lambda\left(L^*_{i,t} - L_{i,t-1}\right) + \delta_{i,t} \qquad \text{(eq. 5.4)}$$

where $L_{i,t}$ is firm i's leverage ratio (which is consecutively measured using BLEV and MLEV) at the end of year t; $L_{i,t-1}$ is firm i's 1-year lagged debt ratio; $L^*_{i,t}$ is the target debt ratio of firm i in the period t; and λ_i measures the Speed of Adjustment towards the target leverage level for firm i. By substituting the equation 5.3 into the equation 5.4, the arranging provides the following estimable specification of SOA:

$$\begin{aligned} &\Leftrightarrow L_{i,t} - L_{i,t-1} = \lambda L^*{}_{it} - \lambda L_{i,t-1} + \delta_{i,t} \\ &\Leftrightarrow L_{i,t} = L_{i,t-1} + \lambda\ L^*_{i,t} - \lambda_i L_{i,t-1} + \delta_{i,t} \\ &L_{i,t} = (1-\lambda)L_{i,t-1} + \lambda(\beta\ X_{i,t-1} + \varepsilon_{i,t}) + \delta_{i,t} \\ &\Leftrightarrow L_{i,t} = (1-\lambda)L_{i,t-1} + (\lambda\beta_i)X_{i,t-1} + \lambda\varepsilon_{i,t} + \delta_{i,t} \qquad \text{(eq. 5.5)} \end{aligned}$$

The purpose is to compare the Speed of Adjustment across industries, countries, and indices (AIM versus the main market). A similar procedure is implemented to yield the SOA of each industry, each country, and each market index. In particular, the firm-specific equation 5.3 will be revised as follows:

$$L^*{}_{i,j,t} = \beta_j\, X_{i,t-1} + \varepsilon_{i,j,t} \qquad \text{(eq. 5.6)}$$

where $L^*{}_{i,t}$ is the target leverage of firm operating in industry/country/index j for the year t, which is a function of $X_{i,t-1}$, a vector of firm characteristics and macroeconomic characteristics. β_j and $\varepsilon_{i,j,t}$ are the fitted coefficient vectors to be estimated.

Substituting the equation 5.6 into the general partial adjustment equation (eq. 5.7) yields the following estimable specification for the computation of industry/country/index leverage of Speed of Adjustment:

$$L_{i,j,t} - L_{i,j,t-1} = \lambda_j\left(L^*_{i,j,t} - L_{i,j,t-1}\right) + \delta_{i,j,t} \quad \text{(eq. 5.7)}$$

$$\Leftrightarrow L_{i,j,t} = \left(1 - \lambda_j\right)L_{i,j,t-1} + \left(\lambda_j\beta_j\right)X_{i,j,t-1} + \lambda_j\varepsilon_{i,j,t} + \delta_{i,j,t} \quad \text{(eq 5.8)}$$

where $L_{i,j,t}$ is the leverage ratio (which is consecutively measured using BLEV and MLEV) at the end of year t of firm i operating in industry/country/index j; $L_{i,j,t-1}$ is firm i's lagged debt ratio of firm i in each industry/country/index j in year t; $L^*_{i,j,t}$ is the target debt ratio in the period t; and λ_j measures the Speed of Adjustment towards the target leverage level for all firms operating in the industry/country/index j.

5.3.3. Independent variables: Determinants of capital structure

This section provides in detail the mathematical computations of all explanatory variables employed in the model. As stated in the hypothesis development section, the expected relationships between those factors and capital structure can be found in Section 4.3.

5.3.3.1. Firm size

To measure firm size, the logarithm value of a firm's total asset is employed. This measure of firm size has been widely employed by the extant literature (e.g. Belkhir et al., 2016; Fan et al., 2012; Flannery & Hankins, 2013; Jõeveer, 2013; Kieschnick & Moussawi, 2018; La Rocca et al., 2010; Lemmon & Zender, 2010; Lucey & Zhang, 2011 Matteva et al., 2013; Oztekin, 2015; Van Hoang et al., 2017).

$$Size = Log\ (Total\ Asset) \quad \text{(eq. 5.9)}$$

5.3.3.2. Tangibility

Tangibility is measured as the net property, plant, and equipment (net PPE) to the total assets (Belkhir et al., 2016; Fan et al., 2012; Jõeveer, 2013; Kayo & Kimura, 2011; Ko¨ksal & Orman, 2015; La Rocca et al., 2010; Li et al., 2019; Lucey & Zhang, 2011; Matteva et al., 2013; Van Hoang et al., 2017). The measure of tangibility can be mathematically written as follows:

$$Tangibility = \frac{Net\ PPE}{Total\ Asset} \quad \text{(eq. 5.10)}$$

5.3.3.3. Growth

Growth is defined as the market-to-book ratio following the studies of, for example, Li et al. (2019), Kieschnick and Moussawi (2018); Fan et al. (2012); Chang et al. (2014), and Flannery and Hankins (2013).

$$\text{Growth} = \frac{Market\ Capitalisation}{Equity\ Book\ Value} \quad \text{(eq. 5.11)}$$

5.3.3.4. Liquidity

Liquidity is the ability of the firm to pay current debts; it is calculated as the ratio of current assets to current liability (Belkhir et al., 2016; Bonfim & Antão, 2012; De Jong et al., 2008; Gul & Tsui, 1998; Khan, 2012; Khémiri et al., 2018; Öztekin et al., 2011;).

$$Current\ Ratio = \frac{Current\ Asset}{Current\ liabilities} \quad \text{(eq. 5.12)}$$

5.3.3.5. Dividend Pay-out Policy

The dividend pay-out policy refers to the terms at which the company pays its dividend to the shareholders. Following the literature, the measure (Div_Payout) is computed by dividing a firm's dividend per share into its earnings per share, i.e. net income after preferred dividends divided by the number of common shares outstanding (Adedeji, 1998; Antoniou et al., 2008; Dang & Garrent, 2015; Huang et al., 2010).

$$Div\_Payout = \frac{Dividends\ Per\ Share}{Net\ Income\ After\ Preferred\ Dividends\ /\ Common\ Shares\ Outstanding} \quad \text{(eq. 5.13)}$$

5.3.3.6. Firm risks: Operating risk

Firm operating risk (risk) is risks associated with the costs of a firm's operation. Following a study by Mishra and McConaughy (1999), a firm's operating risk is measured as the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous 5 years.

$$Risk = Standard\ Deviation\ (\frac{EBITDA}{Sales})_{t,t-5} \quad \text{(eq. 5.14)}$$

5.3.3.7. Firm risks: bankruptcy risk

Bankruptcy risk is also known as insolvency risk, and it is the probability that the firm will not be in a position to meet its debt obligations. Following a number of studies (Devos, 2017; Kayo & Kimura, 2011; Schepens, 2016; Smith, 2012; Venkiteshwaran, 2011), the risk can be measured using the firm's Z-score capturing the firm's distance to bankruptcy as follows:

$$\text{Z\_Score} = \frac{(3.3 * EBIT) + (1 * Net\ sales) + (1.4 * Retained\ earning) + (1.2 * (Current\ asset - Current\ liabilities))}{Total\ Asset} \quad \text{(eq. 5.15)}$$

5.3.3.8. Leverage deviation

To measure the distance between a firm's leverage ratio and its target ratio, i.e. *Dis_Lev* = $\left|L^*_{i,t} - L_{i,t}\right|$, the unobservable target leverage ($L^*_{i,t}$) needs to be estimated. Following the literature (e.g. Oztekin & Flannery, 2012; Zhou et al., 2016), the target leverage as shown in equation 5.3 is computed based on the fitted estimates (β_i and $\varepsilon_{i,t}$) obtained from regressing the observed leverage ratios of firms ($L_{i,t}$) on the set of firm characteristics and macroeconomic factors as stated in the equation 5.3. This step can be written below:

$$L_{i,t} = \beta_i \, X_{i,t-1} + \varepsilon_{i,t} \qquad \text{(eq. 5.16)}$$

5.3.3.9. Financial Flexibility

Building on a study by Aybar-Arias et al. (2012) that reported an influence of the financial flexibility on the firm leverage Speed of Adjustment, the financial flexibility variable can be computed as follows:

$$\text{Flexib} = \text{Log}\left(\frac{short-term\ debt}{long-term\ debt} * operating\ cash\ flow\right) \qquad \text{(eq. 5.17)}$$

5.3.3.10. Controlling variables: Other firm characteristics and macroeconomic factors

A number of controlling variables are accounted for these are firm profitability, non-debt tax shield, intangibility, firm age, ownership concentration and free cash flow. These variables have been found to be determinants of a firm debt adoption decisions. Particularly, profitability is considered an important determinant of capital structure in contemporary firms (Huang et al., 2016; Sogorb, 2005). According to the literature, profitability influences the formation of capital structure in many ways, and scholars differ in that regard. Profitability represents both a capability of raising more capital (Tong & Green, 2005) and a capability to avoid resorting to external finance sources (Chen, 2004; Gaud et al., 2005; Hall et al., 2000; Huang, 2006; Michaelas et al., 1999; Rajan & Zingales, 1995). Furthermore, the influence of non-debt tax shield on the firm's financing choice has been reported by a number of extant studies. However, the finding remains inconclusive with a negative association reported by de Miguel and Pindado (2001), López Gracia and Sogorb Mira (2008), Bennett and Donnelly (1993), Wiwattanakantang (1999); Chen (2004), DeAngelo and Masulis (1980), Sogorb (2005), Delcoure (2007), Moradi and Paulet (2019), Antoniou, Guney, and Paudyal (2008), and D'Amato (2019); and a positive association reported by Chakraborty (2010), Acedo-Ramirez and Ruiz-Cabestre (2014), Michaelas et al. (1999), Bradley, et al. (1984), and Bathala et al. (1994). Liquidity is another important factor reported to significantly influence firm financing

decisions (D'Amato, 2019; Deesomsak et al., 2004; Ozkan, 2001). Liquidity refers to the tradability of firm assets without much influence on its price (Sharma & Paul, 2015). Therefore, it can be understood as the ability of a firm to service and meet its short-term obligation. The definition of the factor can directly link it to the use of debt finance based on trade-off theory. In particular, firms with higher liquidity reduce the risk of bankruptcy because they have more liquid resources that can timely convert into cash to satisfy their short-term financial obligation. As a result, the firms have the capacity to take on more debt, leading to higher leverage (Cole, 2013; Degryse et al., 2012; De Jong et al., 2008; Ozkan, 2001; Shleifer & Vishny, 1992; Vo 2017; Zhang & Mirza, 2015). The association between intangibility and leverage has been supported theoretically by Shleifer and Vishny (1992) and Morellec (2001). The negative association between intangibility and leverage is supported in the literature (Titman & Wessels, 1988; Bolek et al., 2015; Clausen & Hirth, 2016; Long & Malitz, 1985; Mateeva et al., 2013; Williamson, 1988).

Regarding firm age, firms with longer existence tend to possess a long track of operating as well as a credit record, creating a stronger image and reputation (Berger & Udell, 1995; Nico & Van Hulle, 2010; Sakai et al., 2010). Therefore, the relationship between firms and lenders is more solid, leading to larger debt capacity and lower cost of debt (Nico & Van Hulle, 2010; Sakai et al., 2010). According to Huygebaert (2003), older firms with their lasting history are argued to have less exposure to adverse selection and moral hazard, which are favourable to both lenders and investors. Furthermore, as firms have passed the start-up risky phase of their business cycle, there is relatively less uncertainty and a lower chance of bankruptcy compared to younger firms (Berger & Udell, 1995; Huygebaert, 2003; Petersen & Rajan, 1994). Consequently, supporting trade-off theory, the above studies reported a positive relationship between firm age and leverage.

Moreover, the majority of the literature supports the positive relationship between ownership concentration and leverage (Bhaird & Lucey, 2010; Brailsford et al., 2002; Cespedes et al., 2010; Cheng et al., 2005; Du & Dai, 2005; Flannery & Rangan, 2006; Ganguli, 2013; Huang et al., 2011; La Rocca et al, 2010; Li et al., 2009; Margaritis & Psillaki, 2010; Mehran, 1992; Pindado & and La Torre, 2011; Rajan & Zingales, 1995). The reason justifying this is related to the ownership dilution and supports pecking order theory where debt is preferred to equity. Specifically, shareholders of highly ownership-concentrated firms are likely to avoid issuing more equity since that would dilute their control over the firms (Cespedes et al., 2010; Du & Dai, 2005).

Lastly, 'Free cash flow' is defined as the cash a company has on its balance for the day-to-day running of the organization (Mateev et al., 2013). The relationship between free cash flow and leverage can be viewed from two different perspectives. The first perspective is of trade-off theory (Myers, 1984). Firms with higher free cash flow seem to exhibit higher liquidity for servicing and meeting debt obligations, leading to lower bankruptcy costs. This implies larger debt capacity for firms to take advantage of the tax shield benefits. Such positive cash leverage is empirically supported by the literature (e.g. Benito, 2003; Huang & Song, 2006; Jensen, 1986; Stulz, 1990;). However, the negative association between free cash flow and leverage is reported as building on pecking order theory. In particular, firms with higher cash flow tend to be more profitable and exhibit larger accumulated earnings. Consequently, those firms are more likely to use their internal sources prior to external sources, leading to a lower leverage ratio. This finding is extensively supported by empirical research (e.g. De Jong & van Dijk, 2007; Lingling, 2004; Mateev et al., 2013; Myers, 1984; Myers & Majluf, 1984).

Their measures can be explained as follows:

- 'Profitability' is defined as the earnings before interest and taxes to the total asset (see e.g. Chang et al., 2014; Demirgüç-Kunt et al., 2020; Flannery & Hankins, 2013 Kayo & Kimura, 2011; Köksal & Orman, 2014; Margaritis & Psillaki, 2010; Van Hoang et al., 2017; Van Caneghem & Van Campenhout, 2010). A firm's profitability can be computed as follows:

$$\text{Profitability} = \frac{Earnings\ Before\ Interest\ and\ Taxes}{total\ assets} \qquad \text{(eq. 5.18)}$$

- The non-debt tax shield can be defined as the ratio of a firm's depreciation, depletion, and amortization to its total assets (e.g. Belkhir et al., 2016; Flannery & Hankins, 2013; González & González, 2011; La Rocca et al., 2010; Lucey & Zhang, 201).

$$\text{Non-debt tax shield} = \frac{Depreciation,\ \ Depletion\ and\ Amortization}{Total\ Assets} \qquad \text{(eq. 5.19)}$$

- Liquidity is the ability of the firm to pay current debts; it is calculated as the ratio of current assets to current liability (Belkhir et al., 2016; Bonfim & Antão, 2012; De Jong et al., 2008; Gul & Tsui, 1998; Khan, 2012; Khémiri et al., 2018; Öztekin et al., 2011;).

$$Current\ Ratio = \frac{Current\ Asset}{Current\ liabilities} \qquad \text{(eq. 5.20)}$$

- A firm's intangibility is calculated as the total value of the firm's intangible assets divided by its total assets (Degryse et al., 2012; González & González, 2011; Margaritis & Psillaki, 2010; Mateeva, 2013; Van Hoang et al., 2017). Intangible assets are as important as the tangible assets in the organization, because they also help to generate revenue even though they are rarely used as collateral for debts.

$$Intangibility = \frac{Intangiable\ asset}{Total\ asset} \quad \text{(eq. 5.21)}$$

- 'Firm age' refers to the length of a firm's operation measured in years by subtracting the year of the firm's establishment from the current year. Various studies that have used this variable are D'Amato (2019); Daskalakis et al. (2017), Dewaelhyens and Van-Hulle (2010), Bhaird and Lucey (2010), and Palacín-Sánchez et al. (2013).

$$AGE = Current\ year\ (t) - Year \text{ of establishment} \quad \text{(eq. 5.22)}$$

- The dividend pay-out policy refers to the terms at which the company pays its dividend to the shareholders. Following the literature, the measure (Div_Payout) is computed by dividing a firm's dividend per share into its earnings per share, i.e. net income after preferred dividends divided by the number of common shares outstanding (Adedeji, 1998; Antoniou et al., 2008; Dang & Garrent, 2015; Huang et al., 2010).

$$Div\_Payout = \frac{Dividends\ Per\ Share}{Net\ Income\ After\ Preferred\ Dividends\ /\ Common\ Shares\ Outstanding} \quad \text{(eq. 5.23)}$$

- Ownership concentration refers to how much the owners can control and influence the management of the firm (Dewaelhyens & Van-Hulle, 2010; Margaritis & Psillaki, 2010; Pindado & La-Torre, 2011). The ownership concentration can be measured by the total percentage of the top five shareholders' ownership. The higher the stake of the top five owners, the higher the firm's ownership concentration.

- Free cash flow arises from the need of the company to retain some of its cash inflows. The company wants the cash inflows to be higher than the cash outflows (cash used on operations and maintaining capital assets). Various studies have investigated the influence of free cash flow on the capital structure of the firm including Dang and

Garrent (2015); López-Garcia and Sánchez-Andújar (2007), and Harris and Raviv (1991). The free cash flow ratio (Cash_flow) can be computed as follows:

$$\text{Cash\_flow} = \frac{Free\ cash\ flow}{Total\ asset} \qquad \text{(eq. 5.24)}$$

Furthermore, the literature has reported the potential effect of macroeconomic factors as determinants of corporate capital structure (e.g. Antoniou et al., 2008; Cook & Tang, 2010; Drobetz et al., 2015; Halling et al., 2012; Oztekin & Flannery, 2012; see Section 4.4.2). Consequently, the current study also takes into account a number of macroeconomic factors as suggested by the extant studies. These comprise (1) the country's gross domestic product (GDP growth), (2) inflation rate, (3) the proportion of a country's stock market capitalization to GDP, and (4) banking crisis dummy. The first four variables were collected from the World Bank database.

The below Table 4 is the summary of all the above-explained variables:

Table 4: Summary of all employed variables and their measurements

Data Source: All variables were collected from DataStream, except for the Ownership Concentration which was collected from the WRDS Boardex. All macroeconomic variables were collected from World Bank. This Table explain variables and measures for each variable.

Variables	Variables' names and measures
Book Leverage	$\text{BLEV} = \frac{Long-term\ debt + Short-term\ debt}{Total\ assets}$
Market Leverage	$\text{MLEV} = \frac{Long-term\ debt + short-term\ debt}{Total\ assets - Book\ equity + market\ equity}$
Firm size	Size = Log (Total Asset)
Tangibility	$\text{Tangibility} = \frac{Net\ PPE}{Total\ Asset}$
Non-debt tax shield	$\text{Non-debt tax shield} = \frac{Depreciation,\ \ Depletion\ and\ Amortization}{Total\ Assets}$
Growth	$\text{Growth} = \frac{Market\ Capitalisation}{Equity\ Book\ Value}$
Profitability	$\text{Profitability} = \frac{Earnings\ Before\ Interest\ and\ Taxes}{total\ assets}$
Liquidity	$\text{Current Ratio} = \frac{Current\ Asset}{Current\ Liability}$
Intangibility	$\text{Intangibility} = \frac{Intangiable}{Total\ asset}$

Firm age	$AGE = Current\ year\ (t) - Year$ of establishment
Dividend payout policy	Div_Payout = $\frac{Dividends\ Per\ Share}{Net\ Income\ After\ Preferred\ Dividends\ /\ Common\ Shares\ Outstanding}$
Operating risk	Risk = $\frac{EBITDA}{Sales}$
Bankruptcy Risk	Z_Score = $\frac{(3.3 * EBIT) + (1 * Net\ sales) + (1.4 * Retained\ earning) + (1.2 * (Working\ Capital))}{Total\ Asset}$
Ownership concentration	Owner_5 = The total percentage of the top five shareholders' ownership
Free Cash flow	Cash_flow = $\frac{Free\ cash\ flow}{Total\ asset}$
Leverage Deviation	Dis_Lev = Absolute value of the difference between the firm's target leverage and current leverage ratios = $\left\|L^*_{i,t} - L_{i,t}\right\|$
Industry Classifications	All firms are classified into eleven general industry groups based on the Industry Classification Benchmark (ICB)

5.4. Main statistical analyses

5.4.1. Study 1: Determinants of Capital Structure

An extensive body of research on the topic was discussed in Chapter 4 and strongly confirmed that the capital structure decision of firms is dynamic by nature. Consequently, in the investigation of the capital structure's determinants, the primary baseline estimation method being employed is the ordinary least square robust standard error. A general multivariate model can be written as follows:

$$L_{i,t} = \beta_0 + \beta_i X_{i,t} + \text{Year.FE} + \text{Industry.FE}_i + \text{Country.FE}_i + \varepsilon_{i,t} \qquad \text{(eq. 5.24)}$$

where $L_{i,t}$ captures the firm i's leverage level at year t, which is consecutively measured as the market leverage (MLEV, eq. 5.1) and the book leverage (BLEV, eq. 5.2). β_i is the coefficients of the investigated explanatory variables that capture their associations with a firm's leverage

level. Those factors[13] are discussed in the Hypothesis Development section, together with controlling variables, i.e. the country's gross domestic product (GDP growth), inflation rate, the proportion of a country's stock market capitalization to GDP, and banking crisis dummy. The $\varepsilon_{i,t}$ are the constant and error terms of the regressions, respectively. Furthermore, dummy variables controlling for year-fixed effects, industry-fixed effects (H14), and country-fixed effects are also included in the model. The inclusion of those fixed effect dummy variables is referred to as the least square dummy variable approach (LSDV).

Additionally, for a robustness check, this study also employs the fixed effect model (with the support of the Hausman test, see below), the lagged independent variable approach, and the GMM to tackle the potential endogeneity issues that will be discussed in a subsequent section (Section 5.4.2.2).

Furthermore, the same baseline models (Equation 5.24) will be performed on different subsamples as additional tests to compare the findings on the leverage's determinants across firm size, crisis period, and financial systems (market-based or bank-based). Table 5 presents the expected signs of each explanatory factor influencing the leverage ratio of AIM Firms:

Table 5: Expected Signs for the Main Explanatory Variables

This table explain each hypotheses variable with including expected sign and predicated theories.

Hypothesis Variables ($X_{i,t}$)	**Expected sign of β_i**	**Theories' Predicted Sign**
H1: Firm size	Positive (+)	Trade-off theory (+)
H2: Tangibility	Negative (-)/Positive (+)	Trade-off & Agency theories (-) Trade-off theory (+)
H3: Growth	Positive (+)	Pecking order theory (+)
H4: Liquidity	Negative (-)/Positive (+)	Agency & Pecking order theories (-) Trade-off & Agency theories (+) Agency theory (+)

[13] Include: Firm size (H1), tangibility (H2), growth (H3), liquidity (H4), dividend pay-out (H5), operating risk (H6), and bankruptcy risk (H7). The computations of these factors can be found in Section 5.3.3

H5: Dividend pay-out policy	Negative (-)	Pecking order theory agency theory
H6: Operating risk	Negative (-)	Trade off theory
H7: Bankruptcy Risk	Negative (-)	Trade off theory

5.4.2. Study 2: Determinants of SOAs

Following a number of studies (e.g. Flannery & Rangan, 2006; Oztekin & Flannery, 2012; Zhou et al., 2016), the baseline OLS robust standard error will be employed for the measure of leverage SOA as explained in equation 5.5 (Section 5.3.2). To examine the determinants of the firm's SOA, equation 5.5 is augmented by including a number of interaction terms between the lagged leverage ratio and the hypothesized determinants of the Speed of Adjustment. As discussed in Section 4.5, these factors comprise firm size, leverage deviation, financial flexibility, and growth opportunity.[14] The estimation model can be summarised as follows:

$$L_{i,t} = (1 - \lambda_i)L_{i,t-1} + (\lambda_i\beta_i)X_{i,t} + Y_i L_{i,t-1} * Z_{i,t} + \lambda_i\varepsilon_{i,t} + \delta_{i,t} \qquad \text{(eq. 5.25)}$$

Where the $Z_{i,t}$ are values of the four hypothesized determinants of the firm's leverage Speed of Adjustment: firm size, leverage deviation, financial flexibility, and growth opportunity. The influence of these factors on SOA is λ_i is $-(Y_i)$. $X_{i,t}$ includes the 4 variables $Z_{i,t}$ as well as other controlling variables mentioned in the study 1 capturing the determinants of firm leverage. The interaction terms are employed here because the coefficients of $L_{i,t-1}$ are technically the firm's SOA $(1 - \lambda_i)$. Therefore, the coefficients Y_i of $L_{i,t-1} * Z_{i,t}$ determine the influence of $Z_{i,t}$ on the coefficient $L_{i,t-1}$, i.e. the influence of $Z_{i,t}$ on SOA. Other variables have been explained in Section 5.4.1.

Table 6 presents the expected signs of each explanatory factor influencing the leverage Speed of Adjustment of AIM Firms.

[14] The computations of these variables can be found in Section 5.3.3

Table 6: Expected Signs for the determinants of Leverage Speed of Adjustment This table explains the hypotheses variable and expected sign of each variable	
#Hypothesis: Variables ($L_{i,t-1} * Z_{i,t}$)	**Expected sign of Y_i**
H8: Firm size	Negative (-) / Positive (+)
H9: Leverage Deviation	Negative (-) / Positive (+)
H10: Financial Flexibility	Negative (-)
H11: Growth	Negative (-) / Positive (+)

5.4.3. Study 3a: Determinants of Capital Structure across AIM firms and Main Market firms

For the third empirical study, a comparison study on determinants of capital structure between Alternative Investment Market and main market firms was conducted. To examine if there is any difference in the effects of investigated factors (as in Study 1, Chapter 6) on leverage levels of AIM firms and main market firms, interaction terms are generated between those factors[15] and an MM dummy. In other words, the coefficients of those interaction terms determine the moderating effects of the main market firms on the determinants of capital structure. Consequently, an augmented model of equation 5.24 will be employed and is written as follows:

$$L_{i,t} = \beta_0 + \beta_i X_{i,t} + \beta_j X_{i,t} * MM + \beta_k MM + \text{Year.FE} + \text{Industry.FE}_i + \text{Country.FE}_i + \varepsilon_{i,t} \quad \text{(eq. 5.26)}$$

where MM is a dummy variable denoting if one of the firms is listed on the main market (FTSE350) and zero otherwise; $X_{i,t} * MM$ are interaction terms between $X_{i,t}$ and the MM dummy. Other terms can be found in Section 5.4.1.

[15] Include firm size, tangibility, profitability, growth, nondebt tax shield, liquidity, intangibility, firm age, dividend pay-out, operating risk, bankruptcy risk, ownership concentration, and free cash flow. The computations of these factors can be found in Section 5.3.3

5.4.4. Study 3b: Determinants of Speed of Adjustments across AIM and Main Market firms

Another research objective of the third empirical study was to conduct a comparison study on determinants of leverage Speed of Adjustment between Alternative Investment Market and main market firms. Similar interaction terms with an MM dummy were employed, i.e. a three-way interaction of terms between the four investigated factors of SOA[16], lagged leverage ratio, and MM dummy. The coefficients of those three-way interactions capture the moderating influences of MM on determinants of Speed of Adjustment. As a result, an augmented model of the equation 5.25 is written as follows:

$$L_{i,t} = (1-\lambda_i)L_{i,t-1} + (\lambda_i\beta_i)X_{i,t} + \beta_j X_{i,t} * MM + \Upsilon_i L_{i,t-1} * Z_{i,t} + \Psi_i L_{i,t-1} * Z_{i,t} * MM + \theta * MM + \lambda_i \varepsilon_{i,t} + \delta_{i,t} \quad \text{(eq. 5.27)}$$

where $L_{i,t-1} * Z_{i,t} * MM$ are the three-way interactions between $Z_{i,t}$ (firm size, leverage deviation, financial flexibility, and growth), the lagged dependent variable, and the MM dummy. A significant Ψ_i indicates that the influences of $Z_{i,t}$ on SOA (i.e.Υ_i) are different for MM firms by Ψ_i. $X_{i,t}$ include all the determinants of firm leverage mentioning in the previous two studies, i.e., including the main effects of $Z_{i,t}$. Other terms can be found in Section 5.4.2.

5.4.5. Statistical Issues

5.4.5.1. Heteroskedasticity

The literature already has evidence showing that one way of mitigating the heteroscedasticity problem is using panel data. Examples include Baltagi (2005) and Wooldridge (2002). When it comes to panel data, several analytical issues can have an effect on the regression analysis results. These analytical issues relate to multicollinearity, heteroscedasticity, autocorrelation, and reverse causality. OLS has four assumptions that must be met to move to OLS. An LSDV-appropriate method to be used and more commonly used in the literature. Heteroscedasticity is where the variance of the residuals in regression is unequal. One of the assumptions of the OLS regression is that the residuals of a population have constant variance (homoscedasticity), and as such when heteroscedasticity occurs, this assumption is not met. One of the effects of this phenomenon is an incorrect estimated standard error. When a model contains heteroscedastic residuals, for example, then it becomes probable to use the robust standard errors, and this can

[16] Size, growth, financial flexibility, and leverage deviation (Section 4.5: Determinants of SOA) See note on Section names.

change standard error; however, the coefficient will be the same. This is a method proposed by White (1980), in which a researcher uses them to improve a model. This is achieved by obtaining unbiased standard errors of the OLS coefficients under heteroscedasticity. Baltagi (2005), Psillaki and Daskalakis (2009), and Wooldridge (2002) use White's (1980) heteroscedasticity-consistent variances and standard errors to mitigate the heteroscedasticity problem.

5.4.5.2. Endogeneity statistical issue

Although the OLS robust can tackle the issue of multicollinearity, heteroskedasticity, and nonnormality of error terms[17], it cannot effectively deal with biased estimates resulting from endogeneity issues. Endogeneity is the problem that happens when one of the explanatory variables (X_i) is correlated with the error term (ε_i) in the regression model (Gujarati, 2004). There are three primary sources of endogeneity: reverse causality, omitted variables, and measurement errors. Reverse causality can occur when the response variable Y explains the variations of an explanatory variable X. It is a type of simultaneity that both variables have some degree of impact on each other. Second, omitted variables are those that are absent from the model but are associated with the model's independent variables, leading to an endogeneity problem in the equation. Measurement error occurs when the recorded measured quantity is not the true value. When the true value cannot be achieved, this would lead to a problem of endogeneity.

In the estimation model of a firm's leverage ratio, these three issues are likely to exist. For example, the capital structure can indeed influence the firm's financial characteristics such as firm size or profitability. In particular, with appropriate financing decisions, firms can maximise the use and advantages of leverage leading to better/worse profitability and/or total assets. Consequently, the simultaneity issue emerges. This problem can be solved by employing lagged independent variables, as suggested by Rajan and Zingales (1995). This is because current leverage cannot influence the firm's characteristics in the past. Regarding the issue of variable omission, which is likely to occur because it is virtually impossible to take into account all determinants of capital structure, given that many factors remain unknown and require much future research to unveil. These variables may be correlated with the model's explanatory factors, leading to an endogeneity problem. One of the proposed solutions to this problem is the use of robust instrument variables (Wintoki et al., 2012). This approach can be

[17] Diagnoses will be performed and presented in the subsequent chapter.

simply understood as the replacements of independent variables that are deemed to be endogenous. Consequently, if an instrumental variable is correlated with the endogenous independent variables, then it is exogenous. A robust replacement can be made. Last, the measurement error can also be a potential source of endogeneity in this study because all data are secondary and reported by firms where measurement and reporting errors may incur.

Because the issue of endogeneity causes biased and inconsistent estimates, it is important to tackle this issue to obtain robust and reliable findings. In this instance, neither the OLS robust nor fixed effect would be able to achieve unbiased data. As widely recommended and applied in academic research in general and in the capital structure topic in particular, this statistical issue can be resolved by using the system GMM (Caselli et al., 1996). The system GMM helps to solve the problem of endogeneity by having a two-step robust standard error, thus controlling for the correlation of the errors, the heteroscedasticity of the sample, and even measurement errors (Arellano & Bover, 1995; Blundell & Bond, 1998). According to Flanner and Hankin (2013), the use of system GMM is one of the best methods used in dynamic panel methods to resolve the problems of heterogeneity, endogeneity, or any bias from an omitted variable. The problem of endogeneity has been on the largest obstacles to understanding the true relationship between the different aspects of empirical corporate finance (Li, 2016). According to Li (2016), the variables in corporate finance are mostly endogenous, have scarce instruments, and have complicated causality relations. The researcher conducted research which controlled for endogeneity to prove that it is possible for methods to mitigate the risk of endogeneity. Endogeneity happens when in a model, there is a third variable which affects both the independent and the dependent variable. If the researcher does not alienate the third variable, then it leads to biased and inaccurate results. The GMM methods is useful in research when it comes to accounting for the endogeneity problem. According to the study conducted by Li (2016), the researcher found that among all available remedies to the problem of endogeneity, the use of GMM models, that lagged dependent variables, and adding more control variables to a regression mode, research could solve the problem of endogeneity. In the case of this research, the researcher used dummy variables such as industry, and year to year effects to control for unobserved individual effects and endogeneity. Other biases that happen due to omitted variables are autocorrelation and multicollinearity. Multicollinearity happens when the independent variable correlates with another independent variable within the same model. When such a variable affects the model, it leads to undermining of the statistical significance

of the independent variables. This problem is solved by omitting one of the dummy variables. Autocorrelation is an issue in corporate finance models of regression that relates to measuring the correlation of the same variable from one time interval to the next. The researcher must ensure that there is no autocorrelation between periods since it might lead to wrong standard error estimates. The GMM methods allows for the use of OLS estimates to ensure that the regression model is robust and that they control for any cases of autocorrelation. Following the suggestions offered by Li (2016), this research added GMM methods, fixed effects such as industry fixed effects, year fixed effects, and firm fixed effects, in addition to more control variables to reduce the issues associated with omitted variables, all the use of regressions that are not controlled for autocorrelation, multicollinearity, and reverse causality.

CHAPTER 6: EMPIRICAL STUDY 1

6.1. Introduction

The firms operating in the AIM market operate under different regulatory framework compared to firms operating in other major platforms such as NYSE and LSE. This is because the AIM market is unique when it comes to the financial characteristics its firms. The firms, even though they are small and medium sized, have a better access to capital, for example, which is not tied to debts compared to other small and medium sized companies that do not operate in the AIM. The companies can easily raise capital through sale of equity in the AIM market.

Unlike private small-medium firms (SMEs), AIM SMEs have great access to external capital financing because of their listing status in the LSE. In addition to this, they work under different governance since according to the requirements of the AIM market, it is a must for the firms to have external oversight (NOMADS). This external oversight adds to another layer of governance (NOMADS) and has the responsibilities of monitoring and supervising the operations and regulatory compliance of the firms. This governance layer does not exist for private SMEs or the LSE's main market, such as largest 100 companies (FTSE 100) or largest 350 companies (FTSE 350). Therefore, I study the determinants of capital structure. In addition to the differences in the legal framework, AIM firms are mostly young and first growing (Mallin & Ow-Young, 2009). This characteristic makes them to have different capital structure compared to other firms that are in a different growth stage. Given these differences in between the AIM firms and firms operating in the Main markets and as private firms, then it is necessary to investigate whether the capital structure determinants in the AIM firms is similar to those in other main markets. This research achieves this objective by answering the main research question. What are the determinants of the capital structure of Alternative Investment Market (AIM) firms?

Chapter 6 is the opening chapter for the empirical results of the thesis. It presents and discusses the findings of the first empirical study starting with descriptive statistics of all the variables for the Alternative Investment Market sample that are provided in Section 6.2. The distribution of the primary dependent variables employed, i.e. the leverage levels, is shown in Section 6.2.2, and the correlation matrix is revealed in Section 6.2.3 to detect any multicollinearity issue. Moving into Section 6.2, empirical findings are discussed with the baseline analyses, i.e. the OLS robust estimation as well as the robustness checks, including the lagged approach, fixed

effect, and the GMM method. Overall, despite that the OLS robust is the baseline estimation model, other robust models are important for conclusions to be made because they take into account a critical statistical issue of endogeneity which causes the estimators to be inconsistent and biased. Consequently, applying a rule of thumb in making the general conclusion on the findings, if the factors are found to have a significant impact on the leverage ratio by three out of four methods, the impact is concluded to be present. Generally, there are 7 factors that significantly influence the firm decision on capital structure, in particular, debt adoption: size (+), tangibility (+), growth opportunity (-), liquidity (-), dividend pay-out policy (-), operating risk (-), and bankruptcy risk (-). Finally, a number of additional tests are also presented to examine the determinants of capital structure across firm size, financial and nonfinancial firms, and during crisis and noncrisis periods.

6.2. Descriptive statistics

6.2.1. General descriptive statistics for AIM sample

Initially, the elements of the whole dataset and descriptive statistics of all variables included in this study (see Section 5.3) will be discussed. First, the data description for the full sample is presented in Table 7. In this section, all values are calculated and constructed using the raw data after the winsorizing (at a 5% level) treatment of outliers. This stage is important to provide readers with an objective view of the data's pattern, distribution, and any potential outliers. Subsequently, Tables 7–9 will provide a brief description of those variables for industry, country, and each index, respectively.

Table 7: Variable Descriptive Statistics for full sample of AIM firms

Table 7 presents the descriptive statistics for the whole sample of AIM firms. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total

percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

Variables	N	Mean	Median	Std.Dev	Min	Max	coefficient of variation
BLEV	7751	0.119	0.026	0.171	0.000	0.604	1.437
MLEV	7753	0.099	0.016	0.147	0.000	0.504	1.485
Size	7751	9.851	9.927	1.629	6.648	12.606	0.165
Tangibility	7751	0.161	0.046	0.225	0.000	0.762	1.398
Profitability	7751	-0.122	0.000	0.318	-1.065	0.231	-2.607
Growth	6512	2.465	1.450	2.789	-0.230	11.070	1.131
Non-debt Tax Shield	7751	0.031	0.021	0.033	0.000	0.121	1.065
Liquidity	6440	3.969	1.920	4.890	0.400	19.280	1.232
Intangibility	7751	0.252	0.150	0.267	0.000	0.796	1.060
Age	7750	2.417	2.485	0.896	0.693	4.357	0.371
Div_Payout	7725	0.107	0.000	0.214	0.000	0.726	2.000
Risk	6334	6.894	0.130	18.529	0.008	73.859	2.688
Z_Score	7751	-1.057	0.287	4.282	-13.449	3.443	-4.051
Owner_5	7241	49.716	49.586	19.009	9.717	84.597	0.382
Cash_flow	7751	-0.058	0.000	0.209	-0.654	0.202	-3.603
GDP_G	9424	1.326	1.892	1.749	-4.248	3.437	1.319
CPI	9425	2.325	2.480	1.104	0.300	4.460	0.475
StockMV	4572	111.180	112.111	14.131	93.938	161.749	0.127
Crisis	10150	0.214	0.000	0.410	0.000	1.000	1.916

As shown in Table 7, the two main dependent variables capturing a firm's BLEV and MLEV provide relatively similar average values with the $MLEV$ slightly smaller than the $BLEV$ (i.e. 9.9% versus 11.9%). Their values range from 0% (all-equity or unlevered firms) to approximately 60% for BLEV and 50% for MLEV. The mean leverage ratios of the current study's sample are comparatively lower than those of the previous studies (e.g. Flannery & Rangan, 2006) with average market leverage of 27.8%, Zhou et al. (2016) with average market leverage of 24.1%, and Aybar-Arias et al. (2012) with average leverage of 71% for their SME sample. The lower leverage ratio of the AIM sample supports the importance of this study justifying their unique natures. In particular, AIM firms exhibit some characteristics of SMEs, which are associated with higher debt adoption because of their low access to the equity market (Cassar & Holmes, 2003; Fama & Jensen, 1983). However, the AIM firms' listing status on the LSE, fast-growing stage and double-layer governance may have greatly attracted potential equity investors (Section 2.2). It has also shown that the discrepancies between the mean and the median of these two variables indicate their positively skewed distributions because the medians are lower than the means. This again may be explained by the commonly low adoption of debt by AIM SMEs as explained above.

The statistics of other variables can be seen in the same table. The average log (size) of the sample is 9.8 (≈ £18 millions) with a standard deviation of 1.6. The smallest firm exhibits a log size of 6.6 (≈ £0.7 millions), and the largest firm has a log size of 12.6 (≈ £300 millions). The mean and median of the variable after the log transformation are relatively similar indicating a symmetric distribution of data (skewness ≈ 0). Regarding tangibility, AIM firms, on average, invest 16.1% in fixed assets, ranging from 0% to 76.2%. The middle value (median) is 4.6%, which is different from and smaller than the mean. This indicates a positive skewness of the variable driven by more observations with low values of tangibility. This relatively small proportion of fixed assets may be justified by their small-sized businesses. The average nondebt tax shield is 3.1% ranging from 0% to 12.1%. This is expected with the low values of fixed assets. This indicates that AIM firms may not sufficiently take advantage of the tax shield property of either tangible/intangible assets or debt funds. Noticeably, the mean value of profitability for the sample is -12%. This means that on average, Alternative Investment Market firms produced a financial loss during the period of investigation from 2007 to 2019. This is quite expected because AIM firms are young and fast-growing firms. They expose to higher financial risks compared to larger and more established firms (e.g. firms listed in the main market) should be able to yield large returns (maximum value of profitability is 23.1%). This variable also exhibits an average value that is different from the median value signifying an asymmetric (negative skewed) distribution despite its percentage form. This shows that a large proportion of the sample makes low and positive profitability, with a median of 0%. Nevertheless, a number of observations possessed a high loss during the period, dragging down the mean value and causing a negative average. The period investigated in this thesis includes the financial crisis of 2007, which may partially influence this high loss value. In particular, the study sample contains approximately 21.4% crisis observations ($\underline{Crisis}$ = 0.214). However, after subsampling the whole data into crisis and noncrisis samples, the mean profitability for both subsamples are relatively the same, i.e. -12.1% versus -12.2% for noncrisis and crisis profitability averages, respectively. This is indeed another unique aspect to be taken into account supporting the added value of this study on the capital structure of AIM firms. A similar pattern is found in the cash flow ratio of the sample with the mean value of -0.058, ranging from 0.008 to -73.9. Inherent outliers can be observed in this factor. An average negative cash flow, however, is expected for AIM firms because of their fast growth with a great opportunity to invest.

