Revisiting Firm-Specific Determinants of Dividend Policy: Evidence from Turkey

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Abstract

This study investigates the effects of firm-specific factors on the dividend policies of Turkish publicly listed firms in the post-2003 period. The paper focuses on this period because, starting in fiscal year 2003, Turkish authorities and regulators implemented various major economic and structural reforms for market integration and made significant changes in the regulatory framework of cash dividend policy rules. We analyse a panel dataset of 264 firms traded on the Istanbul Stock Exchange (ISE) over the period 2003–2012. Our results reveal that profitability, debt, growth, firm age and firm size are the most important firm-specific characteristics determining cash dividend payment decisions of ISE-listed firms. The findings, thus, suggest that more profitable, more mature and larger firms are more likely to pay dividends (and distribute higher dividends), whereas firms with higher growth (investment opportunities) and more debt are less likely to pay dividends (and distribute lower dividends) in the Turkish market. Overall, we detect that the firm-specific determinants that affect the corporate dividend policies of ISE firms do follow similar patterns of dividend policy factors in more developed economies after the implementation of major developments in the post-2003 period, and hence such reforms make Turkish firms comparable to their counterparts in developed markets in terms of dividend policy setting.

1. Introduction

The corporate finance literature suggests that a firm's dividend policy is closely related with its investment and capital structure policies, and hence directly linked to firm-specific characteristics (Smith and Watts 1992; Gaver and Gaver 1993; Barclay et al 1995). Theoretically, financial managers aim primarily to maximise the wealth of their shareholders and thus make fundamental decisions to enhance their firms' market value (Ward 1993; Bishop et al 2000). The dividend policy of a firm is one of the key aspects of corporate financial management and might have significant implications for firm value. Managers' dividend decisions involve the distribution of corporate earnings (see, for example, determining the size of cash payments) to

shareholders or retaining internally generated earnings for reinvestment (investment policy) and, again through retention, employing low-cost capital and lowering the leverage ratio (capital structure choices), which influence common share prices and therefore shareholders' wealth (Glen et al 1995; Lease et al 2000; Brealey and Myers 2003).

Given that dividend decisions play an important role in overall corporate strategy and firm value creation, the firm-specific factors that determine dividend policy are of critical importance, especially to financial managers who must set optimum policies. Identifying such determinants helps corporate policy makers review their dividend practices, compare them with their counterparts, and allocate corporate earnings in a way that increases firm value. From the investor perspective, there are different types of investors and portfolio managers who have heterogeneous preferences regarding the returns on their investments – for example, some might desire dividend income, whereas others favour capital gains, or even a mixture of both. Hence, knowledge about firm-specific determinants of dividend policy may assist investors and portfolio managers to detect companies with policies that best fit their dividend preferences for their investment targets. The analysis of the effects of financial characteristics on corporate dividend decisions will also provide useful information to financial scholars and researchers, to better understand why some firms pay dividends while other firms do not, and properly appraise the issues that drive dividend practices in formulating theories and models to explain corporate dividend behaviour, thus enriching the finance literature concerning the dividend policy debate.

In this respect, financial economists have investigated how firm-specific factors (e.g., profitability, debt, growth, size) influence dividend payment decisions in different markets and attempted to build connections between such factors and dividend policy theories (see, for example, Fama and French 2001; Aivazian et al 2003; Ferris et al 2006; Al-Najjar 2009). Historically, most divided studies focused on developed markets but some attention has, comparatively recently, shifted to emerging markets. In their famous cross-country study, Aivazian et al (2003) compare dividend policies of companies operating in eight developing countries (India, Jordan, Malaysia, Pakistan, South Korea, Thailand, Turkey and Zimbabwe) with a control sample of US firms. They find that although the same financial determinants are important for the dividend decisions of emerging market corporations as for their US counterparts, the sensitivity to these determinants varies from the US (developed) market to other developing countries.

In fact, prior research generally illustrates major differences in dividend policy practices between developed and emerging economies, as a result of discords such as political and social instability, a lack of adequate disclosure, poor laws and regulations, weaker corporate governance, and different ownership structures (Glen et al 1995; La Porta et al 2000; Faccio et al 2001). Nevertheless, the last three decades have witnessed a rapid increase in the

magnitude of equity portfolio flows to developing countries. This has encouraged authorities and regulators in these countries to show serious efforts in order to converge with global world-market portfolios (Bekaert 1995; Kumar and Tsetsekos 1999). More strikingly, beyond just equity market liberalisation, some developing economies have started to implement financial and structural reforms to integrate with world markets (Bekaert et al 2002; 2011). Not surprisingly, one can expect that market integration processes may have significant effects on firm characteristics and thus corporate financial policies – in our case, dividend policy.

Therefore, our objective is to ascertain how various firm-specific factors affect dividend payment decisions of publicly-listed firms in an emerging market that has undergone major reforms to integrate with world markets, and whether these firms follow such factors in the same manner as their counterparts in developed markets after such changes. In particular, we focus on Turkey, which is one of the most important emerging economies world-wide, located strategically between Europe and the Middle-East, and a candidate for European Union (EU) membership. Turkey offers a unique case for our study since the Turkish authorities adopted major economic and structural reforms, starting in fiscal year 2003, in compliance with the International Monetary Fund (IMF) stand-by agreement, EU directives, and best-practice international standards for a better working of the market economy, outward-orientation, and globalisation. Also, Turkish regulators made significant changes to the regulatory framework of cash dividend policy rules in the post-2003 period (CMB 2003; Adaoglu 2008; Birol 2011). In particular, Turkey's progress towards achieving full membership of the EU provided the strongest motivation in establishing new rules and regulations to integrate its economy with Europe and to harmonise its institutions with those of the EU during this period (IIF 2005; Aksu and Kosedag 2006).[2]

Accordingly, we investigate empirically the effects of firm characteristics on dividend payment decisions of firms listed on the Istanbul Stock Exchange (ISE) in the post-2003 period. Based on a panel dataset of 264 ISE firms (non-financial and non-utility) over the period 2003–2012, we test our hypotheses related to the links between selected firm-specific factors and dividend policy, using logit (for the probability of paying dividends) and tobit (for the dividend payout ratio and dividend yield) regression models. Our main results and several robustness checks show that profitability, firm age and firm size have a positive effect, whereas growth and debt have a negative impact on the dividend payment practices of ISE firms. However, we observe no evidence of a significant influence of business risk, free cash flow, liquidity and asset tangibility on the corporate decisions of ISE-listed firms in setting their dividend policies. This implies that more profitable, more mature and larger ISE firms are more likely to pay dividends (and distribute higher dividends), whilst ISE firms with higher growth and more debt are less likely to pay dividends (and distribute lower dividends). Overall, we find that firm-specific characteristics

affecting the corporate dividend decisions of ISE-listed firms do follow similar patterns to the dividend policy factors in more developed economies after the implementation of major developments in the post-2003 period, and thus such reforms make Turkish firms increasingly comparable to their counterparts in developed markets in terms of the dividend policy setting process.

Our study, hence, contributes to the dividend literature in several ways. First, we provide new evidence from an emerging market that implemented major reforms for market integration, and present insights into firm-specific determinants of dividend policy in this market after such developments. Second, we report the most recent findings about the associations between firm characteristics and corporate dividend decisions of ISE firms by using comprehensive empirical models and alternative econometric techniques, utilising a recent large-scale dataset (covering the period 2003-2012) that includes the period of the latest economic and structural reforms. Third, our findings help corporate managers, investors and fellow researchers, who seek useful guidance from the relevant literature, to gain a broad understanding of the effects of firm-specific factors on corporate dividend choices in the Turkish market. To the best of our knowledge, this study is the first major research study that identifies the link between firm characteristics and dividend policy in Turkey during its market integration process in the post-2003 period.

The paper proceeds as follows. Section 2 provides an overview of the main regulatory developments in Turkey. Section 3 reviews the theoretical background and develops the research hypotheses. Section 4 discusses the research methodology. Section 5 illustrates the empirical results and Section 6 concludes the paper.

2. The Main Regulatory Developments in Turkey

Financial markets in Turkey were strictly regulated until the implementation of a financial liberalisation programme in 1980. After adopting related regulations enacted and launched in the following years, the Istanbul Stock Exchange (ISE) was officially established in December 1985 and commenced its operations on 3 January 1986. The ISE made rapid progress after being established, with the number of listed firms on the ISE increasing markedly, from 80 in 1986 to 315 in 2000, while the annual trading volume rose significantly, from U.S. $13 million in 1986 to U.S. $181.9 billion in 2000. Similarly, the total market capitalisation increased sharply, from U.S. $0.9 billion at the end of 1986 to U.S. $144 billion by the end of 1999 (CMB 2003). However, ISE-listed firms operated under a very different regulatory environment compared with those in developed markets (e.g., the US, UK, Canada, and Australia) during this period. Such differences stemmed from the nature of Turkey's civil law tradition that includes a poor culture of corporate governance, lack of efficient transparency and disclosure practices, and inconsistent and unclear accounting and tax regulations (La Porta et al 1997; Ararat and Ugur 2003; Aksu and Kosedag 2006).