Furthermore, the table shows that the mean dividend pay-out ratio is around 11% with the minimum value of 0% up to 72.6%. AIM firms are deemed to be in their growing stages with many re-investment opportunities. Hence, the dividend pay-out ratio can be relatively lower than for other larger firms. Another intriguing aspect of the samples is their liquidity average of almost 4, ranging from 0.4 to 19.3. This may be because AIM firms are publicly listed and are under close scrutiny from market participants with their smaller sized, youth, and growing characteristics (higher risk nature, see the mean value of operating risk [Risk] and bankruptcy risk [Z_Score] of 6.9 and -1.057, respectively). Therefore, perhaps the decent liquidity ratio is a financial tool that acts as the cushion for their high-risk exposure. Finally, a computation of the coefficient of variation (CV), i.e. standard deviation divided by the mean, is conducted for all variables. The figure shows that the general dispersion of the employed variables is around 1-2, with some noticeable exceptions such as the bankruptcy risk (CV = 4.05) and cash flow (CV = 3.6). Overall, the variables' dispersions are relatively similar.

Tables 8 and 9 reveal the average values of all variables across eleven industries following the GIC classification and across different countries of AIM firms in the sample. As shown in Table 8, the full sample's mean values of BLEV (≈12%) and MLEV (≈10%) are attributed by diverse leverage-adoption decisions across industries. In particular, the average book and market leverage range from 7% for the utility sector to roughly 23% for the industrial sector (see Figure 1). The average leverage ratios across industries are consistent with those reported in the literature with firms operating in specialised industries (e.g. finance, real estate, high tech, and public utilities) exhibiting lower leverage with their higher financial exposure, compared to firms in capital intensive industries, e.g. industrials (Antoniou et al., 2008; Degryse et al., 2012; Istaitieh & Rodrıdguez-Fernadez, 2006; Opler &Titman, 1994). Generally, the mean value of market leverage is slightly lower than that of book leverage in the full sample and across industries. This signifies that AIM firms' market values are generally higher than their book values, i.e. high growth opportunities. Indeed, this lower market leverage is applied to other corporations in general. Because all firms are listed in the AIM index, they tend to be filtered by some basic characteristics, such as size, age, and growth. Hence, the average values of those variables are similar across industries.

Tangibility, however, shows a large variation between industries ranging from 4% (energy) to 34% (industrials). Supporting the difference in leverage adoption across industries, it seems that firms operating in industries with a higher tangibility mean tend to exhibit a higher leverage

ratio. For example, industrial sectors possessing the highest mean tangibility value of 34%, and the sector also reports the highest leverage value. However, energy and technology sectors invest much less in tangible assets compared to other industries, and they report a low leverage adoption. This is consistent with the findings of Antoniou et al. (2008). Such 'hinted' positive association between tangibility and leverage has indeed been well established in the literature owing to the collateralisability of fixed assets leading to greater access to debt funding (e.g. Andres et al., 2014; Dang & Garrett, 2015; Degryse et al., 2012; Frank & Goyal, 2009).

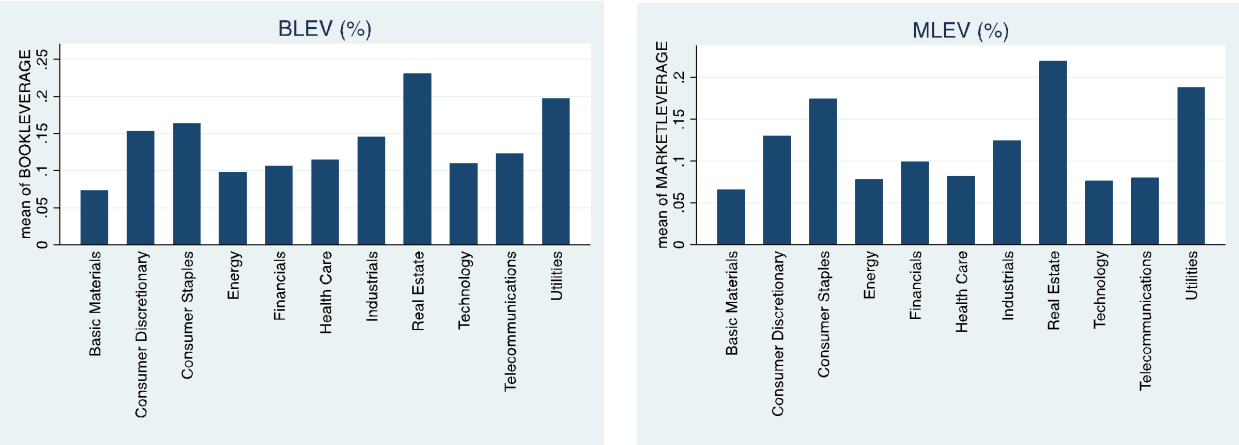


Figure 1: Book and Market Leverage Average Across Industries for AIM firms

Nevertheless, it is worth noting in the utility sector, there is high tangibility but with the lowest leverage. This may be explained by the significant profitability issue (large average loss of 21%) and risk exposure (both operating risk of 15.78 and bankruptcy risk of -2.86).

Similar to the full sample, the average values of profitability and cash-flow ratio for all industries are negative, i.e. financial loss and cash shortage. Great cross-industry variations are also found for financial risks, i.e. operating risk (risk) and bankruptcy risk (Z_score). The highest risk industries being observed in the current sample are consumer staples, financials, and utilities. These risk indicators explain their low access to the debt market and hence, lower leverage, as explained by Istaitieh and Rodrı'guez-Ferna´ndez (2006) and Degryse, Goeij, and Kappert (2012).

As shown in Table 9 regarding the descriptive statistics of all included variables across countries, greater variations in the average values of those factors across countries are observed compared to those across industries. Such variations support findings of extant studies such as Rajan and Zingales (1995), Deesomsak et al. (2004), Huang (2006), and Öztekin (2015).

Compared to the full sample means of leverage ratios, there are eight (nine) countries showing a lower mean value of BLEV (MLEV). The leverage averages across countries range from as low as 0% in South Africa and the Cayman Islands (N = 13) to as high as 30% in France and Zambia (N = 13). One interesting pattern that can be seen from Table 9 (cross-country), which is different from Table 8 (cross-industry), is the potential association between tangibility and leverage. While the association seems to be positive in the cross-industry sample, it is shown to be negative in the cross-country sample, i.e. higher tangibility is associated with lower leverage (e.g. Australia, Canada, Cayman Island, Zambia). The association is supported by Panno (2003), Grossman and Hart (1982), and Salawu and Agboola (2008). They argued that higher tangibility tends to be associated with higher liquidity risk. This raises lenders' concern about the firms' ability to service the debt. Another argument is related to the need for obtaining debt to deal with the agency issue. More discussion on the negative association between tangibility and leverage can be seen in Section 4.3.2.

Regarding growth opportunity, firms operating in South Africa and Canada (N = 169) tend to have the lowest growth opportunity (≈ 0.51 and 0.96, respectively), and they reported low levels of leverage (0% and 7%, respectively). Hong Kong (N=13), however, shows the highest growth figure of 5.65 and reports the highest book leverage of 15% (after Zambia, for which growth data is missing). This approximate positive relationship between growth and leverage is supported by Michaelas et al. (1999), Palacín-Sánchez et al. (2013), Awan et al. (2010), and D'Amato (2019), to mention just a few.

Financial risk indicators (operating risk and bankruptcy risk) also vary across countries. This may be a reason that causes the present cross-country difference in leverage. Hence, it should be controlled for as suggested in the literature (e.g. Cassar & Holmes, 2003; D'Amato, 2019; Michaelas et al., 1999). From mean figures, it can be seen that South African firms show the highest risks (53.33 and -2.36, respectively), whereas its market and book values of leverage are the lowest compared to other countries. In contrast, Zambia firms with the highest leverage ratio (BLEV = 25% and MLEV = 33%) show very low risk average figures (0.03 and 1.27, respectively). The suggestion of 'higher risk, lower leverage' is consistent with trade-off theory (Cassar & Holmes, 2003; Michaelas et al., 1999; Titman & Wessels, 1988). In particular, because the Zambian firms in the sample exhibit low operating and bankruptcy risks, they possess higher debt capacity and hence can borrow more from the debt sources.

Overall, the descriptive statistics have indicated the potential cross-industry and cross-country differences in firm leverage and in its determinants. Indeed, through simple descriptive statistic information (average values), no reliable conclusion can be drawn. However, some sensible and expected patterns of included variables for the full sample, cross-industry and cross-country, can support to some extent the reliability of the dataset being employed in the current thesis.

Table 8: Variable Descriptive Statistics of AIM Firms Across Industries

Table 8 presents the descriptive statistics for the whole sample of AIM firms across the eleven industries following the GIC classification. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT) + (1 * Net sales) + (1.4 * Retained earnings) + (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

		Full sample	Basic Materials	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Real Estate	Technology	Telecom	Utilities
BLEV	*Mean*	0.12	0.15	0.16	0.10	0.11	0.11	0.15	0.23	0.11	0.12	0.20	0.07
	(Std Dev)	(0.17)	(0.18)	(0.18)	(0.17)	(0.17)	(0.19)	(0.16)	(0.20)	(0.16)	(0.18)	(0.19)	(0.14)
MLEV	*Mean*	0.10	0.13	0.17	0.08	0.10	0.08	0.12	0.22	0.08	0.08	0.19	0.07
	(Std Dev)	(0.15)	(0.16)	(0.19)	(0.14)	(0.16)	(0.15)	(0.14)	(0.19)	(0.13)	(0.12)	(0.17)	(0.12)
SIZE	*Mean*	9.85	10.15	10.93	10.01	10.06	9.31	10.19	10.53	9.57	9.66	10.88	9.29
	(Std Dev)	(1.63)	(1.63)	(1.67)	(1.59)	(1.73)	(1.61)	(1.50)	(1.85)	(1.41)	(1.57)	(1.45)	(1.57)
Tangibility	*Mean*	0.16	0.19	0.27	0.26	0.04	0.08	0.16	0.34	0.08	0.07	0.30	0.23
	(Std Dev)	(0.23)	(0.22)	(0.24)	(0.29)	(0.09)	(0.14)	(0.18)	(0.34)	(0.10)	(0.08)	(0.24)	(0.29)
Profitability	*Mean*	-0.12	-0.05	-0.02	-0.22	-0.03	-0.28	-0.04	0.05	-0.08	-0.14	-0.02	-0.21
	(Std Dev)	(0.32)	(0.30)	(0.24)	(0.32)	(0.26)	(0.39)	(0.27)	(0.19)	(0.28)	(0.36)	(0.19)	(0.33)
Growth	*Mean*	2.47	2.49	2.53	2.19	2.03	3.60	2.35	1.67	2.86	2.52	1.88	2.10
	(Std Dev)	(2.79)	(2.72)	(3.02)	(2.85)	(2.45)	(3.33)	(2.69)	(1.52)	(2.68)	(2.67)	(2.63)	(2.68)
Non-debt tax shield	*Mean*	0.03	0.04	0.03	0.02	0.01	0.03	0.04	0.01	0.05	0.06	0.03	0.02
	(Std Dev)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.04)	(0.04)	(0.03)	(0.03)
Liquidity	*Mean*	3.97	2.38	2.39	6.02	4.66	5.61	2.49	2.59	2.74	2.47	2.88	5.51
	(Std Dev)	(4.89)	(3.05)	(2.72)	(6.43)	(5.11)	(5.50)	(2.93)	(2.11)	(3.39)	(2.26)	(3.98)	(5.98)
Intangibility	*Mean*	0.25	0.22	0.21	0.27	0.14	0.27	0.23	0.12	0.36	0.26	0.18	0.28
	(Std Dev)	(0.27)	(0.24)	(0.22)	(0.30)	(0.22)	(0.26)	(0.22)	(0.23)	(0.25)	(0.25)	(0.22)	(0.32)

Age	*Mean*	2.42	2.57	2.85	2.28	2.35	2.35	2.60	2.17	2.50	2.33	2.08	2.24
	(Std Dev)	(0.90)	(1.04)	(1.09)	(0.72)	(0.83)	(0.75)	(1.00)	(0.87)	(0.95)	(0.56)	(0.69)	(0.80)
Div_Payout	*Mean*	0.11	0.15	0.14	0.01	0.17	0.07	0.18	0.28	0.12	0.16	0.11	0.02
	(Std Dev)	(0.21)	(0.23)	(0.20)	(0.08)	(0.27)	(0.18)	(0.25)	(0.30)	(0.22)	(0.27)	(0.20)	(0.10)
Risk	*Mean*	6.89	2.09	4.61	19.93	6.82	12.37	1.87	1.52	1.99	2.27	2.75	15.78
	(Std Dev)	(18.53)	(9.46)	(16.94)	(27.45)	(19.23)	(23.96)	(9.26)	(3.10)	(9.72)	(9.19)	(10.86)	(25.91)
Z_Score	*Mean*	-1.06	0.19	0.40	-2.71	-0.33	-2.78	0.48	0.11	-0.21	-1.00	0.62	-2.86
	(Std Dev)	(4.28)	(4.20)	(4.12)	(4.02)	(3.60)	(4.77)	(3.73)	(3.58)	(3.45)	(5.11)	(1.57)	(4.43)
Owner_5	*Mean*	49.72	53.79	46.97	45.22	55.48	49.20	52.56	53.96	52.79	56.60	60.11	41.61
	(Std Dev)	(19.01)	(17.77)	(18.78)	(20.37)	(16.08)	(19.00)	(17.45)	(15.52)	(14.31)	(16.25)	(19.00)	(20.62)
Cash_Flow	*Mean*	-0.06	-0.01	-0.01	-0.10	-0.02	-0.16	-0.01	0.01	-0.01	-0.05	0.02	-0.12
	(Std Dev)	(0.21)	(0.21)	(0.17)	(0.20)	(0.18)	(0.26)	(0.19)	(0.15)	(0.19)	(0.26)	(0.09)	(0.20)
GDP_G	*Mean*	1.33	1.28	1.40	1.39	1.28	1.29	1.32	1.28	1.29	1.39	1.29	1.39
	(Std Dev)	(1.75)	(1.74)	(1.83)	(1.74)	(1.74)	(1.76)	(1.73)	(1.74)	(1.74)	(1.75)	(1.94)	(1.76)
CPI	*Mean*	2.33	2.35	2.41	2.28	2.35	2.33	2.33	2.35	2.34	2.30	2.17	2.29
	(Std Dev)	(1.10)	(1.09)	(1.23)	(1.09)	(1.09)	(1.11)	(1.09)	(1.10)	(1.10)	(1.13)	(1.20)	(1.12)
StockMV	*Mean*	111.18	111.54	109.02	110.48	111.54	111.90	111.57	111.54	111.24	109.71	108.26	111.09
	(Std Dev)	(14.13)	(13.35)	(13.87)	(13.88)	(13.36)	(15.40)	(14.16)	(13.43)	(13.43)	(13.74)	(13.97)	(15.10)
Crisis	*Mean*	0.43	0.45	0.43	0.39	0.45	0.45	0.44	0.45	0.45	0.42	0.41	0.40
	(Std Dev)	(0.50)	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.49)	(0.49)

Table 9: Variable Descriptive Statistics of AIM Firms Across Countries

Table 9 presents the descriptive statistics for the whole sample of AIM firms across countries. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT) + (1 * Net sales) + (1.4 * Retained earnings) + (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

		Full sample	Australia	Canada	Cayman Islands	France	Germany	Hong Kong	Ireland	Israel	Jersey	Norway	South Africa	United Kingdom	United States	Zambia
BLEV	*Mean*	0.12	0.05	0.07	0.01	0.30	0.08	0.15	0.06	0.05	0.11	0.14	0.00	0.12	0.07	0.25
	(Std Dev)	(0.17)	(0.11)	(0.12)	(0.01)	(0.21)	(0.05)	(0.10)	(0.14)	(0.05)	(0.18)	(0.16)	(0.00)	(0.17)	(0.09)	(0.07)
MLEV	*Mean*	0.10	0.04	0.07	0.01	0.23	0.08	0.05	0.06	0.07	0.09	0.19	0.00	0.10	0.13	0.33
	(Std Dev)	(0.15)	(0.09)	(0.13)	(0.01)	(0.17)	(0.05)	(0.04)	(0.12)	(0.08)	(0.15)	(0.15)	(0.00)	(0.15)	(0.18)	(0.14)
SIZE	*Mean*	9.85	10.01	10.09	10.46	8.97	11.00	12.61	9.88	10.96	9.80	11.99	10.80	9.82	10.44	12.60
	(Std Dev)	(1.63)	(1.35)	(1.92)	(0.51)	(1.36)	(0.39)	(0.00)	(1.57)	(0.52)	(1.76)	(0.44)	(1.81)	(1.62)	(0.71)	(0.03)
Tangibility	*Mean*	0.16	0.39	0.43	0.32	0.14	0.09	0.10	0.10	0.10	0.18	0.61	0.68	0.15	0.09	0.65
	(Std Dev)	(0.23)	(0.31)	(0.30)	(0.07)	(0.13)	(0.02)	(0.07)	(0.24)	(0.11)	(0.28)	(0.09)	(0.21)	(0.21)	(0.07)	(0.05)
Profitability	*Mean*	-0.12	-0.22	-0.25	-0.03	-0.15	0.10	-0.06	-0.09	0.00	-0.21	-0.16	-0.32	-0.12	0.04	0.04
	(Std Dev)	(0.32)	(0.29)	(0.40)	(0.18)	(0.22)	(0.04)	(0.10)	(0.13)	(0.12)	(0.36)	(0.33)	(0.41)	(0.32)	(0.16)	(0.03)
Growth	*Mean*	2.47	2.81	0.96	5.31	.	3.50	5.65	1.61	1.54	2.24		0.51	2.47	2.01	
	(Std Dev)	(2.79)	(3.42)	(0.94)	(4.40)	.	(0.45)	(3.92)	(2.50)	(2.17)	(3.05)	.	.	(2.78)	(1.70)	.
Non-debt tax shield	*Mean*	0.03	0.02	0.03	0.03	0.06	0.03	0.02	0.00	0.02	0.01	0.03	0.00	0.03	0.04	0.03
	(Std Dev)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.01)
Liquidity	*Mean*	3.97	6.71	5.18	0.68	1.06	1.30	2.20	4.14	5.16	5.07	2.69	11.47	3.84	3.57	1.33
	(Std Dev)	(4.89)	(6.52)	(6.29)	(0.15)	(0.38)	(0.04)	(1.00)	(5.39)	(1.72)	(5.42)	(2.26)	(7.10)	(4.77)	(1.97)	(0.13)
Intangibility	*Mean*	0.25	0.05	0.03	0.17	0.45	0.04	0.05	0.40	0.08	0.14	0.07	0.00	0.26	0.25	0.03
	(Std Dev)	(0.27)	(0.11)	(0.10)	(0.11)	(0.24)	(0.03)	(0.05)	(0.35)	(0.07)	(0.25)	(0.11)	(0.00)	(0.27)	(0.20)	(0.03)

Age	*Mean*	2.42	2.45	2.53	1.65	1.94	2.09	2.60	2.68	2.74	1.95	.	2.22	2.43	2.36	2.98
	(Std Dev)	(0.90)	(0.74)	(0.95)	(0.62)	(0.60)	(0.50)	(0.29)	(0.67)	(0.25)	(0.78)	.	(0.44)	(0.91)	(0.63)	(0.20)
Div_Payout	*Mean*	0.11	0.03	0.02	0.27	0.00	0.17	0.00	0.01	0.25	0.02	0.00	0.00	0.11	0.22	0.11
	(Std Dev)	(0.21)	(0.13)	(0.08)	(0.30)	(0.00)	(0.25)	(0.00)	(0.09)	(0.30)	(0.08)	(0.00)	(0.00)	(0.22)	(0.29)	(0.17)
Risk	*Mean*	6.89	25.72	25.90	0.14	0.69	0.02	0.14	1.89	0.15	13.79	15.36	53.33	5.95	0.15	0.03
	(Std Dev)	(18.53)	(27.82)	(33.35)	(0.05)	(0.51)	(0.00)	(0.08)	(2.22)	(0.14)	(24.48)	(6.89)	(21.84)	(17.32)	(0.15)	(0.01)
Z_Score	*Mean*	-1.06	-3.93	-3.55	0.15	-1.71	2.70	0.16	-1.14	0.89	-2.20	-3.24	-2.36	-0.92	0.02	1.27
	(Std Dev)	(4.28)	(5.14)	(4.90)	(0.85)	(0.91)	(0.29)	(0.44)	(1.61)	(1.15)	(4.24)	(2.24)	(4.32)	(4.26)	(2.57)	(0.41)
Owner_5	*Mean*	49.72	33.54	36.00	52.80	42.35	70.70	62.50	39.24	53.85	57.29	28.26	51.49	50.42	46.27	38.79
	(Std Dev)	(19.01)	(19.19)	(20.10)	(17.23)	(26.40)	(4.04)	(30.62)	(13.37)	(16.90)	(17.13)	(10.75)	(38.19)	(18.67)	(12.73)	(16.27)
Cash_Flow	*Mean*	-0.06	-0.11	-0.07	-0.01	-0.10	0.10	-0.01	-0.05	0.01	-0.11	0.00	-0.09	-0.06	0.07	0.01
	(Std Dev)	(0.21)	(0.18)	(0.20)	(0.12)	(0.11)	(0.06)	(0.06)	(0.10)	(0.13)	(0.22)	(0.00)	(0.18)	(0.21)	(0.11)	(0.05)
GDP_G	*Mean*	1.33	2.64	1.79	1.23	1.05	1.37	2.09	1.48	3.03	1.28	1.30	1.69	1.28	1.69	3.24
	(Std Dev)	(1.75)	(0.52)	(1.63)	(2.50)	(1.39)	(2.01)	(1.86)	(2.72)	(0.75)	(1.74)	(1.20)	(1.48)	(1.74)	(1.45)	(0.56)
CPI	*Mean*	2.33	2.28	1.71	1.64	1.24	1.39	2.99	1.27	1.59	2.35	2.13	4.42	2.35	1.91	4.46
	(Std Dev)	(1.10)	(0.82)	(0.65)	(1.24)	(0.80)	(0.75)	(1.27)	(1.44)	(1.40)	(1.10)	(0.91)	(0.11)	(1.09)	(0.99)	(0.00)
StockMV	*Mean*	111.18	105.00	116.31	.	94.75	93.94	161.75	93.94	95.78	111.54	93.94	161.75	111.54	124.78	93.94
	(Std Dev)	(14.13)	(15.89)	(11.44)	.	(2.19)	(0.00)	(0.00)	(0.00)	(5.96)	(13.39)	(0.00)	(0.00)	(13.34)	(19.47)	(0.00)
Crisis	*Mean*	0.43	0.00	0.00	0.00	0.18	0.18	0.00	0.45	0.00	0.45	0.00	0.00	0.45	0.45	0.00
	(Std Dev)	(0.50)	(0.00)	(0.00)	(0.00)	(0.40)	(0.40)	(0.00)	(0.50)	(0.00)	(0.50)	(0.00)	(0.00)	(0.50)	(0.51)	(0.00)
# firms		725	15	12	1	1	1	1	9	2	22	1	1	655	3	1

6.2.2. Distribution of the dependent variables: Market Leverage (MLEV) and Book Leverage (BLEV)

In the subsequent data descriptive section, the focus will be on the distribution of the main dependent variables of this study: the book leverage (BLEV) and market leverage (MLEV). Table 10 presents the mean values of corporate book leverage, market leverage, and the percentage of unlevered firms across the 13-year period from 2007 to 2019. The table together with the visual diagram, Figure 2, reveal l that the average leverage values (both book and market values) remain relatively constant over the investigated period, especially from 2007 to 2018 ($\overline{BLEV_{2007}}$= 11.5% to $\overline{BLEV_{2018}}$ = 11.1%; $\overline{MLEV_{2007}}$ = 8.1% to $\overline{MLEV_{2018}}$ = 9.2%). However, after 2018 to 2019, there was a more inherent increase in the leverage levels by roughly 2%, as well as a significant decline in the number of unlevered firms by 12% from 39% to 27%. Noticeably, during the financial crisis period 2007-2009, leverage levels adopted by AIM firms also increased, not dramatically but relatively more than other years. ($\overline{BLEV_{2007}}$= 11.5% to $\overline{BLEV_{2009}}$ = 12.8%; $\overline{MLEV_{2007}}$ = 8.1% to $\overline{MLEV_{2009}}$ = 10.9%). This may be explained through more government support schemes for corporations during the period in which firms needed external funding to get through the tough time. Because the firms were likely to fall into financial distress, they could not increase the debt level significantly.

Zero-leverage firms mean that in that specific firm, the total amounts of debts (both short-term and long-term) that are due in that specific year are equal to zero. In the above table, the results show the percentage of AIM firms out of the total firms included in the study, which have zero-leverage between 2007 and 2019. The total number of observations made in the study was 3,023 and this data was used to calculate the percentage of firms in the AIM that were zero leverage. The calculation was done by finding (in percentage) the ratio of zero-leverage firms in the AIM to that of firms in the AIM that were zero leverage. The results show that the year, which had the least zero-leverage firms, was 2019, while the year, which had the highest zero-leverage firms, was 2012. The mean AIM zero-debt leverage firms for the entire period were 39%, which is a high compared to other zero leverage firms identified by previous studies such as (Strebulaev and Yang, 2013).

A possible explanation for this zero-leverage phenomenon of AIM firms is in the availability of other financing options for firms that are in AIM. AIM lists companies, mostly small and medium sized companies that have huge investment risks, where investors come and invest in

the small and medium sized companies. Small and medium sized companies have two major options when it comes to financing their operation, either get debts, or equity. Most small and medium sized companies do not have the option of floating equity and thus the only option they have is taking debts. This means that most small and medium sized companies do not fall under the zero—leverage classification. However, the small and medium sized companies that are in AIM have the option of floating equity in order to finance their operations. As such, instead of taking debts, they might decide to float part of their equity. When firms decide to float their equity, instead of taking debts to finance their operations, then they are more likely to be zero-leverage.

Generally, similar trends are observed across years for each industry as shown in Table 10, whereas the marginal changes can be slightly different. Among all industries, real estate revealed the greatest fluctuation. In particular, for the whole period, both leverage mean values jumped by roughly 10% ($\overline{BLEV_{2007}}$ =14% to $\overline{BLEV_{2019}}$ = 23%; $\overline{MLEV_{2007}}$= 13% to $\overline{MLEV_{2019}}$= 23%); and during the financial crisis, leverage adoption surged by almost 20% ($\overline{BLEV_{2007}}$= 14% to $\overline{BLEV_{2009}}$ = 26%; $\overline{MLEV_{2007}}$ = 13% to $\overline{MLEV_{2009}}$= 33%). The change logically makes sense because it is inherent that the real estate sector received the hardest hit from the financial crisis of 2007 that emerged from the subprime mortgage collapse. Basic materials and the financial sector, however, revealed the lowest and most stable movement throughout the whole period, maintaining a leverage level of 8–10%. Regarding the former, the low and stable leverage can be justified because firms operating in this sector were less exposed to financial distress, recession, or crisis because their products exhibit high demand in elasticity. Furthermore, their working capital management tends to be more efficient than other sectors from their cash sale, a high profit margin, and fast inventory turnover natures, leading to higher liquidity and profitability (see Table 8). As a result, the demand for external funding may be lower, and they can maintain their leverage levels over time. In contrast, for the financial sector, as stated by Opler and Titman (1994), the financial industry is viewed as a specialised industry such as banking and insurance. Firms operating in this sector are exposed to high financial distress leading to their weaker access to the debt market. Furthermore, the financials industry also are exposed to more stringent regulations regarding their overall risks, limiting their ability to take on higher debt.

As Table 12 shows, presenting the average leverage of Alternative Investment Market firms across countries over years, the changes in leverages over time were not consistent across countries. Many countries, such as Australia, Canada, Cayman Islands, Ireland, Israel, Jersey, the UK, and Zambia, reveal relatively stable leverage values over the period. France and Norway, however, show drastic changes, particularly with massive drops in leverage after the financial crisis. Leverage averages of French firms dropped by almost 100% from 2007–2019, and more than two-thirds for the 2007–2018 period dropped from 50–60% to roughly 20%. Firms operating in Norway show much more extreme variations during the same period 2007-2019 from 40% to 2% for BLEV and from 33% to 0% for MLEV.

Table 10 Average Leverage of AIM firms across years

leverage ratios adopted by AIM firms across the 2007-2019 period. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**).

Year	Book Leverage Average	Market Leverage Average	Unlevered Firms (%)
2007	0.115	0.081	42%
2008	0.121	0.111	39%
2009	0.128	0.109	39%
2010	0.113	0.092	42%
2011	0.117	0.097	42%
2012	0.114	0.101	43%
2013	0.122	0.104	40%
2014	0.118	0.098	41%
2015	0.12	0.102	41%
2016	0.119	0.1	39%
2017	0.113	0.093	38%
2018	0.111	0.092	39%
2019	0.133	0.108	27%
Obs.	7751	7753	3,023
Mean	0.119	0.099	39%

Figure 2: Leverage Ratio Across Years

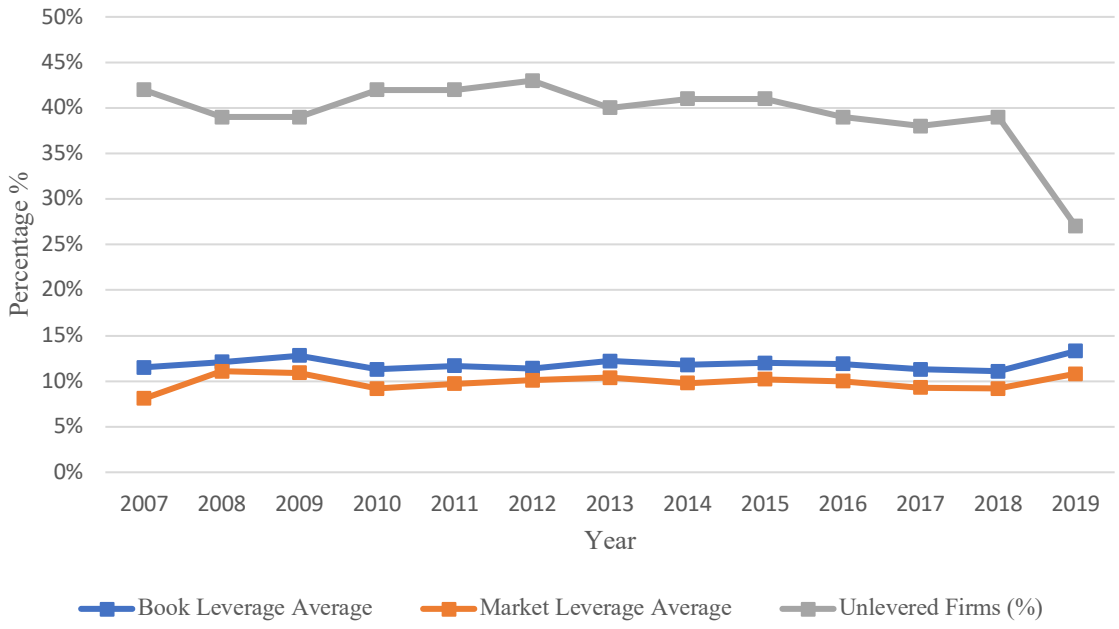


Table 11: Average Leverage of AIM firms across years and industries

Table 11 presents the average of leverage ratios adopted by AIM firms across the 2007-2019 period and eleven GIC industry classifications. The two main dependent variables of the study are the book leverage ratio (**BLEV, Panel A**) and the market leverage ratio (**MLEV, Panel B**).

PANEL A: BOOK LEVERAGE RATIO (BLEV)											
	Basic Materials	**Consumer Discretionary**	**Consumer Staples**	**Energy**	**Financials**	**Health Care**	**Industrials**	**Real Estate**	**Technology**	**Telecom**	**Utilities**
2007	0.07	0.13	0.17	0.11	0.08	0.13	0.15	0.14	0.14	0.05	0.13
2008	0.07	0.12	0.13	0.10	0.11	0.16	0.15	0.17	0.15	0.08	0.18
2009	0.08	0.15	0.19	0.09	0.10	0.15	0.16	0.26	0.16	0.07	0.16
2010	0.08	0.13	0.17	0.08	0.11	0.13	0.14	0.24	0.09	0.14	0.19
2011	0.07	0.14	0.17	0.08	0.11	0.15	0.16	0.33	0.08	0.12	0.15
2012	0.05	0.14	0.18	0.09	0.13	0.13	0.15	0.24	0.09	0.10	0.16
2013	0.06	0.16	0.21	0.09	0.14	0.12	0.14	0.22	0.11	0.11	0.24
2014	0.08	0.16	0.18	0.10	0.13	0.11	0.13	0.26	0.09	0.13	0.25
2015	0.08	0.17	0.18	0.11	0.12	0.10	0.15	0.20	0.09	0.10	0.25
2016	0.07	0.17	0.15	0.11	0.11	0.08	0.14	0.22	0.11	0.17	0.20
2017	0.07	0.15	0.11	0.11	0.09	0.09	0.14	0.22	0.11	0.14	0.20
2018	0.08	0.15	0.14	0.09	0.08	0.10	0.13	0.24	0.10	0.17	0.19
2019	0.10	0.19	0.16	0.11	0.08	0.10	0.16	0.23	0.12	0.19	0.20
N	**1246**	**971**	**189**	**1007**	**790**	**803**	**1331**	**119**	**1026**	**167**	**102**
Mean	**0.073**	**0.153**	**0.164**	**0.098**	**0.106**	**0.115**	**0.146**	**0.231**	**0.110**	**0.123**	**0.198**
PANEL B: MARKET LEVERAGE RATIO (MLEV)											
2007	0.05	0.10	0.13	0.08	0.06	0.07	0.12	0.13	0.07	0.04	0.11
2008	0.07	0.10	0.17	0.11	0.09	0.11	0.15	0.20	0.11	0.08	0.20
2009	0.06	0.12	0.21	0.08	0.09	0.11	0.15	0.33	0.12	0.07	0.15
2010	0.06	0.11	0.18	0.07	0.09	0.08	0.13	0.22	0.07	0.09	0.20
2011	0.06	0.12	0.16	0.06	0.11	0.10	0.14	0.26	0.07	0.09	0.14
2012	0.05	0.14	0.19	0.06	0.13	0.10	0.13	0.23	0.08	0.06	0.16
2013	0.07	0.16	0.23	0.06	0.13	0.10	0.11	0.20	0.08	0.05	0.20
2014	0.08	0.13	0.20	0.07	0.13	0.08	0.10	0.21	0.07	0.06	0.22

2015	0.08	0.14	0.18	0.09	0.11	0.06	0.13	0.16	0.07	0.05	0.24
2016	0.07	0.14	0.15	0.09	0.12	0.05	0.12	0.21	0.07	0.11	0.21
2017	0.06	0.13	0.12	0.07	0.09	0.06	0.12	0.21	0.08	0.08	0.20
2018	0.07	0.12	0.17	0.08	0.07	0.07	0.11	0.24	0.06	0.11	0.20
2019	0.08	0.16	0.18	0.10	0.07	0.08	0.13	0.23	0.08	0.12	0.17
N	**1245**	**972**	**189**	**1008**	**790**	**803**	**1332**	**119**	**1026**	**167**	**102**
Mean	**0.066**	**0.130**	**0.174**	**0.078**	**0.099**	**0.082**	**0.125**	**0.220**	**0.077**	**0.080**	**0.188**

Table 12 Average Leverage of AIM firms across years and countries

Table 12 presents the average of leverage ratios adopted by AIM firms across the 2007-2019 period and countries. The two main dependent variables of the study are the book leverage ratio (**BLEV, Panel A**) and the market leverage ratio (**MLEV, Panel B**).

PANEL A: BOOK LEVERAGE RATIO (BLEV)														
	Australia	**Canada**	**Cayman Islands**	**France**	**Germany**	**Hong Kong**	**Ireland**	**Israel**	**Jersey**	**Norway**	**South Africa**	**The UK**	**The US**	**Zambia**
2007	0.08	0.10	0.00			0.04	0.02	0.00	0.09	0.40	0.00	0.12	0.26	0.25
2008	0.01	0.05	0.00	0.60		0.11	0.09	0.07	0.04	0.56	0.00	0.13	0.11	0.21
2009	0.01	0.07	0.00	0.55		0.04	0.09	0.06	0.05	0.05	0.00	0.13	0.09	0.26
2010	0.06	0.05	0.00	0.47		0.09	0.10	0.10	0.09	0.09	0.00	0.12	0.09	0.28
2011	0.05	0.10	0.00	0.60		0.13	0.12	0.06	0.08	0.08	0.00	0.12	0.09	0.26
2012	0.05	0.07	0.00	0.28	0.10	0.08	0.04	0.05	0.11	0.06	0.00	0.12	0.06	0.40
2013	0.03	0.07	0.03	0.06	0.06	0.08	0.06	0.05	0.12	0.05	0.00	0.13	0.08	0.29
2014	0.04	0.10	0.02	0.04	0.01	0.04	0.04	0.04	0.17	0.04	0.00	0.12	0.03	0.32
2015	0.05	0.10	0.01	0.20	0.02	0.02	0.03	0.06	0.10	0.14	0.00	0.12	0.05	0.32
2016	0.06	0.07	0.00	0.21	0.14	0.03	0.03	0.05	0.18	0.12	0.00	0.12	0.13	0.18
2017	0.04	0.04	0.00	0.11	0.12	0.01	0.05	0.03	0.13	0.10	0.00	0.12	0.01	0.16
2018	0.05	0.05	0.00	0.17	0.08	0.01	0.10	0.02	0.06	0.10	0.00	0.12	0.01	0.17
2019	0.07	0.09	0.03	0.35	0.10	0.01	0.07	0.03	0.09	0.02	0.00	0.14	0.01	0.20
N	**171**	**131**	**9**	**12**	**8**	**13**	**98**	**26**	**207**	**13**	**13**	**7006**	**31**	**13**
Mean	**0.05**	**0.07**	**0.01**	**0.30**	**0.08**	**0.15**	**0.06**	**0.05**	**0.11**	**0.14**	**0.00**	**0.12**	**0.07**	**0.25**
PANEL B: MARKET LEVERAGE RATIO (MLEV)														
2007	0.01	0.06				0.04	0.01	0.00	0.07	0.33	0.00	0.08	0.17	0.10
2008	0.01	0.06		0.50		0.11	0.07	0.11	0.06	0.50	0.00	0.11	0.25	0.12
2009	0.00	0.05		0.41		0.04	0.06	0.06	0.06	0.13	0.00	0.11	0.13	0.20

2010	0.04	0.05		0.28		0.09	0.06	0.14	0.10	0.11	0.00	0.09	0.25	0.25
2011	0.04	0.09	0.00	0.39		0.13	0.08	0.11	0.10	0.10	0.00	0.10	0.25	0.25
2012	0.05	0.07	0.00	0.05	0.13	0.08	0.06	0.11	0.14	0.09	0.00	0.10	0.23	0.43
2013	0.03	0.09	0.02	0.01	0.08	0.08	0.09	0.09	0.14	0.05	0.00	0.10	0.21	0.34
2014	0.04	0.13	0.01	0.03	0.02	0.04	0.05	0.07	0.13	0.06	0.00	0.10	0.11	0.43
2015	0.05	0.10	0.00	0.12	0.03	0.02	0.04	0.07	0.09	0.34	0.00	0.10	0.10	0.42
2016	0.04	0.09	0.00	0.19	0.18	0.03	0.03	0.06	0.15	0.31	0.00	0.10	0.18	0.41
2017	0.04	0.04	0.00	0.11	0.07	0.01	0.06	0.04	0.08	0.28	0.00	0.10	0.01	0.35
2018	0.06	0.04	0.00	0.20	0.05	0.01	0.12	0.02	0.04	0.20	0.00	0.09	0.01	0.50
2019	0.06	0.03	0.02	0.42	0.08	0.01	0.09	0.03	0.07	0.00	0.00	0.11	0.02	0.50
N	**171**	**130**	**9**	**12**	**8**	**13**	**98**	**26**	**207**	**13**	**13**	**7009**	**31**	**13**
Mean	**0.04**	**0.07**	**0.01**	**0.23**	**0.08**	**0.05**	**0.06**	**0.07**	**0.09**	**0.19**	**0.00**	**0.10**	**0.13**	**0.33**

Table 13 shows that the average leverage ratios of Alternative Investment Market firms across firm size and years are provided. The study classifies the sample into three size groups: (1) SMALL firms are those with total asset values of £3.26 million or less; (2) MEDIUM firms are those with total assets valued from £3.26 million to £12.9 million; (3) LARGE firms are those with total assets of more than £12.9 million (Legislation, 2019a, b)[18]. It can be seen that although the general leverage adoptions are relatively similar across AIM's firm sizes with firms in the large group showing slightly higher debt adoption than the other two groups ($\overline{BLEV_{Small}} = 12.9\% \; vs \; \overline{BLEV_{Medium}} = 9.9\% \; vs \; \overline{BLEV_{Large}} = 12.4\%$; and $\overline{MLEV_{Small}} = 7.4\% \; vs \; \overline{MLEV_{Medium}} = 7.9\% \; vs \; \overline{BLEV_{Large}} = 11.4\%$). Such similar leverage values are sensible because the firms are all listed in the AIM, and the differences in their sizes are not too significant. In particular, the mean log sizes of the small, medium, and large groups are 7.3, 8.8, and 11.0, respectively.

However, the variations across the three size groups across years are more visible (see Figure 3 and Figure 4 for the book leverage and market leverage, respectively). For the BLEV (Figure 3), in 2007, AIM firms across the three size groups revealed a similar leverage ratio of 11–12% yet the gap increased over time. An observed interesting pattern for BLEV is that during the financial crisis 2007-2010, firms across all size groups generally adopted more debt with the small group showing the highest marginal changes. This may be justified by the greater need for external funding during a hard time, and smaller-sized firms may have lower access to the equity markets. Furthermore, the leverage gap peaked in 2011 with small firms showing a significant increase in leverage mean from 12.5% in 2010 to 16%, whereas middle-sized firms' leverage mean had a downward trend to roughly 12%, and no change was observed for the large firm group. After 2010 is the post-crisis recovery time; firms were putting their efforts into restructuring their operations. Therefore, additional funds may have been in demand for which smaller-sized firms took on higher leverage, and larger-sized firms preferred equity,

[18] The UK Company Act 2006 has updated the qualifying conditions of medium-sized and small SMEs to be currently in force, Such changes already appeared in the content of section 382 and section 465 of the same act. These changes are as follows:

	No. of Employees		Annual Turnover		Annual Balance sheet (Total Assets)	
	From	To	From	To	From	To
Medium-Sized	< 250	< 250	≤ £ 25.9 million	≤ £ 36 million	≤ £ 12.9 million	≤ £ 18 million
Small	< 50	< 50	≤ £ 6.5 million	≤ £10.2 million	≤ £ 3.26 million	≤ £ 5.1 million

depending on their accessibility to the equity market. Also, firms in the small group showed a drastic decrease in leverage across the remaining period after 2011 to only 8.8% in 2019, while the other two groups adopted higher debt, especially in 2019 ($BLEV_{medium} = 11.7\%\ vs\ BLEV_{large} = 14.2\%$).

While the book leverage means varied substantially across firm sizes and years, especially for small- and medium-sized groups, the market leverage means were comparatively more stable from 2007–2019 (see Figure 4). However, similar trends were observed with MLEV compared to BLEV. The only difference is that the market leverage of the small (large) firms is the lowest from 2007–2010, whereas their book leverage was the highest compared to the other two groups. However, the market leverage of the large group is inherently the highest among all groups, yet its book leverage showed the lowest figures across the whole period. This indicates that the market values of small firms were significantly higher than their book values, causing their market leverage to be much lower. In other words, investors highly value the growth opportunities of smaller firms compared to larger firms. In particular, the larger the gap between market leverage and book leverage with the latter higher (i.e. Diff > 0, Table 13), the more the investors value a company in terms of its future growth.

Table 13: Average Leverage of AIM firms across years and firm size

*Table 13 presents the average of leverage ratios adopted by AIM firms across sizes for the 2007-2019 period. Small Size firms are those with total asset values of £3.26 million or less; medium size companies are those with total asset values ranging from £3.26 million to £12.9 million; and large firms are those with total asset values of £12.9 million or higher. The two main dependent variables of the study are the book leverage ratio (**BLEV)**and the market leverage ratio (**MLEV).** Diff denotes the difference between BLEV and MLEV (i.e., BLEV – MLEV).*

	SMALL			**MEDIUM**			**LARGE**		
	BLEV	**MLEV**	**Diff**	**BLEV**	**MLEV**	**Diff**	**BLEV**	**MLEV**	**Diff**
2007	0.121	0.070	0.051	0.109	0.074	0.035	0.117	0.089	0.028
2008	0.142	0.085	0.057	0.098	0.091	0.007	0.127	0.134	-0.007
2009	0.150	0.073	0.077	0.100	0.091	0.009	0.133	0.135	-0.002
2010	0.125	0.066	0.059	0.094	0.073	0.021	0.117	0.112	0.005
2011	0.160	0.092	0.068	0.084	0.067	0.017	0.118	0.114	0.004
2012	0.128	0.079	0.049	0.096	0.077	0.019	0.117	0.119	-0.002
2013	0.145	0.090	0.055	0.103	0.077	0.026	0.123	0.120	0.003
2014	0.134	0.082	0.052	0.107	0.080	0.027	0.118	0.109	0.009
2015	0.120	0.071	0.049	0.106	0.087	0.019	0.126	0.116	0.010
2016	0.118	0.075	0.043	0.099	0.077	0.022	0.127	0.114	0.013
2017	0.115	0.055	0.060	0.087	0.077	0.010	0.122	0.104	0.018
2018	0.093	0.054	0.039	0.084	0.067	0.017	0.121	0.104	0.017
2019	0.088	0.044	0.044	0.117	0.089	0.028	0.142	0.122	0.020
N	**1214**	**1215**		**1922**	**1922**		**4615**	**4615**	
Mean	**0.129**	**0.074**		**0.099**	**0.079**		**0.124**	**0.114**	

Figure 3: Book Leverage ratios across firm size and years

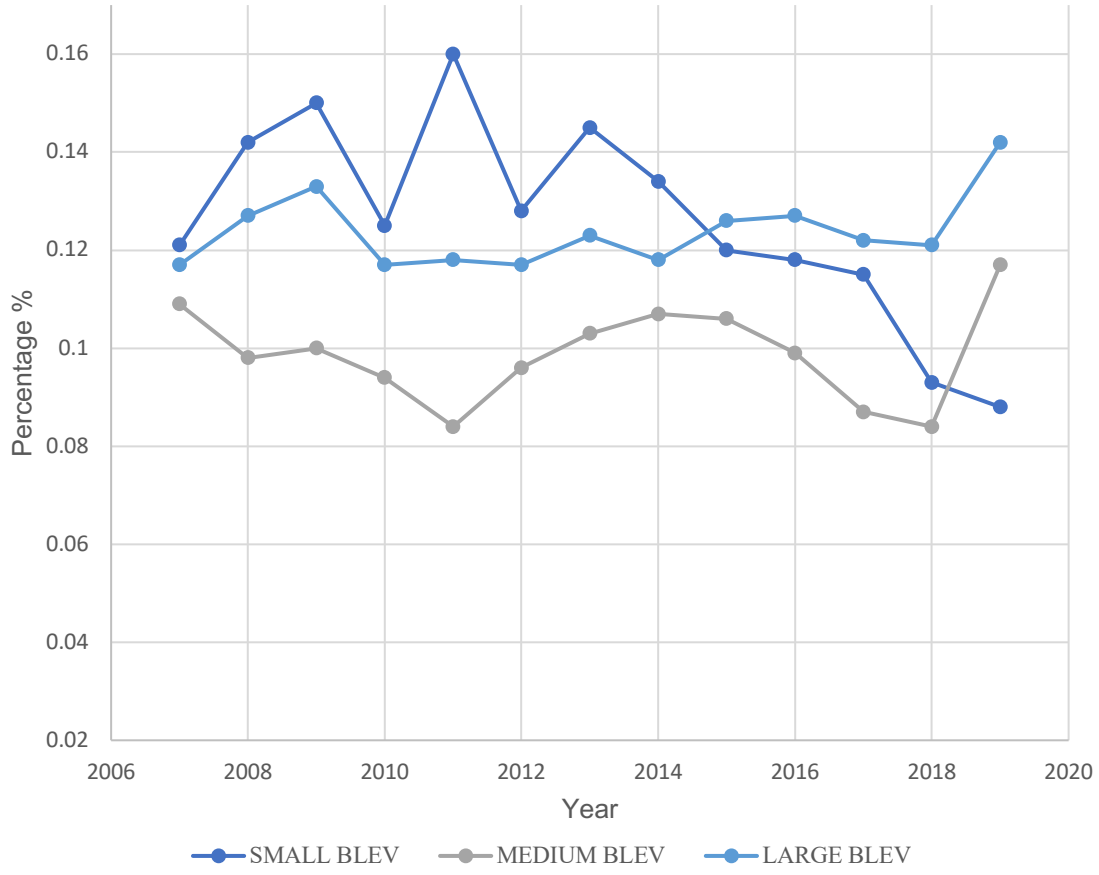
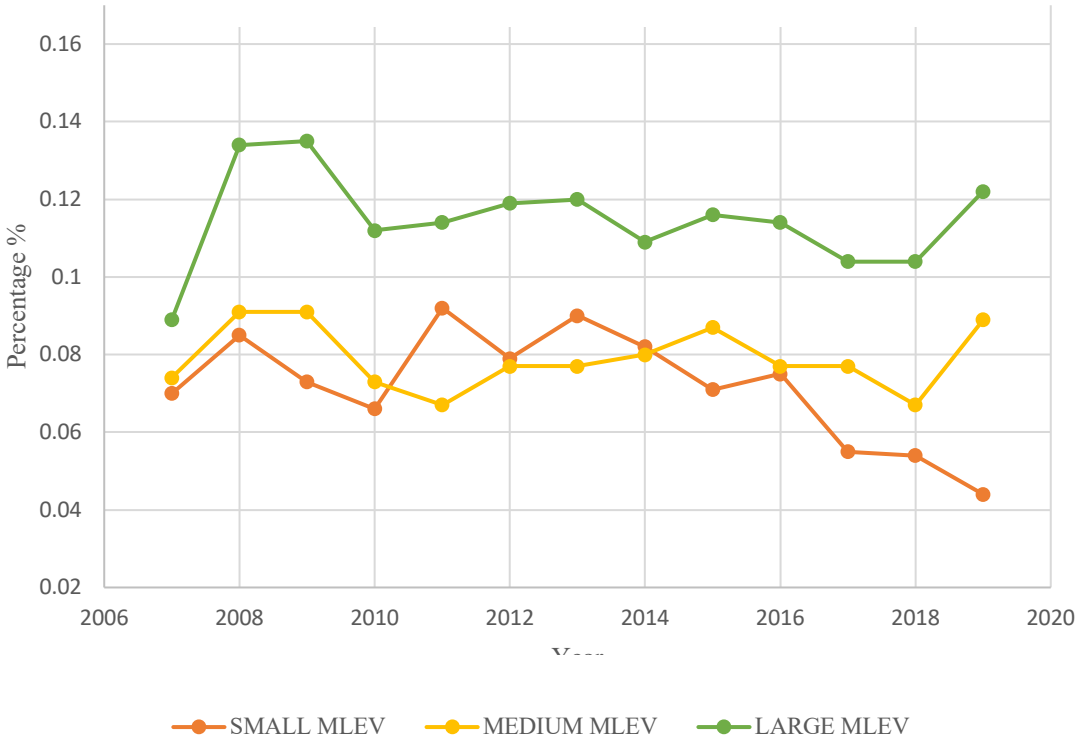


Figure 4: Market Leverage ratios across firm size and years



6.2.3. Correlation Matrix of Independent Variables

Table 14 presents the Pearson correlation matrix of all explanatory variables employed in the current studies. The correlation coefficients that are marked in bold are statistically significant correlated pairs at a 5% critical level or below. The obtained correlation coefficients range from 0 to 0.76 with three variable pairs revealed with coefficients higher than 70%. These are Zscore and profitability, Zscore and cash_flow, and GDP_G and StockMV. Regarding the first two pairs, Zscore denotes a firm's bankruptcy risk which is shown to be significantly positively correlated with a firm's profitability and cash flow. These associations appear to be sensible because profitability is a variable in the Zscore function. Logically, a firm that achieves higher profit means that its business is going well. Hence, the likelihood of insolvency is lower, i.e. higher Zscore. Similarly, cash flow indicates the liquidity of a company, hence, the ability to meet financial obligations. The higher the cash flow, the lower the chance of bankruptcy. In terms of the positive correlation between GDP growth rate and the stock market value of a country, this association has been recorded in the economic literature (e.g. Ake, 2010; Caporale et al., 2004; Luintel & Khan, 1999). They explained that a larger stock market can enhance the efficiency of capital allocation as well as idea creation which are beneficial for economic growth. Overall, despite the noticeably high correlations of these three pairs, the absolute values of the coefficients remain lower than 80% for the concern of multicollinearity (Kennedy, 2008). For more assurance, an additional test, i.e. the Variance of Inflation Factor (VIF), was performed to check for the multicollinearity issue. The result of the test shows the VIFs of all variables are lower than 10[19]. This once again indicates that there is no concern of a multicollinearity issue.

[19] A rule of thumb was recommended by Rogerson (2001)

Table 14 Pearson Correlation Matrix

Table 14 presents the Pearson pairwise correlation matrix that depicts the degree of correlation between the explanatory variables. ***** = indicates significant at 0.05 level. Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT) + (1 * Net sales) + (1.4 * Retained earnings) + (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Size	1																
(2) Tangibility	0.28*****	1															
(3) Profitability	0.47*****	0.08*****	1														
(4) Growth	-0.17*	-0.12*	-0.21*	1													
(5) Non-debt tax shield	0.02	0.12*	-0.08*	0.10*	1												
(6) Liquidity	-0.12*	-0.10*	-0.16*	0.06*	-0.27*	1											
(7) Intangibility	0.03*	-0.34*	0.07*	-0.07*	0.12*	-0.14*	1										
(8) Age	0.17*	0.07*	0.18*	-0.10*	0.05*	-0.17*	-0.09*	1									
(9) Div_Payout	0.32*	0.01	0.34*	0.02	0.04*	-0.16*	0.00	0.21*	1								
(10) Risk	-0.16*	0.05*	-0.33*	0.08*	-0.18*	0.32*	-0.12*	-0.10*	-0.20*	1							
(11) Z_score	0.54*	0.06*	0.76*	-0.15*	0.02	-0.12*	0.07*	0.11*	0.36*	-0.36*	1						
(12) Owner_5	0.11*	-0.02*	0.13*	-0.02*	0.10*	-0.09*	-0.06*	-0.05*	0.10*	-0.11*	0.18*	1					
(13) Cash_flow	0.47*	0.12*	0.68*	-0.18*	0.04*	-0.18*	0.09*	0.16*	0.35*	-0.32*	0.70*	0.14*	1				
(14) GDP_G	0.06*	0.04*	0.03*	0.08*	-0.001	0.02	0.02	0.06*	0.03*	0.01	0.004	-0.04*	0.03*	1			
(15) CPI	-0.05*	-0.02*	-0.00	0.01	-0.03*	0.04*	-0.01	-0.07*	-0.01	-0.00	0.03*	0.02	0.01	-0.15*	1		
(16) StockMV	-0.00	-0.02	0.04*	0.10*	00.01	0.02	-0.01	-0.02	0.04	-0.02	0.05*	0.02	0.05*	0.74*	0.14*	1	
(17) Crisis	-0.11*	-0.09*	-0.00	-0.00	-0.03*	0.01	0.02	-0.13*	-0.02*	-0.03*	0.04*	0.05*	-0.00	-0.48*	0.57*	0	1

6.3. Empirical findings

6.3.1. Main baseline estimation model – the OLS robust standard error

As explained in Section 5.4.1, the main baseline estimation method employed to identify the determinants of AIM firms' capital structure is the OLS robust standard error. The results for the developed hypotheses (Sections 4.3) are presented in Table 16, which will be discussed on a hypothesis-by-hypothesis basis. The table contains six model variations for both measures of leverage: book and market leverage (BLEV and MLEV, respectively). The first model variation contains only the 13 main explanatory variables (referred to as Group 1, hereafter) being tested[20]. The second model extends the first model by inclusion of the year fixed effect dummies (Year.FE). The third model comprises all factors of the second model with additional control of the industry fixed effect dummies to test for hypothesis 14 and the country fixed effect dummies. Model four contains Group 1 variables and other controlling variables capturing the macroeconomic circumstances of a firm's home country as discussed in Section 5.4.1 (Group 2). Subsequently, the fifth model comprises all factors in the fourth model with an additional control of the year fixed effect dummies. Finally, the full model containing all factors explained in Equation 5.24 (Section 5.4.1), i.e. Group 1 main variables, Group 2 macroeconomic variables, and all fixed effects year, industry, and country dummies are performed. Table 15 shows the six model variations.

Table 15 Variables of the six variations of the baseline estimation for Table 16

The table contains all the six models used in the study for both measures of leverage: book leverage (BLEV) and market leverage (MLEV). The first model has the 13 explanatory variables that the research used to determine the determinants of capital structure in AIM firms. These explanatory variables are Firm size (H1), tangibility (H2), profitability (H3), growth (H4), non-debt tax shield (H5), liquidity (H6), intangibility (H7), firm age (H8), dividend pay-out (H9), operating risk (H10), bankruptcy risk (H11), ownership concentration (H12), and free cash flow (H13). This model is then extended by including year-fixed effects dummies (Year.FE), to form the second model. The researchers then added the industry fixed effects and country fixed effects to the second model in order to form the third model. In addition to this, the researchers formed the fourth model by adding the country's gross domestic product (GDP growth), inflation rate (CPI), the proportion of a country's stock market capitalization to GDP, and banking crisis dummies to the first model. The fifth model is formed by adding additional control of the year fixed effect dummies to the fourth model. Lastly, the main model is formed by adding all the Group 1 main variables, Group 2 macroeconomic variables, and all fixed effects year, industry, and country dummies

Model Variation	Columns (BLEV & MLEV, respectively)	Variables

[20] Include: Firm size (H1), tangibility (H2), profitability (H3), growth (H4), nondebt tax shield (H5), liquidity (H6), intangibility (H7), firm age (H8), dividend pay-out (H9), operating risk (H10), bankruptcy risk (H11), ownership concentration (H12), free cash flow (H13). The computations of these factors can be found in Section 5.3.3. SEE NOTE

1	1 and 2	Group 1[20]
2	3 and 4	Group 1 + Year dummies (Year.FE)
3	5 and 6	Group 1 + Year dummies (Year.FE) + Industry dummies (Industry.FE) + Country dummies (Country.FE)
4	7 and 8	Group 1 + Group 2[21]
5	9 and 10	Group 1 + Group 2+ Year dummies (Year.FE)
6	11 and 12	Group 1 + Group 2 + Year dummies (Year.FE) + Industry dummies (Industry.FE) + Country dummies (Country.FE)

Across the six estimation variations, the last model (Columns 11 and 12) shows the highest adjusted R-square (R^2 = 21.3% and 27%, for BLEV and MLEV, respectively). In other words, the full models can explain approximately 21% and 27% of the adopted levels of book and market leverage. This implies that the model variation appears to have the largest goodness of fit because it takes into account more relevant factors that are recommended in the literature. Furthermore, by employing the LSDV approach, unobservable industry and country time-invariant factors can be controlled for yielding a better fit model estimation. Consequently, the findings are primarily relied on for this full model.

6.3.1.1. Hypothesis 1: Firm size is statistically significant positively related to leverage

The firm size reveals a significantly positive influence on the debt adoption of AIM firms at a 1% critical level. The result is strongly consistent across the six model variations for both book and market values of leverage ($\beta_{Size(11)}$ = 0.0141 for BLEV, and $\beta_{Size(12)}$ = 0.0161 for MLEV, p-value < 0.01). Regarding its economic significance, the results indicate that for every 1 log point increase in a firm's total assets, the firm tends to increase its book and market debt ratios by 1.4% and 1.6%, respectively, ceteris paribus. This positive size-leverage association supports the developed hypothesis one and is consistent with the majority of literature (e.g. Drobetz et al., 2013; Frank & Goyal, 2009; Michaelas et al., 1999; Öztekin 2015; Psillaki & Daskalakis, 2009). In line with trade-off theory, larger AIM firms tend to be more diversified and have a greater and more solid market standing with a higher debt rating due to their lower exposure to insolvency. Accordingly, they have more access to external debt funding at more favourable rates (see Daskalakis & Psollaki, 2008; Rajan & Zingales, 1995; Titman & Wessel,

[21] The country's gross domestic product (GDP growth), inflation rate (CPI), the proportion of a country's stock market capitalization to GDP, and banking crisis dummy.

1988). This finding is consistent with the suggestions made by Smith (1977) and Titman and Wessels (1998) that such that larger firms pay much less to issue long-term debt, hence adopting a higher leverage, especially for AIM firms in comparison to nonlisted Small-Medium firms. Their LSE listed status with an additional layer of governance has attenuated the constraints imposed on the access to external capital markets, In particular, the debt market. Therefore, despite the small- and medium-sized nature of AIM firms, they can take advantage of the debt funding which tends to increase with their corporate size.

6.3.1.2. Hypothesis 2: Firm tangibility is statistically significantly associated with leverage

According to Hypothesis 2, the tangibility level of Alternative Investment Market firms is expected to statistically, significantly influence their decisions in taking on debt as a financing source. This hypothesis is supported by the OLS robust analysis at a 1% level for both book and market leverage ratios across all the six model variations. The results reveal consistent and positive coefficients of a tangibility factor ($\beta_{Tangibility(11)} = 0.158$, and $\beta_{Tangibility(12)} = 0.159$, p-value < 0.01) indicating a 10% increase in the proportion of fixed assets held by the companies would lead to 1.6% higher debt adoption. The finding is supported theoretically by trade-off theory. In particular, the higher possession of fixed asset is analogous to a firm's higher collateralisability, and hence, a lower possibility of moral hazard (Jensen & Meckling, 1976). Consequently, more tangible firms can have better access to the debt market at better rates (Bevan and Danbolt, 2004; Chandrasekharan, 2012). Empirically, this finding is also supported by an abundance of studies, such as, Rajan and Zingales (1995), Frank and Goyal (2008), Heyman et al. (2008), Frank and Goyal (2009), and Andres et al. (2014).

6.3.1.3. Hypothesis 3: Growth is statistically significantly positively associated with leverage

Intriguingly, the expectation on the positive influence of firm growth measured by the market to book value on the leverage level is not empirically supported in the results. Statistically significant and consistent negative coefficients were obtained ($\beta_{growth(11)} = -0.0023$ and $\beta_{growth(12)} = -0.0059$, p-value < 0.01) indicating that AIM firms with higher growth opportunities tend to adopt lower levels of debt. In particular, an increase in market to book ratio by one point would cause the book and market leverage ratio to decrease by approximately 0.2% and 0.5%, respectively. Though this is not consistent with expectations, the finding is justifiable and supported both theoretically by trade-off theory, together with previous empirical evidence provided by Rajan and Zingales (1995), Frank and Goyal (2009), Arsov and Naumoski (2016), Fosu (2013), and Kayo and Kimura (2011). The first argument is related to the intangible nature

of growth opportunity which cannot be collateralised to affect the debt access as suggested by Titman and Wessels (1988). Second, rapidly growing firms tend to increase their risk-taking levels, leading to higher insolvency risk. Furthermore, in a financial distress time, growth value (intangible asset) drops significantly and hence cannot support or help the situation. Altogether, these signal higher bankruptcy costs, causing a lower level of debt adoption. As stated in the hypothesis development section 4.3.4, it is expected that the additional governance layer of AIM firms, i.e. the NOMADs, will prevent the firms from taking on increased levels of risks. However, as the results reveal a contradictory result, this implies that their fast-growing nature may be dominant and facilitate higher risk-taking. As a result, a higher possibility of bankruptcy thus leads to lower leverage as suggested by trade-off theory.

6.3.1.4. Hypothesis 4: Liquidity is statistically significantly associated with leverage

There is sufficient statistical evidence supporting Hypothesis 6 as the coefficients of liquidity across all six model variations for both leverage measures show a significant p-value of lower than 1%. Regarding its direction, a negative association between liquidity and leverage is specified ($\beta_{liquidity(11)}$ = -0.0087 and $\beta_{liquidity(12)}$ = -0.0060, p-value < 0.01) suggesting that 1 point increase in a firm's ratio of current assets to current liability (i.e. its liquidity) tends to increase its book and market leverage level by 0.9% and 0.6%, respectively. This negative association can be explained by the trade-off and pecking order theories. Specifically, it has been argued that firms with a higher liquidity tend to expose themselves to higher risk in exchange for higher yields. The reason is that once firms exhibit a decent level of buffering resources in terms of higher liquidity, they tend to possess more capacity in taking on high-risk projects. This may be more applicable for AIM firms as mentioned above in Section 6.2.1.4 such that the fast-growing nature of Alternative Investment Market firms may encourage them to take on risky yet profitable projects to enhance their growth rates, especially when firms possess a great capacity to take on risk (e.g. higher liquidity cushion). Nevertheless, this higher risk-taking will increase the firm's bankruptcy possibility. Therefore, lower debt accessibility. This can also be explained by pecking order theory because a stronger ability to obtain funds from the current asset, i.e. the cash convertibility of asset, may reduce the need for firms in taking on external finance, leading to lower leverage (e.g. D'Amato, 2019; Khemiri & Noubbigh, 2018 Morellec, 2001; Myers & Rajan, 1998; Ozkan, 2001).

6.3.1.5. Hypothesis 5: Dividend pay-out is statistically significantly negatively associated with leverage

Dividend pay-out policy is expected to impose a negative influence on a firm's leverage level. The results reveal strongly significant coefficients of dividend pay-out level for the book and

market leverage of firms across all the six model variations at 1% critical level ($\beta_{dividend(11)}$ = -0.0477 and $\beta_{dividend(12)}$ = -0.0841 for BLEV and MLEV, respectively). In terms of its economic significance, the coefficient magnitudes indicate that £1 increase in the dividend per share for each pound of earning per share leads to approximately 5% and 8% decrease in the book and market leverage levels, respectively. The finding is supported by pecking order theory and agency theory. Regarding the former, it is argued that high dividend-paying firms tend to exhibit decent and stable profit levels and retained earnings (Fama & French, 2002). Therefore, their demands for external financing sources are lower, leading to lower leverage (Antoniou et al., 2008). From agency theory's perspective, dividend payments reduce the free cash flow available in firms. This attenuates the opportunistic behaviours of managers (Jensen, 1986; Jensen & Meckling, 1976). In this instance, the need of using debt finance to control the agency issues within the firms is lower (Rozeff, 1982). The finding is relevant in the context of Alternative Investment Market firms which are often on the growing stage, and hence have greater exposure to profitable investment pools requiring higher funds for their growth. As a result, it is expected that the free cash flow levels of such firms are lower. Therefore, if AIM firms are able and decide to pay out dividends, the dividend amount is likely to take up a high proportion of their free cash flow level, leaving little room for opportunistic managers to take advantage of their firm's financial resources. Such a negative dividend-leverage association has been reported by the majority of literature (e.g. Antoniou et al, 2008; Bokpin, 2009; Dang & Garrett, 2015; Frank & Goyal, 2007).

6.3.1.6. Hypothesis 6: Operating risk is statistically significantly negatively associated with leverage

A firm's operating risk is measured by the standard deviation of its return on the asset over a 5-year window. Consistent with trade-off theory and supporting Hypothesis 10, the finding reveals a strong negative influence of operating risk on a firm's book and market leverage levels across the six model variations ($\beta_{risk(11)}$ = -0.00034 and $\beta_{risk(12)}$ = -0.00021, p-value < 0.01 for BLEV and MLEV, respectively). The result indicates that every 10 standard deviation points increase would lead to a 0.3% and 0.2% decrease in a firm's leverage level. The finding is sensible because firms with highly volatile earnings are less likely to meet their debt obligations, leading to higher insolvency exposure, and hence lower debt capacity (e.g. Cassar & Holmes, 2003; D'Amato, 2019; Michaelas et al., 1999). This risk is more critical for young SMEs like AIM firms such that their operations tend to be less stable in comparison to the main market (Cassar & Holmes, 2003; Michaelas et al., 1999).

6.3.1.7. Hypothesis 7: Bankruptcy risk is statistically significantly negatively associated with leverage

Similar to the operating risk, it is harder for firms with a higher risk of bankruptcy to access the debt market at a reasonable rate. This is supported by trade-off theory (Myers, 1984). Consequently, Hypothesis 11 stating that "bankruptcy risk is statistically significantly negatively associated with leverage" is strongly supported for both leverage measures. The coefficients of the full model for the book and market leverage values indicate that for every one-point increase in the firm's Z-score, its leverage ratios decrease by approximately 10% and 4%, respectively ($\beta_{z\_score(11)}$ = -0.103 and $\beta_{z\_score(12)}$ = -0.043, p-value < 0.01, for BLEV and MLEV respectively). It can be seen that the effect of bankruptcy risk is relatively stronger than the operating risk. This is justifiable because the bankruptcy risk measure is more explicitly related to the ability to service debt, according to trade-off theory.

6.3.1.8. Controlling variables

As shown in Table 16, the association between profitability and leverage is not consistent across the two measures of leverage nor across the model variations. A pattern has been spotted in the result such that for the model variations 1-2-4-5, the effect of profitability on leverage is statistically significant only for the book leverage measure (columns 1-3-7-9, $\beta_{profitability} > 0$, p-value < 0.1). However, for model variations 3 and 5 in which industry fixed effect was controlled for, both measures are significantly positive at the 10% level or below. The industry fixed effect aims to take into account any omitted industry-related factors that are time-invariant. Its inclusion has enhanced the goodness of fit for the model and hence should be taken into account. Consequently, the conclusion is built on the models with industry dummies, specifically the full model. The positive coefficient of profitability suggests that a 1% increase in a firm's profitability level would increase the book and market debt levels by roughly 0.47% and 0.16%, respectively. This finding is supported by trade-off theory because more profitable firms tend to have lower bankruptcy risk due to their increased accumulated retained earnings or their abilities in generating more financial resources internally. As a result, higher access to the debt fund is obtained to take advantage of the source's tax shield property. This conclusion is consistent with previous empirical studies including Leary and Roberts (2010), Nunkoo and Boateng (2010), and Van Caneghem and Van Campenhout (2012).

The tax shield obtained by employing nondebt instruments, such as the depreciation of fixed assets, has shown a significant positive relationship with the leverage level at a 1% critical

level ($\beta_{nondebttaxshield(11)}$ = 0.00628, p-value < 0.01). Nevertheless, the result only shows a significant coefficient for the book leverage measure, while the effect of the nondebt tax shield on the market measure is insignificant. The difference between the two measures is that the book value captures the percentage of debt finance to the firm book value, while the market leverage captures the debt proportion on the firm market value, which changes over time. The factor fails to explain the market leverage that may perhaps be owing to the insignificant economic influence of this variable. Specifically, despite the statistical significance, the coefficient indicates the trivial economic significance of the factor. It shows that a 10% increase in the nondebt tax shield would lead to a 0.06% increase in the book leverage ratio of the firms. Overall, for consistency across the whole study, conclusions should be drawn from the statistical significance. Consequently, the positive effect of the nondebt tax shield on firm leverage is supported, which is consistent with the expectation of trade-off theory. Building on the measure of the factor, that is the proportion of depreciation and amortisation to total asset, firms with higher nondebt tax shield values are likely to possess higher values of fixed assets which enhances their tangibility possession and hence collateralisability (similar to the firm tangibility factor, see Section 6.2.1.2) and, ultimately, higher debt access (Acedo-Ramirez & Ruiz-Cabestre, 2014; Chakraborty, 2010; Jensen & Meckling, 1976; Michaelas et al., 1999).

Furthermore, the positive coefficient of the intangibility variable indicates that firms holding greater relative levels of intangible assets tend to take out a higher level of debt. The results are significant at a 1% level across all model variations for both leverage measures. The coefficients of 0.0475 and 0.0502 (for BLEV and MLEV, columns 11-12, respectively) indicate that for every 10% increase in the proportion of intangible asset value, the leverage ratio increases by 4.8% and 5%, respectively. It has been argued by some researchers that the collateralisability of intangible assets has been increasingly observed (e.g. patent and copyrights of a product or service; Mann, 2018; Hochberg et al., 2017) and because the assets reflect the reputation, image, and market standing of the firms, they are claimed to enhance the firm profitability and cash flow (Lim et al., 2013; Krugman, 2000). These together increase the debt capacity of the AIM firms, and in turn, the leverage levels as suggested by trade-off theory. Especially in the case of AIM firms, because they are fast-growing, young, and publicly listed in the LSE, the possession of high intangible assets may be as important as tangible assets. It

represents the standing and credibility of the firms in the market. The higher the intangibility, the easier and cheaper it is for AIM firms to access debt financing sources.

Firm age shows a significant positive association with market leverage measured at 5% or below ($\beta_{age(12)}$ = 0.00656). This finding supports Hypothesis 8 indicating that firms with one more year of operation tend to adopt a 0.7% higher leverage level. It is sensible to argue that firms with long existence are more well-known in the market, with a long track of credit records, experience, and stronger image (Berger & Udell, 1995; Nico & Van Hulle, 2010; Sakai et al., 2010). The more information about the firms in the market, the lower the adverse selection and moral hazard of the firms. This is a favourable characteristic of firms in the eyes of lenders. Furthermore, compared to young start-up firms, older firms are more likely to operate on a more stable business phase, and hence are less risky. Altogether, these imply lower bankruptcy risk (Berger & Udell, 1995; Bernasconi et al., 2005; Huygebaert, 2003; Nico &Van Hulle, 2010; Petersen & Rajan, 1994). Consequently, in alignment with trade-off theory, older firms exhibit larger debt capacity at a lower cost of borrowing (Sakai et al., 2010; Smith, 1977; Titman & Wessels, 1998)

The coefficients of the total ownership stake of the biggest 5 shareholders for the book and market leverage across all six models are consistently positive and significant at a 1% level. According to the full model, the results reveal that a 10% increase in the total ownership of the top five shareholders would lead to a 0.5% and a 0.2% increase in the firm's book and market leverage, respectively. Noticeably, the economic significance of the factor is trivial. This may be because of other more important factors that influence the need for debt adoption, rather than the approval of shareholders. Specifically, in the circumstances in which the firms need, can and should take on more debt, the major shareholders are likely to support the financing decision.

This finding has been supported by many previous studies, such as Cespedes et al. (2010), Du and Dai (2005), La Rocca et al. (2010), Bhaird and Lucey (2010), Margaritis and Psillaki (2010), and Pindado and La Torre (2011). Alternative Investment Market firms often exhibit strong ownership concentration. Large shareholders tend to be motivated in supporting firms taking on debt to avoid the issue of ownership dilution. This is supported by pecking order theory such that debt is preferred to equity (Cespedes et al., 2010; Du and Dai, 2005).

Free cash flow is expected to negatively influence the debt adoption level of AIM firms. However, the result does not support this expectation because the coefficients of the factor is statistically insignificant despite its negative sign ($\beta_{cashflow\ (11)}$ = -0.025 and $\beta_{cashflow(12)}$ = -0.0108, n.s). This does not support pecking order theory, which suggests that firms with higher cash flow will have lower demands for external funds because they prefer to utilise the internal resources. To explain this finding, it may be that Alternative Investment Market firms decided to be listed publicly on the LSE mainly to enhance their visibility as well as their access to the external markets. Consequently, they may take the opportunity to take on either debt or equity, when possible, regardless of their free cash flow level.

Table 16: AIM Market Regression Results (OLS estimation)

Table 16 reports the OLS estimation of dynamic panel data of the determinants of capital structure for the whole sample of AIM firms for the period from year 2007 to 2019. Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset), **Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

VARIABLES	The Baseline Estimation: OLS Method											
	BLEV (1)	MLEV (2)	BLEV (3)	MLEV (4)	BLEV (5)	MLEV (6)	BLEV (7)	MLEV (8)	BLEV (9)	MLEV (10)	BLEV (11)	MLEV (12)
Size	0.011***	0.013***	0.012***	0.014***	0.0127***	0.0150***	0.013***	0.014***	0.014***	0.015***	0.014***	0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Tangibility	0.141***	0.152***	0.142***	0.153***	0.163***	0.167***	0.155***	0.158***	0.148***	0.159***	0.158***	0.159***
	(0.011)	(0.009)	(0.011)	(0.009)	(0.012)	(0.010)	(0.012)	(0.012)	(0.0138)	(0.010)	(0.014)	(0.011)
Non-debt tax shield	0.006***	0.000	0.006***	0.000	0.005***	0.001	0.004**	-0.001	0.005***	-0.001	0.006***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Growth	-0.002***	-0.006***	-0.002***	-0.006***	-0.002***	-0.005***	-0.002***	-0.006***	-0.002***	-0.006***	-0.002**	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Profitability	0.371***	0.126	0.376***	0.130	0.452***	0.181**	0.211*	0.002	0.426***	-0.001	0.470***	0.163*
	(0.106)	(0.084)	(0.106)	(0.084)	(0.105)	(0.082)	(0.116)	(0.095)	(0.147)	(0.091)	(0.148)	(0.091)
Liquidity	-0.009***	-0.006***	-0.009***	-0.006***	-0.008***	-0.006***	-0.009***	-0.006***	-0.009***	-0.006***	-0.008***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intangibility	0.039***	0.039***	0.042***	0.042***	0.051***	0.054***	0.029***	0.029***	0.036***	0.029***	0.047***	0.050***
	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.007)
Age	0.000	0.004**	0.002	0.006***	0.003	0.007***	0.002	0.006***	0.003	0.006***	0.003	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Div_Payout	-0.036***	-0.071***	-0.035***	-0.070***	-0.051***	-0.087***	-0.029***	-0.062***	-0.036***	-0.062***	-0.047***	-0.084***
	(0.009)	(0.007)	(0.009)	(0.007)	(0.010)	(0.007)	(0.010)	(0.007)	(0.008)	(0.008)	(0.009)	(0.007)
Risk	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.083***	-0.028***	-0.086***	-0.030***	-0.096***	-0.039***	-0.087***	-0.032***	-0.096***	-0.032***	-0.103***	-0.042***
	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.007)	(0.011)	(0.006)	(0.011)	(0.007)
Cash_flow	-0.027*	-0.013	-0.028*	-0.0139	-0.027*	-0.012	-0.008	-0.003	-0.029	-0.003	-0.025	-0.010
	(0.016)	(0.012)	(0.016)	(0.0127)	(0.015)	(0.012)	(0.017)	(0.013)	(0.020)	(0.013)	(0.020)	(0.012)
Owner_5	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G							-0.007	-0.012	-0.014*	-0.032	0.005	-0.007
							(0.011)	(0.009)	(0.007)	(0.033)	(0.005)	(0.008)
CPI							-0.000	-0.002	0.001	-0.060**	0.006	-0.013*
							(0.003)	(0.002)	(0.011)	(0.023)	(0.006)	(0.007)
StockMV							0.229***	0.056	0.189***	0.164**	-0.273***	-0.482**
							(0.073)	(0.056)	(0.068)	(0.083)	(0.086)	(0.199)
Crisis							0.011	0.014***	0.022	0.036	0.013	-0.014
							(0.007)	(0.005)	(0.032)	(0.045)	(0.027)	(0.027)
Constant	0.011***	0.013***	0.012***	0.014***	0.012***	0.015***	0.013***	0.014***	0.014***	0.015***	0.014***	0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year.FE	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**N**	**Y**	**Y**	**Y**	**Y**
Industry.FE	**N**	**N**	**N**	**N**	**Y**	**Y**	**N**	**N**	**N**	**N**	**Y**	**Y**
Country.FE	**N**	**N**	**N**	**N**	**Y**	**Y**	**N**	**N**	**N**	**N**	**Y**	**Y**
Observations	4941	4941	4941	4941	4941	4941	4880	4880	4880	4880	4880	4880
R-squared	0.179	0.224	0.183	0.231	0.206	0.263	0.191	0.234	0.198	0.236	0.213	0.270
F-stat	82.54	108.7	44.06	58.47	29.56	40.44	55.49	72.38	41.17	43.41	41.83	40.62

6.3.2. Robustness tests – the OLS lagged approach, fixed effect model and GMM

In this section, three estimation methods are performed as robustness checks that take into account a potential statistical issue embedded in the OLS robust model, that is, the endogeneity. As discussed in Section 5.4.2.2, there are three main sources of endogeneity: simultaneity, omitted variables that may be correlated with at least one explanatory variable in the model, and measurement errors. To deal with the reverse causality, a lagged model is employed in which all the explanatory variables are lagged by 1 year. The idea behind this model is that a firm's capital structure in year t should not influence the past values of independent variables such as firm size or market to book value in year t-1. However, the fixed-effect model can help with the potential existence of omitted variables. In particular, those that are time-invariant. Nevertheless, the omitted variables may not be time-invariant as assumed in the fixed-effect model, and hence a random effect model may be preferred. According to the Hausman test (Table 17, Columns 3–4), the statistic test is significant at a 1% level indicating that the omitted heterogeneity is fixed over time (time-invariant) and correlated with the independent variables. Therefore, the fixed-effect model is a more appropriate model to be implemented. Lastly, the two-step system generalised method of moments with robust standard error option is also performed, which has been claimed to exhibit the ability to tackle all the three endogeneity sources (Arellano & Bover, 1995; Blundell & Bond, 1998).