For instance, the Turkish Code of Commerce, dating back to 1957, was only based on the generally accepted principles of accounting and auditing, and the concept of full and fair disclosure, and thus the ISE's financial reporting was not properly regulated according to international norms and standards (Aksu and Kosedag 2006). Although the enforcement of high-quality financial reporting standards is compulsory and required for shareholder protection in developed countries, the purpose of accounting regulations in Turkey was to protect the interests of the Treasury, as in many other emerging markets. Hence, this reduced the demand for high-quality financial reporting and disclosure, and Turkish companies prepared financial statements to produce information for the tax authorities for taxation purposes, rather than supporting financial decisions (Cooke and Curuk 1996; UNCTAD 2008). In addition, despite the fact that Turkey generally enjoyed economic growth in 1990s, it was overall an economically unstable decade, with a number of financial crises and high inflation rates that surpassed 100%. Given the inconsistent and unclear accounting practices and absence of inflation accounting standards, the historical financial statements of the ISE firms lost their information value and misinformed investors (Ararat and Ugur 2003).

In this context, Turkey's Capital Markets Board (CMB) issued Communiqué Serial: XI, No: 25 entitled 'Accounting Standards in Capital Markets' in November 2003, in line with the EU requirements, adopting 'International Financial Reporting Standards (IFRS)' and enforcing publicly owned and traded firms to use new rules. The CMB also obliged the implementation of inflation-adjusted accounting at the same time (UNCTAD 2008). This has resulted in a more transparent and more efficient set of high-quality financial reporting standards, providing comparable and consistent financial data for foreign and domestic investors, and other institutions (Aksu and Kosedag 2006). More importantly, the Turkish business culture of accounting for taxation has changed to accounting for decision-making, which led ISE managers to produce more reliable financial reports and measure business performance more accurately. This has had a positive effect on their decision-making for corporate financial policies (e.g. investment, capital structure and dividends) (Balsari and Varan 2014). Also, the applications of IFRS and inflation accounting have increased the amount of information about the financial facts of firms and provided researchers a much enhanced opportunity to study firm-specific characteristics of firms and their influence on financial policies in the Turkish market.

Previous studies reveal that Turkish firms are generally highly concentrated and have pyramidal ownership structures, mostly dominated by founding families. They typically owned business groups affiliated with industrial (businesses and subsidiaries) and financial (banks) corporations organised under the legal form of a holding company (Glen et al 1995; Gursoy and Aydogan 1999; Yurtoglu 2003). Moreover, Turkey has a bank-based financial system where private sector banks characterise the market and are mainly part of those larger family-owned holding companies (Aivazian et al 2003; Erturk

2003). As a result of this infrastructure, families have control over not only many banks belonging to their business groups, but also bank lending decisions. Hence, business groups used to obtain much of their finance from their own banks, via non-arm's length party transactions (Yurtoglu 2003; IIF 2005; Aksu and Kosedag 2006).

The CMB made many amendments to improve the transparency and quality of the banking sector in early 2000s. In particular, it adopted 'The Banking Sector Restructuring Program' in May 2001 for restructuring public banks, rehabilitating the private banking system, and strengthening surveillance and supervision to increase efficiency in the sector (BRSA 2010). Moreover, with the introduction of the 'Regulation on Establishment and Operations of Banks' in July 2001, the risk group definition and calculation of loan limits for a single business group, considering direct and connected lending, were established to prevent insider lending (non-arm's length transactions) as a source of financing (BRSA 2010; IIF 2005). Since then, ISE firms have turned to the equity market with a greater incentive for more transparent financing (IIF 2005), which possibly affects their financial policies, including corporate dividend decisions.

Furthermore, Turkish authorities heavily regulated the dividend policies of ISE-listed firms, when the ISE first started to operate in 1986. According to the 'first mandatory dividend policy' regulation, ISE firms legally had to pay at least 50 per cent of their distributable income as a cash dividend (Adaoglu 1999, 2000; Kirkulak and Kurt 2010). Therefore, ISE corporations lacked flexibility in setting their own dividend policies. However, the CMB of Turkey also made important changes in the regulatory framework of dividend policy rules, along with the implementation of major economic and structural reforms. Specifically, the CMB introduced the 'second mandatory dividend policy' in 2003, which was more flexible as compared to the first regulation. ISE firms were required to pay at least 20 per cent of their distributable income as a dividend, but they did not have to pay this amount entirely in cash; they had the option to distribute it in cash or stock dividends or a mixture of both.

In fiscal year 2004, the CMB increased the minimum payout rate to 30 per cent, the percentage also applied to ISE firms for fiscal year 2005. The CMB then decreased the minimum compulsory payout ratio to 20 per cent again in 2006 and it remained at this level for fiscal years 2007 and 2008. In fiscal year 2009, the CMB decided not to determine a minimum payout ratio and ended mandatory dividend payments requirements. This has provided ISE companies with the freedom to make their own dividend policy decisions. Consequently, we argue that the market integration process of Turkey, with these significant developments, may have important implications for ISE firms' financial characteristics and thus corporate financial policies, especially their dividend policy decisions, because ISE firms now need to carefully consider their firms' financial attributes in making dividend decisions, rather than just concentrating on the mandatory dividend payout ratio imposed by the regulations.

3. Theoretical Background and Research Hypotheses

This section reviews various firm-specific factors of corporate dividend policy according to the relevant literature. This further illustrates the corresponding research hypotheses that we advance based on these factors and major developments in the Turkish market in the post-2003 period.

3.1. Profitability

The dividend policy literature suggests that a firm's profitability is one of the most important determinants affecting its dividend policy. Since dividend payments are usually distributed from annual profits, it is mostly assumed that profitable firms tend to pay higher dividends, which indicates a positive relationship between profitability and dividend policy. This positive relationship is consistent with signalling theory (Bhattacharya 1979; Miller and Rock 1985; John and Williams 1985), which contends that highly profitable firms are more likely to pay dividends, to convey their better financial performance. They also tend to distribute larger cash dividends to shareholders as a good (credible) signal to the market, whilst their less profitable counterparts, whose financial positions are not as good, cannot match such dividend payments.

In the same vein, the empirical results from a number of studies (see, for instance, Fama and French 2001; Aivazian et al 2003; Ferris et al 2006) present strong evidence in favour of the notion that profitability positively influences dividend payments. As previously mentioned, after the major reforms undertaken by the CMB of Turkey, ISE managers' accounting perspectives changed from a taxation motivation to decision-making. Firms were also given the opportunity to determine their own dividend policy, through increasingly flexible dividend payment regulations in the post-2003 period. Accordingly, we hypothesise that highly profitable ISE firms have more motivation to pay higher dividends to show their better financial position. Therefore, we posit that:

H1: Profitability is positively related to ISE firms' dividend policy decisions.

3.2. Growth

A firm's fund requirements for growth (investment) opportunities typically appear to have a significant negative impact on dividend payout in the literature. The pecking order theory of capital structure, proposed by Myers (1984) and Myers and Majluf (1984), posits that firms should prioritise their sources of financing according to a hierarchy – firms first use internal earnings (as it is less costly than external financing) to meet their funding needs. If additional funds are required, firms then prefer to issue debt to cover their financial deficit. Firms should raise equity capital only in extreme cases. Thus, this 'pecking order' behaviour predicts a negative relationship between growth and dividend policy: high-growth firms will use their earnings primarily to finance expansion and, given that investment requires more than the internally generated funds, they will next prefer debt, with equity issuance a last resort. This in turn reduces the probability of paying dividends, as well as

the amounts of dividends distributed to shareholders. Transaction cost theory also supports this negative association, as it asserts that firms with high growth need more funds to finance their investments, thus they are more likely to retain internally generated funds for investment rather than dividends, because external finance is costly. Therefore, firms would prefer to avoid transactions costs related to external financing and distribute lower dividends when they are experiencing higher growth opportunities (Rozeff 1982; Miller and Rock 1985).

Studies conducted in developed markets (e.g., Rozeff, 1982; Fama and French 2001; Baker and Wurgler 2004; Ferris et al 2006) find generally that strong growth reduces both the likelihood and magnitude of dividend payments. Conversely, La Porta et al (2000) argue that the correlation between growth opportunities and dividend policy may differ significantly in countries with poor shareholder protection, typically in emerging markets. In spite of this, La Porta et al (2000) propose the substitute model of dividends, suggesting that dividends are substitutes for legal protection and, by paying dividends, companies establish a reputation for good treatment of minority shareholders in countries with poor institutional settings and weak shareholder protection. Hence, companies with higher growth opportunities in these countries have stronger incentives to establish such reputations, as they have a much greater potential need to raise additional funding in the capital markets. Other things being equal, high-growth firms should therefore distribute larger dividends as compared with their counterparts with poor investment opportunities in such countries. Consistently, Aivazian et al (2003), Al-Najjar (2009) and Kirkulak and Kurt (2010) find a positive relationship between growth and dividend payout in different developing countries – including Turkey.

However, with the introduction of various amendments in banking sector regulations in order to prevent credit risk concentration and insider lending, ISE firms have turned increasingly to capital markets, given the greater incentive for more transparent financing, rather than obtaining much of their funds from their own business group banks. In this context, we postulate that ISE-listed corporations may find that external financing now provided from arm's length parties, to be more costly in the post-2003 period, and thus they are more likely to use internally generated earnings to fund their investment projects instead of paying them as a cash dividend, consistent with the pecking order and transactions cost theories. Hence, we hypothesise:

H2: Growth is negatively related to ISE firms' dividend policy decisions.