Table 17 presents the results for the three above-mentioned robustness tests using the full model variation in which all main explanatory variables[22], controlling macroeconomic variables[23], and the year-, industry- and country-dummy variables. Each estimation method takes two columns for the two measures of leverage, the BLEV and MLEV, respectively. Regarding the reliability test for the GMM model, because the robust standard error option is employed, the test for over-identifying restrictions is based on the Hansen J test rather than the Sargan test. The chi-square statistics for BLEV and MLEV model are 171.74 and 196.49, respectively, which are statistically insignificant (p-value = 0.68 and 0.85, respectively). Therefore, it can be concluded that the instruments are satisfying the orthogonality conditions

[22] Include: Firm size (H1), tangibility (H2), growth (H3), liquidity (H4), dividend pay-out (H5), operating risk (H6), and bankruptcy risk (H7). The computations of these factors can be found in Section 5.3.3

[23] Include: Non-debt tax shield, Profitability, Intangibility, Age, cash flow, ownership concentration, The country's gross domestic product (GDP growth), inflation rate (CPI), the proportion of a country's stock market capitalization to GDP, and banking crisis dummy.

for their employment. Furthermore, the AR (1) and AR (2) test results indicate the absence of autocorrelation because the AR (2) statistic is insignificant. Despite the significant result of AR (1), the robust option has been employed to tackle the issue.

Among the 12 financial factors reported to significantly influence the firm's leverage level (for either the book leverage or market leverage, or both), only seven factors retain their significant impacts across the three robustness tests. In particular, firm size and tangibility consistently report positive associations with both book and market leverage across the lagged approach, fixed-effect model, and GMM. The results indicate that larger AIM firms with greater noncurrent asset values tied in either tangible or intangible assets tend to adopt more debt for their capital. These characteristics are critical for AIM firms in enhancing their market standing, creditability, and reputation, especially they are young, fast-growing, and publicly listed companies in the LSE. With those favourable market attributes, the firms can have better access to the debt market at a lower cost of debt.

However, consistent with the baseline OLS estimation, the levels of a firm's liquidity, dividend pay-out, and operating and bankruptcy risks reveal consistent negative impacts on both book and market leverage across the three models. This indicates that firms with higher risks in terms of more volatile earnings or bankruptcy exposure are less likely to take on debt due to their lower debt accessibility, as suggested by the trade-off theory. Furthermore, consistent with agency theory, firms with higher dividend pay-out exhibit lower demand for debt as a means to restrict their manager's chance of conducting opportunistic behaviours detrimental to the corporations because dividend payments have lowered the free cash flow availability of the firms. Therefore, managers have fewer financial resources to abuse for their self-interest. Furthermore, AIM firms are fast-growing, and if being provided with good ability, such as higher liquidity, they are likely to implement fruitful but high-risk investment opportunities (Mallin & Ow-Young, 1998). As a result, those highly liquid AIM firms tend to expose to higher bankruptcy risks and hence lower their ability to take on debt at good rates.

The growth opportunity of Alternative Investment Market firms is also found to be negatively significantly influence a firm's leverage level. Nevertheless, the construct is only found to be statistically significant for the market leverage measure across the three estimation methods ($\beta_{growth(2\text{-}4\text{-}6)}$ = -0.0049, -0.00295, -0.0072, p-value < 0.01). Although Hypothesis 4 remains

supported empirically, the evidence is not as strong as other factors. The firm cash flow level once again fails to show a significant impact on corporate capital structure decisions. Noticeably, the factor capturing the level of ownership concentration only reports a significant and positive impact on both book and market leverage of AIM firms when the OLS and lagged OLS are employed, while Hypothesis 12 is not supported by the fixed-effect and GMM models.

Table 17 AIM Market Regression Result (Robustness checks).

Table 17 reports the OLS estimation with lag independent variables (columns 1-2), the fixed-effect model (columns 3-4), and two-step system GMM (columns 5-6) of dynamic panel data of the determinants of capital structure for the whole sample of AIM firms for the period from year 2007 to 2019. Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). For the lagged approach, all independent variables included in the model are in their 1-year lagged forms. Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3*EBIT)+ (1*Net sales)+ (1.4*Retained earnings)+ (1.2*(Current asset - Current liabilities))/(Total Asset), **Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.

VARIABLES	Lagged Approach		Fixed-effect model		Two-step System GMM	
	BLEV (1)	MLEV (2)	BLEV (3)	MLEV (4)	BLEV (5)	MLEV (6)
Size	0.013***	0.015***	0.026***	0.025***	0.019***	0.015***
	(0.002)	(0.001)	(0.003)	(0.002)	(0.005)	(0.004)
Tangibility	0.175***	0.147***	0.138***	0.136***	0.158***	0.155***
	(0.014)	(0.011)	(0.017)	(0.014)	(0.043)	(0.034)
Non-debt tax shield	0.003*	-0.002	0.008***	0.004***	0.000	0.005
	(0.001)	(0.001)	(0.002)	(0.001)	(0.010)	(0.009)
Growth	-0.001	-0.004***	-0.000	-0.002***	0.000	-0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.002)
Profitability	-0.004	-0.105	0.273***	0.038	-0.122	0.099
	(0.119)	(0.092)	(0.093)	(0.076)	(0.398)	(0.343)
Liquidity	-0.007***	-0.005***	-0.003***	-0.002***	-0.010***	-0.007***
	(0.0006)	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)
Intangibility	0.059***	0.049***	-0.003	0.004	0.057*	0.052*
	(0.0109)	(0.008)	(0.012)	(0.009)	(0.034)	(0.027)
Age	-0.000	0.002	0.005	0.021***	-0.001	0.001

	(0.002)	(0.002)	(0.009)	(0.007)	(0.007)	(0.004)
Div_Payout	-0.028***	-0.053***	-0.070***	-0.092***	-0.042**	-0.065***
	(0.010)	(0.008)	(0.010)	(0.008)	(0.018)	(0.013)
Risk	-0.000***	-0.000***	-0.000*	-0.000*	-0.012	-0.012**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.006)
Z_score	-0.077***	-0.027***	-0.101***	-0.052***	-0.125***	-0.069**
	(0.009)	(0.006)	(0.009)	(0.007)	(0.042)	(0.027)
Cash_flow	-0.003	0.000	-0.007	-0.005	0.0078	0.005
	(0.018)	(0.014)	(0.0143)	(0.011)	(0.010)	(0.006)
Owner_5	0.000***	0.000**	0.0002*	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	-0.011	-0.068	0.010	-0.032	0.060	-0.006
	(0.056)	(0.044)	(0.037)	(0.030)	(0.052)	(0.033)
CPI	-0.000	-0.013	0.012	-0.015	-0.006*	-0.007**
	(0.034)	(0.027)	(0.023)	(0.018)	(0.003)	(0.003)
StockMV	-0.101	-0.849***	-0.190	-0.612***	-0.765	-0.128
	(0.307)	(0.245)	(0.205)	(0.168)	(1.091)	(0.546)
Crisis	-0.004	-0.044	0.016	-0.000	0.091	0.022
	(0.066)	(0.053)	(0.043)	(0.035)	(0.063)	(0.038)
Constant	0.535	4.001***	0.915	2.945***	4.138	0.877
	(1.441)	(1.150)	(1.003)	(0.822)	(5.492)	(2.744)
Year.FE	Y	Y	Y	Y	Y	Y
Industry.FE	Y	Y	-	-	Y	Y
Country.FE	Y	Y	-	-	Y	Y
Observations	4136	4451	4271	4271	2479	2479
R-squared	0.191	0.214	0.138	0.159	-	-
F-stat	20.62	24.97	19.68	23.21	-	-
Hausman tests	-	-	75.63***	90.92***	-	-
No. of instruments	-	-	-	-	229	266
Hansen-test (p-value)	-	-	-	-	0.677	0.849
AR1 (p-value)	-	-	-	-	0.0000498	0.00369
AR2 (p-value)	-	-	-	-	0.735	0.576

Table 18 below summarises the findings obtained by the four employed estimation analyses. Overall, despite the OLS robust is the baseline estimation model, other robust models are important for conclusions to be made because they take into account a critical statistical issue of endogeneity which causes the estimators to be inconsistent and biased. Building on all the findings obtained, all seven hypotheses are statistically supported. Particularly, the influences of those factors on debt adoption are size (+), tangibility (+), growth opportunity (-), liquidity

(-), dividend pay-out policy (-), and risk (+). Regarding economic significance, among the seven investigated factors, tangibility shows the strongest influences on firm leverage such that every 1% increase in the firm's tangibility would lead to 14% increase in the firm's leverage level. Furthermore, the effect of profitability, a controlling variable, shows noticeably immense effect on leverage. Particularly, 1% increase in profitability would lead to 16.3% increase in the market value of a firm's debt.

Table 18: Results obtained using different estimation method						
Hypothesis Variables ($X_{i,t}$)	Expected sign of β_i	**Baseline OLS robust (LSDV)**	**Lagged OLS robust**	**Fixed Effect model**	**System GMM**	**Overall Conclusion**
H1: Firm size	(+)	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**
H2: Tangibility	(-) or (+)	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**
H3: Growth	(+)	**(-) Not supported**	**(-) Not supported**	**(-) Not supported**	**(-) Not supported**	**(-) Not supported**
H4: Liquidity	(-) or (+)	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**
H5: Dividend pay-out policy	(-)	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**
H6: Operating risk	(-)	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**
H7: Bankruptcy Risk	(-)	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**	**(-) Supported**

6.3.3. Additional tests

The current section provides results for a number of additional tests exploring some external situations that may attribute to potential variations of the findings obtained in the main empirical findings (Sections 6.2.1 and 6.2.2). Similar to the robustness check in Section 6.2.2, the full model including all main explanatory variables[24], controlling macroeconomic variables[25], and the year-, industry- and country-dummy variables will be employed using the OLS robust standard error estimation.

6.3.3.1. Determinants of capital structure across firm size

Firstly, the determinants of Alternative Investment Market firms' capital structure are tested on two size-classified subsamples: (a) Group 1 comprising relatively larger AIM firms whose total asset values are larger than the average value of the whole sample and (b) Group 2 comprising relatively smaller AIM firms whose total asset values are lower than the average value of the whole sample. The findings are presented in Table 19 and reveal that in general, the findings are strongly consistent with those obtained in the main findings. Nevertheless, the magnitudes of the determinants (economic significance) are slightly different across the two groups.

First, the nondebt tax shield factor is found to impose relatively larger positive effect on leverage for larger firms (BLEV of Group1 versus Group 2: $\beta_{NDTS(1)vs(3)} = 0.383$ and 0.161; MLEV of Group1 versus Group 2: $\beta_{NDTS(2)vs(4)} = 0.00516$ and 0.00138). This is perhaps because AIM firms are considered SMEs at least in comparison to the main market firms, and larger AIM firms tend to have greater access to the debt market (as supported by Hypothesis 1). Consequently, firms in this larger-sized group with greater nondebt tax shield level, i.e. greater possession of fixed assets both tangible and intangible, can further boost its credit profile in the debt market a more drastically, leading to higher debt adoption level, compared to AIM firms in the smaller-sized group. A similar explanation can be applied for profitability, operating and bankruptcy risks such that these favourable financial attributes enhance the debt accessibility of larger AIM firms to a greater extent compared to smaller AIM firms. For example, larger AIM firms exhibit more solid corporate image than smaller AIM firms, and if they have greater

[24] Include: Firm size (H1), tangibility (H2), growth (H3), liquidity (H4), dividend pay-out (H5), operating risk (H6), bankruptcy risk (H7).The computations of these factors can be found in Section 5.3.3.

[25] Include: profitability, nondebt tax shield, intangibility, firm age, ownership concentration, free cash flow, The country's gross domestic product (GDP growth), inflation rate (CPI), the proportion of a country's stock market capitalization to GDP, and banking crisis dummy.

profitability, and/or lower risks, the ability and chance of taking on debt at favourable rates are likely to be enhanced.

However, the effect of growth opportunity on leverage appears to be stronger for the smaller-sized group compared to the other (BLEV of Group1 versus Group 2: $\beta_{Growth(1)vs(3)}$ = -0.003 and -0.006; MLEV of Group1 versus Group 2: $\beta_{Growth(2)vs(4)}$ = -0.002 and -0.006). On a similar stance, the difference may be justified such that AIM firms are all fast-growing firms, and smaller AIM firms tend to hold a weaker stand in the market. However, if those smaller-size firms are acknowledged and highly valued by the market on their growth opportunity (i.e. higher market to book value), their debt capacity may be increased at a greater extent compared to larger-sized firms with relatively better stand in the market. Similar to age factor, more trading and operating historical profile and experience may favourably assist the image, reputation, and credit rating of smaller AIM firms compared to larger AIM firms (BLEV of Group1 versus Group 2: $\beta_{Age(1)vs(3)}$ = 0.002 and 0.007; MLEV of Group1 versus Group 2: $\beta_{Age(2)vs(4)}$ = 0.006 and 0.010).

Table 19 AIM Market Regression Result across Size firm

Table 19 reports the OLS estimation of dynamic panel data of the determinants of capital structure across two groups of firm size for the whole sample of AIM firms for the period from year 2007 to 2019. **Group 1** (columns 1-2) comprises AIM firms with total asset values lower than the average value of the whole sample. **Group 2** (columns 3-4) comprises larger AIM firms whose total asset values are higher than the average value of the whole sample. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

VARIABLES	The OLS robust standard error estimation			
	Group 1: $Size_i$ > Mean (Size)		Group 2: $Size_i$ < Mean (Size)	
	BLEV (1)	MLEV (2)	BLEV (3)	MLEV (4)
Size	0.014***	0.013***	0.015***	0.0158***
	(0.001)	(0.001)	(0.001)	(0.001)
Tangibility	0.142***	0.147***	0.141***	0.151***
	(0.013)	(0.014)	(0.011)	(0.011)
Non-debt tax shield	0.383***	0.005***	0.161***	0.001
	(0.076)	(0.001)	(0.054)	(0.001)
Growth	-0.002***	-0.002**	-0.006***	-0.005***
	(0.000)	(0.001)	(0.000)	(0.000)
Profitability	0.326***	0.422***	0.166**	0.157*
	(0.125)	(0.141)	(0.079)	(0.085)
Liquidity	-0.008***	-0.008***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)
Intangibility	0.031***	0.051***	0.034***	0.056***
	(0.009)	(0.010)	(0.007)	(0.007)
Age	0.002	0.005**	0.006***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
Div_Payout	-0.043***	-0.056***	-0.085***	-0.081***
	(0.008)	(0.008)	(0.006)	(0.007)
Risk	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.086***	-0.103***	-0.040***	-0.039***
	(0.009)	(0.011)	(0.006)	(0.006)
Cash_flow	-0.023	-0.021	-0.001	-0.014
	(0.018)	(0.020)	(0.012)	(0.012)
Owner_5	0.000***	0.000***	0.000***	0.000

	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	0.002	0.004	0.000	-0.010
	(0.009)	(0.006)	(0.007)	(0.012)
CPI	0.007	0.006	-0.016**	-0.008
	(0.006)	(0.007)	(0.007)	(0.007)
StockMV	-0.230***	-0.299***	-0.451**	-0.531***
	(0.085)	(0.097)	(0.195)	(0.200)
Crisis	0.009	0.013	-0.003	-0.017
	(0.027)	(0.030)	(0.028)	(0.029)
Constant	1.084***	1.447***	2.050**	2.517***
	(0.384)	(0.473)	(0.887)	(0.934)
Year.FE	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y
Observations	2941	2941	2260	2260
R-squared	0.206	0.207	0.260	0.263

6.3.3.2. Determinants of capital structure across financial and non-financial firms

This section aims at examining the determinants of capital structure across industries, exclusively on financial and nonfinancial corporations. Few studies in the literature consider the industry as an influential factor in capital structure determinants (e.g. Antoniou et al., 2008; Drobetza et al., 2013; Harris & Raviv, 1991; Titman & Wessels, 1988). A study found indicators of difference among industrial groups in the financing decision (Islam & Khandakerb, 2015; Myer, 1984). Furthermore, Jõeveer (2013) emphasised that the industry has a higher explanation power of leverage variation compared to both firm-specific factors and country-specific factors. Supporting the industry effects on capital structure, Harris and Raviv (1991); Michaelas et al. (1999); Miao (2005), and MacKay and Phillips (2005) emphasised that the capital structure of the firms depends on the industry characteristics, and firms operating in the same industry are more likely to have the same average leverage, short-terms debts, long-term debts, and maturity capital structure.

The key reason for focusing the analysis on financial and nonfinancial Alternative Investment Market firms in this section is due to the unique features of financial corporations. In particular, financial firms tend to operate in highly regulated environments with stricter risk management and governance practices due to their high financial risk exposures, as illustrated in the financial crisis 2007 (Akbar et al., 2017; Kirkpatrick, 2009). Additionally, Macey and O'Hara (2003) pointed out the greater information asymmetry nature of financial firms compared to nonfinancial ones. Consequently, the factors that can influence financial firms' capital structure can be distinct. As Opler and Titman (1994) suggested, firms that are more vulnerable to financial distress may have a different leverage level than others (Degryse et al., 2012; Istaitieh & Rodrı'guez-Ferna´ndez, 2006).

Table 20 presents the findings for this section and reveals that the determinants of capital structure of AIM firms obtained in the main findings were mainly driven by the sample of nonfinancial firms. This is because the effects of the main explanatory variables investigated in this study remain unchanged in the nonfinancial subsample, although distinct results were found in the financial subsample. Firstly, while the nondebt tax shield was found to be strongly positive and significant in the nonfinancial and full sample, it is significantly negative for the financial sample. This may be explained by the high-risk exposure of the financial firms. Therefore, while everything else stays constant, firms may try to use nondebt instruments with a tax-saving property to substitute for the debt instruments. This can lower the risk exposed by

financial firms whilst the tax-saving advantage is still consumed. Some empirical studies supported this perspective on the negative nondebt tax shield association with leverage (e.g. Antoniou et al., 2008; D'Amato, 2019; López et al., 2008; Moradi & Paulet, 2019).

Second, the profitability factor shows significantly greater positive effect ($\beta_{Profit,BLEV}$ = 1.14 and $\beta_{Profit,MLEV}$ = 0.66, Table 20) on financial firms compared to that of the nonfinancial firms ($\beta_{Profit,BLEV}$ = 0.28 and $\beta_{Profit,MLEV}$ = 0.15, Table 20) and the full sample ($\beta_{Profit,BLEV}$ = 0.47 and $\beta_{Profit,MLEV}$ = 0.16, Table 16). This is sensible because financial firms are exposed to higher financial distress and operate in highly levered environments (Akbar, Kharabsheh et al., 2017; Smith & Jensen, 2000); ceteris paribus, firms may take a boost in their profitability as an opportunity to drastically increase their debt level. Similarly, financial firms seem to take the measure of bankruptcy risk as a chance to build up their debt funds to increase the debt-tax-shield boost in their firm values. This can be seen by the greater coefficients of Z_score variable in the financial subsamples for both book and market leverage values, in comparison to those of the nonfinancial firms (Table 20) and the full sample (Table 16). Lastly, three factors of liquidity, intangibility, dividend pay-out policy, and operating risk do not show any significant influence on the financial firms' leverage levels.

Table 20 AIM Market Regression Results across financial and non-financial industries

Table 20 reports the OLS estimation of dynamic panel data of the determinants of capital structure across financial and non-financial AIM firms for the period from year 2007 to 2019. The dependent variables of the study are the book leverage ratio (**BLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis.Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

VARIABLES	The Baseline Estimation: OLS Method			
	Financial group		Non-financial group	
	BLEV (1)	MLEV (2)	BLEV (3)	MLEV (4)
Size	0.026***	0.030***	0.013***	0.015***
	(0.0094)	(0.007)	(0.001)	(0.001)
Tangibility	0.302***	0.159*	0.142***	0.153***
	(0.107)	(0.082)	(0.013)	(0.011)
Non-debt tax shield	-0.906***	-0.522*	0.342***	0.068
	(0.340)	(0.308)	(0.076)	(0.055)
Growth	-0.000	-0.002	-0.003***	-0.006***
	(0.005)	(0.003)	(0.000)	(0.000)
Profitability	0.002**	0.658**	0.280**	0.146*
	(0.002)	(0.286)	(0.129)	(0.081)
Liquidity	-0.002	-0.000	-0.009***	-0.006***
	(0.002)	(0.001)	(0.000)	(0.000)
Intangibility	-0.012	0.010	0.031**	0.031***
	(0.038)	(0.033)	(0.010)	(0.007)
Age	0.035*	0.034**	0.003	0.007***
	(0.018)	(0.013)	(0.002)	(0.002)
Div_Payout	-0.008	-0.038	-0.036***	-0.079***
	(0.038)	(0.038)	(0.009)	(0.007)
Risk	-0.000	-0.000	0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.140***	-0.089***	-0.078***	-0.032***
	(0.033)	(0.022)	(0.009)	(0.006)
Cash_flow	-0.084	-0.012	-0.029	-0.009
	(0.076)	(0.048)	(0.019)	(0.013)
Owner_5	-0.000	-0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)

GDP_G	-0.310***	-0.318***	-0.104***	-0.054***
	(0.101)	(0.084)	(0.016)	(0.013)
CPI	0.063	0.040	0.004	-0.008
	(0.348)	(0.314)	(0.005)	(0.008)
StockMV	-0.011	-0.015	0.007	-0.014**
	(0.025)	(0.020)	(0.006)	(0.007)
Crisis	-0.044	0.292	-0.267***	-0.507**
	(10.915)	(9.907)	(0.083)	(0.201)
Constant	1.190***	2.248**	1.234***	2.265**
	(0.386)	(0.920)	(0.387)	(0.919)
Year.FE	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y
Observations	290	290	4887	4887
R-squared	0.2360	0.2474	0.1995	0.2462
F-statistic	2.99	3.19	44.54	44.26

6.3.3.3. Determinants of capital structure across crisis and non-crisis periods

Subsequently in this section, the determinants of AIM firms' capital structure are examined for the crisis and noncrisis periods. It has been pointed out in the capital structure literature that in the financial difficulty times (e.g. economic recession, financial crisis) both demand and supply of capital are likely to be different from those financially healthy times (Drobetz et al., 2015). Because the study sample comprises the financial crisis 2007, it would be relevant and intriguing to examine the influences of crisis on the determinants of firm leverage level, or the moderating effect of crisis. As a result, three tests using the OLS robust standard error (on full model[26]) has been performed on crisis subsample, noncrisis subsample, and full sample with crisis interaction terms. Their results are presented in Table 21.

Overall, the results indicate that most of the determinants of capital structure remains consistent across the crisis and noncrisis subsamples, such as size, tangibility, nondebt tax shield, profitability, current ratio, intangibility, dividend policy, and risks. Nevertheless, the effects of some financial characteristics that are important in representing the firm's credit quality, market standing, and risks become much more important during the crisis for firms to take out higher levels of debt. In particular, profitability of firms report greater positive effect on firm leverage level during the crisis compared to the crisis period ($\beta_{Profit,BLEV}$ =0.62 vs $\beta_{Profit,BLEV}$ =

[26] Include all main explanatory variables, controlling macroeconomic variables, and the year-, industry- and country-dummy variables

0.086; $\beta_{Profit,MLEV}$ = 0.18 vs $\beta_{Profit,MLEV}$ = 1.07, crisis versus noncrisis). This is to say, during the financial turbulence, firms with higher profitability can enhance significantly their market credibility compared to less profitable firms and hence can take on higher debt to tackle the crisis. Similarly with bankruptcy risk (Z_score), the effect magnitude on leverage during crisis is almost double that during the noncrisis period ($\beta_{Zscore,BLEV}$ =-0.07 vs $\beta_{Zscore,BLEV}$ = -0.03; $\beta_{Zscore,MLEV}$ = -0.14 vs $\beta_{Zscore,MLEV}$ = -0.07, crisis versus noncrisis). Corporations were likely to experience tough time financially and the ability to access external funds is magnificently important during crisis. Firms with lower bankruptcy score during these negative market events tend to be at a much better position in the eyes of debtholders. Consequently, they are likely to access and adopt higher debt. Noticeably, firm age has lost its significance during noncrisis. This may be because the longer the historically track of a firm during crisis periods, the easier the debtholders can access the firm credit quality. Hence, this is a useful characteristic for firms to access the debt market.

In the last two columns of the Table 21, the full sample is employed with interaction terms between the 13 explanatory variables and crisis are taken into account. The results show that all significant determinants of capital structure obtained in the main findings (Section 6.2.1) remain statistically significant, after controlling for moderating effects of crises. Intriguingly, the results reveal that profitability level and age of firms are not significant overall. However, if the crisis is present, these factors become relevant in the firms' decisions in adopting higher debt level. Using F-test, it can be revealed that the aggregate effect of profitability and the moderating effect of crisis is statistically significant at 1% level (F-statistic$_{blev}$ = 7.24 (p-value < 0.01) and F-statistic$_{mlev}$ = 2.91 (p-value < 0.1)). Similarly for age, the aggregate effect is also significant at 1% level (F-statistic$_{blev}$ = 5.23 and F-statistic$_{mlev}$ = 7.30). As explained earlier, a firm's profitability and age can be valuable reference for debtholders to access the firm's creditability and operating quality during turbulent times. The better the profitability level and the longer the operating track, the greater the debt accessibility to tackle the financially tough periods. Furthermore, a number of factors have been found to strengthen their influences on a firm's leverage during the crisis: size, tangibility, market to book value (growth opportunity), intangibility, dividend, operating risk, and bankruptcy risk. These are favourable attributes for firms in enhancing their accessibility to the debt funding sources. However, the positive effect of tangibility seems to significantly reduce during the crisis ($\beta_{Intangi\_crisis}$ < 0, both BLEV and MLEV). This is a justifiable result to obtain because during crisis firms are greatly in need of liquidity to deal with any financial shock, the acquirement of greater tangible assets that exhibit

low liquidity, i.e. being harder to convert to cash, is indeed a risky behaviour during financial crisis. As a result, debtholders may be reluctant to issue funds for those companies. From another perspective, firms operating in the crisis times decide to investment more funds in tangible fixed assets may have greater financial funds, e.g., more cash flow. Consequently, their demands for external funds are lower leading to lower leverage levels. Overall, the determinants of AIM firms' leverage ratios are relatively stable across crisis and noncrisis periods.

Table 21: AIM Market Regression Results across Bank crisis

Table 21 reports the OLS estimation of dynamic panel data of the determinants of capital structure of AIM firms across crisis and non-crisis times for the period from year 2007 to 2019. The dependent variables of the study are the book leverage ratio (**BLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

VARIABLES	The Baseline Estimation: OLS Method					
	Crisis		Non-crisis		Crisis interaction model	
	BLEV (1)	MLEV (2)	BLEV (3)	MLEV (4)	BLEV (5)	MLEV (6)
Size	0.019***	0.020***	0.011***	0.014***	0.011***	0.014***
	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)
Tangibility	0.103***	0.127***	0.152***	0.139***	0.156***	0.144***
	(0.024)	(0.019)	(0.016)	(0.012)	(0.016)	(0.015)
Non-debt tax shield	0.376***	0.142	0.341***	0.145**	0.305***	0.131*
	(0.132)	(0.102)	(0.089)	(0.070)	(0.091)	(0.075)
Growth	0.001	-0.002**	-0.003***	-0.006***	-0.003***	-0.005***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Profitability	1.075***	0.621***	0.180	0.086***	0.179	0.114
	(0.164)	(0.126)	(0.115)	(0.090)	(0.121)	(0.109)
Liquidity	-0.008***	-0.005***	-0.007***	-0.005***	-0.008***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intangibility	0.060***	0.080***	0.025*	0.015***	0.025**	0.017*
	(0.016)	(0.013)	(0.012)	(0.010)	(0.013)	(0.010)
Age	0.008*	0.008**	-0.004	-0.002	-0.004	-0.003
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Div_Payout	-0.089***	-0.114***	-0.035**	-0.081***	-0.036***	-0.088***
	(0.019)	(0.015)	(0.013)	(0.010)	(0.013)	(0.010)
Risk	-0.000*	-0.000	-0.000***	-0.000***	-0.000***	-0.000***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.144***	-0.068***	-0.072***	-0.033***	-0.072***	-0.034***
	(0.012)	(0.009)	(0.008)	(0.006)	(0.009)	(0.007)
Cash_flow	-0.074***	-0.018	-0.028	0.001	-0.019	0.006
	(0.027)	(0.020)	(0.020)	(0.015)	(0.021)	(0.017)
Owner_5	0.000**	-4.76e	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	-0.124***	-0.108***	-0.127***	-0.098***	-0.004	-0.003
	(0.035)	(0.027)	(0.026)	(0.020)	(0.027)	(0.0133)
CPI	0.198	0.431	-0.000	-0.019	0.012	-0.003
	(0.380)	(0.293)	(0.035)	(0.027)	(0.021)	(0.007)
StockMV	0.183	0.353	0.017	-0.004	-0.206	-0.453**
	(0.361)	(0.278)	(0.035)	(0.017)	(0.250)	(0.224)
Size_crisis					0.008**	0.005*
					(0.004)	(0.003)
Tangi_crisis					-0.047*	-0.016
					(0.028)	(0.025)
NDTS_crisis					0.052	0.024
					(0.155)	(0.129)
MTB_crisis					0.004***	0.003***
					(0.001)	(0.001)
Profit_crisis					0.115***	0.055**
					(0.025)	(0.023)
Liquid_crisis					-0.000	-0.000
					(0.001)	(0.000)
Intangi_crisis					0.039*	0.066***
					(0.021)	(0.016)
Age_crisis					0.015***	0.013***
					(0.005)	(0.004)
Div_crisis					-0.052**	-0.021
					(0.024)	(0.017)
Risk_crisis					0.000	0.000
					(0.000)	(0.000)
Zscore_crisis					-0.009***	-0.003**
					(0.002)	(0.0019)
Cashflow_crisis					-0.055*	-0.018
					(0.033)	(0.028)
Owner_crisis					-0.000	-0.000***
					(0.000)	(0.000)

Crisis					-0.101	-0.093**
					(0.084)	(0.045)
Constant	0.907**	1.631*	0.893**	1.607*	0.995	2.094**
	(0.440)	(0.914)	(0.430)	(0.890)	(1.154)	(1.027)
Year.FE	Y	Y	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y	Y	Y
Observations	1646	1646	2925	2925	4395	4395
R-squared	0.241	0.289	0.198	0.240	0.212	0.255
F-statistic	00.00	20.49	15.89	20.20	20.13	28.37

6.4. Conclusion

The chapter's aim was to examine the determinants of capital structure by AIM firms. AIM firms operate in different regulatory framework compared to other firms, and hence the need to determine whether the determinants of capital structure play the same role in AIM firms as other firms. This chapter investigated on 7 variables that are gotten from massive review of existing literature on the determinants of capital structure. These variables are size, tangibility, growth opportunity, liquidity, dividend pay-out policy, operating risk, and bankruptcy risk. The research investigated these variables using the theoretical framework developed by the trade-off theory and the pecking order theory on how different factors affect the capital structure of firms. The most results of the study supported the theoretical framework developed under the trade-off theory. The results showed that the variables that had a positive impact on the capital structure were size and tangibility. The variables that had a negative impact on capital structure on the other hand were liquidity, dividend-pay-out policy, operating risk, and bankruptcy risk. According to the trade-off theory, larger firms have a higher debt rating due to their lower exposure to solvency and have more diversified and more solid market standing, which makes it possible for them to access external debt, hence the positive influence of size on capital structure (see Daskalakis & Psollaki, 2008; Rajan & Zingales, 1995; Titman & Wessel, 1988). At the same time, the trade-off theory argues that firms that have higher fixed assets have the ability to take more debts and leverage them against their assets, and thus the existence of a positive relationship between tangibility and the capital structure of the firm (Jensen & Meckling, 1976). Firms that have more fixed assets (tangibility), can easily access debts. (Bevan and Danbolt, 2004; Chandrasekharan, 2012) thus the positive relationship between tangibility and capital structure. Other studies such as Rajan and Zingales (1995), Frank and Goyal (2008), Heyman et al. (2008), Frank and Goyal (2009), and Andres et al. (2014) support this finding.

The relationship between liquidity and capital structure can be explained through the pecking order theory. According to the pecking order theory, firms that have large cash reserves are less likely to take on debts since they can use their cash and liquidity to finance their operations. This explains the negative relationship between the capital structure and liquidity in the research due to lower leverage. Literature supports these assertions (e.g. D'Amato, 2019; Khemiri & Noubbigh, 2018 Morellec, 2001; Myers & Rajan, 1998; Ozkan, 2001). The risk variable is self-explanatory since debtors and creditors are less likely to loan forms that have high risks of failing to meet their debt obligations. Such firms have a lower debt capacity and

hence the negative correlation with leverage. These findings are supported by other findings in literature (e.g. Cassar & Holmes, 2003; D'Amato, 2019; Michaelas et al., 1999).

These findings contribute in literature in that, although the findings are similar to others in literature, this topic investigation focuses on the AIM market. None of the previous studies have focuses on the AIM market. In addition to this, the AIM market has small and medium sized companies. However, the regulatory framework in the AIM market is not similar to that of the private owned firms, and thus the need to conduct a study that was specific to the AIM firms. The AIM firms are in unique capital environments, regulations, and governance and this chapter helps to understand the specific determinants of capital structure in this environment.

CHAPTER 7: EMPIRICAL FINDINGS STUDY 2

7.1. Introduction

In this chapter, the research focuses on providing empirical findings regarding the target capital structure of AIM firms, and its relationship with the speed of adjustment towards the intended target leverage. Speed of adjustment is necessary since it outlines the ability of firms to move towards the optimal capital structure. Understanding how different factors influence the speed of adjustment towards the necessary target optimal leverage can help policy makers to make more informed decisions in their bid to close the gap between the current leverage, and the target leverage. At optimal leverage, the company's capital is performing optimally and hence the need to achieve the target leverage as soon as possible. The finance literature is full of studies that investigate the determinants of leverage decisions and how these determinants influence the speed of adjustment. However, no studies are yet to be conducted to determine the determinants of leverage decisions and how these determinants influence the speed of adjustment in the case of Alternative Investment Market firms. Therefore, the second empirical study contributes to the literature by providing evidence on factors that affect the leverage Speed of Adjustment for firms operating in the Alternative Investment Market (AIM).

In order to achieve this objective, the research selects four determinants of speed of adjustment in line with the suggestions of Aybar et al. (2012), in regard to studies seeking to investigate the determinants of speed of adjustment for small and medium sized organizations. These are size, leverage deviation, financial flexibility, and growth. The Speed of adjustment (SOA) values are presented using the OLS robust (LSDV), fixed effect model, and the system two-step GMM. The Speed of adjustment are also computed on different subsamples, such as for each year, each industry, and across firm sizes.

Chapter 7 presents and discusses the findings of the second empirical study starting with descriptive statistics of employed variables for the Alternative Investment Market sample, which are provided in Section 7.2. It is an extension of the Section 6.2 because all variables employed in the first empirical study will be taken into account in this study with a few extra variables. The empirical findings are discussed in Section 7.3 with the main analysis using the OLS robust model and robustness checks consistently indicating that firm size and leverage deviation are negatively affect the Speed of Adjustment. In other words, larger firms with

greater leverage gap to their target tend to be more reluctant in achieving the target, i.e. slower Speed of Adjustment, especially in the financial crisis.

7.2. Descriptive Statistics

7.2.1. General descriptive statistics for AIM sample

Extending the descriptive statistics presented in the Table 7 (Chapter 6), the current study on the determinants of AIM firms' Speed of Adjustment employs additional relevant SOA-related variables, including the target/optimal leverage ratio (Target_BLEV and Target_MLEV), the leverage deviation (Dis_BLEV and Dis_MLEV), and a firm's financial flexibility (Flexib). Measures of these variables can be found in Section 5.3.3. The estimated target book and market leverage ratios of AIM firms are found to take average values of 12.2% and 9.4% (for Target_BLEV and Target_MLEV, respectively). There are Alternative Investment Market firms with an optimal unlevered structure (minimum target leverage equals to zero) to firms that target to adopt up to 35% leverage level. Regarding leverage deviation, i.e. distance between the current and target leverage ratios, AIM firms on average quite close to their targets, especially, the market debt ratio. The minimum value for this construct is -0.354, indicating that there are AIM firms adopting leverage levels that are 35% below the target (under-levered, Dis_BLEV_{MIN} = -0.354). However, a maximum value of 0.726 is obtained also for the Dis_BLEV, indicating that firms can be over-levered by as much as 73%. Lastly, the average log value of financial flexibility is 7.119 with the minimum value of 3.73 and the maximum of 10.447.

Table 22: Descriptive statistics an additional variables of AIM firms

Table 22 presents the descriptive statistics for the whole sample of AIM firms for additional variables being taken into account in the current empirical study, i.e., speed of adjustment (SOA). Explanatory variables employed include all variables being accounted for in the empirical study 1. Their descriptive statistics were presented in Table 7 (Chapter 6). In this study, additional explanatory variables are a firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation captures the distance between the firm current leverage level and its target/optimal leverage. Both book and market leverage deviations are calculated denoted as Dis_BLEV and Dis_MLEV, respectively. Target_BLEV and Target_MLEV are a firm's target book and market leverage levels, respectively. Its computation can be found in Section 5.3.3.

Variables	N	Mean	Median	Std.Dev	Min	Max
Target_BLEV	4,251	0.122	0.121	0.059	0	0.354
Target_MLEV	4,251	0.094	0.093	0.059	0	0.271
Dis_BLev	4,251	0.060	-0.042	1.396	-0.354	0.726
Dis_MLev	4,251	0.000	-0.031	0.116	-0.237	0.692
Flexib	5,564	7.119	7.100	1.850	3.726	10.447

Table 23 further presents the average values and standard deviations of the additional variables for all industries. Starting with the target leverage ratios, there is a quite consistent and similar target leverage (both for book and market leverage values) across industries, ranging from 11% to 14% for the Target_BLEV, and from 7% to 13% for the Target_MLEV. For the leverage deviation construct, the average values for each industry are also close to zero, indicates the normal distribution of the data set. However, the tendency for firms to be over-levered seem to be more common owing to the positive mean value of Dis_BMLEV and Dis_MLEV. Lastly, the average financial flexibility level is varied across industries with the most financial flexible firms are found to be in the consumer staples sector (8.31) and the least financial flexible firms are found to be in the financial sector (6.70). These figures are sensible because the financial sector have been well-acknowledged as a highly risky industry with stringent requirements for regulation compliance (Opler and Titman, 1994). As a result, it would be more challenging for financial firms to obtain or adjust their financing structure. On the contrary, consumer staples industry is characterised by its low sensitivity to economic cycles due to the supply of basic and essential products. Therefore, the sector exhibits lower risk exposure which make them more flexible in their financing adjustment.

Table 23: Descriptive statistics of additional variables of AIM firms across industries

Table 23 presents the descriptive statistics for the additional variables of the whole AIM sample across the eleven industries following the GIC classification. Explanatory variables employed include all variables being accounted for in the empirical study 1. Their descriptive statistics were presented in Table 8 (Chapter 6). In this study, additional explanatory variables are a firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation captures the distance between the firm current leverage level and its target/optimal leverage. Both book and market leverage deviations are calculated denoted as Dis_BLEV and Dis_MLEV, respectively. Target_BLEV and Target_MLEV are a firm's target book and market leverage levels, respectively. Its computation can be found in Section 5.3.3.

		Full sample	**Basic Materials**	**Consumer Discretionary**	**Consumer Staples**	**Energy**	**Financials**	**Health Care**	**Industrials**	**Real Estate**	**Technology**	**Telecom**	**Utilities**
Target_BLEV	*Mean*	0.12	0.13	0.13	0.12	0.13	0.11	0.10	0.12	0.13	0.12	0.12	0.14
	(Std Dev)	(0.06)	(0.07)	(0.05)	(0.06)	(0.08)	(0.05)	(0.06)	(0.05)	(0.08)	(0.04)	(0.05)	(0.07)
Target_MLEV	*Mean*	0.09	0.11	0.10	0.11	0.11	0.08	0.07	0.10	0.09	0.08	0.08	0.13
	(Std Dev)	(0.05)	(0.07)	(0.05)	(0.06)	(0.07)	(0.04)	(0.05)	(0.05)	(0.07)	(0.04)	(0.03)	(0.06)
Dis_BLev	*Mean*	0.06	-0.01	0.02	0.01	0.05	0.01	0.00	0.02	0.06	0.00	0.17	0.07
	(Std Dev)	(1.40)	(0.15)	(0.35)	(0.14)	(0.49)	(0.17)	(0.18)	(0.14)	(0.15)	(0.19)	(0.75)	(0.15)
Dis_MLev	*Mean*	0.00	0.00	0.00	0.03	-0.02	0.03	-0.01	0.02	0.04	-0.02	-0.01	0.07
	(Std Dev)	(0.12)	(0.13)	(0.13)	(0.15)	(0.12)	(0.14)	(0.09)	(0.11)	(0.10)	(0.09)	(0.09)	(0.14)
Flexib	*Mean*	7.12	7.84	7.06	8.31	6.79	6.70	6.95	7.35	5.90	6.85	7.22	7.80
	(Std Dev)	(1.85)	(1.89)	(1.83)	(1.71)	(2.10)	(1.70)	(1.93)	(1.78)	(1.65)	(1.68)	(1.68)	(1.84)

In Table 24, a percentage distribution is computed to reveal the percentage of Alternative Investment Market firms in the whole sample that are un-levered, i.e. exhibit a leverage ratio that is below the target/optimal one, over time (Panel A) and across industries (Panel B). Under-levered firms are suggested to have not taken the full advantages of debt instruments to achieve the value maximisation goal of the corporations. On a more concerned ground, over-levered firms take on excessive debt levels that are beyond the equilibrium point where the costs of debt finance exceed the debt saving benefits. In other words, any additional debt will be detrimental for firms in terms of the firm's values and heightened riskiness. The distribution reveals that about a third of the full sample are under-levered firms (28%). This indicates that most AIM firms tend to adopt a leverage ratio that is above the optimal equilibrium point. Indeed, the average under-levered firm proportion is relatively higher within a range of 30–40% over years. However, the figures notably point out that almost all firms listed in the AIM are over-levered during the financial crisis of 2008 and 2009. A sharp drop from 23% in 2007 is recorded. This can be expected that during the financial turbulence period; all firms were exposed to financial difficulty and undertook additional debt external finance could be an essential decision to make to overcome the tough times and to retain the firms in business. Furthermore, as seen in the Figure 5, the consistent upward trend is observed for the proportion of under-levered firms over time. In particular, it seems that AIM firms have been adjusting down their excessive leverage over time, indicating a lower risk exposure of the market. Over-leverage firms have been reducing from 77% in 2007 to as low as 57% in 2018, representing approximately a 25% reduction. An assimilated trend is observed for both measures of book and market leverage.

In Panel B of the same Table 24, proportions of under-levered Alternative Investment Market firms across industries are presented. The figures can generally indicate the riskiness of each industry, such that the lower the percentage of under-levered firms, the riskier the industries because they are filled with more over-levered firms. Among all the industries, the energy and industrials sectors reveal the lowest (largest) proportions of under-levered (over-levered) firms. This indicates that the two industries carry the highest levels of risk compared to the other sectors. Once again, this is expected because these two sectors exhibit great levels of intangibility that can provide them with higher access to debt leading the higher likelihood of over-leverage due to their greater collateralised assets (Bevan & Danbolt, 2004). The top three industries with the least over-levered firms are technology, real estate and consumer staples (58%, 59%, and 67%, respectively.

Table 24: Percentage Distribution of Under-levered AIM firms

Table 24 presents the percent distribution capturing the proportion of the whole AIM sample that is under-levered, i.e., firms exhibit leverage levels that are below the target/optimal leverage. The distribution is for the full sample, across years (Panel A) and across industries (Panel B). The "under-levered" variable is built on the leverage deviation which captures the distance between the firm current leverage level and its target/optimal leverage (Dis_BLEV and Dis_MLEV). Firms are classified as under-levered if the leverage deviation variable takes negative value. Its computation can be found in Section 5.3.3.

	%Under-levered firms (BLEV measure)	**%Under-levered firms (MLEV measure)**
Full sample	28%	29%
Panel A: Across Years	**%Under-levered firms (BLEV measure)**	**%Under-levered firms (MLEV measure)**
2007	23%	24%
2008	0.3%	0.3%
2009	0.1%	0.1%
2010	29%	28%
2011	29%	28%
2012	31%	30%
2013	31%	31%
2014	32%	33%
2015	34%	35%
2016	37%	38%
2017	39%	41%
2018	43%	43%
2019	39%	42%
Panel B: Across Industries	**%Under-levered firms (BLEV measure)**	**%Under-levered firms (MLEV measure)**
Basic Materials	34%	33%
Consumer Discretionary	36%	34%
Consumer Staples	23%	23%
Energy	12%	11%
Financials	33%	33%
Health Care	31%	31%
Industrials	12%	12%
Real Estate	41%	45%
Technology	42%	43%
Telecom	22%	21%
Utilities	28%	29%

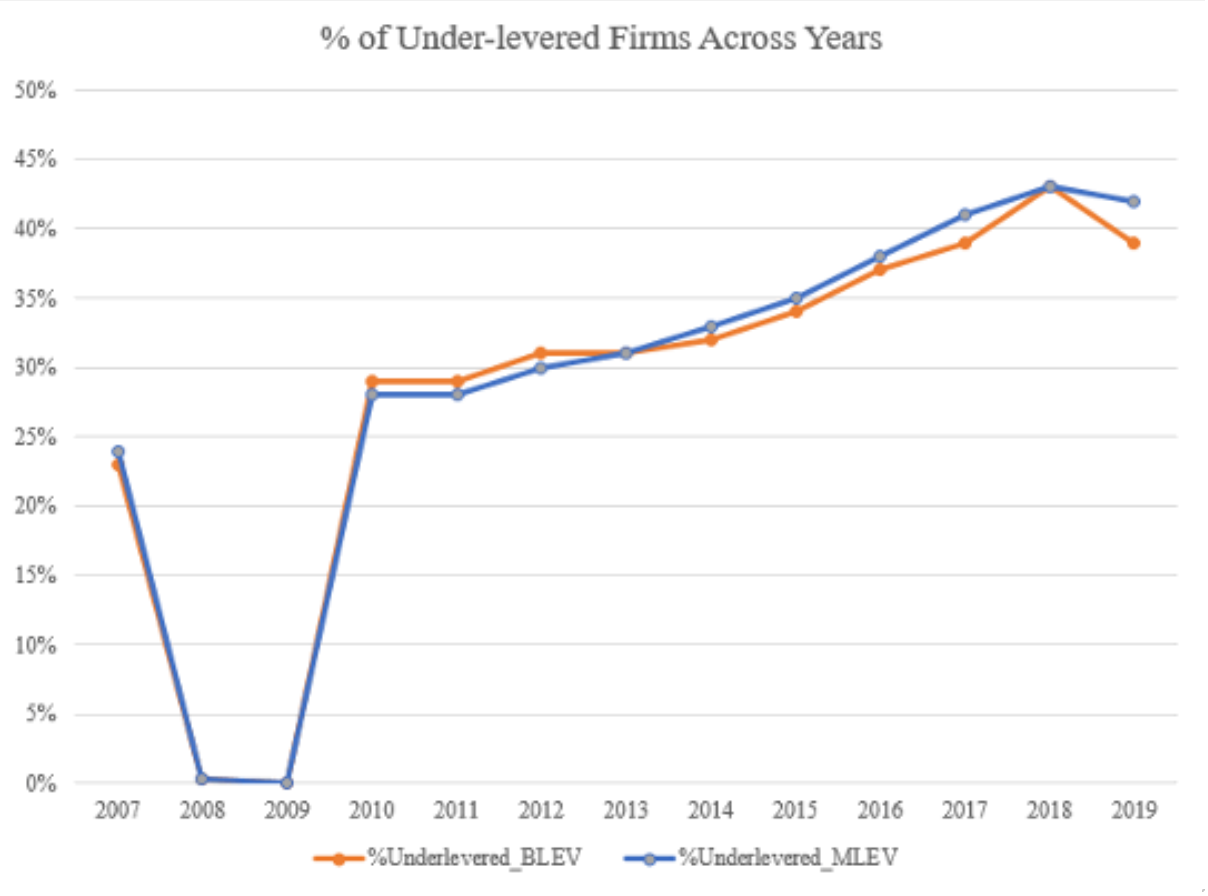


Figure 5: Percentage Distribution of Under-levered AIM firm

7.2.2. The computation and distribution of the Speed of Adjustment

In this section, the computation and distribution of the main variable, i.e. the SOA, is presented. The Speed of Adjustment is extracted using the following equation:

$$L_{i,t} = \beta_0 + (1-\lambda)L_{i,t-1} + \beta_i X_{i,t} + Year.FE + Industry.FE_i + Country.FE_i + \varepsilon_{i,t} \quad \text{(eq. 7.1)}$$

where $L_{i,t}$ is the observed book (market) leverage value, consistently denoted BLEV (MLEV) in this study of firm i at the year t. Explanatory variables were the speed of adjust, which is λ. Hence, the coefficient of the lagged dependent variable ($L_{i,t-1}$) is extracted and λ is computed by subtracting the coefficient from 1. This the Speed of Adjustment of all Alternative Investment Market firms, which assumes that they exhibit the same SOA. Nevertheless, SOA are also computed on different subsamples, such as for each year, each industry, and across firm sizes. The Speed of Adjustment values are presented using the OLS robust (LSDV), fixed effect model, and the system two-step GMM, where applicable (depending on the sample size of subsamples). More explanation and discussion can be found in the methodology chapter (Section 5.3.2).

The Table 25 reveals that AIM firms do set a target leverage and adopt strategies to achieve the target. This is shown by the statistically significant coefficient of the lagged dependent variable ($L_{i,t-1}$) in all models: OLS robust, fixed effect and GMM models. The findings support trade-off theory regarding the existence of a target/optimal leverage (Modigliani & Miller, 1958). According to the OLS robust model, the Speed of Adjustment towards a target leverage adopted by AIM firms is around 24% (towards the target book leverage, BLEV), and around 27% (towards the target market leverage, MLEV). This Speed of Adjustment rate is consistent with results obtained by Huang and Ritter (2009), Lemmon et al. (2008), and Byoun (2008). In their studies, the SOA towards a target market leverage is also higher than the SOA towards a target book leverage. Notably, the Speed of Adjustment rate obtained by the fixed effect and system GMM models are much higher than that obtained by the OLS robust standard error model ($SOA_{FE} \approx 48\%$ versus $SOA_{GMM} \approx 44\%$). This higher SOA is reported by a study of Hovakimian and Li (2011).

Table 25: Speed of adjustment for full sample			
	OLS Robust	**Fixed Effect**	**System GMM**
λ (BLEV)	23.93%	48.94%	44.95%
λ (MLEV)	27.18%	48.15%	43.74%

In Table 26, Speed of Adjustment of AIM firms across years and industries are provided. In particular, the Equation 7.1 is performed on each year and each industry, and the estimates of the lagged dependent variable are extracted to compute the SOA. Note that because the model includes a 1-year lagged dependent variable, the Speed of Adjustment for year t is computed by using a sample comprising year t-1 and year t). Due to the small sample size for each year subsample, only OLS robust method was performed. It can be seen that the Speed of Adjustment rates are relatively stable across years and compared to the overall rate. Nevertheless, during the financial crisis 2007-2010, AIM firms tend to adjust the leverage more rapidly compared to other years, i.e. around 30%-BLEV (35%-MLEV) 2007-2010 versus around 20%-BLEV (30%-MLEV) in other noncrisis years. The literature stated that a firm's leverage SOA is influenced due to two factors: (1) costs of deviation, and (2) cost of adjustment (Drobetz et al., 2015). During the financial crisis, the supply of external funds is often limited and hence, it is tougher for firms to adjust their debt level (Drobetz et al., 2015). Nevertheless, for the financial natures of Alternative Investment Market firms in terms of their young, fast-growing and risky profile, the market may make harsher judgement on firms with great deviation. Especially, as shown in Table 24 and discussed in Section 7.2.1, during these crisis years, there are greater proportions of over-levered firms implying a larger risk exposure of AIM firms. As a result, the cost of leverage deviation can be significant, encouraging firms to adjust quickly towards their target to ease down the potential negative and extreme market reactions.

Regarding the firms' Speed of Adjustment (SOA) across industries, Alternative Investment Market (AIM) firms in different industries seem to adopt relatively similar SOA of around 25%-30%. Among all, the utilities sector shows comparatively higher SOA than others with a SOA of roughly 40%. As mentioned, the Utilities industry tends to exhibit high level of collateralised (tangible) assets, which may assist them in obtaining external finance. In other words, firms operating in this industry is more flexible in adjusting their financing structure, leading to lower cost of leverage adjustment and hence a higher Speed of Adjustment (SOA).

Table 26: AIM firms' speed of adjustment across years and industries (OLS robust)

Year	BLEV	MLEV	Industry	BLEV	MLEV
2007	30.67%	40.44%	**Basic Materials**	23.97%	27.03%
2008	25.20%	28.77%	**Consumer Discretionary**	24.08%	25.67%
2009	26.85%	30.64%	**Consumer Staples**	24.43%	24.91%
2010	29.04%	33.41%	**Energy**	29.46%	30.67%
2011	22.94%	27.48%	**Financials**	21.18%	18.92%
2012	22.10%	19.48%	**Health Care**	24.84%	31.15%
2013	22.09%	29.12%	**Industrials**	26.22%	29.38%
2014	19.01%	27.17%	**Real Estate**	26.70%	16.86%
2015	20.94%	27.73%	**Technology**	29.75%	31.41%
2016	22.69%	26.50%	**Telecom**	20.94%	28.26%
2017	24.77%	26.91%	**Utilities**	38.29%	41.45%
2018	23.32%	26.75%			
2019	23.89%	27.02%			

Lastly, Alternative Investment Market Firms' Speed of Adjustment across two groups of firm size (Equation 7.1 is performed on each size subgroup). Group 1 comprises AIM firms with total asset values lower than the average value of the whole sample. Group 2 comprises larger AIM firms whose total asset values are higher than the average value of the whole sample. According to the results obtained by three different methods, the two size subgroups reveal speedier leverage convergence compared to the full sample in all three methods. It also reveals that larger AIM firms (Group 1) generally show slightly lower SOA, yet the differences are not too noticeable. This may be because the sample are firms listed in the AIM, their sizes and financial characteristics are not significantly different from each other. Consequently, the financing-related decisions, e.g., SOA, are relatively similar.

Table 27: AIM firms' speed of adjustment across firm size (OLS robust)

	λ OLS Robust		**λ Fixed Effect**		**λ System GMM**	
	BLEV	MLEV	BLEV	MLEV	BLEV	MLEV
Group 1: $Size_i$ > Mean (Size)	26.82%	26.55%	53.52%	51.87%	42.87%	50.52%
Group 2: $Size_i$ < Mean (Size)	27.82%	30.45%	52.52%	50.88%	57.02%	56.49%

7.3. Empirical Findings: Determinants of SOA

7.3.1. Main Analysis (OLS robust – LSDV)

In the current section, the results from the baseline OLS robust estimation method are presented and discussed. There are four main determinants of a firm's Speed of Adjustment (SOA) as hypothesized in Section 4.5: firm size (H14, Section 4.5.1), firm leverage deviation (H15, Section 4.5.2), firm financial flexibility (H16, Section 4.5.3), and firm growth opportunity (H17, Section 4.5.4). The results are presented in Table 28. In this table, the first two columns (columns 1 and 2) present the results of OLS method with the use of book and market leverage (BLEV and MLEV, respectively). The other columns are results of robustness checks using different estimation methods, which will be discussed in a later section (Section 7.3.2).

7.3.1.1. Hypothesis 8: Firm size is significantly associated with the speed of adjustment of AIM firms

According to the obtained coefficient of the interaction term between firm size and the lagged leverage ($\beta_{Size*L1.DV}$ = 0.0166 and 0.0132, p-value = 0.01 and 0.1, for BLEV and MLEV, respectively), it indicates that firm size significantly moderates (increases) the influence of the 1-year lagged leverage on the current leverage. In other words, the Speed of Adjustment (SOA) (λ) is reduced by 1.7% (1.3%) for every one log point increase in firm size. Consequently, the hypothesis 14 is supported such that the Speed of Adjustment of AIM firms is significantly impacted by firm size in a negative direction. As discussed in Section 4.5.1, the finding can be justified based on the lower costs of leverage deviation for larger AIM firms, which acts as an additional assurance for investors' investment in terms of the firms' market standing and risk of financial distress. The lower pressure from the external stakeholders leads to the lower incentive and speed of leverage convergence. This finding is consistent with previous studies by Dang et al. (2012) and Banerjee et al. (2004).

7.3.1.2. Hypothesis 9: Firm leverage deviation level is statistically significantly associated with speed of adjustment of AIM firms

The results also reveal evidence supporting the hypothesis 15 regarding the influence of firm leverage deviation on the Speed of Adjustment. Leverage deviation measure signifies how far away the firm's leverage ratio from its target one. The significantly positive coefficient of the interaction term between leverage deviation and the lagged leverage ($\beta_{Dis.LEV*L1.DV}$ = 1.556 and 2.008, p-value = 0.01, for BLEV and MLEV, respectively) indicates that the further the firm's leverage from the target, the slower the SOA. This may be because it would be more costly for firms to reach the target. Therefore, the higher cost of adjustment can demotivate firms to adjust.

A study by Aybar-Arias et al. (2012) examining the Speed of Adjustment (SOA) of SMEs reported the same result on the decreasing SOA as the deviation distance is greater.

7.3.1.3. Hypothesis 10: Firm financial flexibility is significantly positively associated with speed of adjustment of AIM firms

Financial flexibility captures a firm's flexibility in its financing structure. Aybar-Arias et al. (2012) defined this construct as "the ability of firms to alter their debt composition without incurring prohibitive costs" (p. 984). Aybar-Arias et al. (2012) studied SMEs and found that firm financial flexibility positively impacts the firm Speed of Adjustment due to lower cost of leverage adjustment because the firms are more financing flexible. Nevertheless, the coefficients of the interaction between financial flexibility and the lagged leverage ($\beta_{Flexib*L1.DV}$ = 0.004 and 0.0003, ns, for BLEV and MLEV, respectively) are not statistically significant. This indicates that there is no sufficient evidence for the hypothesis to be supported. The difference between the current study's finding and that of Aybar-Arias et al. (2012) may be present due to two factors: (1) AIM firm uniqueness and (2) the measure of financial flexibility. As discussed throughout this thesis, In particular, in Section 2.2, Alternative Investment Market firms exhibit a number of distinct characteristics with other unlisted SMEs, especially, on the access to external capital market. Within the AIM, due to their listing status on the LSE, the access to external capital market is larger and hence AIM firms are generally more financially flexible compared to other private SMEs. Consequently, the factor may not be critical enough to be significant. Second, although the same measure of financial flexibility is employed following the study of Aybar-Arias et al. (2012). The current study does not make the variable a dummy, that takes a unity value if a firm's financial flexibility is greater than the sample average and zero otherwise. The average cut-off point tends to make the factor more likely to be significant compared to the use of ratio variable employed in the current study.

7.3.1.4. Hypothesis 11: Firm growth opportunity are significantly associated with speed of adjustment of AIM firms

Lastly, the influence of firm growth opportunity on Speed of Adjustment (SOA) can be analysed through the coefficient of the interaction term between firm growth (measured by the market to book value) and the lagged leverage (Growth*L1.DV). The obtained coefficients show negative signs for both book and market measures of leverage. Nevertheless, the results are statistically insignificant. This indicates that a firm's growth opportunity is not a determinant of rate of leverage convergence (SOA). In other words, a firm's SOA is independent of the firm's growth prospect. Consequently, the hypothesis 17 is not statistically supported by the empirical evidence.

7.3.1.4. General remark

Overall, following the literature, the current empirical study proposed four factors as determinants of Alternative Investment Market firms' Speed of Adjustment. Based on the baseline analysis OLS robust (LSDV), there are sufficient evidence to support firm size and firm leverage deviation as two factors that significantly influence the firm leverage convergence. In the subsequent section, three additional estimation methods are employed, whose results are presented in the same Table 28 (columns 3-8), as robustness checks. As explained in the methodology Section 5.4.2.2, the OLS lagged approach, the fixed effect and GMM models are employed to tackle different sources of endogeneity. Consistent with the first empirical study (Chapter 6), the conclusion on finding is built on all methods such that the hypothesis is deemed to be supported if the results are found to be significant in at least three out of four methods.

7.3.2. Robustness Checks (OLS lagged Approach, Fixed Effect Model, and System GMM)

First, the lagged approach employs all 1-year lagged values of independent variable. This approach can deal with the simultaneity source of endogeneity because the dependent variable of the current year can hardly affect the firm characteristics in the past. Based on the results obtained by this method. All four factors (size, leverage deviation, financial flexibility, and growth) are found to significantly influence the SOA of Alternative Investment Market firms. In particular, consistent with the baseline OLS method, firm size and leverage deviation significantly positively affect the firm Speed of Adjustment (SOA). However, firm financial flexibility is now found to bring a significant negative coefficients for both book and market measures of leverage ($\beta_{Flexib*L1.DV}$ = -0.00873 and -0.00778, p-value = 0.05, for BLEV and MLEV, respectively). Consistent with the majority of extant studies (e.g. Aybar-Arias et al., 2012; Clark et al., 2009; DeAngelo et al., 2010; Graham & Harvey, 2001), the result indicates that the more financially flexible firms tend to adopt speedier leverage convergence. As mentioned above, this is because of the lower cost of leverage adjustment when firms are financially flexible. Furthermore, a significant positive coefficient of firm growth is obtained at just marginal level for BLEV and at 5% level for MLEV ($\beta_{Growth*L1.DV}$ = 0.00538 and 0.00870, for BLEV and MLEV, respectively). This supports the developed Hypothesis 17. It can be argued that firm with greater growth prospect can get more leeway (flexibility) in their risk exposure through the adoption of capital structure. Consequently, external stakeholders may be more tolerant and lenient to firms for their leverage deviation, leading to a lower cost

of deviation. This reduces the pressure on firms to adjust their leverage ratio, and hence, a lower SOA.

However, the fixed effect model is employed to tackle the issue of omitted variables which are correlated with one of the independent variables of the model, resulting in endogeneity issue. These omitted variables are believed to be time-invariant (i.e. constant across time) and the statistically significant results of the Hausman test determine the fixed effect model to be a more appropriate model compared to the random effect model. The findings reveal that among the four investigated determinants of Speed of Adjustment, only the firm leverage deviation is found to significantly positively influence the AIM firms' SOA ($\beta_{Dis.LEV*L1.DV}$ = 2.472 and 3.385, p-value = 0.01, for BLEV and MLEV, respectively). Once again, this is consistent with the OLS baseline and OLS lagged models.

Lastly, the system GMM model is employed which is deemed to tackle all three sources of endogeneity (as explained in Section 5.4.2.2). Before discussing the findings, it is important to check the validity of the model employed. First, the over-identification issue is not detected using the Hansen test[27] because the test statistics are not significant with p-values greater than 0.5. Second, the autocorrelation tests were also performed and no issue is detected due to the insignificant second-order difference (AR(2)). Despite the significant first-order difference test, a robust option has been employed. Therefore, the autocorrelation issue is diagnosed based on the second-order test. Using this method, consistent with the baseline, only firm size and leverage deviation are found to positively affect the firm Speed of Adjustment (SOA) at 5% level or below ($\beta_{Size*L1.DV}$ = 0.120 and 0.0875, $\beta_{Dis.LEV*L1.DV}$ = 2.074 and 2.805, for BLEV and MLEV, respectively).

Overall, because only the effects of firm size and leverage deviation are statistically supported by at least three estimation methods out of four, it can be concluded that only the Hypotheses 14 and 15 are supported. However, firm financial flexibility and growth only significantly affect Speed of Adjustment (SOA) in the lagged OLS approach. Consequently, they do not meet the support criteria. The below Table 29 summaries the findings obtained by the four models and the final conclusion. Generally, the analyses indicate that firm size and leverage deviation are negatively affect the Speed of Adjustment. In other words, larger firms with

[27] The robust option is employed, so the Sagan test is not applied.

greater leverage gap to their target tend to be more reluctant in achieving the target, i.e. slower Speed of Adjustment (SOA).

Table 28: Determinants of Speed of Adjustments for AIM firms

Table 28 reports the OLS estimation (main analysis, column 1-2) and robustness checks derived from the OLS lagged approach (columns 3-4), Fixed effect model (Column 5-6), and the system GMM (columns 7-8) of dynamic panel data of the determinants of speed of adjustment of AIM firms for the period from year 2007 to 2019. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **L1.DV** takes the 1-year lagged value of the dependent variable. The **Size* L1. DV, Dis.LEV * L1. DV, Flexib* L1. DV, and Growth*L1.DV are** the four interactions terms between the lagged dependent variables (either BLEV or MLEV measure) and (1) size, (2) leverage deviation (for BLEV/MLEV measure), (3) financial flexibility , and (4) growth. **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. A firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation (**Dis.LEV**) captures the distance between the firm current leverage level and its target/optimal leverage (for both measures of BLEV and MLEV). Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

	OLS		**Lagged Approach**		**Fixed-effect model**		**Two-step System GMM**	
VARIABLES	**BLEV**	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
L1. DV	0.206***	0.221***	0.237***	0.181**	0.156*	0.186**	-1.043**	-0.754*
	(0.068)	(0.073)	(0.071)	(0.077)	(0.091)	(0.089)	(0.464)	(0.450)
Size* L1. DV	0.016***	0.013*	0.028***	0.021***	-0.006	-0.009	0.120***	0.087**
	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.008)	(0.037)	(0.035)
Dis.LEV * L1. DV	1.556***	2.008***	1.327***	2.674***	2.472***	3.385***	2.074***	2.805**
	(0.082)	(0.170)	(0.087)	(0.108)	(0.087)	(0.106)	(0.284)	(1.227)
Flexib* L1. DV	0.004	0.000	-0.008**	-0.007**	-0.000	-0.005	0.0153	0.006
	(0.004)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)	(0.016)	(0.015)
Growth*L1. DV	-0.000	-0.005	0.005*	0.008**	-0.003	-0.000	-0.001	0.011
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.008)	(0.011)
Size	0.006***	0.005***	0.002*	0.004***	0.025***	0.023***	-0.009	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.005)	(0.004)
Tangibility	0.090***	0.074***	0.040***	0.043***	0.143***	0.131***	0.064***	0.050**
	(0.008)	(0.007)	(0.009)	(0.007)	(0.016)	(0.012)	(0.019)	(0.023)
Non-debt tax shield	0.002*	0.002**	0.004***	0.002*	0.004**	0.132**	0.366*	0.202
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.054)	(0.210)	(0.153)
Growth	-0.001**	-0.000	-0.000	-0.000*	-0.002***	-0.000	-0.000	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Profitability	0.000***	0.044***	0.035***	0.018**	0.000***	0.039***	0.024	0.028
	(0.000)	(0.008)	(0.010)	(0.008)	(0.000)	(0.008)	(0.050)	(0.024)
Liquidity	-0.001***	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***	-0.002***	-0.002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intangibility	0.051***	0.040***	0.030***	0.029***	0.040***	0.021**	0.045***	0.033**
	(0.007)	(0.005)	(0.007)	(0.006)	(0.011)	(0.008)	(0.014)	(0.013)
Age	0.004***	0.003**	-0.001	-0.000	0.008	0.013**	0.006*	0.006*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.007)	(0.005)	(0.003)	(0.003)
Div_Payout	-0.003	-0.011**	-0.000	-0.004	-0.015**	-0.034***	-0.021	-0.046*
	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.006)	(0.024)	(0.027)
Risk	-0.000*	-0.000*	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.023***	-0.003	-0.032***	-0.001*	-0.015*	-0.021***	-0.019	-0.062**
	(0.006)	(0.005)	(0.007)	(0.000)	(0.008)	(0.006)	(0.024)	(0.026)
Cash_flow	-0.013	-0.010	-0.050***	-0.025**	-0.013	-0.007	0.011	0.043

	(0.012)	(0.010)	(0.013)	(0.011)	(0.013)	(0.010)	(0.071)	(0.043)
Owner_5	-0.000	-0.000	-0.000*	-0.000**	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	0.009	0.003	0.005	0.020*	0.013	0.003	0.012	0.006
	(0.015)	(0.013)	(0.014)	(0.011)	(0.015)	(0.012)	(0.024)	(0.071)
CPI	0.007	0.005	-0.006	0.0021	0.012	0.002	-0.000	0.039
	(0.012)	(0.010)	(0.011)	(0.009)	(0.011)	(0.009)	(0.020)	(0.045)
StockMV	-0.136	-0.079	0.159	0.022	-0.179	-0.000	0.000	0.003
	(0.182)	(0.152)	(0.152)	(0.127)	(0.166)	(0.001)	(0.000)	(0.006)
Crisis	-0.020	-0.021	-0.012	-0.013	0.007	0.000	-0.052	-0.062
	(0.038)	(0.032)	(0.040)	(0.033)	(0.035)	(0.028)	(0.049)	(0.135)
Dis.LEV	0.112***	0.245***	0.130***	0.048***	0.075***	0.416***	0.086**	0.123
	(0.010)	(0.028)	(0.009)	(0.007)	(0.012)	(0.09)	(0.034)	(0.258)
Flexib	-0.066***	-0.051***	-0.023**	-0.018*	-0.071***	-0.005***	-0.060	-0.073
	(0.012)	(0.010)	(0.011)	(0.009)	(0.013)	(0.001)	(0.069)	(0.060)
Constant	0.620	0.355	-0.736	-0.196	0.711	-0.135	0.077	-0.483
	(0.855)	(0.714)	(0.700)	(0.583)	(0.811)	(0.143)	(0.157)	(0.828)
Year.FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y	-	-	Y	Y
Country.FE	Y	Y	Y	Y	-	-	Y	Y
Observations	3169	3171	2952	2952	3169	3296	2462	2462
R-squared	0.769	0.779	0.767	0.778	0.568	0.613		
F-stat	195.8	207.9	180.2	191.7	100.4	123.4		
Hausman tests					334.75***	349.04***		
No. of instruments							240	198
Hansen-test (p-value)							0.540	0.509
AR1 (p-value)							3.29e-10	7.94e-08
AR2 (p-value)							0.294	0.645

Table 29: Results obtained using different estimation method						
Hypothesis Variables $(L_{i,t-1} * Z_{i,t})$	Expected sign of Y_i	**Baseline OLS robust (LSDV)**	**Lagged OLS robust**	**Fixed Effect model**	**System GMM**	**Overall Conclusion**
H8: Firm size	(-)/(+)	**(+) Supported**	**(+) Supported**	Not significant Not supported	**(+) Supported**	**(+) Supported**
H9: Leverage Deviation	(-)/(+)	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**	**(+) Supported**
H10: Financial Flexibility	(-)	Not significant Not supported	**(-) Supported**	Not significant Not supported	Not significant Not supported	Not supported
H11: Growth	(-)/(+)	Not significant Not supported	**(+) Supported**	Not significant Not supported	Not significant Not supported	Not supported

7.3.3. Additional Analyses: Determinants of SOA in crisis and non-crisis periods

In the current section, an additional test is performed on the full baseline model across crisis versus noncrisis subsamples, whose results are presented in Table 30. The motivations behind this additional test are that there are many differences in the financial circumstances of firms influencing their demand for financing and the need for capital structure adjustment, in the external environments influencing the supply of capital, and in the perceptions and attitudes of external stakeholders towards the firms during the healthy period and turbulent period. These can potentially influence the findings reported in the main analyses (Section 7.3.1). In particular, the factors that affect the leverage convergence speed of AIM firms. The results of the equation 7.1 on each subsamples show that the overall leverage adjustment process during the crisis is slightly speedier than during the noncrisis period ($SOA_{Crisis} \approx$ 25-30% versus $SOA_{Noncrisis} \approx$ 23-26%). This is inconsistent with the finding reported by Drobetz et al. (2015) who suggested that during economic recession (turbulence as per crisis), the capital supply is more limited and hence it is harder and more costly for firms to adjust their financing structure. In the case of AIM firms, however, the opposite is obtained. This may be because the firms are fast-growing and riskier than the primary market firms. In the financial crisis time, the investors are more cautious on the survival of these firms and hence firms with suboptimal capital structure can be harshly judged by those stakeholders imposing higher costs of leverage deviating. Consequently, despite the higher cost of adjustment, AIM firms are still encouraged to adjust their leverage towards the target speedily to ease the concern, worry, and pressure of the investors, and hence, preventing any extreme negative reactions.

Regarding the factors influencing firm Speed of Adjustment (SOA), especially the two significant determinants that were reported in the main analyses (size and leverage deviation), firm leverage deviation is still found to negatively influence AIM firms' SOA ($\beta_{Dis.Lev*L1.DV} >$ 0, p-value = 0.01) across both crisis and noncrisis periods. However, the effects are weaker during the crisis. This is to say, firms with greater leverage deviation have less incentive to work towards achieving the target due to higher cost of adjustment. Nevertheless, such negative effect is lower during the crisis because the pressure on leverage convergence from external stakeholders is more intensive during the turbulence. This pushes the firms to put effort in closing the leverage–target gap, providing a more optimal capital structure.

Firm size, however, only significantly influences Speed of Adjustment (SOA) during a crisis and not during a noncrisis. The same justification regarding the cost of deviating (pressure from

investors during the crisis) is put forward. In particular, during the crisis, larger firms can better assure the investors owing to their reputation, credibility, and market standing. This financial characteristic is more critical during the financially difficulty times, acting as a proxy for a firm's stability and health. As a result, a lower pressure in achieving a leverage target causes slower Speed of Adjustment (SOA), ceteris paribus. Overall, the additional analysis emphasizes the importance of firm size and leverage deviation in slowing down the Alternative Investment Market firms' Speed of Adjustment, particularly during the financial crisis.

Table 30: Determinants of Speed of Adjustments for AIM firms during Crisis and Non-crisis period

Table 30 reports the OLS estimation of dynamic panel data of the determinants of speed of adjustment of AIM firms for the period from year 2007 to 2019 for the crisis (columns 1-2) and non-crisis (columns 3-4) subsamples. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **L1. DV** takes the 1-year lagged value of the dependent variable. The **Size* L1. DV, Dis.LEV * L1. DV, Flexib* L1. DV, and Growth*L1.DV are** the four interactions terms between the lagged dependent variables (either BLEV or MLEV measure) and (1) size, (2) leverage deviation (for BLEV/MLEV measure), (3) financial flexibility , and (4) growth. **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country. A firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation (**Dis.LEV**) captures the distance between the firm current leverage level and its target/optimal leverage (for both measures of BLEV and MLEV). Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

	Crisis Period		Non-crisis Period	
VARIABLES	**BLEV**	**MLEV**	**BLEV**	**MLEV**
	(1)	**(2)**	**(3)**	**(4)**
L1. DV	0.206*	0.142*	0.214**	0.277***
	(0.121)	(0.082)	(0.093)	(0.096)
Size* L1. DV	0.023*	0.037**	0.013	0.001
	(0.014)	(0.015)	(0.008)	(0.009)
Dis.LEV * L1. DV	0.843***	1.014***	2.134***	2.813***
	(0.255)	(0.333)	(0.119)	(0.234)
Flexib* L1. DV	0.007	-0.007	-0.000	-0.003
	(0.010)	(0.008)	(0.007)	(0.006)
Growth*L1. DV	0.009	-0.003	0.008*	0.010***
	(0.006)	(0.007)	(0.004)	(0.003)
Size	0.005**	0.000**	0.005**	0.006***
	(0.002)	(0.002)	(0.002)	(0.001)
Tangibility	0.082***	0.059***	0.071***	0.067***
	(0.020)	(0.016)	(0.012)	(0.009)
Non-debt tax shield	-0.002	0.000	0.005***	0.001
	(0.003)	(0.002)	(0.001)	(0.001)
Growth	-0.003*	-0.002*	-0.001*	-0.002***
	(0.001)	(0.001)	(0.000)	(0.000)
Profitability	0.121***	0.045***	0.032**	0.000***
	(0.020)	(0.016)	(0.013)	(0.000)
Liquidity	-0.001	-0.001	-0.003***	-0.002***
	(0.001)	(0.000)	(0.000)	(0.000)
Intangibility	0.049***	0.041***	0.035***	0.029***
	(0.015)	(0.012)	(0.009)	(0.007)
Age	0.005	0.0058*	0.005**	0.004**
	(0.003)	(0.003)	(0.002)	(0.002)
Div_Payout	0.002	-0.011	0.000	-0.014**
	(0.014)	(0.011)	(0.008)	(0.006)
Risk	-0.000***	-0.0003**	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Z_score	-0.011	-0.000	-0.003	-0.012*

	(0.014)	(0.010)	(0.008)	(0.006)
Cash_flow	0.036	0.0118	-0.035**	-0.002
	(0.027)	(0.022)	(0.017)	(0.014)
Owner_5	-0.000*	-0.000*	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	-0.012	0.309*	0.001	0.015
	(0.207)	(0.171)	(0.025)	(0.020)
CPI	-0.013	0.115*	0.006	0.012
	(0.073)	(0.061)	(0.016)	(0.012)
StockMV	0.023	-0.254	0.000	0.114
	(0.491)	(0.420)	(0.002)	(0.214)
Dis.LEV	0.281***	0.436***	0.017	0.086**
	(0.050)	(0.057)	(0.032)	(0.040)
Flexib	-0.005**	-0.038	-0.003**	-0.002*
	(0.002)	(0.023)	(0.001)	(0.001)
Constant	-0.053	0.301	-0.142	-0.732
	(1.991)	(1.722)	(0.284)	(1.016)
Year.FE	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y
Observations	716	716	1746	1746
R-squared	0.766	0.777	0.756	0.789
F-stat	63.78	67.77	107.4	129.1

7.4. Conclusion

This chapter has offered empirical evidence of Speed of adjustment forward target leverage. The study contributes to the literature by providing empirical evidence on the factors that influence the SOA towards a target leverage ratio in the Alternative Investment Market (AIM). The findings give empirical evidence that supports the trade-off theory. The results of the study show that the firms in the AIM market try to achieve optimal capital structure. The firms in the AIM market are shown to move towards their optimal leverage. The speed of adjustment is shown to be around 24% (towards the target book leverage, BLEV), and around 27% (towards the target market leverage, MLEV). This SOA rate is consistent with results obtained by Huang and Ritter (2009), Lemmon et al. (2008), and Byoun (2008). Since there is an existence of leverage speed of adjustment, it supports the existence of a target/optimal leverage level as stated by the trade-off theory. Furthermore, the study found that the firm size and leverage deviation are statistically supported by at least three estimation methods out of four, it can be concluded that firm size and leverage deviation negatively affect the Speed of Adjustment (SOA). This finding is important for policy makers and the management of the firms operating in the AIM, since it helps them understand the variables that can derail or quicker their speed of adjustment towards the target capital structure.

CHAPTER 8: EMPIRICAL FINDINGS STUDY 3

8.1. Introduction

Chapter 8 presents and discusses the findings of the third empirical study starting with descriptive statistics of employed variables for the main market sample that are provided in Section 8.2. A univariate comparison in the leverage level and the leverage Speed of Adjustment between the Alternative Investment Market firms and the main market firms are conducted in Sections 8.2.2 and 8.2.3. The empirical findings are discussed in Section 8.3 with the main analysis using the OLS robust model and robustness checks. Overall, the findings of the baseline OLS indicate that compared to the AIM firms, the positive effects of firm size, tangibility, intangibility, and ownership concentration and the negative effects of operating risk, bankruptcy risk, and cash flow ratio to leverage are stronger for main market firms. Furthermore, the negative effect of growth on leverage becomes positive for main market firms, and the positive effect of profitability on leverage becomes negative for main market firms. Besides, the negative influence of dividend pay-out on leverage lost its effect for main market firms. In other words, the dividend pay-out ratio is not a determinant of main market firms' capital structure. These moderating effects of main market listing status found in the main analysis are confirmed by both the lagged approach and the system GMM. The only exception is the ownership concentration effect on leverage which is not found to be statistically significantly different across the Alternative Investment Market firms and Main market firms since the ownership and main market dummy interaction is not significant. Regarding the findings on the SOA presented in Section 8.3.2, out of the four investigated determinants of Speed of Adjustment, the effects of firm size, leverage deviation, and growth opportunity on SOA are found to be different across Alternative Investment Market firms and Main market firms. In particular, the negative size SOA association is stronger for main market firms. However, the effects of leverage deviation (negative) and growth (positive) on the Speed of Adjustment are weaker for main market firms. These are confirmed in the robustness check section 8.3.2.2.

8.2. Descriptive statistics

8.2.1. general descriptive statistics for aim sample and main market sample

The current study conducts a comparison study on the determinants of corporate capital structure and leverage Speed of Adjustment between the two LSE markets: the Alternative Investment Market and the main market (FTSE350). Before the main analyses, this section

provides descriptive statistics for the samples containing AIM firms and main market firms. Table 31 shows that the average book and market leverage ratios (BLEV and MLEV, respectively) are comparatively higher for main market firms (FTSE100, FTSE250, and FTSE350). Such differences are visually illustrated in Figure 6. In particular, while the leverage ratios for AIM firms are around 10-12%, the largest 100 UK firms (FTSE100) exhibit the highest leverage (BLEV = 24% and MLEV = 16%), and the largest 350 UK firms (FTSE350) reveal average leverage values of 20% and 15% for BLEV and MLEV, respectively. These figures can be explained by the greater access to external capital funds by the main market firms, especially debt financing sources. For Alternative Investment Market firms, their small-medium size nature, together with their higher risk profile, would raise a higher barrier to access debt funds, leading to a lower leverage level. The descriptive statistic table also shows that firms listed on the main market are generally more financially flexible, i.e. possess a greater capability in adjusting the capital structure at trivial costs than the AIM firms ($Flexib_{AIM}$ = 7.119 versus $Flexib_{FTSE100\text{-}250\text{-}350}$ = 11.8, 9.0, and 10.1, respectively). Furthermore, because of the more matured, established, and stable operations of the main market firms, they exhibit a greater capability for leverage. Consequently, those firms can set a higher target/optimal leverage to take advantage of the debt savings. This leads to the higher average values of target leverage (Target_BLEV and Target_MLEV) for the main market firms (18%-28%) than for AIM firms (10%-12%).