3.3. Business risk

Al-Najjar (2009 p.193) states that 'The higher the risk is, the more likely the firm will be bankrupt and hence the less the chance for firms to pay dividends.' From the transaction cost theory perspective, transaction costs are directly related to firm risk: if a firm has higher operating and financial leverage, all else being equal, the firm's dependence on external funding increases because of

the volatility in its earnings. Both operating and financial leverages can be translated into an overall (high) total risk of stock returns, which will have a negative impact on dividend payments (Rozeff 1982; Holder et al 1998; Farinha, 2003). A number of studies, such as Jensen et al (1992), Manos (2002), Farinha (2003) and Al-Najjar (2009), indeed report a negative relationship between business risk and dividend policy in favour of the notion that riskier firms, in other words firms with higher uncertainty about their future earnings, tend to pay lower or zero dividends.

Emerging markets are generally characterised by higher volatility and greater risk, as compared with developed markets (Glen et al 1995; Adaoglu 2000). Similarly, the ISE has been representative of a promising but very volatile emerging market, with high returns in some years and large losses in others, since its establishment (CMB 2003, 2012; Odabaşi et al 2004). Accordingly, we formulate the following hypothesis:

H3: Business risk is negatively related to ISE firms' dividend policy decisions.

3.4. Debt Policy

Jensen and Meckling (1976), Jensen (1986) and Crutchley et al (1999), among many others, argue that the use of debt and dividend distributions are alternative tools to monitor managers and control agency-related problems. Thereby, agency cost theory suggests an inverse relation between debt and dividends. Thus the usage of debt (especially, high levels of the debt ratio) lessens the need for paying dividends. Also, when firms obtain debt financing, they commit themselves to fixed financial charges (e.g., interest payments) and the principal amount they have to repay, and if firms fail to meet these obligations, they may face the risk of default. Thus, highly-leveraged firms often have lower or zero dividends, because they tend to maintain their internal funds to pay their obligations and lower external financing costs, rather than paying the cash to shareholders (Rozeff 1982; Manos 2002).

Aivazian et al (2003) detect that higher debt ratios are associated with lower dividend payments in emerging markets. In Jordan, Al-Najjar (2009) reports a significant negative correlation between debt and dividend policies. Furthermore, Kirkulak and Kurt (2010) find that the level of debt has no impact on the probability of paying dividends in Turkey, but an increased level of debt significantly increases the amount of dividend reductions of Turkish firms. Given that ISE firms may find external financing more costly in the research period after the CMB's amendments in the banking sector, we therefore stress the transactions costs involved in external financing and the importance of the substitution role of debt for dividends in controlling agency problems in the Turkish market, and propose that:

H4: Debt is negatively related to ISE firms' dividend policy decisions.

3.5. Free Cash Flow

Jensen's (1986) free cash flow hypothesis is one of the most popular explanations for why firms pay dividends. According to Jensen (1986), managers of a firm with large amounts of free cash flow may not always act in the best interest of shareholders, because they might undertake negative net present value (NPV) investment projects with this cash. Paying large dividends will, however, lessen the amount of free cash flow under managers' discretion and reduce the scope of overinvestment. In addition, by paying out substantial dividends, the firm minimises the possibility that managers may misuse this cash for their own consumption (Jensen and Meckling 1976). This also forces them to enter external capital markets for additional funding, which increases monitoring by the market (Easterbrook 1984). This in turn helps to mitigate traditional agency cost problems (the principal-agent conflict) and hence increases the firm's market value.

Moreover, La Porta et al (1999) argue that the direct involvement of families in the management of their companies leads to greater supervision and few owner-manager agency conflicts. Likewise, Grossman and Hart (1980), Demsetz and Lehn (1985) and Shleifer and Vishny (1986), suggest that the existence of large shareholders can mitigate the free-rider problem of monitoring managers, which reduces agency conflicts between managers and shareholders. In this respect, concentrated ownership structures by large controlling shareholders are still widespread in Turkey, where especially families, and other blockholders such as foreign and institutional investors and the state, dominate its capital market (Gursoy and Aydogan 1999; Yurtoglu 2003; IIF 2005; Sevil et al 2012; Al-Najjar and Kilincarslan 2016). More importantly, in family-owned Turkish firms, management and ownership are often not separated, since family members generally occupy the highest executive positions and sit on the boards, whereas other managers do not have much power and authority to use the free cash flow (Yurtoglu 2003; Aksu and Kosedag 2006). As a result of highly concentrated ownership structures and overlapping ownership and management, principal-agent conflicts seem to be much lower in the Turkish market.

Nevertheless, one of the disadvantages of ownership concentration is that the interests of large (controlling) shareholders and minority (outside) owners might not be the same. Numerous studies (see, for example, Shleifer and Vishny 1997; La Porta et al 2000; Anderson and Reeb 2003; Morck and Yeung 2003; Villalonga and Amit 2006) show that when large blockholders hold almost full control, and if they do not pay dividends, they appear to use the free cash to implement policies that generate benefits to themselves at the expense of minority shareholders, given the absence of efficient monitoring. If this is the case, the salient agency problem is thus expropriation of the wealth of minority investors by the controlling shareholders, also called the principal-principal conflict. La Porta et al (2000 p.2) emphasise that 'The key point, however is that failure to disgorge cash leads to its diversion or waste, which is detrimental to outside shareholders' interest' and further suggest that dividend payments can

alleviate the conflict of interest between large and minority shareholders, as dividends guaranty a pro-rata cash distribution to all shareholders and limit free cash from large shareholders' control. Accordingly, in either case, larger amounts of free cash flow are associated with the high possibility of agency-related problems, which implies higher dividend payments in order to overcome such problems. Therefore:

H5: Free cash flow is positively related to ISE firms' dividend policy decisions.

3.6. Liquidity

Darling (1957) points out that a firm's liquidity position is one of the most important factors to maintain its financial manoeuvrability and is also vital in determining its dividend policy within the capital budgeting process. Manos (2002) argues that liquidity is an inverse proxy for transactions costs and therefore has a positive impact on dividend payments. Furthermore, Ho (2003) finds that more liquid firms (firms with higher cash availability) are more likely to pay dividends, compared with their counterparts with a liquidity crunch. This positive relationship is consistent with signalling theory: high-liquidity firms convey credible signals to the market that they are capable of paying their obligations easily and thus involve lower risk of default. Based on the above discussion and considering much more flexible dividend payment regulations in the post-2003 period, the following is hypothesised:

H6: Liquidity is positively related to ISE firms' dividend policy decisions.

3.7. Asset Tangibility

Aivazian et al (2003) show that firms operating in developing countries with more tangible assets (thus fewer short-term assets) tend to have lower dividend payouts. Aivazian et al explain this by asserting that larger fractions of long-term tangible assets reduce the proportion of short-term assets that can be collateral for short-term loans, and hence decrease the borrowing capacity of firms where the main source of debt is short-term bank financing. This will then force such firms to make more use of internally generated funds, while lessening the chance to pay dividends. Similarly, Al-Najjar (2009) in Jordan and Al-Najjar and Hussainey (2009) in the U.K. find a significant negative relationship between tangibility of assets and dividend policy.

Regarding ISE-listed firms, loans from commercial banks play a crucial role in providing external financing, since Turkey has a bank-based financial system. Given that ISE firms now seek more transparent financing from outside sources, given the amendments to banking sector regulation to prevent insider lending, especially within business groups, we predict that more tangible assets may reduce their short-term borrowing capacity but increase their reliance on retain earnings, which will decrease the likelihood of paying dividends. Hence:

H7: Asset tangibility is negatively related to ISE firms' dividend policy decisions.

3.8. Firm Age

The maturity hypothesis (also called the firm life-cycle theory), proposed by Grullon et al (2002), attempts to link firm age with dividend policy. This explanation posits that larger dividend increases are a sign of change in a firm's life cycle. Firms are more likely to pay higher dividends as they transition from growth to a more mature phase. This change occurs because their investment opportunities and growth rates become slower, or even decline, and they start generating larger amounts of free cash flows. DeAngelo et al (2006) also support this positive association between firm maturity and dividend payments.

Even though the ISE is a relatively young stock market compared with developed stock exchanges with hundreds years of historical developments, corporations trading on the ISE range from old and well-established family-controlled business group companies, whose roots can be traced back to the 1920s, to large holding companies generally founded in the 1970s (Bugra 1994; Yurtoglu 2003) or even comparatively young and growing firms incorporated in the 2000s. This suggests that ISE firms' life cycles differ significantly from one another and therefore we hypothesise that more mature ISE firms are more likely to pay higher dividends. Thus:

H8: Firm age is positively related to ISE firms' dividend policy decisions.