The average log size and age of the Alternative Investment Market sample is 9.85 and 2.42, respectively, compared to the values of 15.57, 13.62, and 14.25 (for size) and of 3.35, 3.05, and 3.14 (for age) of the largest 100 companies (FTSE 100), largest 250 companies (FTSE 250), and largest 350 companies (FTSE 350), respectively. These values somewhat verify the size and age differences between AIM and main market firms which have been repeatedly mentioned throughout the thesis, in particular, in Section 2.2. The tangibility of AIM firms is also lower than that of the main market firms (16% versus 20-26%). This is because larger FTSE firms tend to invest more in tangible assets compared to smaller firms such as AIM firms. Regarding growth opportunity measured by market-to-book value, despite the younger and smaller size of Alternative Investment Market firms, their growth prospect is perceived to be relatively similar to the main market firms, especially, the FTSE250 and FTSE350. Nevertheless, such growth prospect of the AIM remains slightly lower than the top 100 UK firms FTSE100 (2.47 versus 3.13). It may be that AIM firms are young and fast-growing firms due to their developing stage with many investment opportunities for reinvestment of their own

products, service lines, and operations, leading to higher risk profile. FTSE100 firms, however, are mature and established with fewer opportunities for internal growth. Nevertheless, they often possess sufficient internal financing sources together with strong credit profiles for access to external funds to implement external expansion projects, such as mergers and acquisitions. This adds to their further growth opportunities. For the same reason, i.e. the young, fast-growing, and developing nature of AIM firms; and for the mature and developed nature of main market firms, the dividend pay-out ratio of AIM firms is much lower than that of the main market firms due to their greater reinvestment opportunities and lower profitability (Div_Payout_{AIM} = 11% versus Div_Payout_{FTSE} = 39-46%). Regarding the operating risk and bankruptcy risk, once again, the higher risk profile of AIM firms stated in Section 2.2 (with support of the literature) is verified through the higher operating risk measured by the volatility of the return on assets across the 5-year interval and higher bankruptcy risk measured by Z-scores (Risk and Z_score_{AIM} = 6.89 and -1.06). Finally, the descriptive statistics show that the ownership structure of the AIM is more concentrated compared to that of the main market. As discussed in Section 2.2, firms listed on the AIM do not expose to the ownership concentration constraint as do firms on FTSE350. As a consequence, AIM firms are more likely to have block holder ownership (large shareholding).

Overall, the current descriptive statistic discussion has confirmed the differences in characteristics between firms listed on the Alternative Investment Market and the Main market. This supports the arguments provided in Section 2.2 (Why AIM?) regarding the unique traits of AIM supporting and solidifying the contribution of the thesis.

Table 31: Variable Descriptive statistics of AIM firms across AIM and Main market

Table 31 presents the descriptive statistics for the whole sample of AIM firms and firms listed in the main market indexes, i.e., FTSE100, FTSE250, and FTSE350. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT) + (1 * Net sales) + (1.4 * Retained earnings) + (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **StockMV** refers to the stock market capitalization to GDP of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. A firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation captures the distance between the firm current leverage level and its target/optimal leverage. Both book and market leverage deviations are calculated denoted as Dis_BLEV and Dis_MLEV, respectively. Target_BLEV and Target_MLEV are a firm's target book and market leverage levels, respectively. Their computations can be found in Section 5.3.3.

		AIM	FTSE100	FTSE250	FTSE350
BLEV	*Mean*	0.12	0.24	0.18	0.20
	(Std Dev)	(0.17)	(0.16)	(0.17)	(0.17)
MLEV	*Mean*	0.10	0.16	0.15	0.15
	(Std Dev)	(0.15)	(0.13)	(0.15)	(0.14)
SIZE	*Mean*	9.85	15.57	13.62	14.25
	(Std Dev)	(1.63)	(1.60)	(1.35)	(1.70)
Tangibility	*Mean*	0.16	0.26	0.20	0.22
	(Std Dev)	(0.23)	(0.26)	(0.26)	(0.26)
Profitability	*Mean*	-0.12	0.09	0.07	0.08
	(Std Dev)	(0.32)	(0.09)	(0.11)	(0.10)
Growth	*Mean*	2.47	3.13	2.29	2.56
	(Std Dev)	(2.79)	(2.55)	(2.22)	(2.36)
Non-debt tax shield	*Mean*	0.03	0.03	0.02	0.03
	(Std Dev)	(0.03)	(0.03)	(0.03)	(0.03)
Liquidity	*Mean*	3.97	1.58	1.72	1.66
	(Std Dev)	(4.89)	(1.25)	(1.52)	(1.42)
Intangibility	*Mean*	0.25	0.20	0.15	0.16
	(Std Dev)	(0.27)	(0.22)	(0.20)	(0.21)
Age	*Mean*	2.42	3.35	3.05	3.14
	(Std Dev)	(0.90)	(1.05)	(1.15)	(1.12)
Div_Payout	*Mean*	0.11	0.46	0.39	0.41
	(Std Dev)	(0.21)	(0.33)	(0.37)	(0.36)
Risk	*Mean*	6.89	0.12	0.94	0.68
	(Std Dev)	(18.53)	(0.36)	(2.74)	(2.31)

Z_Score	*Mean*	-1.06	1.44	1.29	1.34
	(Std Dev)	(4.28)	(1.03)	(1.12)	(1.09)
Owner_5	*Mean*	49.72	30.79	34.21	33.11
	(Std Dev)	(19.01)	(16.58)	(18.00)	(17.63)
Cash_Flow	*Mean*	-0.06	0.08	0.06	0.07
	(Std Dev)	(0.21)	(0.07)	(0.07)	(0.07)
GDP_G	*Mean*	1.33	1.26	1.27	1.27
	(Std Dev)	(1.75)	(1.76)	(1.75)	(1.76)
CPI	*Mean*	2.33	2.29	2.31	2.31
	(Std Dev)	(1.10)	(1.15)	(1.14)	(1.14)
StockMV	*Mean*	111.18	108.74	111.10	110.82
	(Std Dev)	(14.13)	(16.07)	(13.52)	(13.55)
Crisis	*Mean*	0.214	0.27	0.27	0.27
	(Std Dev)	(0.41)	(0.45)	(0.45)	(0.45)
Flexib	*Mean*	7.119	11.805	8.961	10.133
	(Std Dev)	(1.850)	(2.390)	(2.336)	(2.712)
Dis_BLev	*Mean*	0.060	0.003	-0.028	0.002
	(Std Dev)	(1.396)	(0.105)	(0.486)	(0.109)
Dis_MLev	*Mean*	0.000	0.002	-0.042	0.002
	(Std Dev)	(0.116)	(0.076)	(0.494)	(0.094)
Target_BLEV	*Mean*	0.122	0.273	0.274	0.266
	(Std Dev)	(0.059)	(0.093)	(0.110)	(0.090)
Target_MLEV	*Mean*	0.094	0.179	0.259	0.190
	(Std Dev)	(0.059)	(0.078)	(0.173)	(0.083)

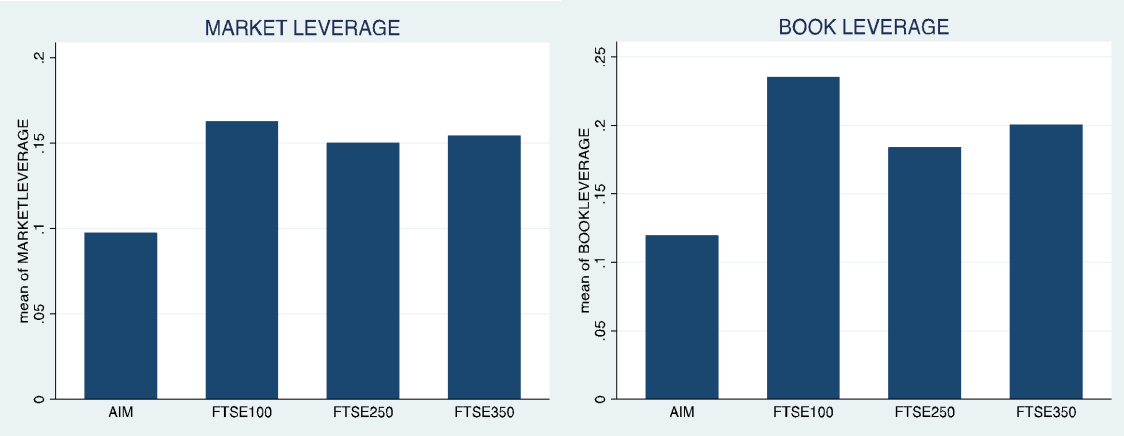


Figure 6: Comparisons on the Leverage Ratios Across AIM and Main Market

8.2.2. Leverage ratios across AIM firms and Main Market firms and across years

In this section, the focus is on the main response variable of the study, i.e. BLEV and MLEV. Table 32 provides the mean values of leverage ratios of the Alternative Investment Market and Main market samples over time (2007-2019). For a visual illustration, Figure 7 & 8 illustrates the variations of the book and market leverage (Figures 8.2a and 8.2b, respectively) over the 2007-2019 period for the AIM, largest 100 companies (FTSE 100), largest 250 companies (FTSE 250), and largest 350 companies (FTSE 350).

At the first glance, Figures 7 & 8 have two noticeable features. First, Alternative Investment Market firms exhibit the lowest leverage ratios throughout the whole period. FTSE100 takes

the lead in leverage adoption level followed by FTSE350 and FTSE250. The lower leverage level of AIM firms was discussed in the previous Section 8.2.1. Second, it can be observed that all the four LSE indexes generally follow a similar move over the years for both book and market leverage ratios. In particular, the leverage level increased during the financial crisis in 2007 then gradually decreased and stabilized after the crisis terminated. In accordance with average leverage throughout the whole 2007-2019 period, AIM firms' leverage levels were relatively stable at around 10-12%. The main market firms' leverage fluctuated slightly around 15%-20%. Overall, there seems to be a steady pattern of leverage adoption for each index. This signifies their differences in financing structure decisions and supports the objective of the current thesis in understanding the differences in the determinants of capital structure and Speed of Adjustment for AIM firms and main market firms.

Figure 7: Book Leverage Across Year of AIM and Main Market Firms

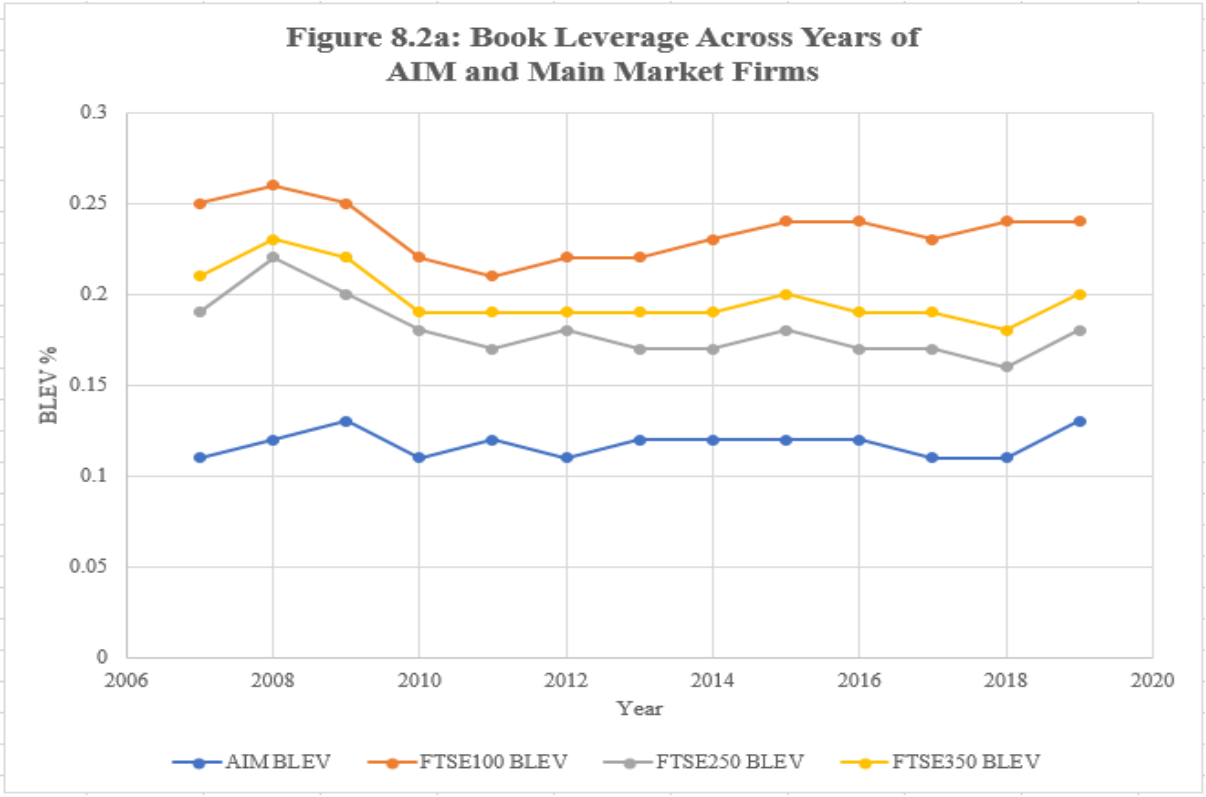


Figure 8: Market Leverage Across Years of AIM and Main Market Firms

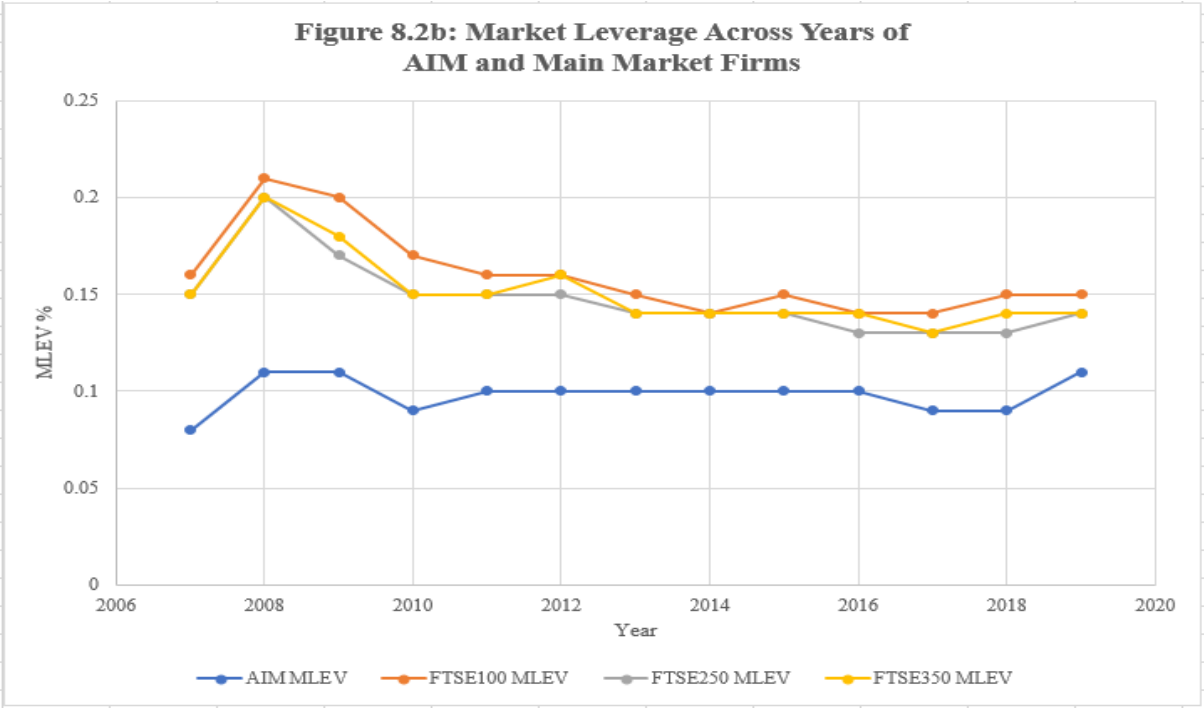


Table 32: Average Leverage of firms listed on AIM and Main Indexes across years

*Table 32 presents the average of leverage ratios adopted by AIM firms and Main Market firms across the 2007-2019 period. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**).*

	AIM		FTSE100		FTSE250		FTSE350	
	BLEV	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**
2007	0.11	0.08	0.25	0.16	0.19	0.15	0.21	0.15
2008	0.12	0.11	0.26	0.21	0.22	0.2	0.23	0.2
2009	0.13	0.11	0.25	0.2	0.2	0.17	0.22	0.18
2010	0.11	0.09	0.22	0.17	0.18	0.15	0.19	0.15
2011	0.12	0.1	0.21	0.16	0.17	0.15	0.19	0.15
2012	0.11	0.1	0.22	0.16	0.18	0.15	0.19	0.16
2013	0.12	0.1	0.22	0.15	0.17	0.14	0.19	0.14
2014	0.12	0.1	0.23	0.14	0.17	0.14	0.19	0.14
2015	0.12	0.1	0.24	0.15	0.18	0.14	0.2	0.14
2016	0.12	0.1	0.24	0.14	0.17	0.13	0.19	0.14
2017	0.11	0.09	0.23	0.14	0.17	0.13	0.19	0.13
2018	0.11	0.09	0.24	0.15	0.16	0.13	0.18	0.14
2019	0.13	0.11	0.24	0.15	0.18	0.14	0.2	0.14
N	**7,751**	**7,751**	**1,263**	**1,263**	**2,793**	**2,793**	**4,056**	**4,056**
Mean	**0.12**	**0.10**	**0.24**	**0.16**	**0.18**	**0.15**	**0.20**	**0.15**

8.2.3. SOA Toward a Target Leverage of AIM and Main Market Firms

Coming to the other main response variable of the study, i.e. the SOA, Table 33 and Figure 9 numerically and visually reveal the differences in the leverage convergence rate between firms listed in the Alternative Investment Market and in the Main market. To obtain the value of SOA (λ), the equation 7.1 is performed on each market subgroup using three estimation methods: OLS robust (LSDV), fixed effect, and system GMM models.

First, the table and the figure reveal that the Speed of Adjustment obtained from the OLS robust model is consistently lower than those obtained from the fixed effect and system GMM model for all indexes by at least 100%. Such different figures across estimation models are similar to those obtained by Huang and Ritter (2009). For both measures of book and market SOAs, AIM firms tend to adjust their leverage towards the target one by approximately 25% at a time (λ = 24% and 27% for BLEV and MLEV, respectively) using the OLS result. The variations in SOAs across the AIM firms and main market firms (all three indexes) are not too significant under this estimation method with the SOAs of FTSE250 and FTSE350 being slightly lower than those of the AIM firms and FTSE100 firms. However, differences are more noticeable if the fixed effect and GMM models are employed. Specifically, the FTSE100 index containing the biggest 100 firms in the UK adopted the speediest adjustment towards the target by two-third at a time (λ ≈ 60%). This high rate of leverage convergence can be explained by the FTSE100 firms' lower cost of adjusting because of their high financial flexibility with greater and cheaper access to the capital market. As a result, issuing new and retiring old financing funds are relatively easier for these larger firms. Compared to the Speed of Adjustment of Alternative Investment Market firms and the FTSE250 and FTSE350, relatively similar convergence rates were obtained for these indexes fluctuating around 48%. Consistent with previous studies, Ozkan (2001) found a similar Speed of Adjustment for UK main market firms (≈50%) using the system GMM. According to Ozkan (2001), the OLS-based SOAs implies that the cost of adjustment is more important than the cost of deviation since the Speed of Adjustment values are lower than 50% (Ozkan, 2001). However, based on the fixed effect and system GMM results, the two costs are relatively equally important, especially for the AIM, FTSE250, and FTSE350. For FTSE100, a high SOA of more than 60% indicated the higher relevance of cost of adjustment in comparison to the cost of deviating which is sensible with the market standing and credibility.

Figure 9: Leverage Speed of Adjustment (λ) of AIM Firms and Main Market Firm

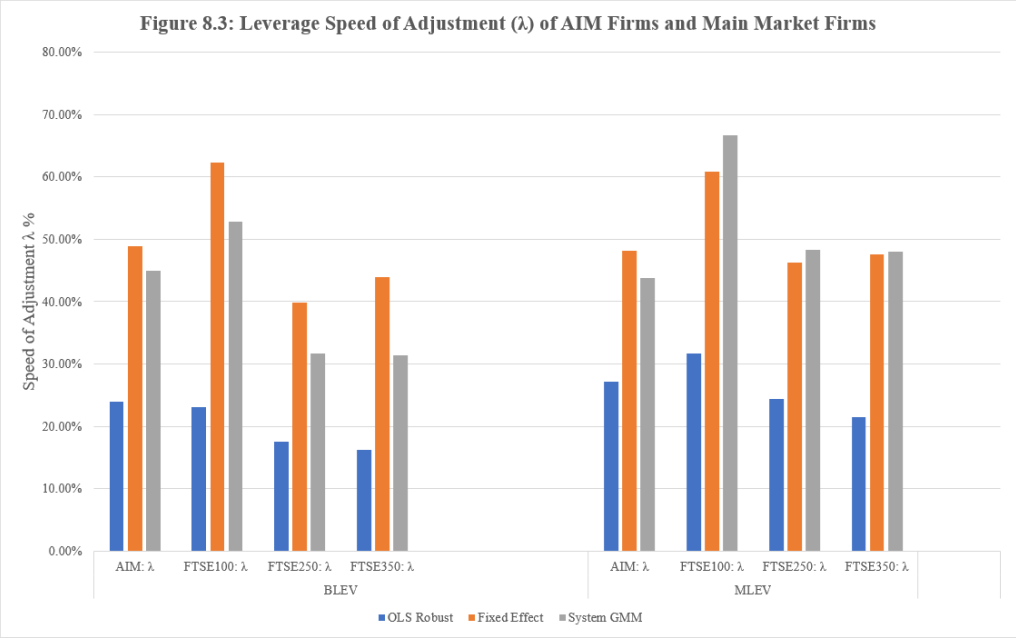


Table 33: Speed of Adjustment for AIM firms and Main market firms

AIM sample	OLS Robust	Fixed Effect	System GMM
λ (BLEV)	23.93%	48.94%	44.95%
λ (MLEV)	27.18%	48.15%	43.74%
FTSE100			
λ (BLEV)	23.08%	62.36%	52.89%
λ (MLEV)	31.67%	60.83%	66.72%
FTSE250			
λ (BLEV)	17.53%	39.91%	31.68%
λ (MLEV)	24.41%	46.25%	48.34%
FTSE350			
λ (BLEV)	16.30%	43.86%	31.44%
λ (MLEV)	21.54%	47.57%	48.04%

8.3. Empirical Findings:

8.3.1. Determinants of capital structure: Comparison between AIM and Main market

This section discusses results for equation 5.26 (Section 5.4.3) determining the differences in the determinants of capital structure between Alternative Investment Market firms and Main market firms. Table 34 presents results for the baseline OLS estimation model in Columns One and Two for book and market leverage ratios, respectively. In the remaining four columns of the table, the results for the lagged approach (columns 3-4) and the system GMM (columns 5-6) are provided.

8.3.1.1. Baseline estimation model – OLS robust (LSDV)

Starting with the baseline model for the full sample comprising AIM and main market firms, the results indicate that the effects of firm size, tangibility, growth, profitability, intangibility, age, dividend pay-out, risk (operating and bankruptcy risks), cash flow ratio, and ownership concentration on leverage adoption are found to be significantly moderated by the main market listing status of firms. This is determined by the statistically significant coefficients of the interactions between leverage determinants being investigated in the first study [28] and the main market dummy at 10% or below.

The direct effect of firm size and tangibility on both BLEV and MLEV leverage is found to be significantly positive, consistent with Study 1 (Chapter 6) (β_{Size} = 0.01 and β_{Tangi} = 0.01, p-value = 0.01). These effects are significantly positively moderated by main market listing (β_{Size_MM} = 0.03 and 0.1, for BLEV and MLEV, respectively, p-value = 0.01). This indicates that larger and more tangible firms tend to adopt a greater leverage level, and the effects are stronger for main market firms. A potential explanation for this is that those main market corporations exhibit a solid market standing and credibility due to their matured and developed operations. If the firms are larger with a greater possession of tangible assets, lenders (or investors) are technically insured to their lending/investments. As a result, the access to debt funds for these larger main market firms can be drastically enhanced. In the case of Alternative Investment Market firms, as discussed in Sections 6.2.1.1 and 6.2.1.2, larger and more tangible AIM firms provide better assurance for lenders and exhibit lower chances of moral hazards, compared to smaller and less tangible AIM firms. Consequently, larger AIM firms are likely to have a greater debt capacity at a more reasonable cost. However, if compared to the main market firms, although AIM firms with larger size and greater tangibility can provide a better assurance on their borrowing, with higher risk profiles and less stable operations, lenders should remain cautious when considering increasing the debt capital supply to AIM firms. As a result, the positive effects of size and tangibility on leverage are smaller for AIM firms compared to main market firms.

Growth opportunity's direct effects on the book and market leverage ratios are significantly negative at 1% (β_{Growth} = -0.002 and -0.005, BLEV and MLEV, respectively). Consistent with Study 1 (Section 6.2.1.4), a firm's growth opportunity can reflect its increased risk-taking,

[28] Include: Firm size, tangibility, profitability, growth, nondebt tax shield, liquidity, intangibility, firm age, dividend pay-out, operating risk, bankruptcy risk, ownership concentration, and free cash flow. The computations of these factors can be found in Section 5.3.3

leading to higher insolvency risk. This lowers the debt capacity of the firm. Nevertheless, a positive moderating effect is obtained for main market firms (β_{Growth_MM} = 0.01 and 0.004, BLEV and MLEV, respectively, p-value = 0.01). It indicates that the negative effects of growth on leverage becomes positive for main market firms. According to an F-test result on the combination of the coefficient of growth and the coefficient of growth MM (β_{Growth} + β_{Growth_MM}), the positive combined coefficient is statistically significant at a 1% level (F-statistic = 86.76). Overall, the results imply that for AIM firms, growth opportunity negatively affects their leverage levels. Nevertheless, for main market firms, the higher the growth opportunities are the higher the leverage adoption. This finding can be justified since the intangible-in-nature of AIM firms' growth opportunity is more fragile in financial disruption circumstances compared to the main market firms. As suggested by Titman and Wessel (1988), the growth opportunity cannot be collateralised, and its value tends to drop drastically in negative financial events. This is more likely to be true in the case of AIM firms due to their young, developing, unstable, and risky nature. However, for the matured and more established main market firms, the growth opportunity is a valuable characteristic given their low-risk profile. Many studies also argue that the growth opportunity (especially, a more sustainable growth) has been increasingly collateralisable and can enhance the access of firms to the debt market (Ellis & Jarboe, 2010; Hochberg et al., 2017; Loumioti, 2012; Mann, 2018). Since growth opportunity carries similar traits as intangibility, the same result is obtained for the intangibility factor ($\beta_{Intangi\_MM}$ = 0.08, for BLEV, p-value = 0.01). This indicates that for main market firms, the positive effect of intangibility on leverage is stronger for the main market firms compared to the AIM firms.

Regarding the effect of profitability on leverage, a consistently positive effect is obtained from Study 1 ($\beta_{Profitability}$= 0.01 and 0.007, BLEV and MLEV, respectively, p-value = 0.01). As discussed in Section 6.2.1.3, higher profitability acts as a financial cushion for firms in crisis leading to a lower bankruptcy risk and higher leverage (supporting the trade-off theory). However, this financial cushion seems to be more critical for AIM firms (again, due to their financial characteristics). For main market firms, the profitability is rather a bonus than a critical financial aspect to prevent them from insolvency. Instead, higher profitability for main market firms with fewer reinvestment opportunities (due to their mature business cycle) can massively add to their already-high level of retained earnings. This can drastically reduce their demand for external financing. Consequently, for main market firms, it is likely that more profitable firms adopt lower leverage. This is empirically supported by the significant positive

coefficient of the interaction term between profitability and the main market dummy, mainly for the market leverage measure (β_{Profit_MM} = -0.177, p-value = 0.01). According to the F-test result, it verifies that the effect of profitability on leverage of the main market firms is statistically significantly negative (F-test = 14.19).

Dividend pay-out policy is another significant determinant of leverage. The results show that a higher dividend pay-out ratio tends to be associated with lower leverage ($\beta_{Div\_Pay\text{-}out}$ = -0.04 and -0.07, BLEV and MLEV, respectively, p-value = 0.01). As discussed in Section 6.2.1.9, firms paying higher level dividends tend to achieve higher profit levels, hence, reducing their demand for external finance (pecking order theory) and reducing the need of employing debt instruments to reduce agency issues (agency theory). However, this negative dividend-leverage association is only significant for AIM firms and not significant for main market firms. In other words, the dividend pay-out policy of main market firms does not influence their capital structure decisions. A conclusion is drawn on the positive effects of the interaction term between dividend pay-out and the main market dummy (β_{Div_MM} = 0.04 and 0.06, BLEV and MLEV, p-value = 0.01). The magnitude of the interaction coefficients brings the direct effect coefficient (β_{Div_Payout}) closer to zero. The results of an F-test on the combination of the two coefficients indicate that the effect of dividend pay-out on leverage after taking into account the main market listing status becomes statistically insignificant. To explain this finding, it is possible that main market firms have a lower reinvestment opportunity with generally higher levels of profit. Consequently, for mature firms with a lower need for external borrowing, paying dividends to shareholders is the primary means of dealing with the agency issue rather than employing debt finance.

Furthermore, the negative association between risk and leverage (β_{Risk}= -0.02, MLEV, p-value = 0.05; and $\beta_{Z\text{-}score}$= -0.1 and -0.05, BLEV and MLEV, respectively, p-value = 0.01) is supported by the trade-off theory suggesting that firms with higher risk exposure have lower access to the debt market, leading to lower leverage. It is expected that AIM firms with higher risk profiles are more sensitive to both operational and bankruptcy risk. Hence, the negative risk-leverage association should be stronger for AIM firms compared to main market firms. Intriguingly, the results reveal an opposite tendency. Specifically, the coefficients of the interaction terms between risk (operating and bankruptcy risks) and the main market dummy are significantly negative (β_{Risk_MM} and $\beta_{Zscore\_MM} < 0$, BLEV and MLEV, p-value < 0.05). This leads to stronger negative effects of operating risk and bankruptcy risk on both BLEV and

MLEV. A possible explanation for this finding is placed on the expectation of market participants for the firms they invest in or lend to. AIM firms are characterised by their higher risk exposure, and the market participants who invest in those firms are well-acknowledged of the nature of the firms. For the main market firms which tend to receive more followers and scrutiny together with their stable and sustainable operating performance, an increase in operating risk and bankruptcy risk may trigger a closer investigation from the external stakeholders. Consequently, in the event of heightened levels of risk, main market firms will be more likely to use their internal resources rather than issuing external finance to avoid disturbing and sending an 'unnecessary' bad signal to the market.

Furthermore, the negative influence of a firm's cash flow level is also found to be much stronger for main market firms in comparison to AIM firms ($\beta_{Cashflow\_MM}$ = -0.16 and -0.18, BLEV and MLEV, p-value < 0.05). This is sensible and justifiable since main market firms often exhibit high profit levels, and hence a retained earning level with fewer reinvestment opportunities. With the high excess level of free cash flow, in the event that firms need to obtain funds, it is likely that they would use their internal resources rather than external resources. This decision can indeed prevent ownership dilution (for equity issuance), avoid increased risk level (for debt issuance), and reduce agency cost (lower free cash flow level within a firm).

Finally, the effect of ownership concentration on leverage is found to be significantly positive (β_{Owner_5} = 0.0006 and 0.0003, BLEV and MLEV, respectively, p-value = 0.01). As discussed in Section 6.2.1.12, firms owned by larger owners are often prevented from issuing equity since the current shareholders are concerned about their ownership being diluted. As a result, in the need for external funds, firms tend to issue more debt. Nevertheless, according to the negative coefficient of the interaction of the factor and the main market dummy (β_{Owner_MM} = -0.0006, BLEV, p-value < 0.05), the effect of ownership concentration on the book leverage has been brought to almost zero, indicating that this factor has lost its influence on leverage for main market firms. This may be because main market firms must comply with the ownership limit set out by the LSE, i.e. no single shareholder can own more than a 30% stake of the firms (Mortazian et al., 2019). Consequently, the firms are owned by many smaller shareholders whose voting rights are not as influential as those of the AIM firms and may not be sufficiently influential to alter the firms' financing decisions.

Overall, the findings of the baseline OLS indicate that compared to the AIM firms, the positive effects of firm size, tangibility, intangibility, and ownership concentration and the negative effects of operating risk, bankruptcy risk, and cash flow ratio on leverage are stronger for main market firms. Furthermore, the negative effect of growth on leverage becomes positive for main market firms, and the positive effect of profitability on leverage becomes negative for main market firms. Besides, the negative influence of dividend pay-out on leverage has lost its effect for main market firms. The dividend pay-out ratio is not a determinant of main market firms' capital structure. Consequently, the evidence has concluded that Hypothesis 18 which stated "Influences of the determinants of capital structure are heterogeneous between AIM and main market" is strongly supported. To provide further assurance to the main finding, the subsequent section will implement and discuss the findings obtained by the OLS lagged approach and system GMM. The fixed-effect model cannot be implemented since the main market dummy is treated as a fixed effect within the model and hence the variable is automatically eliminated.

8.3.1.2. Robustness checks – OLS lagged and GMM

The results of the two robust estimation models are presented in Table 34 with columns 3-4 for the OLS lagged approach and columns 5-6 for the system GMM model. These two models are employed to take into account potential issues of endogeneity, including the omitted variables, simultaneity, and measurement errors. As the results reveal, the moderating effects of a main market listing status found in the main analysis (Section 8.3.1.1) are confirmed by both the lagged approach and the system GMM. The only exception is the ownership concentration effect on leverage which is not found to be statistically significantly different across the AIM firms and main market firms since the ownership and main market dummy interaction is not significant. Therefore, the moderating effect of a main market listing status on the association between ownership concentration and leverage is not supported. Overall, Hypothesis 18 is confirmed to be supported by the robustness check.

Table 34: Market index as a moderating effect of determinants of Capital structure

Table 34 reports the OLS estimation (main analysis, columns 1-2) and robustness checks derived from the OLS lagged approach (columns 3-4), and the system GMM (columns 7-8) of dynamic panel data of the determinants of capital structure for the whole sample comprising AIM firms, and firms on the main market (FTSE350) for the period from year 2007 to 2019. Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset), **Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. Main_Market denotes unity if the firm is listed in the FTSE350 and zero otherwise. *_MM are interaction terms between the main market variable and the 13 main explanatory variables being investigated in the current study.

VARIABLES	OLS		Lagged Approach		Two-step System GMM	
	BLEV	MLEV	BLEV	MLEV	BLEV	MLEV
	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.009***	0.0127***	0.0102***	0.013***	0.012***	0.013***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.003)
Tangibility	0.122***	0.123***	0.133***	0.129***	0.162***	0.151***
	(0.011)	(0.009)	(0.011)	(0.009)	(0.032)	(0.026)
Non-debt tax shield	0.508***	0.231***	0.476***	0.216***	0.635***	0.467***
	(0.073)	(0.056)	(0.072)	(0.056)	(0.235)	(0.167)
Growth	-0.002***	-0.005***	-0.001*	-0.004***	0.000	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Profitability	0.009***	0.006***	0.008***	0.006***	0.009***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Liquidity	-0.079***	-0.026**	-0.040***	-0.015	-0.026	-0.027
	(0.013)	(0.010)	(0.013)	(0.010)	(0.039)	(0.024)
Intangibility	0.028***	0.033***	0.040***	0.038***	0.034	0.046***
	(0.009)	(0.007)	(0.009)	(0.007)	(0.022)	(0.016)
Age	0.003	0.006***	0.002	0.003*	0.009*	0.010**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.005)	(0.004)
Div_Payout	-0.038***	-0.069***	-0.028***	-0.055***	-0.036**	-0.054***
	(0.009)	(0.007)	(0.008)	(0.007)	(0.014)	(0.012)
Risk	0.005	-0.018**	0.000	-0.016**	0.042	0.014
	(0.010)	(0.008)	(0.010)	(0.007)	(0.027)	(0.019)
Z_score	-0.105***	-0.048***	-0.080***	-0.038***	-0.004	-0.006
	(0.008)	(0.006)	(0.008)	(0.006)	(0.039)	(0.026)
Cash_flow	-0.036**	-0.005	-0.048***	-0.019	-0.075	-0.017
	(0.016)	(0.013)	(0.016)	(0.013)	(0.051)	(0.038)
Owner_5	0.000***	0.000***	0.000***	0.000***	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	0.004*	0.001	0.002	0.0014	-0.009	-0.006
	(0.002)	(0.001)	(0.002)	(0.001)	(0.006)	(0.004)
CPI	0.002	0.004	0.001	0.001	0.021*	0.017**
	(0.006)	(0.005)	(0.006)	(0.005)	(0.011)	(0.007)
StockMV	0.000	-0.000	0.000	-0.000	-0.002	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)

Crisis	0.017	0.003	0.007	0.010	0.013	0.011
	(0.024)	(0.018)	(0.024)	(0.019)	(0.034)	(0.024)
Main_market	-0.248***	-0.066*	-0.256***	-0.087**	-0.299*	-0.120**
	(0.049)	(0.038)	(0.047)	(0.037)	(0.167)	(0.064)
Size_MM	0.026***	0.012***	0.025***	0.011***	0.029***	0.015**
	(0.003)	(0.002)	(0.003)	(0.002)	(0.009)	(0.006)
Tangi_MM	0.065***	0.005	0.058**	0.006	0.046**	-0.036
	(0.023)	(0.018)	(0.023)	(0.018)	(0.020)	(0.054)
NDTS_MM	-0.182	-0.159	-0.125	-0.164	1.120*	0.686
	(0.182)	(0.142)	(0.178)	(0.140)	(0.610)	(0.417)
Growth_MM	0.014***	0.003***	0.014***	0.003***	0.015***	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)
Profit_MM	-0.002	-0.177***	0.065	-0.109***	0.056	-0.169**
	(0.053)	(0.041)	(0.051)	(0.040)	(0.098)	(0.070)
Liquid_MM	-0.0019	-0.002	0.000	-0.000	0.000	-0.000
	(0.00228)	(0.001)	(0.002)	(0.001)	(0.006)	(0.004)
Intangi_MM	0.0794***	-0.003	0.072***	0.000	0.066**	-0.049
	(0.0229)	(0.017)	(0.022)	(0.017)	(0.037)	(0.045)
Age_MM	-0.0200***	-0.021***	-0.017***	-0.018***	-0.013**	-0.016*
	(0.00420)	(0.003)	(0.004)	(0.003)	(0.005)	(0.009)
Div_MM	0.0400***	0.062***	0.045***	0.063***	0.047*	0.045**
	(0.0145)	(0.011)	(0.014)	(0.011)	(0.024)	(0.019)
Risk_MM	-0.125**	-0.129***	-0.183***	-0.154***	-0.115	-0.139**
	(0.0488)	(0.038)	(0.046)	(0.036)	(0.136)	(0.070)
Zscore_MM	-0.0332***	-0.018***	-0.034***	-0.019***	-0.056***	-0.027**
	(0.00493)	(0.003)	(0.004)	(0.003)	(0.014)	(0.013)
Cashflow_MM	-0.159**	-0.176***	-0.163**	-0.166***	-0.248**	-0.204**
	(0.0672)	(0.052)	(0.065)	(0.051)	(0.124)	(0.103)
Owner_MM	-0.000564**	0.000	-0.000**	0.000	-0.000	0.000
	(0.000248)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.267***	-0.191***	-0.198***	-0.159***	-0.444	-0.178
	(0.0654)	(0.050)	(0.062)	(0.048)	(0.364)	(0.228)
Year.FE	Y	Y	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y	Y	Y
Observations	6487	6487	6861	6862	6487	6487
R-squared	0.347	0.350	0.330	0.325		
F-stat	55.12	55.69	53.14	52.01		
Hausman tests						
No. of instruments					190	190
Hansen-test (p-value)					4.51e-13	2.68e-16
AR1 (p-value)					0.000278	0.0000397
AR2 (p-value)					0.724	0.413

8.3.2. Determinants of SOA: AIM Market Versus Main market

The second objective of the current study is to compare the effects of the four determinants (firm size, leverage deviation, financial flexibility, and growth – Section 4.5) of leverage Speed of Adjustment between Alternative Investment Market firms and Main market firms. This section provides the results for equation 5.27 (Section 5.4.4) using the baseline estimation OLS model for the full sample. The results are presented in Table 35. Subsequently, a robustness analysis is performed on the four indexes subsamples (AIM, FTSE100, FTSE250, and FTSE350), which is shown in Table 36.

8.3.2.1. Baseline estimation model – OLS robust (LSDV) using interaction terms

It can be seen that the model presented in Table 35 is an augmented model as shown in Table 34, which comprises the lagged dependent variable (L1. DV) for the estimate of Speed of Adjustment and three-way interaction terms between the four determinants of SOA, lagged leverage dependent variable, and the main market dummy. The four coefficients of these interaction terms are the key interest of the current study since they capture the moderating effect of main market listing status on the effects of the four factors on firm Speed of Adjustment. In other words, if those coefficients are statistically significant, it indicates that the effects of the four determinants of the Speed of Adjustment are different across the AIM firms and main market firms. More discussion can be found in the methodology Section 5.4.4.

Consistent with the findings obtained in Study 2 on the determinants on Speed of Adjustment (Chapter 7, Section 7.3.1), the effects of firm size and leverage deviation on SOA remain statistically significantly negative at 5% level or below ($\beta_{Size\_L1.DV}$ and $\beta_{Dis.LEV\_L1.DV} > 0$, BLEV and MLEV, p-value < 0.05). Thus, positive coefficients indicate that larger firms with a greater gap between their leverage targets tend to adopt slower SOA, i.e. the negative influences. However, such a negative effect of size on Speed of Adjustment is found to be stronger/larger for main market firms compared to AIM firms. The positive coefficient of the three-way interaction between size, lagged leverage, and main market dummy ($\beta_{Size*L1.DV*MM} = 0.02$ and 0.01, book and market SOA respectively) is significant at a 1% level. This indicates that larger firms adjust their leverage levels towards the target more slowly than smaller firms, and the marginal effect is found to be larger for main market firms. As discussed by Ozkan (2001), the Speed of Adjustment towards a target is determined by costs of deviation and costs of adjustment. The larger firm size acts as a favourable corporate trait in terms of lower insolvency risk, higher profitability, and greater creditability. Hence, this characteristic can lower the costs of deviation, causing firms to be less motivated to adjust their leverage level, which often is quite costly. Especially in the case of main market firms, the cost of deviation may have already

been lower than for Alternative Investment Market firms. With a larger firm size, these firms may be more discouraged in adjusting their capital structure.However, the moderating effect of the main market listing status is found to be significantly negative at a 1% level ($\beta_{Dis.Lev*L1.DV*MM}$ and $\beta_{Dis.Lev*L1.DV*MM}$ = -1.6 and -1.5, BLEV and MLEV, p-value < 0.01). This negative interactive coefficient indicates that for main market firms, the negative effect of leverage deviation on SOA is weaker. Noticeably, for the book SOA, the combination of the coefficients of Dis.Lev*L1.DV and Dis.Lev*L1.DV*MM is statistically insignificant (F-test statistic = 1.25, n.s). This indicates that for the book measure of SOA, leverage deviation has lost its effect on Speed of Adjustment for the main market. Although leverage deviation discourages AIM firms to adjust their SOA (slower SOA) due to higher costs of adjustment, this does not influence the Speed of Adjustment decision of main market firms. Nevertheless, for the market value of SOA, the combination of the coefficients of Dis.Lev*L1.DV and Dis.Lev*L1.DV*MM is still significantly positive at a 1% level (F-test statistic = 27.20). This implies that a firm's Speed of Adjustment reduces with leverage deviation, yet the effect is stronger for AIM firms than for main market firms. This is justifiable since AIM firms' financial characteristics are not as strong and solid as main market firms. Their costs of financing adjustment tend to be higher. Consequently, the further the leverage distance from the target, AIM firms are more discouraged to adjust their capital structure in comparison to main market firms.

Finally, the results also show that growth rate generally speeds up the Speed of Adjustment (SOA) of firms ($\beta_{Growth*L1.DV}$ = -0.03 for market SOA, p-value = 0.01). This indicates that firms with greater growth opportunities exhibit speedier leverage adjustment. To explain the finding, it is possible that higher growth opportunity increases the cost of deviating (due to higher risk level), and simultaneously reduces the cost of adjustment (better growth aspect is a favourable financial trait). The two aspects encourage firms to drive up their speed in achieving the target/optimal leverage. However, this factor has lost its effect for main market firms (F-statistic for $\beta_{Growth*L1.DV} + \beta_{Growth*L1.DV*MM}$ = 1.30, n.s). This is revealed by the magnitude of the positive coefficient of the interaction term between growth, lagged dependent variable, and the main market dummy ($\beta_{Growth*L1.DV*MM}$ = 0.04 for market SOA, p-value = 0.01).

Overall, out of the four investigated determinants of the Speed of Adjustment, the effects of firm size, leverage deviation, and growth opportunity on the SOA are found to be different across AIM firms and main market firms. In particular, the negative size/SOA association is

stronger for main market firms. However, the effects of leverage deviation (negative) and growth (positive) on the Speed of Adjustment are weaker for main market firms. Consequently, Hypothesis 19, "The Speed of Adjustment on AIM is statistically significantly different from that of the main market," is statistically supported. To further assure the findings, the subsequent section will discuss a robustness check by implementing the analyses of different index subsamples.

Table 35: Moderating Effects of Main Market Listing on Determinants of Speed of Adjustments

Table 35 reports the OLS estimation of dynamic panel data of the determinants of speed of structure for the whole sample comprising AIM firms, and firms on the main market (FTSE350) for the period from year 2007 to 2019. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **L1.DV** takes the 1-year lagged value of the dependent variable. The **Size* L1. DV, Dis.LEV * L1. DV, Flexib* L1. DV, and Growth*L1.DV are** the four interactions terms between the lagged dependent variables (either BLEV or MLEV measure) and (1) size, (2) leverage deviation (for BLEV/MLEV measure), (3) financial flexibility , and (4) growth. ***_L1.DV*MM** are the 4 three-way interaction capturing the moderating effect of main market on the determinants of speed of adjustment. **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. A firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation captures the distance between the firm current leverage level and its target/optimal leverage (**Dis.LEV**). Main_market denotes unity if the firm is listed on the main FTSE index and zero otherwise. ***_MM** are interaction terms between the main market variable and the 13 main explanatory variables being investigated in the current study. Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

VARIABLES	OLS robust	
	BLEV	MLEV
	(1)	(2)
L1. DV	0.262***	0.195***
	(0.066)	(0.020)
Size	0.004***	0.002**
	(0.001)	(0.001)
Tangibility	0.074***	0.069***
	(0.009)	(0.011)
Non-debt tax shield	0.168***	0.021
	(0.056)	(0.077)
Growth	-0.002***	-0.000
	(0.000)	(0.001)
Profitability	0.003***	0.001
	(0.000)	(0.001)
Liquidity	-0.069***	-0.172***
	(0.011)	(0.020)
Intangibility	0.041***	0.042***
	(0.007)	(0.011)

Age	0.004**	0.004**
	(0.001)	(0.002)
Div_Payout	0.001	0.001
	(0.005)	(0.006)
Risk	-0.028***	-0.021*
	(0.010)	(0.012)
Z_score	0.011	0.024
	(0.008)	(0.016)
Cash_flow	-0.020	-0.082**
	(0.014)	(0.041)
Owner_5	-0.000	-0.000
	(0.000)	(0.000)
GDP_G	0.001	-0.001
	(0.002)	(0.002)
CPI	-0.006	-0.001
	(0.005)	(0.005)
StockMV	0.000	0.000
	(0.000)	(0.000)
Crisis	-0.005	-0.019
	(0.022)	(0.021)
Dis.LEV	0.105***	0.055
	(0.009)	(0.037)
Flexib	-0.002***	-0.005
	(0.001)	(0.005)
Size* L1. DV	0.012**	0.017***
	(0.006)	(0.005)
Dis.LEV * L1. DV	1.709***	2.666***
	(0.094)	(0.215)
Flexib* L1. DV	0.001	-0.007
	(0.004)	(0.005)
Growth*L1. DV	-0.001	-0.026***
	(0.003)	(0.008)
Main_Market	0.098*	0.051
	(0.050)	(0.043)
Size_MM	-0.003	0.001
	(0.002)	(0.002)
Tangi_MM	0.037*	0.044**
	(0.021)	(0.019)
NDTS_MM	0.010	0.020
	(0.172)	(0.150)
Growth_MM	0.008***	0.001
	(0.002)	(0.002)
Profit_MM	-0.075	-0.041
	(0.049)	(0.043)
Liquid_MM	0.007**	0.002
	(0.002)	(0.002)
Intangi_MM	0.056**	0.063***
	(0.022)	(0.020)
Age_MM	-0.008**	-0.007**
	(0.003)	(0.003)
Div_MM	0.014	0.007
	(0.011)	(0.010)
Risk_MM	-0.137**	-0.130**
	(0.063)	(0.052)
Zscore_MM	-0.016***	-0.013***
	(0.005)	(0.004)
Cashflow_MM	-0.131*	-0.181**
	(0.076)	(0.071)
Owner_MM	-0.000	-0.000*
	(0.000)	(0.000)
Size* L1. DV*MM	0.021***	0.013**
	(0.005)	(0.005)
Dis.LEV * L1. DV*MM	-1.555***	-1.528***
	(0.159)	(0.215)
Flexib* L1. DV*MM	-0.002	-0.005

	(0.006)	(0.007)
Growth*L1. DV*MM	-0.000	0.035***
	(0.007)	(0.011)
Constant	-0.102*	-0.069
	(0.057)	(0.063)
Year.FE	Y	Y
Industry.FE	Y	Y
Country.FE	Y	Y
Observations	3231	3231
R-squared	0.809	0.824
F-stat	183.1	114.5

8.3.2.2. Robustness checks – Main Market subsamples

Table 36 presents results on the determinants of the Speed of Adjustment on each market index (AIM, FTSE100, FTSE250, and FTSE350) using the baseline OLS robust model. Looking at the interaction terms between the four determinants of Speed of Adjustment (size, leverage deviation, financial flexibility, and growth) and the lagged leverage, similar findings are obtained compared to the main findings (Section 8.3.2.1).

Firm size is found to be a significant determinant of the SOA with a negative influence realised (i.e. positive $\beta_{Size*L1.DV}$). Furthermore, the results also show that the coefficients of the interaction term are greater for the main market subsamples (FTSE100, FTSE250, and FTSE350). Consequently, the negative effect of size on the SOA is stronger for main market firms compared to Alternative Investment Market firms supporting Hypothesis 19. In the main findings discussed in Section 8.3.2.1 on the effect of leverage deviation on the SOA, the negative influence of this factor on the Speed of Adjustment is weaker for the main market firms. This once again is confirmed across the subsamples, especially, with such a moderating effect of the main market. The listing is driven by the FTSE250 ($\beta_{Dis.LEV*L1.DV} = 0.357$, column 5). The effect of leverage deviation on the SOA is much weaker for this index when compared to the AIM, largest 100 companies (FTSE 100), and largest 350 companies (FTSE 350).

For growth, a quite inconsistent result is reported such that growth opportunity only positively influences the Speed of Adjustment for main market firms but not for AIM firms. This finding is more justifiable since, for developed and mature firms listing in the main market, the growth opportunity is limited and hence, very favourable for firms. It acts as a valuable intangible asset for firms that can encourage firms to achieve their leverage target (lower cost of adjustment). Intriguingly, the financial flexibility factor was not found to be a significant determinant of the Speed of Adjustment throughout the thesis. Nevertheless, based on the current results, this factor is relevant for influencing the SOA for the main market. In particular, main market firms with greater financial flexibility tend to adopt a speedier leverage convergence rate ($\beta_{Flexib*L1.DV} < 0$ for the market measure of SOA, p-value <0.05, columns 4-6-8). This positive Flexib/SOA association is supported by various studies such as Clark et al. (2009), Aybar-Arias et al. (2012), Graham and Harvey (2001), and DeAngelo et al. (2010).

Overall, the robustness analysis confirms support of Hypothesis 19. In particular, differences in the effects of all four determinants of the Speed of Adjustment are obtained across AIM firms and Main market firms.

Table 36: Determinants of Speed of Adjustments for three Main Market Indexes

Table 36 reports the OLS estimation of dynamic panel data of the determinants of speed of adjustment for each main market index (AIM, FTSE100, FTSE250, and FTSE350) for the period from year 2007 to 2019. The two main dependent variables of the study are the book leverage ratio (**BLEV**) and the market leverage ratio (**MLEV**). Explanatory variables employed include **L1.DV** takes the 1-year lagged value of the dependent variable. The **Size* L1. DV, Dis.LEV * L1. DV, Flexib* L1. DV, and Growth*L1.DV are** the four interactions terms between the lagged dependent variables (either BLEV or MLEV measure) and (1) size, (2) leverage deviation (for BLEV/MLEV measure), (3) financial flexibility , and (4) growth. **Size** captures the firm size measured by the log value of total asset; **Tangibility** captures the firm tangibility measured by the proportion of net plant, property, and equipment to the total asset; **Profitability** captures the firm profitability value measured by the percentage of earnings before interest and taxes (EBIT) to total assets, i.e. returns of asset; **Growth** refers to the firm growth opportunity calculated as the ratio of market capitalisation to equity book value, **Non-debt tax shield** is calculated by dividing the total asset from the depreciation, depletion and amortization; **Liquidity** captures the firm's ability in meeting their short-term financial obligations which is calculated by the ratio of current asset to current liability; **Intangibility** refers to the proportion of a firm's values from intangible assets to total asset; **Age** captures the firm's age in years; **Div_Payout** captures the firm dividend pay-out policy, which is measured by dividends per share divided by earnings per share; **Risk** captures the firm operating risk measured by the standard deviation of the ratio of the firm's operating income before depreciation (EBITDA) to its sales value for the previous five years. **Zscore** captures the firm bankruptcy risk measured by the following equation: ((3.3 * EBIT)+ (1 * Net sales)+ (1.4 * Retained earnings)+ (1.2 * (Current asset - Current liabilities)) / (Total Asset)**, Owner_5** captures the total percentage of the top five shareholders' ownership; **Cash_flow** refers to the firm proportion of free cash flow to total asset; **GDP_G** captures the GDP growth of the firm's home country, **CPI** refers to the inflation rate of the firm's home country, **Crisis** refers to banking crisis dummy which denotes 1 if the firm's home country is experiencing financial crisis. A firm's financial flexibility **(Flexib)** captures its flexibility in adjusting the financing sources, measured by the logarithm value of the multiplication of the short-term debt to long-term debt ratio and the operating cash flow. A firm's leverage deviation captures the distance between the firm current leverage level and its target/optimal leverage. Both book and market leverage deviations are calculated denoted as **Dis.LEV.** Firm characteristics are winsorized at the 5% level. Robust standard errors in parentheses. Significant level is denoted with *** p<0.01, ** p<0.05, * p<0.1.

	AIM		**FTSE100**		**FTSE250**		**FTSE350**	
VARIABLES	**BLEV**	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**	**BLEV**	**MLEV**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
L1. DV	0.206***	0.221***	0.586**	0.628***	0.428***	0.459***	0.611***	0.595***
	(0.068)	(0.073)	(0.296)	(0.142)	(0.110)	(0.138)	(0.075)	(0.223)
Size* L1. DV	0.016***	0.0132*	0.040*	0.011**	0.010**	0.035***	0.006**	0.028*
	(0.006)	(0.006)	(0.023)	(0.004)	(0.004)	(0.005)	(0.003)	(0.016)
Dis.LEV * L1. DV	1.556***	2.008***	2.382***	0.352	0.357***	0.048	2.079***	1.683***
	(0.082)	(0.170)	(0.482)	(0.219)	(0.093)	(0.046)	(0.252)	(0.312)
Flexib* L1. DV	0.004	0.000	-0.006	-0.023*	0.003	-0.024*	0.001	-0.033**
	(0.004)	(0.004)	(0.015)	(0.013)	(0.008)	(0.012)	(0.005)	(0.016)
Growth*L1. DV	-0.000	-0.005	-0.046***	-0.009	-0.011**	-0.023***	-0.018***	-0.001
	(0.003)	(0.003)	(0.009)	(0.008)	(0.006)	(0.008)	(0.005)	(0.007)
Size	0.006***	0.005***	0.004**	0.003	0.008**	0.001	0.004*	0.004
	(0.001)	(0.001)	(0.002)	(0.004)	(0.003)	(0.004)	(0.002)	(0.002)
Tangibility	0.090***	0.074***	0.050*	0.026	0.040**	0.031	0.030*	0.019
	(0.008)	(0.007)	(0.026)	(0.031)	(0.020)	(0.023)	(0.016)	(0.015)
Non-debt tax shield	0.002*	0.002**	0.356	0.220	-0.121	-0.302	0.225	0.122
	(0.001)	(0.001)	(0.317)	(0.276)	(0.225)	(0.252)	(0.140)	(0.126)
Growth	-0.001**	-0.000	0.030***	0.006*	0.014***	0.008***	0.017***	0.004***
	(0.000)	(0.000)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)
Profitability	0.000***	0.045***	-0.010	0.004	0.002	0.004	0.001	-0.000
	(0.000)	(0.008)	(0.006)	(0.005)	(0.004)	(0.005)	(0.002)	(0.002)
Liquidity	-0.001***	-0.002***	-0.206**	-0.356***	-0.227***	-0.384***	-0.161***	-0.145***
	(0.000)	(0.000)	(0.081)	(0.077)	(0.064)	(0.072)	(0.040)	(0.036)
Intangibility	0.051***	0.040***	-0.089**	-0.029	-0.004	-0.005	-0.037**	-0.012
	(0.007)	(0.005)	(0.040)	(0.034)	(0.026)	(0.029)	(0.018)	(0.016)
Age	0.004***	0.003**	-0.001	-0.003	-0.001	-0.000	-0.003	-0.003*
	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Div_Payout	-0.003	-0.011**	0.021**	0.015	0.007	-0.007	0.024***	0.009
	(0.006)	(0.005)	(0.010)	(0.009)	(0.009)	(0.010)	(0.008)	(0.007)
Risk	-0.000*	-0.000*	-0.335**	-0.168	-0.123	-0.167*	-0.198***	-1.111**
	(0.000)	(0.000)	(0.136)	(0.119)	(0.087)	(0.098)	(0.051)	(0.542)
Z_score	-0.023***	-0.003	-0.481***	-0.180*	-0.116	-0.034	-0.376***	-0.010***
	(0.006)	(0.005)	(0.120)	(0.106)	(0.083)	(0.092)	(0.063)	(0.003)
Cash_flow	-0.013	-0.010	0.047	-0.114	-0.143*	-0.245***	-0.129**	-0.203***
	(0.012)	(0.010)	(0.103)	(0.091)	(0.082)	(0.093)	(0.060)	(0.056)
Owner_5	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000*

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP_G	0.009	0.003	-0.201**	-0.097	-0.002	-0.005**	-0.001	-0.002
	(0.015)	(0.013)	(0.087)	(0.080)	(0.002)	(0.002)	(0.002)	(0.002)
CPI	0.007	0.005	0.024	0.019	-0.005	0.000	-0.007	0.003
	(0.012)	(0.010)	(0.024)	(0.022)	(0.006)	(0.007)	(0.006)	(0.008)
StockMV	-0.136	-0.079	0.000	-0.001	0.001	0.001	0.000	-0.000
	(0.182)	(0.152)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Crisis	-0.020	-0.021	-0.108	0.046	-0.024	-0.005	-0.034	-0.025
	(0.038)	(0.032)	(0.104)	(0.092)	(0.031)	(0.035)	(0.029)	(0.026)
Dis.LEV	0.112***	0.245***	-0.449***	0.101	0.083***	-0.006	-0.509***	-0.114*
	(0.010)	(0.028)	(0.133)	(0.080)	(0.024)	(0.012)	(0.073)	(0.064)
Flexib	-0.066***	-0.051***	0.001	0.001	-0.023*	0.000	-0.033***	-0.003**
	(0.012)	(0.010)	(0.004)	(0.003)	(0.013)	(0.003)	(0.012)	(0.001)
Constant	0.620	0.355	0.702**	0.326	0.024	0.079	0.171**	0.076
	(0.855)	(0.714)	(0.320)	(0.288)	(0.095)	(0.098)	(0.079)	(0.068)
Year.FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry.FE	Y	Y	Y	Y	Y	Y	Y	Y
Country.FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	3169	3171	325	325	369	369	769	744
R-squared	0.769	0.779	0.867	0.820	0.873	0.828	0.864	0.848
F-stat	195.8	207.9	48.91	34.31	47.02	32.87	93.20	78.80

CHAPTER 9: CONCLUSION

9.1 Overview of the thesis

The primary aim of this study is to examine the capital structure dynamics, including the leverage level and the Speed of Adjustment towards target leverage of Alternative Investment Market firms and how these financing decisions are different between AIM firms and main market firms. The specific research objectives of the thesis are the following:

1. Research Study 1: to examine the determinants of leverage levels of Alternative Investment Market firms.
2. Research Study 2: to examine the determinants of the Speed of Adjustment toward target leverage (leverage SOA) of Alternative Investment Market firms.
3. Research Study 3: to examine the differences in determinants of leverage and Speed of Adjustment between Alternative Investment Market and Main market firms. In other words, to examine the moderating effects of the Alternative Investment Market listing status on those capital dynamic constructs.

To implement the three empirical studies, the thesis employed the main set of data comprised of AIM and main market (FTSE 100, FTSE 250, and FTSE 350) listed firms covering the period from 2006 to 2019, taking into account the impacts of the 2007–2019 crisis. The final sample size for AIM comprises 7,751 firm-year observations; for largest 100 companies (FTSE 100) it is 1,263 firm-year observations; for largest 250 companies (FTSE 250) it is 2,793 firm-year observation; and for largest 350 companies (FTSE 350) it is 4,056 firm-year observations. The baseline statistical method being employed is the OLS robust standard error together with a number of robustness checks to consider potential issues of endogeneity. Those robustness estimation models are a lagged approach, fixed effect, and GMM. In brief, the thesis has provided a greater insight into capital structure decisions of AIM firms that have not been covered by the extant literature. It is important to examine the topic on Alternative Investment Market firms exclusively due to the many unique characteristics they exhibit, including their prestigious LSE-listed status for SMEs, young and fast-growing firms, a double governance layer with the existence of nominated advisors, international profile, and a block-holder ownership structure.

9.2 Contributions and findings of the research

This study makes several academic contributions. The first contribution of the study is to the literature by providing empirical evidence on the nature of capital structure decisions and factors affecting capital structure decisions in firms listed in the AIM. The Alternative Investment Market has different characteristics, governance, and regulatory structure from the main market, and hence the focus on the Alternative Investment Market brings new insight into the financing decisions of those prestigious public-listed SMEs. Regarding this, the results of the study are similar to other results from previous studies, despite the firms operating in the AIM having unique characteristics compared to those operating in the Main markets such as the London Stock Exchange.

The results of this study showed that there is a positive relationship between firm leverage and size, which is similar to the results of other studies (e.g. Antoniou et al., 2008; D'Amato, 2019; Dang & Garrett, 2015; Drobetz et al., 2013; Frank & Goyal, 2009; Gonzalez, 2015). The results also showed that there is a positive relationship between tangibility and firm leverage. The results are similar to those of other studies (e.g. Andres et al., 2014; Benkraiem et al., 2013; Dang & Garrett, 2015; Degryse et al., 2012; Frank & Goyal, 2008; Frank & Goyal, 2009; Harris & Raviv, 1991; Heyman et al., 2008; Huang & Song, 2006). On the other hand, the results of the study showed that there is a negative relationship between leverage and growth (e.g. Arsov & Naumoski, 2016; Billett et al., 2007; Frank & Goyal 2009; Fosu 2013; Gaud et al., 2005; Huang 2006; Kayo & Kimura 2011; Rajan and Zingales, 1995; Shah & Khan 2007), operating risk, bankruptcy risk (e.g. Bradley et al., 1984; Cassar & Holmes, 2003; D'Amato, 2019; Kester, 1986; Michaelas et al., 1999; Titman & Wessels, 1988), liquidity (e.g. D'Amato, 2019; Khemiri & Noubbigh, 2018 Morellec, 2001; Myers & Rajan, 1998; Ozkan, 2001), and dividend pay-out policy (Antoniou et al, 2008; Bokpin, 2009; Chen & Steiner, 1999; Dang & Garrett, 2015; Frank & Goyal, 2007; Lemmon et al., 2008; Rozeff, 1982).

The second contribution in literature is in the methods used. Previous studies did not consider using more than 2 estimation models to investigate the determinants of capital structure in order to achieve a more reliable and valid result. However, this study used 4 estimation methods, and sought to solve for endogeneity by ensuring that only results that were significant in more than 3 estimation models were concluded to be the real results. In this regard, by using the baseline OLS robust estimation together with the lagged approach, the fixed effect, and the system

GMM, the results show that all investigated factors that significantly influence the firm decision on capital structure, i.e. the debt adoption.

The third contribution of this study to literature is in providing evidence for the assumptions of the trade-off theory, and the pecking order theory in regard to the determinants of capital structure. It is noticeable that a large share of the findings obtained are in support of the theoretical framework developed under the trade off theory. These findings are size (+), tangibility (+), growth opportunity (-), operating risk (-), and bankruptcy risk (-). According to the trade-off theory, larger firms tend to be more diversified and have a greater and more solid market standing with higher debt rating due to their lower exposure to insolvency. Accordingly, they have more access to external debt funding at more favourable rates, hence the positive relationship between size and leverage. According to the trade-off theory the higher possession of fixed assets is analogous to a firm's higher collateralisability, and hence, a lower possibility of moral hazard. Consequently, more tangible firms can have better access to the debt market at better rates, hence the positive relationship between tangibility and leverage.

The trade-off theory also argues for a negative relationship between growth and leverage since quickly growing firms tend to increase their risk-taking levels, leading to higher insolvency risks. These signal higher bankruptcy costs, causing a lower level of debt adoption. The trade-off theory argues for a negative relationship between liquidity and leverage since that firms with higher liquidity tend to expose themselves to higher risk in exchange for higher yields. The reason is that once firms exhibit a decent level of buffering resources in terms of higher liquidity, they tend to possess more capacity for taking on high-risk projects. This may be more applicable for AIM firms such that the fast-growing nature of AIM firms may encourage them to take on risky yet profitable projects to enhance their growth rates, especially, when firms possess a great capacity to take on risk (e.g. a higher liquidity cushion). Lastly, according to the trade-off theory, there is a negative relationship between risk and leverage since insolvency higher risks lead to lower debt capacity and hence, a lower leverage adoption.

The remaining firm characteristics and their influences on firm leverage, as shown by this study, provide evidence for the pecking order theory, and the agency theory. The negative influence of dividend pay-out on leverage is supported by the pecking order theory and agency theory.

In the second empirical chapter, the research contributes to the literature by providing empirical evidence on the factors that influence the Speed of Adjustment towards a target leverage ratio in the Alternative Investment Market. Although the financing literature is crowded with studies investigating determinants of leverage decision, the focus on leverage Speed of Adjustment remains far from being sufficient. Therefore, the second empirical study contributes to the literature by providing evidence on factors that affect the leverage SOA for firms operating in the AIM. Four determinants as suggested in previous studies were tested. These are firm size, leverage deviation, financial flexibility, and growth opportunity. The results show that the SOA of Alternative Investment Market firms is significantly impacted by firm size in a negative direction. The finding can be justified based on the lower costs of leverage deviation for larger AIM firms, which acts as additional assurance for investors in terms of the firms' market standing and risk of financial distress. The lower pressure from the external stakeholders leads to the lower incentive and speed of leverage convergence. Furthermore, the leverage deviation measure signifies how far away the firm's leverage ratio is from its target one. The finding indicates that the further the firm's leverage from the target the slower the Speed of Adjustment. This may be because it would be more costly for firms to reach the target. Therefore, the higher cost of adjustment can demotivate firms to adjust. A study by Aybar-Arias et al. (2012) examining the Speed of Adjustment of Small-Medium Firms (SMEs) reported the same result on decreasing the SOA as the deviation distance is greater. Generally, the analyses indicate that firm size and leverage deviation negatively affect the SOA. In other words, larger firms with a greater leverage gap to their target tend to be more reluctant in achieving the target, i.e. a slower SOA.

In the third empirical chapter, the study contributes to literature by providing empirical evidence on the differences in the determinants of leverage and leverage Speed of Adjustment that exist between Alternative Investment Market and Main markets. Overall, the findings indicate that compared to the AIM firms, the positive effects of firm size, tangibility, intangibility, and ownership concentration and the negative effects of operating risk, bankruptcy risk, and cash flow ratio on leverage, are stronger for main market firms. Furthermore, the negative effect of growth on leverage becomes positive for main market firms, and the positive effect of profitability on leverage becomes negative for main market firms. Besides, the negative influence of dividend pay-out on leverage has lost its effect for main market firms. In other words, the dividend pay-out ratio is not a determinant of main market firms' capital structure. Consequently, the evidence has concluded that Hypothesis 18's stated

"Influences of the determinants of capital structure are heterogeneous between Alternative Investment Market and main market" is strongly supported. Furthermore, regarding the four investigated determinants of SOA, the effects of firm size, leverage deviation, and growth opportunity on Speed of Adjustment are found to be different across AIM firms and main market firms. In particular, the negative size/SOA association is stronger for main market firms. However, the effects of leverage deviation (negative) and growth (positive) on the SOA are weaker for main market firms. Consequently, Hypothesis 19, "The Speed of Adjustment on Alternative Investment Market is statistically significantly different from that of the main market,*"* is statistically supported. All the above findings are confirmed by the lagged OLS and the system GMM.

9.3. Implications, limitations, and future research:

The findings and conclusions of this thesis provide practical implications for AIM SMEs directly and UK main market. It helps the investors and other market participants, e.g. the policymakers, understand the differences in financing decisions made by main market firms and submarket firms, in particular, submarkets with similar characteristics to Alternative Investment Market firms. Furthermore, the findings also give organizations information that they can use to make informed decisions on their preferences for different sources of finance available in the market. Through understanding the various factors that affect the leverage of the company and the SOAs in either the AIM SMEs or UK main market firms, they can make informed decisions on their financing decisions. An informed decision would involve considering the optimal balance between debt and equity that will enable the firm to perform its operations at the least possible cost of capital.

Although the thesis has been conducted with utmost care and consideration, the study has two main limitations. The first limitation is that the study only uses two measures of company leverage. It is important to use all company measures of leverage to come up with more conclusive results by comparing the results of different company leverages. The second limitation is that findings are exclusively for AIM firms, and it may be challenging to generalise these findings for all firms listed on submarkets of a stock exchange.

Based on these limitations, there are several recommendations for future research. The first recommendation is that in future more studies should be conducted using different measures of leverage from those used in this study. This will help to create more reliable and valid results in regard to determinants of capital structure in the AIM market. In addition to this, future

research may consider comparing the results of the AIM firms with those of other submarkets. This is because different submarkets may exhibit different characteristics and regulatory frameworks. Those differences can alter the findings. Also, Further research also needs to be conducted on this topic, using primary data. This study used secondary data only and including primary data would help to increase the opportunity for having more comprehensive research. Lastly, given the advent of COVID-19, it is important to conduct a further study on the determinants of the capital structure of firms during periods of uncertainty due to risks such as pandemics. This would help to understand the effect of COVID-19 on capital structure decisions.

REFERENCES

Abor, J. & Biekpe, N. (2009) How do we explain the capital structure of SMEs in sub-Saharan Africa?. *Journal of Economic Studies*. 36 (1). pp. 83-97.

Acedo-Ramírez, M. & Ruiz-Cabestre, F. (2014) Determinants of Capital Structure: United Kingdom Versus Continental European Countries. *Journal of International Financial Management & Accounting*. 25 (3). pp. 237-270.

Acedo-Ramírez, M. & Ruiz-Cabestre, F. (2016) IPO characteristics and underprincing in the Alternative Investment Market. *Applied Economics Letters*. 24 (7). pp. 485-489.

Adedeji, A. (1998). Does the pecking order hypothesis explain the dividend payout ratios of firms in the UK? *Journal of Business, Finance & Accounting*, *25*(9-10), pp. 1127-1155.

Akbar, S., Kharabsheh, B., Poletti-Hughes, J. & Shah, S. (2017) Board structure and corporate risk taking in the UK financial sector. *International Review of Financial Analysis*. 50. pp. 101-110.

Almeida, H. & Campello, M. (2007) Financial Constraints, Asset Tangibility, and Corporate Investment. *Review of Financial Studies*. 20 (5). pp. 1429-1460.

Altman, E. (1968) financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*. 23 (4). pp. 589-609.

Alufar Bokpin, G. (2009) Macroeconomic development and capital structure decisions of firms. *Studies in Economics and Finance*. 26 (2). pp. 129-142.

Alves, P., Couto, E. & Francisco, P. (2015) Board of directors' composition and capital structure. *Research in International Business and Finance*. 35. pp. 1-32.

Andres, C., Cumming, D., Karabiber, T. & Schweizer, D. (2014) Do markets anticipate capital structure decisions? — Feedback effects in equity liquidity. *Journal of Corporate Finance*. 27. pp. 133-156.

Antoniou, A., Guney, Y. & Paudyal, K. (2006) The Determinants of Debt Maturity Structure: Evidence from France, Germany and the UK. *European Financial Management*. 12 (2). pp. 161-194.

Antoniou, A., Guney, Y. & Paudyal, K. (2008).The determinants of corporate debt ownership structure: evidence from market-based and bank-based economies. *Managerial Finance*, 34(12), pp. 821 – 847.

Arellano, M. & Bond, S. (1991) Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*. 58 (2). p. 277.

Arellano, M. & Bover, O. (1995) Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*. 68 (1). pp. 29-51.

Arsov, S., & Naumoski, A. (2016). Determinants of capital structure: An empirical study of companies from selected post-transition economies. *Journal of Economics and Business*, 34(1), 119-146.

Awan, H. M., Bhatti, M. I., Ali, R. & Qureshi, A. (2010). How growth opportunities are related to corporate leverage decisions? *Investment Management and Financial Innovations*, 7(1), pp. 90-97.

Aybar-Arias, C., Casino-Martínez, A. & López-Gracia, J. (2011) On the adjustment speed of SMEs to their optimal capital structure. *Small Business Economics*. 39 (4). pp. 977-996.

Baghai, R. P., Servaes, H., & Tamayo, A. (2014). Have rating agencies become more conservative? Implications for capital structure and debt pricing. *The Journal of Finance*, 69(5), 1961-2005.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *The Journal of Finance*, 57(1), 1-32.

Banerjee, S., Dasgupta, S., & Kim, Y. (2008). Buyer–supplier relationships and the stakeholder theory of capital structure. *The Journal of Finance*, 63(5), 1-52.

Banerjee, S., Heshmati, A. & Wihlborg, C. (2004). The dynamics of capital structure. SSE/EFI Monetary Integration, Markets and regulation. *Research in Banking and Finance*, 4, pp. 275–297.

Bansal, R., Coleman, W. J., & Lundblad, C. T. (2010, November). Endogenous liquidity supply. In *AFA 2011 Denver Meetings Paper*.

Barclay, M. J., Morellec, E. & Smith, C. W. (2006). On the debt capacity of growth options. *Journal of Business*, 79, pp. 37–59.

Barclay, M., Marx, L. & Smith, C. (2003) The joint determination of leverage and maturity. *Journal of Corporate Finance*. 9 (2). pp. 149-167.

Bathala, C., Moon, K. & Rao, R. (1994) Managerial Ownership, Debt Policy, and the Impact of Institutional Holdings: An Agency Perspective. *Financial Management*. 23 (3). p. 38.

Belkhir, M., Maghyereh, A. & Awartani, B. (2016) Institutions and corporate capital structure in the MENA region. *Emerging Markets Review*. 26. pp. 99-129.

Benito, A. (2003). The Capital Structure Decisions of Firms: Is There A Pecking Order? *Bank of Spain, Document 0310.*

Benkraiem, R. & Gurau, C. (2013) How do corporate characteristics affect capital structure decisions of French SMEs?. *International Journal of Entrepreneurial Behavior & Research*. 19 (2). pp. 149-164.

Berger, A. & Udell, G. (1995) Relationship Lending and Lines of Credit in Small Firm Finance. *The Journal of Business*. 68 (3). p. 351.

Berger, A. & Udell, G. (1998) The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. *SSRN Electronic Journal*.

Berger, P., Ofek, E., & Yermarck, D. (1997) Managerial Entrenchment and Capital Structure Decisions. *The Journal of Finance*. 52 (4). pp. 1411-1438.

Berk, J., Stanton, R. & Zechner, J. (2008) Human Capital, Bankruptcy and Capital Structure. *SSRN Electronic Journal*.

Bernasconi, M., Marenzi, A. & Pagani, L. (2005) Corporate Financing Decisions and Non-Debt Tax Shields: Evidence from Italian Experiences in the 1990s. *International Tax and Public Finance*. 12 (6). pp. 741-773.

Bertrand, M. & Schoar, A. (2003) Managing with Style: The Effect of Managers on Firm Policies. *The Quarterly Journal of Economics*. 118 (4). pp. 1169-1208.

Bevan, A. & Danbolt, J. (2002) Capital structure and its determinants in the UK - a decompositional analysis. *Applied Financial Economics*. 12 (3). pp. 159-170.

Bevan, A. & Danbolt, J. (2004) Testing for inconsistencies in the estimation of UK capital structure determinants. *Applied Financial Economics*. 14 (1). pp. 55-66.

Bhaduri, S. (2002) Determinants of corporate borrowing: Some evidence from the Indian corporate structure. *Journal of Economics and Finance*. 26 (2). pp. 200-215.

Bhama, V., Jain, P. & Yadav, S. (2016) Testing the pecking order theory of deficit and surplus firms: Indian evidence. *International Journal of Managerial Finance*. 12 (3). pp. 335-350.

Billett, M., Garfinkel, J. & Yu, M. (2017) The effect of asymmetric information on product market outcomes. *Journal of Financial Economics*. 123 (2). pp. 357-376.

Billett, M., King, T. & Mauer, D. (2007) Growth Opportunities and the Choice of Leverage, Debt Maturity, and Covenants. *The Journal of Finance*. 62 (2). pp. 697-730.

Bolek, M. & Lyroudi, K. (2015) Is There Any Relation between Intellectual Capital and the Capital Structure of a Company? The Case of Polish Listed Companies. *e-Finanse*. 11 (4). pp. 23-33..

Bonfim, D. & Antão, P. (2012). The dynamics of capital structure decisions. Banco De PortugalWorking Paper Series No. 6. *Economics and Research Department, Banco de Portugal.*

Booth, L., Aivazian, V., Demirguc-Kunt, A. & Maksimovic, V. (2001) Capital Structures in Developing Countries. *The Journal of Finance*. 56 (1). pp. 87-130.

Boubakari, A. & Jin, D. (2010) The Role of Stock Market Development in Economic Growth: Evidence from Some Euronext Countries. *International Journal of Financial Research*. 1 (1).

Boudry, W., Kallberg, J. & Liu, C. (2010) An Analysis of REIT Security Issuance Decisions. *Real Estate Economics*. 38 (1). pp. 91-120.

Brailsford, T., Oliver, B. & Pua, S. (2002) On the relation between ownership structure and capital structure. *Accounting and Finance*. 42 (1). pp. 1-26.

Brusov, P., Filatova, T., Orehova, N. & Brusova, N. (2011) Weighted average cost of capital in the theory of Modigliani–Miller, modified for a finite lifetime company. *Applied Financial Economics*. 21 (11). pp. 815-824.

Byoun, S. (2008) How and When Do Firms Adjust Their Capital Structures toward Targets?. *The Journal of Finance*. 63 (6). pp. 3069-3096.

Campello, M. & Giambona, E. (2013) Real Assets and Capital Structure. *Journal of Financial and Quantitative Analysis*. 48 (5). pp. 1333-1370.

Caporale, G. M., Howells, P. G. & Soliman, A. M. (2004). Stock market development and economic growth: the causal linkage. *Journal of economic development*, 29(1), pp. 33-50.

Carpentier, C., L'Her, J. & Suret, J. (2010) Stock exchange markets for new ventures. *Journal of Business Venturing*. 25 (4). pp. 403-422.

Caselli, F., Esquivel, G. & Lefort, F. (1996) Reopening the convergence debate: A new look at cross-country growth empirics. *Journal of Economic Growth*. 1 (3). pp. 363-389.

Cassar, G. & Holmes, S. (2003) Capital structure and financing of SMEs: Australian evidence. *Accounting and Finance*. 43 (2). pp. 123-147.

Céspedes, J., González, M. & Molina, C. (2010) Ownership and capital structure in Latin America. *Journal of Business Research*. 63 (3). pp. 248-254.

Chandrasekhar, C.V. (2012). Determinants of capital structure in the Nigerian Listed firms. *International Journal of Advanced Research in Management and social sciences*, 1(2), pp.108 – 133.