3.9. Firm Size

Substantial evidence from many studies indicates that firm size is another important factor affecting corporate dividend decisions and reveals a positive correlation between firm size and dividend policy (see, for example, Gaver and Gaver 1993; Barclay et al 1995; Moh'd et al 1995; Fama and French 2001; Farinha 2003; Ferris et al 2006; Al-Najjar 2009). The impact of firm size on dividends is seen as reflecting both transactions cost and agency problem arguments. It is disputed that larger firms have easier access to the capital markets and hence are able to raise external finance at lower costs compared with smaller firms, which also reduces their dependence on internally generated earnings. Also, since larger firms generally have more dispersed ownership structures, monitoring will be more difficult and costly, and thus they face higher levels of potential agency costs (Lloyd et al 1985; Crutchley and Hansen 1989; Holder et al 1998). Consequently, given the comparatively lower transactions costs and less reliance on internal funds, and taking the greater potential for agency problems into account, large firms are more likely to pay dividends and have a tendency to distribute higher amounts to alleviate such problems. Borrowing the above arguments and considering the major developments in the banking sector and the regulatory framework of dividend policy rules in the research period, we postulate that:

H9: Firm size is positively related to ISE firms' dividend policy decisions.

4. Research Methodology

4.1. Data Sample

We have collected the data for this study from several sources. In particular, information on accounting and financial variables is obtained from DATASTREAM, and data on firms' incorporation dates are derived from the annual reports published in the Public Disclosure Platform (KAP) of the ISE and firms' official websites. The validity of the data is also cross-checked with the OSIRIS database. However, we construct our sample as follows. First, we consider all publicly listed corporation on the ISE over the period 2003–2012. Second, we narrow the sample down to firms whose data are available on DATASTREAM. Third, we exclude financial (Industry Classification Benchmark (ICB) code 8000) and utility (ICB code 7000) sector companies. These criteria provide us an unbalanced panel of 2,112 firm year observations representing 264 unique ISE firms from 14 different industries (based on ICB codes) for the period 2003–2012.

4.2. Research Design, Models and Variables

In order to test our research hypotheses based on the links between selected firm-specific factors and ISE firms' corporate dividend decisions (i.e., H1-H9), we construct our research models and variables as follows. First, we employ alternative dividend policy measures (in other words, different dependent variables) and formulate corresponding models using appropriate regression techniques. Specifically, we estimate the probability of paying a cash dividend by a logit model (Model 1) – because when setting their dividend policies, firms face two choices; to pay or not to pay dividends. Thus a logit regression model is a suitable econometric approach for estimating a binary variable (0/1). Then, we attempt to estimate the intensity of paying dividends, using two substitute dependent variables; namely the dividend payout ratio (an accounting measure) and dividend yield (a market measure), by tobit models (Model 2 and Model 3, respectively) – in this respect, the dividend payout ratio or dividend yield will be never be negative, and it will have one of two outcomes; zero (discrete numbers) when firms do not pay dividends, or a positive value (continuous numbers) if firms pay dividends. Hence, the tobit regression technique is used for estimating such dependent variables that are left censored at zero, and contain a mixture of continuous and discrete values.

Second, we outline a set of explanatory variables representing each of the nine hypothesised firm-specific characteristics and define them based on the most common forms used in the literature. Since our research sample is drawn from 14 industries and covers a relatively long time period (2003–2012) we, third, consider the effects of different regulatory frameworks across industries and unobserved time-varying factors, employing industry and year dummies, respectively, to control for such effects. Finally, we use one-year lagged values of each of the nine test variables in all models, ensuring that firm-specific factors are predetermined with respect to the dividend policy decisions, in order to mitigate endogeneity concerns.

Accordingly, we formulate the related logit model (Model 1) by the following equation:

$$\text{Model 1: } DPAY_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t-1} + \alpha_2 M/B_{i,t-1} + \alpha_3 RISK_{i,t-1} + \alpha_4 DEBT_{i,t-1} + \alpha_5 FCF_{i,t-1} + \alpha_6 LIQ_{i,t-1} + \alpha_7 TANG_{i,t-1} + \alpha_8 AGE_{i,t-1} + \alpha_9 SIZE_{i,t-1} + \sum_{j=1}^{N} \alpha_j INDUSTRY_{j,i,t} + \sum_{t=1}^{T} \alpha_t YEAR_{i,t} + \varepsilon \quad (1)$$

$$DPAY_{i,t} = \begin{cases} 0 \text{ if } DPAY_{i,t} = 0, \\ 1 \text{ if } DPAY_{i,t} > 0. \end{cases}$$

The corresponding tobit models (Models 2 and 3) are developed as below:

$$\text{Model 2: } DPOUT_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 M/B_{i,t-1} + \beta_3 RISK_{i,t-1} + \beta_4 DEBT_{i,t-1} + \beta_5 FCF_{i,t-1} + \beta_6 LIQ_{i,t-1} + \beta_7 TANG_{i,t-1} + \beta_8 AGE_{i,t-1} + \beta_9 SIZE_{i,t-1} + \sum_{j=1}^{N} \beta_j INDUSTRY_{j,i,t} + \sum_{t=1}^{T} \beta_t YEAR_{i,t} + u \quad (2)$$

$$DPOUT_{i,t} = \begin{cases} 0 & \text{if } DPOUT_{i,t} = 0, \\ DPOUT_{i,t} & \text{if } DPOUT_{i,t} > 0. \end{cases}$$

$$\text{Model 3: } DYIELD_{i,t} = \gamma_0 + \gamma_1 ROA_{i,t-1} + \gamma_2 M/B_{i,t-1} + \gamma_3 RISK_{i,t-1} + \gamma_4 DEBT_{i,t-1} + \gamma_5 FCF_{i,t-1} + \gamma_6 LIQ_{i,t-1} + \gamma_7 TANG_{i,t-1} + \gamma_8 AGE_{i,t-1} + \gamma_9 SIZE_{i,t-1} + \sum_{j=1}^{N} \gamma_j INDUSTRY_{j,i,t} + \sum_{t=1}^{T} \gamma_t YEAR_{i,t} + \omega \quad (3)$$

$$DYIELD_{i,t} = \begin{cases} 0 & \text{if } DYIELD_{i,t} = 0, \\ DYIELD_{i,t} & \text{if } DYIELD_{i,t} > 0. \end{cases}$$

where $DPAY_{i,t}$ is the probability of paying dividends, which is a binary code (0/1) that equals 1 if the firm pays dividends, 0 otherwise (Model 1); $DPOUT_{i,t}$ is the dividend payout ratio that is the fraction of dividends per share to earnings per share (Model 2), and $DYIELD_{i,t}$ is the dividend yield that is measured as dividends per share to price per share (Model 3) in a given year during the period 2003–2012. Furthermore, the explanatory (test) variables are that *ROA* is the return on assets ratio (profitability) defined as net earnings after taxes to total assets; *M/B* is the market-to-book ratio (growth/investment opportunities); *RISK* is stock returns volatility (business risk) calculated as the mean variance of the firm's weekly stock returns; *DEBT* is the debt ratio measured as total debt divided by total assets; *FCF* is the free cash flow per share of the firm; *LIQ* is the current ratio (liquidity) defined as current assets to current liabilities; *TANG* is the ratio of fixed assets to total assets (asset tangibility); *AGE* is firm age, the natural logarithm of the total number of years since the firm's incorporation date, and *SIZE* is the firm size measured as the natural logarithm of market capitalisation. Lastly, the control variables. *INDUSTRY* is a vector of dummy variables using 14 different industry classifications of the research

sample, and *YEAR* represents yearly dummies for the years from 2003 to 2012, which take a value of 1 for the particular year and 0 otherwise.

5. Empirical Results and Discussion

5.1. Descriptive Analysis

Panel A in Table 1 shows descriptive statistics for our research variables gathered from a panel dataset (unbalanced) of 264 ISE-listed firms (non-financial and non-utility) with 2,112 firm-year observations over the period 2003–2012.

As Panel A illustrates, the mean *DPAY* (0.339) indicates that ISE firms in our sample paid dividends in about 34 per cent of the total observations. *DPOUT*[3] reveals that firms had an average dividend payout ratio of 24.3 per cent, whereas they gained an overall dividend yield that was just below 2 per cent, as reported by *DYIELD* (0,019), for the entire period. Moreover, the means of *DEBT* and *ROA* show that firms included about 25 per cent debt financing in their capital structures, and had approximately 2 per cent of returns on total assets invested over the period. On average, ISE firms had a good prospect of growth, as *M/B* shows a mean market-to-book ratio of 1.508 (that is, higher than unity). *LIQ* displays a high average current ratio of 3:1, which implies that firms generally had sufficient liquidity to pay their obligations. Also, the mean *TANG* of 0.49 indicates that ISE firms had almost half of their assets as fixed (tangible) assets.

Panel B in Table 1 shows the Pearson's correlation and Variance of Inflation Factor (VIF) values for the explanatory variables. As can be observed, there are significant correlations amongst variables. However, there is no strong association between any two of them, although a few are moderately correlated. Additionally, we further estimate the VIF and tolerance (calculated as 1/VIF) statistics, in order to check directly the issue of multicollinearity. As a rule of thumb, a VIF value greater than 10 and a tolerance value lower than 0.1 signify multicollinearity. Since none of the VIFs exceeds 10, nor are the tolerance values smaller than 0.1, the results suggest no multicollinearity problem amongst our explanatory variables.

5.2. Regression Analysis

Table 2 reports the results of logit and tobit regression models for the dividend payment decisions of ISE firms. Model 1 shows the random-effects logit estimates on the probability of paying a cash dividend, whereas Model 2 and 3 present the random-effects tobit estimates on dividend payout ratio and dividend yield, respectively. The table also illustrates the marginal effects (economic significance) of explanatory variables to provide further interpretations, in addition to the logit/tobit coefficients (statistical significance) – it is worth noting that the marginal effects reflect the marginal impact of each explanatory variable on the dependent variable at the mean values of other explanatory variables.