Chang, X. & Dasgupta, S. (2009) Target Behavior and Financing: How Conclusive Is the Evidence?. *The Journal of Finance*. 64 (4). pp. 1767-1796.

Chang, Y., Chou, R. & Huang, T. (2014) Corporate governance and the dynamics of capital structure: New evidence. *Journal of Banking & Finance*. 48. pp. 374-385.

Charalambakis, E. & Psychoyios, D. (2012) What do we know about capital structure? Revisiting the impact of debt ratios on some firm-specific factors. *Applied Financial Economics*. 22 (20). pp. 1727-1742.

Chatzinas, G. & Papadopoulos, S. (2018) Trade-off vs. pecking order theory: evidence from Greek firms in a period of debt crisis. *International Journal of Banking, Accounting and Finance*. 9 (2). p. 170.

Chen, C. & Steiner, T. (1999) Managerial Ownership and Agency Conflicts: A Nonlinear Simultaneous Equation Analysis of Managerial Ownership, Risk Taking, Debt Policy, and Dividend Policy. *The Financial Review*. 34 (1). pp. 119-136.

Chen, J. (2004) Determinants of capital structure of Chinese-listed companies. *Journal of Business Research*. 57 (12). pp. 1341-1351.

Chen, J., Ezzamel, M. & Cai, Z. (2011) Managerial power theory, tournament theory, and executive pay in China. *Journal of Corporate Finance*. 17 (4). pp. 1176-1199.

Cheng, S. & Shiu, C. (2007) Investor protection and capital structure: International evidence. *Journal of Multinational Financial Management*. 17 (1). pp. 30-44.

Cheng, S., Nagar, V. & Rajan, M. (2004) Identifying Control Motives in Managerial Ownership: Evidence from Antitakeover Legislation. *Review of Financial Studies*. 18 (2). pp. 637-672.

Chung, H., Judge, W. & Li, Y. (2015) Voluntary disclosure, excess executive compensation, and firm value. *Journal of Corporate Finance*. 32. pp. 64-90.

Claessens, S., Djankov, S., Fan, J. & Lang, L. (2002) Disentangling the Incentive and Entrenchment Effects of Large Shareholdings. *The Journal of Finance*. 57 (6). pp. 2741-2771.

Clark, B., Francis, B. & Hasan, I. (2009) Do Firms Adjust Toward Target Capital Structures? Some International Evidence. *SSRN Electronic Journal*.

Clausen, S. & Hirth, S. (2016) Measuring the value of intangibles. *Journal of Corporate Finance*. 40. pp. 110-127.

Cole, R. (2013) What Do We Know about the Capital Structure of Privately Held US Firms? Evidence from the Surveys of Small Business Finance. *Financial Management*. 42 (4). pp. 777-813.

Colombelli, A. (2010) Alternative Investment Market: A Way to Promote Entrepreneurship. *Journal of Industry, Competition and Trade*. 10 (3-4). pp. 253-274.

Cook, D. & Tang, T. (2010) Macroeconomic conditions and capital structure adjustment speed. *Journal of Corporate Finance*. 16 (1). pp. 73-87.

Cooley, T. & Quadrini, V. (2001) Financial Markets and Firm Dynamics. *American Economic Review*. 91 (5). pp. 1286-1310.

D'Amato, A. (2019) Capital structure, debt maturity, and financial crisis: empirical evidence from SMEs. *Small Business Economics*. 55 (4). pp. 919-941.

Dang, V. & Garrett, I. (2015) On corporate capital structure adjustments. *Finance Research Letters*. 14. pp. 56-63.

Dang, V., Kim, M. & Shin, Y. (2012) Asymmetric Capital Structure Adjustments: New Evidence from Dynamic Panel Threshold Models. *SSRN Electronic Journal*.

Daskalakis, N. & Psillaki, M. (2008). Do country or firm factors explain capital structure? Evidence from SMEs in France and Greece. *Applied Financial Economics*, 18(2), pp. 87–97.

Davenport, M. (1971). Leverage and the cost of capital: some tests using British data. *Economica*, 38(150), pp. 136–162.

De Jong A. & Dijk R.V. (2007). Determinants of leverage and agency problems: a regression approach with survey data. *European Journal of Finance*, 13(6), pp. 565-593.

De Jong, A., Kabir, R. & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country-specific determinants. *Journal of Banking & Finance*, 32(9), pp.1954-1969.

DeAngelo, H. & Masulis, R. (1980). Optimal capital structure under corporate and personal taxation. *Journal of Financial Economics,* 8, pp. 3-29.

DeAngelo, H. & Roll, R. (2015). How stable are corporate capital structures? *The Journal of Finance*, 70(1), pp. 373-418.

DeAngelo, H., DeAngelo, L. & Whited, T. M. (2011). Capital structure dynamics and transitory debt. *Journal of financial economics*, *99*(2), pp.235-26.

Deesomsak, R., Paudyal, K. & Pescetto, G. (2004). The determinants of capital structure: evidence from the Asia Pacific region. Journal of multinational financial management, 14(4-5), pp.387-405.

Degryse, H., de Goeij, P. & Kappert, P. (2012). The impact of firm and industry characteristics on small firms' capital structure. Small Business Economics, 38 (4), pp. 431-447.

Delcoure, N. (2007). The determinants of capital structure in transitional economies. *International Review of Economics and Finance*, 16(3), pp. 400-415.

Demirgüç-Kunt, A. & Maksimovic, V. (1999). Institutions, Financial Markets and Firm Debt Maturity, *Journal of Financial Economics*, 54, pp. 295-336.

Demirgüç-Kunt, A., Peria, M. S. M. & Tressel, T. (2020). The global financial crisis and the capital structure of firms: was the impact more severe among SMEs and nonlisted firms? *J. Corp. Finance,* 60 (101514).

Devos, E., Shofiqur, R. & Desmond, T. (2017). Debt covenants and the speed of capital structure adjustment. *Journal of Corporate Finance,* 45, pp. 1–18.

Dewaelheyns, N. & Van Hulle, C. (2010). Internal capital markets and capital structure: bank versus internal debt. *European Financial Management*, 16, pp. 345–73.

Dollinger, M. J. (1995). Entrepreneurship, Strategies and Resources. *Wellesley, MA: Irwin, Babson College*, pp. 131-144.

Doukas, J. A. & Hoque, H. (2016). Why firms favour the AIM when they can list on main market? *Journal of International Money and Finance*, 60, pp.378-404.

Drobetz, W. & Wanzenried, G. (2006). What determines the speed of adjustment to the target capital structure? *Applied Financial Economics*, 16, pp. 941–958.

Drobetz, W., Dirk, C. S. & Henning, S. (2015). Heterogeneity in the Speed of Capital Structure Adjustment across Countries and over the Business Cycle. *European Financial Management*, 21, pp. 936–73.

Drobetza, W., Gounopoulos, D., Merikas, A. & Schröder, H. (2013). Capital structure decisions of globally-listed shipping companies. *Transportation Research Part E: Logistics and Transportation Review*, 52(1), pp. 49-76.

Du, J. & Dai, Y. (2005). Ultimate corporate ownership structure and capital-structures: evidence from East Asian economies. *Corporate Governance*, 13(1), pp. 60-71.

Elsas, R., Flannery, M. J. & Garfinkel, J. A. (2014). Financing major investments: Information about capital structure decisions. *Review of Finance*, *18*(4), pp.1341-1386.

Espenlaub, S., Khurshed, A. & Mohamed, A. (2012). IPO Survival in a Reputational Market. *Journal of Business Finance & Accounting*, 39(3), pp.427-463.

Fama, E. (2012) Capital Structure Choices. *Critical Finance Review*. 1 (1). pp. 59-101.

Fama, E. & French, K. (2002) Testing Trade-Off and Pecking Order Predictions About Dividends and Debt. *Review of Financial Studies*. 15 (1). pp. 1-33.

Fama, E. & French, K. (2005) Financing decisions: who issues stock?. *Journal of Financial Economics*. 76 (3). pp. 549-582.

Fama, E. & Jensen, M. (1983) Agency Problems and Residual Claims. *The Journal of Law and Economics*. 26 (2). pp. 327-349.

Fama, E. F., Miller, M.H. & Miller, M. (1972). The theory of finance. *Dryden Press*.

Fan, J., Titman, S. & Twite, G. (2011) An International Comparison of Capital Structure and Debt Maturity Choices. *Journal of Financial and Quantitative Analysis*. 47 (1). pp. 23-56.

Farinha, J., Mateus, C. & Soares, N., (2018). Cash holdings and earnings quality: Evidence from the main and alternative UK markets. *International Review of Financial Analysis*, 56, pp.238–252.

Faulkender, M. & Petersen, M.A., (2005). Does the source of capital affect capital structure? *Review of Financial Studies*, 19(1), pp.45–79.

Fauver, L. & McDonald, M.B., (2015). Culture, agency costs, and governance: International evidence on capital structure. *Pacific-Basin Finance Journal*, 34, pp.1–23.

Feng, Z., Ghosh, C. & Sirmans, C.F., (2007). On the capital structure of Real Estate Investment Trusts (reits). *The Journal of Real Estate Finance and Economics*, 34(1), pp.81–105.

Fitzgerald, J. & Ryan, J. (2019). The impact of firm characteristics on speed of adjustment to target leverage. *A UK study: Applied Economics*, 51 (3), pp.315-327.

Flannery, M.J. & Hankins, K.W., (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance*, 19, pp.1–19.

Flannery, M.J. & Rangan, K.P., (2006). Partial adjustment toward Target Capital Structures. *Journal of Financial Economics*, 79(3), pp.469–506.

Forte, D., Barros, L.A. & Nakamura, W.T., (2013). Determinants of the capital structure of small and medium sized Brazilian enterprises. *BAR - Brazilian Administration Review*, 10(3), pp.347–369.

Fosu, S. et al., (2016). Information asymmetry, leverage and firm value: Do crisis and growth matter? *International Review of Financial Analysis*, 46, pp.140–150.

Fosu, S., (2013). Capital Structure, product market competition and firm performance: Evidence from South Africa. *The Quarterly Review of Economics and Finance*, 53(2), pp.140–151.

Frank, M. Z. & Goyal, V. K. (2005). Trade-off and Pecking Order Theories of Debt. *Handbook of empirical corporate finance*, pp.135-202.

Frank, M. Z. & Goyal, V. K. (2007). Tradeoff and pecking order theories of debt. In: Eckbo, B. (Ed.). *Empirical Corporate Finance*, pp.135-202.

Frank, M. Z. & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? *Financial management*, 38(1), pp. 1-37.

Frank, M.Z. & Goyal, V.K., (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2), pp.217–248.

Fukui, T., Mitton, T. & Schonlau, R. J. (2018). Determinants of Capital Structure: An Expanded Assessment. *SSRN Electronic Journal*, pp.1-61.

Ganguli, S. K. (2013). Capital structure - Does ownership structure matter? Theory and Indian evidence. *Studies in Economics and Finance*, 30 (1), pp.56-72.

Gaud, P., Jani, E., Hoesli, M. & Bender, A. (2005). The capital structure of Swiss companies: an empirical analysis using dynamic panel data. *European financial management*, 11(1), pp.51-69.

Gerakos, J., Lang, M. & Maffett, M. (2013). Post-listing performance and private sector regulation: The experience of London's Alternative Investment Market. *Journal of Accounting and Economics*, 56(2-3), pp. 189-215.

Giannetti, M. (2003). Do better institutions mitigate agency problems: evidence from corporate finance choices? *Journal of Financial and Quantitative Analysis,* 38, pp. 185–212.

Gonzalez, V. M. (2015). The financial crisis and corporate debt maturity: The role of banking structure. *Journal of Corporate Finance*, 35, pp. 310-328.

González, V. M. & González, F. (2012). Firm size and capital structure: evidence using dynamic panel data. *Applied Economics*, 44(36), pp. 4745-4754.

Graham, J. R. & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of financial economics*, 60(2-3), pp. 187-243.

Graham, J. R. & Leary, M. T. (2011). A Review of Empirical Capital Structure Research and Directions for the Future. *Annual Review of Financial Economics*, 3, pp. 309-345.

Graham, J. R., Leary, M. T. & Roberts, M. R. (2015). A century of capital structure: The leveraging of corporate America. *Journal of Financial Economics*, 118(3), pp.658-683.

Grossman, S. & Hart, O. (1982). Corporate financial structure and managerial incentives, In J. McCall (Ed.). *The economics of information and uncertainty*, pp.107–140.

Gul, F.A. & Tsui, S. L. (1998). A test of the free cash flow and debt monitoring hypothesis: Evidence from audit pricing. *Journal of Accounting and Economics*, 24, pp. 219-237.

Guney, Y., Li, L., & Fairchild, R. (2011). The relationship between product market competition and capital structure in Chinese listed firms. *International Review of Financial Analysis*, 20(1), pp. 41-51.

Haas, R. & Peeters, M. (2006). The dynamic adjustment towards target capital structures of firms in transition economies. *Economics of Transition*, 14 (1), pp. 133-169.

Hall, G., Hutchinson, P. & Michaelas, N., (2000). Industry effects on the determinants of unquoted smes' capital structure. *International Journal of the Economics of Business*, 7(3), pp.297–312.

Hall, G.C., Hutchinson, P.J. & Michaelas, N., (2004). Determinants of the capital structures of European Smes. *Journal of Business Finance Accounting*, 31(5-6), pp.711–728.

Halling, M., Yu, J. & Zechner, J. (2016) Leverage dynamics over the business cycle. *Journal of Financial Economics*. 122 (1). pp. 21-41.

Hamilton, R. & Fox, M. (1998) The financing preferences of small firm owners. *International Journal of Entrepreneurial Behavior & Research*. 4 (3). pp. 239-248.

Haron, R., & Ibrahim, K. (2012). Target capital structure and speed of adjustment: Panel data evidence on Malaysia Shariah compliant securities. *International Journal of Economics, Management and Accounting*, *2*(2), pp. 87-107.

Harris, M. & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, *46*(1), pp.297-355.

Harrison, B. & Widjaja, T. W. (2014). The Determinants of Capital Structure: Comparison between Before and After Financial Crisis. *Economic Issues*, 19(2), pp.55-82.

Harrison, D. M., Panasian, C.A. & Seiler, M. J. (2011). Further evidence on the capital structure of REITs. *Real Estate Economics*, 39(1), pp.133-166.

Hartzell, J. C., Kallberg, J.G. & Liu, C. H. (2008). The Role of Corporate Governance in Initial Public Offerings: Evidence From Real Estate Investment Trusts. *Journal of Law and Economics*, 51(3), pp. 539–562.

Heshmati, A. (2001). The dynamics of capital structure: evidence from Swedish micro and small firms. *Research in Banking and Finance*, 2, pp. 199–241.

Heyman, D., Deloof, M. & Ooghe, H. (2008). The financial structure of private held Belgian firms. *Small business economics,* 30, pp. 301-313.

Hochberg, Y. V., Serrano, C. J. & Ziedonis, R.H. (2018). Patent Collateral, Investor Commitment, and the Market for Venture Lending. *Journal of Financial Economics*, 130, pp.74–94.

Holmes, S. & Kent, P. (1991). An empirical analysis of the financial structure of small and large Australian manufacturing enterprises. *Journal of small business finance*, 1(2), pp. 141-154.

Holmstrom, B. & Tirole, J. (1993). Market liquidity and performance monitoring. *Journal of Political Economy*, 101, pp. 678–709.

Hovakimian, A. & Li, G. (2011). In search of conclusive evidence: how to test for adjustment to target capital structure. *Journal of Corporate Finance,* 17, pp. 33–44.

Hovakimian, A., Hovakimian, G. & Tehranian, H. (2004). Determinants of target capital structure: The case of dual debt and equity issues. *Journal of financial economics*, *71*(3), pp.517-540.

Huang, B. Y., Lin, C. M. & Huang, C. M. (2011). The influences of ownership structure: Evidence from China. *The Journal of Developing Areas*, 45(1), pp. 209-227.

Huang, G. (2006). The determinants of capital structure: Evidence from China. *China economic review*, 17(1), pp.14-36.

Huang, R. & Ritter, J. R. (2009). Testing theories of capital structure and estimating the speed of adjustment. *Journal of Financial and Quantitative analysis*, pp.237-271.

Huang, W., Boateng, A. & Newman, A. (2016). Capital structure of Chinese listed SMEs: an agency theory perspective. *Small Business Economics*, 47(2), pp. 535-550.

Huyghebaert, N. (2003). The Capital Structure of Business Start-ups: Policy Implications. *Journal of Economics and Management*, 48 (1), pp. 1-24.

Islam, S. Z. & Khandaker, S. (2015). Firm leverage decisions: Does industry matter? *North American Journal of Economics and Finance*, 31, pp. 94-107.

Istaitieh, A. & Rodriguez, J. M. (2006). Factor-product markets and firm's capital structure: A literature review. *Review of Financial Economics*, 15(1), pp. 49-75.

Jarboe, K. P. & Ellis, I. (2010). Intangible assets: Innovative financing for innovation. *Issues in Science and Technology*, 26(2), pp. 75–80.

Jensen, M. & Meckling, W. (1978). Can the corporation survive? *Financial Analysts Journal*, 31, pp. 31–37.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, 76(2), pp. 323-329.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3, pp. 305-360.

Jensen, M. C. & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy* 98(2), pp. 225-264.

Jensen, M. C. & Smith, C. W. (2000). Stockholder, manager, and creditor interests: Applications of agency theory. *Theory of the Firm*, 1(1).

Jõeveer, K. (2013). Firm, country and macroeconomic determinants of capital structure: Evidence from transition economies. *Journal of Comparative Economics*, 41 (1), pp. 294-308.

John, K. & Williams, J. (1985). Dividends, dilution, and taxes: a signalling equilibrium. *The Journal of Finance*, 40, pp. 1053-70.

Johnsen, G. J. & Mcmahon, R. G. (2005). Owner-manager gender, financial performance and business growth amongst SMEs from Australia's business longitudinal survey. *International Small Business Journal,* 23, pp. 115-142.

Jordan, J., Lowe, J. & Taylor, P. (1998). Strategy and financial policy in UK small firms. *Journal of Business Finance and Accounting,* 25, pp. 1-27.

Joseph, S. (1969). A Reexamination of the Modigliani-Miller Theorem. *American Economic Review*, 59, pp. 784-793.

Karadeniz, E., Kandir, S.Y., Balcilar, M. & Onal, Y. B. (2009). Determinants of capital structure: evidence from Turkish lodging companies. *International Journal of Contemporary Hospitality Management*.

Kayo, E. K., & Kimura, H. (2011). Hierarchical determinants of capital structure. *Journal of Banking and Finance*, 35(2), pp. 358-371.

Kennedy, P. (2008) *A guide to econometrics.* Blackwell Publishing: Malden Massachusetts.

Kester, C. W. (1986). Capital and ownership structure: A comparison of United States and Japanese manufacturing corporations, *Financial Management*, pp. 5-16.

Khémiri, W. & Noubbigh, H. (2018). Determinants of capital structure: Evidence from sub-Saharan African firms. *The Quarterly Review of Economics and Finance*, 70, pp.150–159.

Khurshed, A., Kostas, D. & Saadouni, B. (2016). Warrants in underwritten IPOs: The Alternative Investment Market (AIM) experience. *Journal of Corporate Finance*, 40, 97-109.

Kieschnick, R. & Rabih M. (2018). Firm age, corporate governance, and capital structure choices. *Journal of Corporate Finance,* 48, pp. 597–614.

Kim W. C, Hwang P. & Burgers W. P. (1993). Multinationals' diversification and the risk–return trade-off. *Strategic Management Journal,* 14, pp. 275–286.

Kim, W. S. & Sorensen, E. H. (2006). Evidence of the agency costs of debt on corporate debt policy. *Journal of Financial and Quantitative Analysis*, 21(2), pp. 131–144.

Kirkpatrick, G. (2009). The corporate governance lessons from the financial crisis. *OECD J.: Financ. Mark. Trends,* 1, pp. 61–87.

Klapper L. F, Sarria-Allende V. & Zaidi R. (2006). Firm-Level Analysis of Small and Medium Size Enterprise Financing in Poland. *World Bank Policy Research Working Paper 3984*.

Köksal, B. & Orman, C. (2014). Determinants of capital structure: Evidence from a major developing economy. *Small Business Economics*, 44(2), pp. 255–282.

Korteweg, A. (2010). The net benefits to leverage. *The Journal of Finance*, 65(6), pp. 2137-2170.

Kraus, A., Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *Journal of Finance,* 28, pp. 911–922.

Krugman, P. R. (2000). Where in the world is the 'new economic geography? *The Oxford handbook of economic geography*, pp.49-60.

La Porta, R., Florencio, L., Andrei, S. & Robert, W. V. (1998). Law and finance. *Journal of Political Economy*, 106, pp. 1113-1155.

La Rocca, M., La Rocca, T. & Cariola, A. (2010). The influence of local institutional differences on the capital structure of SMEs: Evidence from Italy. *International small business journal*, 28(3), pp.234-257.

La Rocca, M., La Rocca, T. & Cariola, A. (2011). Capital structure decisions during a firm's life cycle. *Small Business Economics*, 37(1), pp.107-130.

Leary, M. T. & Roberts, M. R. (2010). The pecking order, debt capacity, and information asymmetry. *Journal of financial economics*, 95(3), pp. 332-355.

Lefort, F. & Francisco, U. (2008). Board independence, firm performance and ownership concentration: Evidence from Chile. *Journal of Business Research*, 61, pp. 615- 622.

Legislation. (2019a). *Companies Act 2006*. Legislation.gov.uk. Retrieved 6 June 2019, from http://www.legislation.gov.uk/ukpga/2006/46/section/382#commentary-key-c73f6017c578f747ccb025271e6c400a.

Legislation. (2019b). *Companies Act 2006*. Legislation.gov.uk. Retrieved 6 June 2019, from http://www.legislation.gov.uk/ukpga/2006/46/section/465.

Lemma, T. T. & Negash, M. (2014). Determinants of the adjustment speed of capital structure: evidence from developing economies. *Journal of Applied Accounting Research*, 15 (1), pp. 64-99.

Lemmon, M. & Zender, J. (2010). Debt capacity and tests of capital structure theories. *Journal of Financial and Quantitative Analysis*, 45, pp. 1161–1187

Lemmon, M. L., Robberts. M.R. & Zender, J. F. (2008) Back to the Beginning: Persistence and the Cross-Section of Corporate Capital Structure. *The Journal of Finance,* 513.

Levati, M. V., Qiu, J. & Mahagaonkar, P. (2012). Testing the Modigliani-Miller theorem directly in the lab. *Experimental Economics*, 15(4), pp. 693-716.

Levine, R. (1991). Stock markets, growth, and tax policy. *Journal of Finance* 46, pp. 1445-1465.

Li, L. & Islam, S. Z. (2019). Firm and industry specific determinants of capital structure: evidence from the Australian market. *International Review of Economics and Finance,* 59 (1), pp. 425-437.

Li, Y. & Singal, M. (2019). Capital structure in the hospitality industry: The role of the asset-light and fee-oriented strategy. *Tourism Management*, *70*, pp.124-13.

Lim, S. C., Macias, A. J, & Moeller, T. (2020). Intangible assets and capital structure. *Journal of Banking & Finance*, 105873.

Lim, T. C. (2012). Determinants of capital structure empirical evidence from financial services listed firms in China. *International journal of economics and finance*, 4(3), pp.191-203.

Lipson, M. L., & Mortal, S. (2009). Liquidity and capital structure. *Journal of financial markets*, 12(4), pp. 611-644.

Long, M. S. & Malitz, I. B. (1985). Investment patterns and financial leverage; corporate capital structures in the United States. *Chicago, Illinois: University of Chicago Press*, pp. 325-352.

López-Gracia, J. & Sánchez-Andújar, S. (2007). Financial structure of the family business. Evidence from a group of small Spanish firms. *Family Business Review,* 20, 269–287.

López-Gracia, J. & Sogorb-Mira, F. (2008). Testing trade-off and pecking order theories financing SMEs. *Small Business Economics*, 31(2), pp. 117-136.

Loughran, T. & Ritter, J. R. (1995). The new issues puzzle. *The Journal of finance*, 50(1), pp. 23-51.

Loumioti, M. (2012). The use of intangible assets as loan collateral. *Available at SSRN 1748675*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1748675

Loumioti, M. (2013). The Use of Intangible Assets as Loan Collateral. *Working Paper, University of Texas at Dallas*.

LSE, 2018. *Resources*. [online] London Stock Exchange. Available at: <https://www.londonstockexchange.com/companies-and-advisors/aim/publications/rules-regulations/aim-rules-for-nominated-advisers-march-2018.pdf> [Accessed 7 November 2019].

LSE, 2020. *Resources*. [online] Available at: <https://www.londonstockexchange.com/statistics/historic/aim/aim-statistics-archive-2020/aimstatistics-march2020.xlsx> [Accessed 13 August 2020].

LSE, 2020a. *Reports*. [online] Available at: <https://www.londonstockexchange.com/statistics/companies-and-issuers/companies-and-issuers.htm> [Accessed 14 November 2020].

Lu, C. W., Chen, T. K. & Liao, H. H. (2010). Information uncertainty, information asymmetry and corporate bond yield spreads. *Journal of Banking and Finance*, 34(9), pp. 2265-2279.

Lucey, B. & Zhang, Q. (2011). Financial integration and emerging markets capital structure. *J. Banking Finance,* 35, pp. 1228–1238.

Luintel, K. B. & Khan, M. (1999). A quantitative reassessment of the finance–growth nexus: evidence from a multivariate VAR. *Journal of development economics*, 60(2), pp. 381-405. https://www.sciencedirect.com/science/article/pii/S0304387899000450

Luintel, K. B. & Mosahid K. (1999). A Quantitative Reassessment of Finance-Growth Nexus: Evidence from Multivariate VAR. *Journal of Development Economics* 60, pp. 381-405.

Mac an Bhaird, C. & Lucey, B. (2010). Determinants of capital structure in Irish SMEs. *Small business economics*, 35(3), pp. 357-375.

Mac an Bhaird, C., Vidal, J. S. & Lucey, B. (2016). Discouraged borrowers: evidence for Eurozone SMEs. *Journal of International Financial Markets, Institutions and Money*, 44, pp. 46-55.

MacKay, P. & Phillips, G. M. (2005). How does industry affect firm financial structure? *The Review of Financial Studies*, 18 (4), pp.1433-1466.

MacKie-Mason, J. K. (1990). Do taxes affect corporate financing decisions? *The Journal of Finance*, 45(5), pp.1471–1493.

Mallin, C. & Ow-Yong, K. (2010). The UK alternative investment market–ethical dimensions. *Journal of Business Ethics*, 95, pp. 223-239.

Mallin, C. & Ow-Yong, K. (2012). Factors influencing corporate governance disclosures: Evidence from Alternative Investment Market (AIM) companies in the UK. *The European Journal of Finance*, 18(6), pp. 515-533.

Mann, W. (2018). Creditor Rights and Innovation: Evidence from Patent Collateral. *Journal of Financial Economics*, 130, pp. 25–47.

Margaritis, D. & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance*, 34 (3), pp. 621-632.

Marshall, A., Kemmitt, M. & Pinto, H. (2013). The determinants of foreign exchange hedging in alternative investment market firms. *The European Journal of Finance*, 19(2), pp. 89-111.

Mateev, M., Poutziouris, P. & Ivanov, K. (2013). On the determinants of sme capital structure in central and eastern Europe: a dynamic panel analysis. *Res. Int. Business Finance,* 27 (1), pp.28–51.

Mazur, K. (2007). The Determinants of Capital Structure Choice: Evidence from Polish Companies. *International Advance Economies Research*, 13, pp. 495-514

Mehran, H. (1992). Executive incentive plans, corporate control, and capital structure. *Journal of Financial and Quantitative Analysis*, 27, pp. 539-60.

Mian, L. S. (1996). Evidence on Corporate Hedging Policy. *The Journal of Financial and Quantitative Analysis*, 31, pp. 419-439.

Miao, J. (2005). Optimal Capital Structure and Industry Dynamics. *Journal of Finance*, 60, pp. 2621–2659.

Michaelas, N., Chittenden, F. & Poutziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. *Small business economics*, 12(2), pp. 113-130.

Miguel, A. & Pindado, J. (2001). Determinants of Capital Structure: New Evidence from Spanish Panel Data. *Journal of Corporate Finance*, 7(1), pp. 77- 99

Mikkelson, W. (1984) On the Existence of an Optimal Capital Structure: Theory and Evidence: Discussion. *The Journal of Finance*. 39 (3). p. 878.

Miller, M. H. & Kevin, R. (1985). Dividend policy under asymmetric information. *The Journal of Finance*, 40, pp. 1031-51.

Mills, D. (1996). Simple network time protocol (SNTP) version 4 for IPv4, IPv6 and OSI. *RFC 2030, October.*

Mishra, C. & McConaughy, D. (1999). Founding family control and capital structure: the risk of loss of control and the aversion to debt. *Entrepreneurship: Theory and Practice*, 23(4), pp. 53-64.

Modigliani, F. & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), pp. 261-297.

Modigliani, F. & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *The American economic review*, 53(3), pp. 433-443.

Moradi, A. & Paulet, E. (2019). The firm-specific determinants of capital structure–An empirical analysis of firms before and during the Euro Crisis. *Research in International Business and Finance*, 47(1), pp. 150-161.

Morellec, E. (2001). Asset Liquidity, Capacity Choice and the Pricing of Corporate Securities. *Journal of Financial Economics*, 61, pp.173-206.

Morri, G. & Cristanziani, F. (2009). What determines the capital structure of real estate companies? *Journal of Property Investment & Finance*.

Mortazian, M., Tabaghdehi, S. A. H., & Mase, B. (2019). Large Shareholding and Firm Value in the Alternative Investment Market (AIM). *Asia-Pacific Financial Markets*, 26(2), pp. 229-252.

Mukherjee, T., & Wang, W. (2013). Capital Structure Deviation and Speed of Adjustment. *Financial Review*, 48(4), pp.597-615.

Myers, S. & R. G. Rajan (1998). The Paradox of Liquidity. *Quarterly Journal of Economics,* 5, pp. 733-771.

Myers, S. C. (1977). Determinants of Corporate Borrowing. *Journal of Financial Economics*, 5, pp. 147–175.

Myers, S. C. (1984). The Capital Structure Puzzle. *The Journal of Finance*, 39(3), pp. 575-592.

Myers, S. C. (2001). Capital Structure. *Journal of Economic Perspectives*, 15(2), pp. 81-102.

Myers, S. C. (2003). Financing of corporations. *Handbook of the Economics of Finance*, 1, pp. 215-253.

Myers, S. C. & Mujlif, N. C., (1984). Corporate Financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13, pp. 187-221.

Nico, D. & Van hulle, C. (2010). Internal capital markets and capital structure: bank versus internal debt. *European Financial Management*, 16(3), pp. 345-373.

Nielsson, U. (2013). Do less regulated markets attract lower quality firms? Evidence from the London AIM market. *Journal of Financial Intermediation*, 22(3), pp. 335-352.

Nunkoo, P. & Boateng, A. (2010). The empirical determinants of target capital structure and adjustment to long-run target: evidence from Canadian firms. *Applied Economic Letters*, 17, pp. 983–90.

O'Gorman, D. & Patil, S. (2012). Corporate governance and AIM. In Cronin, P., Murphy, F. & Slaughter and May (Eds.). *Corporate Governance for Main Market and AIM Companies*, pp. 93-101.

Opler, T. & Titman, S. (1994). Financial distress and corporate performance. *Journal of Finance*, 49(3), 1015-1040.

Ozkan, A. (2001). Determinants of capital structure and adjustment to long run target: evidence from UK company panel data. *Journal of business finance & accounting*, *28*(1-2), pp.175-198.

Öztekin, Ö. (2015). Capital structure decisions around the world: which factors are reliably important? *Journal of Financial and Quantitative Analysis*, 50(3), pp. 301-323.

Öztekin, Ö. & Flannery, M. J. (2012). Institutional determinants of capital structure adjustment speeds. *Journal of financial economics*, *103*(1), pp.88-112.

Pacheco, L. & Tavares, F. (2017). Capital structure determinants of hospitality sector SMEs. *Tourism Economics*, *23*(1), pp.113-132.

Palacín-Sánchez, M. J., Ramírez-Herrera, L. M. & Di Pietro, F. (2013). Capital structure of SMEs in Spanish regions. *Small Business Economics*, 41(2), pp. 503-519.

Pandey, I. (2001). Capital Structure and the Firm Characteristics: Evidence from an Emerging Market. *IIMA Working Paper*.

Panno, A. (2003). An empirical investigating on the determinants of capital structure: The UK and Italian experience. *Applied Financial Economics*, 13, pp. 97-112.

Parsons, C. & Titman S. (2008b). Empirical capital structure: a review. *Found. Trends Finance,*3(1), pp. 1–93

Petacchi, R. (2015). Information Asymmetry and Capital Structure: Evidence from Regulation FD. *Journal of Accounting and Economics*, *2-3*, pp. 1-50.

Petersen, M. & Raghuram R. (1994). The Benefits of Lending Relationships: Evidence from Small Business Data. *Journal of Finance,* XLIX, pp. 3-37.

Pfaffermayrm, M., Stockl, M. & Winner, H. (2008). Capital structure, corporate taxation and firm age. *Working paper / Oxford University Centre for Business Taxation.*

Pindado, J. & De La Torre, C. (2011). Capital structure: new evidence from the ownership structure. *International Review of Finance*, 11(2), pp. 213-26.

Piotroski, J. D. (2013). The London Stock Exchange's AIM experiment: Regulatory or market failure: a discussion of Gerakos, Lang and Maffett. *Journal of Accounting and Economics*, 56(2-3), pp. 216-223.

Psillaki, M. & Daskalakis, N. (2008) Are the determinants of capital structure country or firm specific?. *Small Business Economics*. 33 (3). pp. 319-333.

Psillaki, M. & Daskalakis, N. (2009). Are the determinants of capital structure country or firm specific? *Small Business Economics*, 33(3), pp. 319-333.

Qian, Y., Tian, Y. & Wirjanto, T. S. (2009). Do Chinese publicly listed companies adjust their capital structure toward a target level? *China Economic Review*, *20*(4), pp. 662-676.

Raj, A. & NyoNyo, A. K. (2010). Capital structure, dividend policy, and multinationality: Theory versus empirical evidence. *International Review of Financial Analysis*, pp. 140-150.

Rajan, R. (1992). Insiders and outsiders: The choice between informed and arm's-length debt. *Journal of Finance*, 47, pp. 1367–1400.

Ravi, R. & Hong, Y. (2014). Firm opacity and financial market information asymmetry. *Journal of Empirical Finance*, 25, pp. 83-94.

Revest, V. & Sapio, A. (2013). Does the alternative investment market nurture firm growth? A comparison between listed and private companies. *Industrial and Corporate Change*, 22(4), pp. 953-979.

Robb, A. M. & Robinson, D.T. (2014). The capital structure decisions of new firms. *The Review of Financial Studies*, 27(1), pp.153-179.

Rogerson, P. A. (2001). Statistical Methods for Geography. *London: Sage*.

Rozeff, M. S. (1982). Growth, beta and agency costs as determinants of dividend payout ratios. *Journal of financial Research*, 5(3), pp. 249-259.

Sakai, K., Uesugi, I. & Watanabe, T. (2010). Firm age and the evolution of borrowing costs: evidence from Japanese small firms. *Journal of Banking and Finance*, 34, pp. 1970-1981.

Salawu, R. O. & Agboola, A. A. (2008). The determinants of capital structure of large non-financial listed firms in Nigeria. *The International Journal of Business and Finance Research,* 2, pp. 75-84.

Schepens, G. (2016). Taxes and bank capital structure. *Journal of Financial Economics*, 120, pp. 585–600.

Scherr, C. & Hulburt, H. (2001).The debt maturity structure of small firms. *Financial Management*, 30, pp. 85–111.

Serfling, M. (2016). Firing costs and capital structure decisions. *The Journal of Finance*, 71(5), pp. 2239-2286.

Serrasqueiro, Z., Nunes, P. M., & Armada, M. R. (2016). Capital structure decisions: old issues, new insights from high-tech small and medium-sized enterprises. *European Journal of Finance*, 22, pp. 59-79.

Shah, S. & Thakor, A.V. (1987). Optimal capital structure and project financing. *Journal of Economic Theory*, *42*(2), pp.209-243.

Shleifer, A. & Robert W. V. (1992). Liquidation Values and Debt Capacity: A Market Equilibrium Approach. *Journal of Finance*, 47(4), pp.1343–66.

Short, J. C., Ketchen, D. J. & Palmer, T. B. (2002). The role of sampling in strategic management research on performance: a two-study analysis. *Journal of Management,* 28(3), pp. 363–385.

Sikveland, M. & Zhang, D. (2020). Determinants of capital structure in the Norwegian salmon aquaculture industry. *Marine Policy, 119(May),* 104061.

Smith Jr, C. W. (1977). Alternative methods for raising capital: Rights versus underwritten offerings. *Journal of financial economics*, 5(3), pp. 273-307.

Smith, G. P. (2012). Capital structure determinants for tax-exempt organisations: evidence from the UK. *Financial Accountability & Management*, 28 (2) pp. 143-163.

Sogorb-Mira, F. (2005). How SME uniqueness affects capital structure: Evidence from a 1994–1998 Spanish data panel. *Small business economics*, 25 (5), 447-457.

Sohn, J., Tang, C. H. H. & Jang, S. S. (2013). Does the asset-light and fee-oriented strategy create value? *Int. J. Hosp. Manage*, 32, pp. 270–277.

Strebulaev, I. A. & Yang, B. (2013). The mystery of zero-leverage firms. *Journal of Financial Economics*, 109(1), pp. 1-23.

Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of financial Economics*, 26, pp. 3-27.

Titman, S. & Wessels, R. (1988). The Determinants of Capital Structure Choice. *The Journal of Finance*, 43(1), pp. 1-19.

Titman, S., Fan, J. & Twite, G. (2003). An international comparison of capital structure and debt maturity choices. *Working Paper Social Science Research Network.*

Tong, G. & Green, C. J. (2005). Pecking order or trade-off hypothesis? Evidence on the capital structure of Chinese companies. *Applied economics*, 37(19), pp. 2179-2189.

Tucker, J. & Stoja, E. (2011). Industry membership and capital structure dynamics in the UK. *International Review of Financial Analysis*, 20, 4, pp. 207-214.

Upneja, A. & Dalbor, M. C. (2001). An examination of capital structure in the restaurant industry. *International Journal of Contemporary Hospitality Management*, *8*(1), pp.70-70

Van Caneghem, T. & Van Campenhout, G. (2012). Quantity and quality of information and SME financial structure. *Small Business Economics*, 39 (2), pp. 341-358.

Van Hoang, T. H., Gurău, C., Lahiani, A. & Seran, T. L. (2017). Do crises impact capital structure? A study of French micro-enterprises. *Small Business Economics*, pp.1-19.

Venkiteshwaran, V. (2011). Partial adjustment toward optimal cash holding levels. *Review of Financial Economics*, 20(3), pp.113–121.

Vismara, S., Paleari, S. & Ritter, J. R. (2012). Europe's Second Markets for Small Companies. *European Financial Management*, 18(3), pp.352-388.

Vo, X.V. (2017). "Determinants of capital structure in emerging markets: evidence from Vietnam. *Research in International Business and Finance*, 40, pp.105-113.

Wald, J. K. (1999). How firm characteristics affect capital structure: an international comparison. *Journal of Financial Research*, 22(2), pp.161-187.

Warner, J. B. (1977). Bankruptcy Costs: Some Evidence. *The Journal of Finance*, 32(2), pp. 337-347.

Weston, J. F. (1963). A test of capital propositions. *Southern Economic Journal*, 30, pp.105–112.

Williamson, O. E. (1988). Corporate Finance and Corporate Governance. *Journal of Finance*, 43(3), pp.567-591.

Wintoki, M., Linck, J. & Netter, J. (2012) Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*. 105 (3). pp. 581-606.

Wiwattanakantang, Y. (1999). An empirical study on the determinants of the capital structure of Thai firms. *Pacific-Basin Finance Journal*, 7(3–4), pp. 371-403.

Wu, L. (2004). The Impact of Ownership Structure on Debt Financing of Japanese Firms with the Agency Cost of Free Cash Flow. *EFMA 2004 Basel Meetings Paper.*

Xu, J. (2012). Profitability and capital structure: Evidence from import penetration. *Journal of Financial Economics*, 106(2), pp. 427-446.

Yang, B. (2013). Dynamic capital structure with heterogeneous beliefs and market timing. *Journal of Corporate Finance*, *22*, pp. 254-277.

Yang, G. J. A., Chueh, H. & Lee, C. H. (2014). Examining the theory of capital structure: signal factor hypothesis. *Applied Economics*, 46(10), pp.1127-1133.

Zhang, X. & Mirza, S. S. (2015). Determinants of Capital Structure of Firms in Pre-Post Financial Crisis: Evidence from China. *Research Journal of Finance and Accounting*, 6(12), pp. 33-51.

Zhou, Q., Tan, K., Faff, R. & Zhu, Y. (2016) Deviation from target capital structure, cost of equity and speed of adjustment. *Journal of Corporate Finance*. 39. pp. 99-120.