Table 1: Descriptive Statistics, and Pearson's Correlations and VIF Values

Panel A: Descriptive statistics of research variables

Variables	*DPAY*	*DPOUT*	*DYIELD*	*ROA*	*M/B*	*RISK*	*DEBT*	*FCF*	*LIQ*	*TANG*	*AGE*	*SIZE*
Mean	0.339	0.243	0.019	0.021	1.508	0.457	0.249	0.078	3.014	0.490	3.445	4.863
Median	0.000	0.000	0.000	0.030	1.162	0.420	0.158	0.042	1.561	0.497	3.555	4.704
Std. Dev.	0.473	0.911	0.040	0.185	1.322	0.196	0.542	1.340	9.099	0.215	0.499	1.712
Minimum	0.000	0.000	0.000	–5.120	0.284	0.017	0.000	–19.18	0.005	0.001	1.098	0.513
Maximum	1.000	21.05	0.663	1.059	18.66	2.868	10.76	13.58	263.6	0.991	4.477	10.16

Panel B: Pearson's correlations and VIF values of explanatory variables

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*VIF*	*1/VIF*
(1) ROA	1.000									1.56	0.641
(2) M/B	–0.144**	1.000								1.51	0.662
(3) RISK	–0.132**	0.171**	1.000							1.14	0.877
(4) DEBT	–0.498**	0.458**	0.073**	1.000						1.77	0.565
(5) FCF	0.276**	–0.042	–0.027	–0.104**	1.000					1.09	0.917
(6) LIQ	0.111**	0.052*	–0.012	–0.093**	0.056**	1.000				1.03	0.971
(7) TANG	–0.145**	–0.000	0.024	0.082**	–0.111**	–0.058**	1.000			1.06	0.943
(8) AGE	–0.005	–0.091**	–0.071**	0.035	0.044*	–0.049*	0.088**	1.000		1.06	0.943
(9) SIZE	0.301**	0.152**	–0.071**	–0.157**	0.044**	0.011	0.094**	0.146**	1.000	1.03	0.971

Notes: ** and * indicate statistical significance at the 1% and 5% levels, respectively.

Table 2: Results of Logit and Tobit Estimates for Dividend Payment Decisions

Model:	Model 1 Random effects logit		Model 2 Random effects tobit		Model 3 Random effects tobit	
Dependent variable:	Dividend payment $DPAY_{i,t}$ (0/ 1)		Dividend payout ratio $DPOUT_{i,t}$		Dividend yield $DYIELD_{i,t}$	
Independent variables:	Coefficient estimates	Marginal effects	Coefficient estimates	Marginal effects	Coefficient estimates	Marginal effects
$ROA_{i,t-1}$	11.486*** (7.76)	1.1043*** (8.32)	6.1409*** (7.65)	0.7719*** (7.86)	0.3047*** (12.71)	1.1510*** (12.91)
$M/B_{i,t-1}$	–0.3572*** (–2.94)	–0.0343*** (–2.99)	–0.1920*** (–2.84)	–0.0241*** (–2.87)	–0.0088*** (–4.06)	–0.0335*** (–4.05)
$RISK_{i,t-1}$	–0.7864 (–1.16)	–0.0756 (–1.16)	–1.0497 (–1.17)	–0.1319 (–1.17)	–0.0164 (–1.31)	–0.0620 (–1.31)
$DEBT_{i,t-1}$	–3.9045*** (–4.82)	–0.3753*** (–4.91)	–1.4614*** (–3.11)	–0.1837*** (–3.12)	–0.0778*** (–5.18)	–0.2938*** (–5.17)
$FCF_{i,t-1}$	0.0813 (1.05)	0.0078 (1.05)	0.0016 (0.04)	0.0002 (0.04)	0.0001 (0.16)	0.0006 (0.16)
$LIQ_{i,t-1}$	0.0058 (0.46)	0.0005 (0.46)	0.0013 (0.02)	0.0001 (0.02)	0.0001 (0.99)	0.0006 (0.99)
$TANG_{i,t-1}$	–0.4694 (–0.59)	–0.0451 (–0.59)	–0.6026 (–1.28)	–0.0757 (–1.28)	–0.0368 (–1.33)	–0.1391 (–1.34)
$AGE_{i,t-1}$	0.7665* (1.93)	0.0736* (1.95)	0.2765** (2.29)	0.0347** (2.31)	0.0220*** (2.68)	0.0833*** (2.70)
$SIZE_{i,t-1}$	1.1052*** (7.84)	0.1062*** (9.70)	0.5371*** (7.04)	0.0675*** (7.72)	0.0177*** (6.58)	0.0670*** (7.02)
Constant	–7.2745*** (–4.78)		–3.7642*** (–4.45)		–0.1569*** (–5.03)	
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
YEAR	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1,846	1,846	1,800	1,800	1,846	1,846
Wald χ^2	198.06***		213.21***		377.75***	
ρ value	0.6148		0.3411		0.5253	
Likelihood-ratio test	268.41***		121.47***		315.86***	

Notes: The table reports the logit/tobit estimates and *z*-statistics in the parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged.

The results reveal that Models 1, 2 and 3 are overall statistically significant at the 1 per cent level, as evidenced by the Wald χ^2 tests. The likelihood-ratio test statistics are also highly significant at the 1 per cent level, signposting that the panel-level variance component (ρ) values are considerably different from zero for all models (0.6148, 0.3411 and 0.5253, respectively). This suggests that the random effects (panel) models are preferable to the pooled models in estimating the relationship between firm-specific variables and dividend policy decisions of ISE firms. Therefore, we report our findings based on the random effects logit/tobit models, although we obtain very similar results using pooled logit and tobit regressions for Models 1, 2 and 3.

The random effects logit and tobit estimates show that the coefficients on *ROA* (profitability) are positive and statistically significant ($z = 7.76$, $p < 0.01$ in Model 1, $z = 7.65$, $p < 0.01$ in Model 2, and $z = 12.71$, $p < 0.01$ in Model 3). The marginal effects of this variable, other things being equal, indicate that a 10 percentage point increase in *ROA* will increase the probability of paying dividends by about 11 per cent, dividend payout ratio by around 7.72 per cent, and dividend yield by approximately 11.5 per cent, for an average firm. The evidence of this positive relationship between profitability and dividend policy is consistent with signalling theory (Bhattacharya, 1979; John and Williams, 1985; Miller and Rock, 1985), suggesting that more profitable ISE firms are more likely to pay dividends, even pay out higher amounts, to show their better financial performance to the market. It is also consistent with various studies from developed countries (e.g. Fama and French 2001; DeAngelo et al 2006; Ferris et al, 2006) and developing countries (e.g. Aivazian et al 2003; Kirkulak and Kurt 2010). Hence, this evidence lends support for **H1**.

Furthermore, the results report a strong negative impact of growth (investment) opportunities on dividend decisions, since the coefficients on *M/B* are negative and highly significant in all models ($z = –2.94$, $p < 0.01$ in Model 1, $z = –2.84$, $p < 0.01$ in Model 2, and $z = 4.06$, $p < 0.01$ in Model 3). The marginal effects imply that the probability of paying a cash dividend and the level of dividend yield decrease by about 0.34 per cent, and the magnitude of the dividend payout ratio drops by around 0.24 per cent for an average firm, corresponding to a 10 percentage point increase in *M/B*. Accordingly, this is inconsistent with La Porta et al's (2000) substitution model of dividends, and studies such as Aivazian et al (2003), Al-Najjar (2009) and Kirkulak and Kurt (2010) who find a positive relationship between growth and dividend policy in different emerging markets. However, in accordance with the pecking order theory (Myers 1984; Myers and Majluf 1984) and transactions cost theory (Rozeff 1982; Holder et al 1998), and in line with previous research on developed markets (e.g. Fama and French 2001; Baker and Wurgler 2004; Ferris et al 2006), this implies that high-growth ISE firms tend to distribute lower or zero dividends. Thus, this finding provides support for **H2**.

The results in Table 2 further reveal another negative association, between the usage of debt (*DEBT*) and dividends. The coefficients on *DEBT* are significant

and negative in logit and tobit models ($z = –4.82$, $p < 0.01$, $z = –3.11$, $p < 0.01$ and $z = –5.18$, $p < 0.01$ in Models 1, 2 and 3, respectively) and the marginal effects of the variables, all else being equal, illustrate that a 10 percentage point increase in debt ratio will decrease the probability of paying dividends by about 3.75 per cent, and the magnitudes of dividend payout ratio and dividends by approximately 1.84 per cent and 2.94 per cent, respectively, for an average firm. This negative impact is consistent with the notion that the use of debt and dividend payments are alternative devices in monitoring managers and controlling agency-related problems (Jensen and Meckling 1976; Jensen 1986; Crutchley et al 1999). This also implies that highly-levered ISE firms are more likely to maintain their internal earnings to pay obligations that derive from raising costly external financing, in line with transactions cost theory (Rozeff 1982; Manos 2002). The inverse association between debt and dividend policy is also supported by prior research conducted in developing countries, such as Aivazian et al (2003), Al-Najjar (2009) and Kirkulak and Kurt (2010). Therefore, this evidence lends support for **H4**.

The random effects logit and tobit estimates show that the coefficients on *AGE* (firm age) are positive and statistically significant ($z = 1.93$, $p < 0.10$ in Model 1, $z = 2.29$, $p < 0.05$ in Model 2, and $z = 2.68$, $p < 0.01$ in Model 3) and the marginal effects of *AGE* show that the probability of paying a cash dividend will go up by about 0.74 per cent, and the amounts of dividend payout ratio and dividend yield will increase by about 0.35 per cent and 0.83 per cent, respectively, corresponding to a 10 percentage point increase in firm age. This finding suggests that more mature ISE firms are more likely to distribute cash dividends, consistent with Grullon et al's (2002) maturity (firm life-cycle) hypothesis and DeAngelo et al (2006), who also conform a positive correlation between firm age and dividend payments. Hence, this provides support for **H8**.

The results in Table 2 indicate that the corporate dividend decisions of ISE firms are also positively affected by firm size (*SIZE*), since the coefficients on this variable are positive and highly significant ($z = 7.84$, $p < 0.01$, $z = 7.04$, $p < 0.01$, and $z = 6.58$, $p < 0.01$ in Models 1, 2 and 3, respectively). The marginal effects show that a 10 percentage point increase in SIZE will increase the probability of paying dividends by roughly 1.06 per cent, and the magnitude of dividend payout ratio and dividend yield by around 0.67-0.68 per cent for an average firm. This positive relationship between firm size and dividend policy is, again, consistent with various studies, such as Gaver and Gaver (1993), Barclay et al (1995), Moh'd et al (1995), Fama and French (2001), Farinha (2003), Ferris et al (2006), and Al-Najjar (2009). Based on the transactions cost and agency problem arguments (Lloyd et al 1985; Crutchley and Hansen 1989; Holder et al 1998), this positive relation implies that larger ISE firms generally have easier access to the capital markets to raise external finance at lower costs and less dependency on internal funds, and often face higher potential agency conflicts; thus they are more likely to pay dividends and have a tendency

to distribute higher amounts to mitigate such problems. Therefore, this finding lends support for **H9**.

Finally, the random effects logit and tobit estimates in Table 2 show no significant impact of business risk (*RISK*), free cash flow (*FCF*), liquidity (*LIQ*) and asset tangibility (*TANG*) on dividend payment decisions. Accordingly, this evidence reveals that these firm-specific factors do not affect corporate dividend policies of the ISE firms in a significant way. Hence, this leads us to reject **H3**, **H5**, **H6** and **H7**.

We perform supplementary tests to check the robustness of our main findings. First, we estimate our research models using an alternative econometric approach, namely ordinary least squares (OLS) regression, to find out whether the above results are robust or sensitive to the usage of a different estimation technique. Accordingly, Table 3 reports the results of OLS regression models for the dividend payment decisions of ISE firms. In particular, Model 1

Table 3: Results of OLS Estimates for Dividend Payment Decisions

Model:	Model 1 Linear probability model	Model 2 Pooled OLS	Model 3 Pooled OLS
Dependent variable:	Dividend payment $DPAY_{i,t}$ *(0/1)*	Dividend payout ratio $DPOUT_{i,t}$	Dividend yield $DYIELD_{i,t}$
Independent variables:			
$ROA_{i,t-1}$	0.3976*** (2.84)	0.2430*** (3.01)	0.4641*** (3.16)
$M/B_{i,t-1}$	–0.2616** (–2.02)	–0.2183* (–1.88)	–0.0147*** (–3.32)
$RISK_{i,t-1}$	–0.0148 (–1.42)	–0.0029 (–0.43)	–0.0007 (–1.09)
$DEBT_{i,t-1}$	–0.3125*** (–2.61)	–0.1557*** (–5.76)	–0.1730* (–1.83)
$FCF_{i,t-1}$	0.0248 (0.68)	0.0062 (1.17)	0.0043 (0.36)
$LIQ_{i,t-1}$	0.0039 (1.40)	0.0020 (1.28)	0.0025 (0.84)
$TANG_{i,t-1}$	–0.0097 (–0.71)	–0.1276 (–1.56)	–0.0106 (–1.08)
$AGE_{i,t-1}$	0.0503** (2.28)	0.0139* (1.93)	0.0049** (2.37)
$SIZE_{i,t-1}$	0.1160*** (5.93)	0.0631*** (6.28)	0.0426*** (7.30)
Constant	–2.2498*** (–3.63)	–1.8025** (–2.01)	–0.1614*** (–3.72)
INDUSTRY	Yes	Yes	Yes
YEAR	Yes	Yes	Yes
Number of observations	1,846	1,800	1,846
F-statistic	77.41***	42.19***	15.20***
R^2(%)	33.39	28.63	19.95

Notes: The table reports the coefficients and *t*-statistics in the parentheses. The models are tested using White's corrected heteroscedasticity robust regressions. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged.

illustrates the linear probability model estimates on the likelihood of paying a cash dividend, whereas Models 2 and 3 display the pooled OLS estimates on dividend payout ratio and dividend yield, respectively. As seen in Table 3, the OLS estimates are in line with the logit/tobit estimates reported in Table 2, providing consistent results since the explanatory (test) variables have the same directional signs and exhibit similar statistical significance behaviour. Therefore, this confirms the robustness of our main findings.

Second, we estimate each of the three research models by conducting year-by-year OLS cross-sectional regressions over the period 2003–2012, in order to identify the time-variation in the explanatory power of firm-specific characteristics on dividend decisions.[4] In this respect, Table 4 presents the results of OLS cross-sectional tests, for each year, for the probability of paying dividends (Panel A), dividend payout ratio (Panel B) and dividend yield (Panel C). The results show that *F*-statistics of all 27 OLS cross-sectional estimates (three different dependent variables and nine years) are statistically significant at the 1 per cent level, indicating overall significance of all tests. The R^2 values of estimated equations vary between 15 per cent and 55 per cent and hence suggest an acceptable level of goodness-of-fit. Moreover, the evidence from our cross-sectional analysis across years supports the validity of our panel evidence – that is, profitability, growth, debt, firm age and size are the significant factors in determining the dividend policies of ISE firms.

5.3. Further Analysis

Since our research sample covers a long time period, 2003 to 2012, we attempt to control for unobserved time-varying effects using year dummies. The September 2008 global financial crisis also occurred during our sample period, so we conduct further tests to examine directly the impact of the global financial crisis. In particular, we extend our logit and tobit models by adding a crisis dummy (denoted as *PERIOD*), which takes the value 0 for the pre-crisis period (2003–2007) and 1 for the post-crisis period (2008–2012). We also introduce interaction terms between the crisis dummy and nine firm-specific variables in all models, to capture the possible impact of the global financial crisis on our explanatory variables. Accordingly, Table 5 illustrates the estimates from the extended logit/tobit models (including the crisis dummy and interaction terms) for the probability of paying dividends (Model 1B), dividend payout ratio (Model 2B) and dividend yield (Model 3B). The results, however, show no significant impact of the crisis dummy in any of the models. Similarly, none of the interaction terms is statistically significant, suggesting that firm-specific factors have the same influence on dividend policy pre- and post-crisis periods. Consistent with our main findings, the evidence from the further tests also reveals that more profitable, more mature and larger ISE firms are more likely to pay dividends (and distribute higher dividends), whereas ISE firms with higher growth and more debt are less likely to pay dividends (and distribute lower dividends).

Table 4: Results of Cross-Sectional Analysis using OLS for Dividend Payment Decisions across Years

Panel A: Cross-sectional estimates on the probability of paying dividends

Dependent variable: $DPAY_{i,t}$ (0/1)			Model 1A										
Fiscal year	No. of firms	Constant	$ROA_{i,t-1}$	$M/B_{i,t-1}$	$RISK_{i,t-1}$	$DEBT_{i,t-1}$	$FCF_{i,t-1}$	$LIQ_{i,t-1}$	$TANG_{i,t-1}$	$AGE_{i,t-1}$	$SIZE_{i,t-1}$	*INDUSTRY*	*F*-test	R^2 (%)
2003–2004	157	–1.9686†	0.2416**	–0.1098**	–0.0109	–0.4552†	0.0269	0.0016	–0.0045	0.0455†	0.0901†	Yes	2.61†	30.03
		(–2.70)	(1.99)	(–2.24)	(–0.44)	(–3.09)	(0.63)	(0.20)	(–0.35)	(2.34)	(3.98)			
2004–2005	164	–2.1115†	1.2245†	–0.1285**	–0.0128	–0.2698**	0.0234	0.0038	–0.0074	0.0242*	0.1259†	Yes	4.40†	40.73
		(–3.31)	(3.08)	(–2.21)	(–0.82)	(–2.51)	(0.70)	(0.62)	(–0.61)	(1.85)	(4.52)			
2005–2006	197	–2.0409†	1.3884†	–0.2457†	–0.0245	–0.2603**	0.0260	0.0011	–0.0053	0.0430**	0.1386†	Yes	9.34†	55.04
		(–3.10)	(4.59)	(–2.87)	(–0.87)	(–2.23)	(1.46)	(0.14)	(–0.40)	(2.29)	(6.45)			
2006–2007	211	–2.0170†	1.2690†	–0.1948**	–0.0194	–0.2677**	0.0237	0.0027	–0.0106	0.0502**	0.1263†	Yes	7.07†	45.28
		(–2.98)	(4.91)	(–2.52)	(–0.52)	(–2.44)	(1.29)	(0.47)	(–1.16)	(2.36)	(6.11)			
2007–2008	213	–2.5526†	1.5280†	–0.1295**	–0.0130	–0.2983†	0.0171	0.0050	–0.0123	0.0203*	0.0784†	Yes	6.62†	43.38
		(–3.90)	(5.75)	(–2.44)	(–0.64)	(–2.67)	(0.42)	(1.22)	(–1.29)	(1.70)	(3.71)			
2008–2009	215	–2.4657†	0.5790†	–0.4111†	–0.0411*	–0.2410*	0.0147	0.0030	–0.0034	0.0346**	0.1038†	Yes	32.08†	43.60
		(–3.76)	(2.72)	(–3.73)	(–1.73)	(–1.84)	(0.73)	(1.02)	(–0.18)	(2.10)	(5.26)			
2009–2010	218	–2.1031†	0.5540**	–0.4564**	–0.0256	–0.3225†	0.0144	0.0023	–0.0061	0.0584**	0.0730†	Yes	23.31†	37.14
		(–3.18)	(2.53)	(–2.01)	(–1.44)	(–2.89)	(0.66)	(0.49)	(–0.54)	(2.41)	(3.44)			
2010–2011	225	–2.6098†	1.2020†	–0.0611*	–0.0061	–0.4941†	0.0258	0.0024	–0.0056	0.0492**	0.0785†	Yes	35.74†	36.68
		(–4.02)	(3.94)	(–1.73)	(–0.31)	(–3.56)	(0.88)	(0.55)	(–0.45)	(2.37)	(3.76)			
2011–2012	246	–2.2175†	0.2138*	–0.1297**	–0.0129	–0.2600**	0.0260	0.0053	–0.0067	0.0536**	0.1204†	Yes	71.67†	36.37
		(–3.34)	(1.76)	(–1.98)	(–0.55)	(–2.10)	(0.95)	(1.33)	(–0.59)	(2.40)	(6.52)			

Panel B: Cross-sectional estimates on dividend payout ratio

Dependent variable: $DPOUT_{i,t}$			Model 2A										
Fiscal year	No. of firms	Constant	$ROA_{i,t-1}$	$M/B_{i,t-1}$	$RISK_{i,t-1}$	$DEBT_{i,t-1}$	$FCF_{i,t-1}$	$LIQ_{i,t-1}$	$TANG_{i,t-1}$	$AGE_{i,t-1}$	$SIZE_{i,t-1}$	*INDUSTRY*	*F*-test	R^2 (%)
2003–2004	154	–1.9179**	0.1680**	–0.2415**	–0.0067	–0.1779†	0.0055	0.0013	–0.1472	0.0196**	0.0615†	Yes	2.75†	26.90
		(–2.38)	(2.41)	(–2.03)	(–0.74)	(–6.43)	(0.98)	(1.05)	(–1.63)	(2.40)	(5.37)			
2004–2005	160	–1.5542**	0.2759†	–0.1972*	–0.0059	–0.1562†	0.0074	0.0009	–0.1232	0.0130*	0.0874†	Yes	8.23†	20.61
		(–1.99)	(3.12)	(–1.94)	(–0.52)	(–5.83)	(1.20)	(0.69)	(–1.52)	(1.78)	(7.12)			
2005–2006	195	–1.3040*	0.5404†	–0.1895*	–0.0019	–0.1476†	0.0053	0.0018	–0.1243	0.0147*	0.0653†	Yes	15.58†	31.19
		(–1.74)	(5.35)	(–1.82)	(–0.27)	(–4.24)	(0.92)	(1.22)	(–1.57)	(1.85)	(5.68)			
2006–2007	209	–1.7931**	0.4243†	–0.2297**	–0.0021	–0.1322†	0.0031	0.0025	–0.1353	0.0121*	0.0427†	Yes	4.91†	25.70
		(–2.18)	(2.90)	(–2.00)	(–0.35)	(–4.08)	(0.57)	(1.33)	(–1.59)	(1.69)	(3.91)			
2007–2008	208	–1.8041**	0.3177†	–0.1460*	–0.0033	–0.1897†	0.0040	0.0019	–0.1185	0.0155*	0.0862†	Yes	9.08†	24.43
		(–2.23)	(2.80)	(–1.66)	(–0.49)	(–6.40)	(1.01)	(1.24)	(–1.38)	(1.93)	(6.74)			
2008–2009	203	–2.1509**	0.1613**	–0.1017	–0.0027	–0.1505†	0.0026	0.0011	–0.1060	0.0179*	0.0515†	Yes	22.47†	27.28
		(–2.46)	(2.55)	(–1.52)	(–0.34)	(–4.30)	(0.48)	(0.87)	(–1.12)	(1.95)	(4.69)			

2009–2010	214	–1.7055**	0.2070†	–0.2433**	–0.0011	–0.1985†	0.0031	0.0029	–0.1214	0.0143*	0.0601†	Yes	38.50†	33.51
		(–2.17)	(2.92)	(–2.41)	(–0.15)	(–5.82)	(0.84)	(1.21)	(–1.33)	(1.80)	(5.99)			
2010–2011	218	–1.9431**	0.3228†	–0.1719*	–0.0061	–0.1399†	0.0089	0.0033	–0.1152	0.0116*	0.0709†	Yes	15.63†	19.06
		(–2.26)	(3.02)	(–1.74)	(–0.45)	(–3.98)	(1.35)	(1.42)	(–1.29)	(1.66)	(6.57)			
2011–2012	239	–1.8401**	0.1505**	–0.2090*	–0.0040	–0.1462†	0.0067	0.0025	–0.1619	0.0128*	0.0598†	Yes	20.82†	26.19
		(–2.19)	(2.28)	(–1.83)	(–0.39)	(–4.91)	(1.29)	(1.39)	(–1.61)	(1.75)	(6.10)			

Panel C: Cross-sectional estimates on dividend yield

Dependent variable: $DYIELD_{i,t}$						Model 3A								
Fiscal year	No. of firms	Constant	$ROA_{i,t-1}$	$M/B_{i,t-1}$	$RISK_{i,t-1}$	$DEBT_{i,t-1}$	$FCF_{i,t-1}$	$LIQ_{i,t-1}$	$TANG_{i,t-1}$	$AGE_{i,t-1}$	$SIZE_{i,t-1}$	*INDUSTRY*	*F*-test	R^2 (%)
2003–2004	157	–0.2067†	0.2831†	–0.0115†	–0.0005	–0.1607*	0.0027	0.0021	–0.0115	0.0023*	0.0328†	Yes	5.69†	13.12
		(–4.64)	(2.82)	(–3.14)	(–1.14)	(–1.71)	(0.23)	(0.80)	(–1.16)	(1.87)	(6.56)			
2004–2005	164	–0.1759†	0.5174†	–0.0094**	–0.0003	–0.1824*	0.0018	0.0018	–0.0088	0.0036**	0.0530†	Yes	4.65†	22.03
		(–4.20)	(3.49)	(–2.79)	(–0.55)	(–1.85)	(0.19)	(0.61)	(–0.69)	(2.25)	(8.36)			
2005–2006	197	–0.2465†	0.3201†	–0.0158†	–0.0006	–0.1598*	0.0034	0.0020	–0.0135	0.0034**	0.0461†	Yes	7.41†	18.39
		(–5.01)	(2.94)	(–3.56)	(–1.00)	(–1.66)	(0.30)	(0.74)	(–1.22)	(2.18)	(7.42)			
2006–2007	211	–0.1958†	0.1727**	–0.0148†	–0.0008	–0.1993*	0.0055	0.0031	–0.0109	0.0015*	0.0389†	Yes	3.57†	19.44
		(–4.57)	(2.19)	(–3.28)	(–1.28)	(–1.90)	(0.79)	(0.95)	(–1.13)	(1.71)	(6.95)			
2007–2008	213	–0.1602†	0.3842†	–0.0135†	–0.0007	–0.2364**	0.0046	0.0024	–0.0071	0.0038**	0.0404†	Yes	4.63†	14.92
		(–3.59)	(3.01)	(–3.11)	(–0.81)	(–2.17)	(0.39)	(0.83)	(–0.48)	(2.30)	(7.10)			
2008–2009	215	0.1481†	0.5340†	–0.0129†	–0.0001	–0.1938**	0.0063	0.0011	–0.0095	0.0071†	0.0589†	Yes	10.94†	23.50
		(–3.25)	(3.58)	(–3.20)	(–0.13)	(–2.05)	(0.85)	(0.48)	(–0.90)	(2.74)	(8.62)			
2009–2010	218	–0.1344†	0.4253†	–0.0140†	–0.0011	–0.1756*	0.0029	0.0017	–0.0104	0.0052**	0.0613†	Yes	13.65†	16.97
		(–2.98)	(3.11)	(–3.44)	(–1.37)	(–1.94)	(0.27)	(0.56)	(–1.09)	(2.53)	(8.77)			
2010–2011	225	–0.1553†	0.5094†	–0.0168†	–0.0015	–0.1835*	0.0044	0.0019	–0.0120	0.0046**	0.0551†	Yes	12.03†	14.92
		(–3.42)	(3.54)	(–3.65)	(–1.53)	(–1.79)	(0.37)	(0.65)	(–1.18)	(2.47)	(8.44)			
2011–2012	246	–0.1796†	0.3984†	–0.0137†	–0.0009	–0.2145*	0.0030	0.0026	–0.0127	0.0060**	0.0493†	Yes	11.06†	15.74
		(–4.33)	(3.09)	(–3.22)	(–1.32)	(–1.95)	(0.29)	(0.90)	(–1.31)	(2.56)	(7.68)			

Notes: The table reports the coefficients and *t*-statistics in the parentheses. The models are tested using White's corrected heteroscedasticity robust regressions. †, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged. The models (Model 1A-3A) are constructed as below:

Model 1A: $DPAY_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t-1} + \alpha_2 M/B_{i,t-1} + \alpha_3 RISK_{i,t-1} + \alpha_4 DEBT_{i,t-1} + \alpha_5 FCF_{i,t-1} + \alpha_6 LIQ_{i,t-1} + \alpha_7 TANG_{i,t-1} + \alpha_8 AGE_{i,t-1} + \alpha_9 SIZE_{i,t-1} + \alpha_j INDUSTRY_{j,i,t} + \varepsilon$

Model 2A: $DPOUT_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 M/B_{i,t-1} + \beta_3 RISK_{i,t-1} + \beta_4 DEBT_{i,t-1} + \beta_5 FCF_{i,t-1} + \beta_6 LIQ_{i,t-1} + \beta_7 TANG_{i,t-1} + \beta_8 AGE_{i,t-1} + \beta_9 SIZE_{i,t-1} + \beta_j INDUSTRY_{j,i,t} + u$

Model 3A: $DYIELD_{i,t} = \gamma_0 + \gamma_1 ROA_{i,t-1} + \gamma_2 M/B_{i,t-1} + \gamma_3 RISK_{i,t-1} + \gamma_4 DEBT_{i,t-1} + \gamma_5 FCF_{i,t-1} + \gamma_6 LIQ_{i,t-1} + \gamma_7 TANG_{i,t-1} + \gamma_8 AGE_{i,t-1} + \gamma_9 SIZE_{i,t-1} + \gamma_j INDUSTRY_{j,i,t} + \omega$

Table 5: Results of Logit and Tobit Estimates for the Impact of the 2008 Global Financial Crisis on Dividend Payment Decisions

Model:	Model 1B Random effects logit		Model 2B Random effects tobit		Model 3B Random effects tobit	
Dependent variable:	Dividend payment $DPAY_{i,t}$ (0/1)		Dividend payout ratio $DPOUT_{i,t}$		Dividend yield $DYIELD_{i,t}$	
Independent variables:	Coefficient estimates	Marginal effects	Coefficient estimates	Marginal effects	Coefficient estimates	Marginal effects
$ROA_{i,t-1}$	10.929***	1.0939***	5.3648***	0.6689***	0.3575***	1.0364***
	(5.54)	(5.77)	(5.07)	(5.16)	(10.92)	(10.45)
$M/B_{i,t-1}$	–0.3423***	–0.0340***	–0.2230***	–0.0286***	–0.0103***	–0.0396***
	(–2.59)	(–2.71)	(–2.63)	(–2.64)	(–3.64)	(–3.62)
$RISK_{i,t-1}$	–0.9495	–0.0706	–0.9541	–0.2437	–0.0151	–0.0384
	(–1.24)	(–1.25)	(–1.12)	(–1.14)	(–1.47)	(–1.47)
$DEBT_{i,t-1}$	–3.1796***	–0.2829***	–1.3769***	–0.1699***	–0.0626***	–0.2388***
	(–3.76)	(–3.82)	(–3.39)	(–3.45)	(–4.99)	(–5.03)
$FCF_{i,t-1}$	0.0884	0.0081	0.0025	0.0012	0.0007	0.0002
	(1.19)	(1.19)	(0.51)	(0.51)	(0.47)	(0.47)
$LIQ_{i,t-1}$	0.0063	0.0004	0.0018	0.0005	0.0003	0.0001
	(0.50)	(0.50)	(0.37)	(0.39)	(0.64)	(0.64)
$TANG_{i,t-1}$	–0.3748	–0.0343	–0.7843	–0.0978	–0.0514	–0.1961
	(–0.43)	(–0.43)	(–1.45)	(–1.44)	(–0.93)	(–0.94)
$AGE_{i,t-1}$	0.5269*	0.0483*	0.2354**	0.0169**	0.0232***	0.0884***
	(1.72)	(1.73)	(2.37)	(2.40)	(2.73)	(2.76)
$SIZE_{i,t-1}$	1.1782***	0.1128***	0.5404***	0.0570***	0.0168***	0.0651***
	(8.01)	(9.05)	(6.44)	(6.91)	(6.10)	(6.39)
$PERIOD_{i,t}$	–1.6337	–0.1732	–1.5352	–0.3161	–1.0411	–0.1753
	(–1.07)	(–1.14)	(–1.40)	(–1.39)	(–1.55)	(–1.55)
$PERIOD_{i,t}$ x $ROA_{i,t-1}$	0.0418	0.0041	0.2119	0.0264	0.0969	0.0069
	(0.26)	(0.26)	(0.58)	(0.59)	(1.46)	(1.42)
$PERIOD_{i,t}$ x $M/B_{i,t-1}$	–0.0714	–0.0071	–0.0348	–0.0043	–0.0083	–0.0032
	(–0.42)	(–0.42)	(–0.35)	(–0.35)	(–0.26)	(–0.26)
$PERIOD_{i,t}$ x $RISK_{i,t-1}$	–0.0166	–0.0013	–0.0197	–0.0025	–0.0625	–0.0023
	(–0.98)	(–0.92)	(–1.20)	(–1.20)	(–1.50)	(–1.51)
$PERIOD_{i,t}$ x $DEBT_{i,t-1}$	–0.1519	–0.0155	–0.1848	–0.0023	–0.0252	–0.0010
	(–1.25)	(–1.25)	(–1.61)	(–1.61)	(–1.09)	(–1.09)
$PERIOD_{i,t}$ x $FCF_{i,t-1}$	0.0076	0.0007	0.0013	0.0002	0.0050	0.0019
	(0.14)	(0.14)	(0.10)	(0.10)	(0.23)	(0.23)
$PERIOD_{i,t}$ x $LIQ_{i,t-1}$	0.0186	0.0018	0.0040	0.0005	0.0013	0.0002
	(0.53)	(0.53)	(0.28)	(0.28)	(0.39)	(0.39)
$PERIOD_{i,t}$ x $TANG_{i,t-1}$	–0.0401	–0.0040	–0.0591	–0.0044	–0.0218	–0.0032
	(–0.44)	(–0.44)	(–0.60)	(–0.60)	(–1.05)	(–1.05)
$PERIOD_{i,t}$ x $AGE_{i,t-1}$	0.0486	0.0058	0.0372	0.0029	0.0111	0.0043
	(1.15)	(1.34)	(1.49)	(1.55)	(1.16)	(1.22)
$PERIOD_{i,t}$ x $SIZE_{i,t-1}$	0.0620	0.0069	0.0465	0.0058	0.0193	0.0073
	(0.50)	(0.51)	(1.03)	(1.07)	(0.83)	(0.85)

Constant	–6.3129*** (–3.84)		–2.7241*** (–2.92)		–0.1277*** (–3.94)	
INDUSTRY	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1,846	1,846	1,800	1,800	1,846	1,846
Wald χ^2	185.73***		206.93***		371.90***	
ρ value	0.6094		0.3708		0.5204	
Likelihood-ratio test	263.40***		110.65***		332.80***	

Notes: The table reports the logit/tobit estimates and *z*-statistics in the parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged. The models (Model 1B-1C) are constructed as below:

Model 1B:
$$DPAY_{i,t} = \alpha_0 + \alpha_1 ROA_{i,t-1} + \alpha_2 M/B_{i,t-1} + \alpha_3 RISK_{i,t-1} + \alpha_4 DEBT_{i,t-1} + \alpha_5 FCF_{i,t-1} + \alpha_6 LIQ_{i,t-1} + \alpha_7 TANG_{i,t-1} + \alpha_8 AGE_{i,t-1} + \alpha_9 SIZE_{i,t-1} + \alpha_{10} PERIOD_{i,t} + \alpha_{11}(PERIOD_{i,t} x\ ROA_{i,t-1}) + \alpha_{12}(PERIOD_{i,t} x\ M/B_{i,t-1}) + \alpha_{13}(PERIOD_{i,t} x\ RISK_{i,t-1}) + \alpha_{14}(PERIOD_{i,t} x\ DEBT_{i,t-1}) + \alpha_{15}(PERIOD_{i,t} x\ FCF_{i,t-1}) + \alpha_{16}(PERIOD_{i,t} x\ LIQ_{i,t-1}) + \alpha_{17}(PERIOD_{i,t} x\ TANG_{i,t-1}) + \alpha_{18}(PERIOD_{i,t} x\ AGE_{i,t-1}) + \alpha_{19}(PERIOD_{i,t} x\ SIZE_{i,t-1}) + \alpha_j INDUSTRY_{j,i,t} + \varepsilon$$

Model 2B:
$$DPOUT_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 M/B_{i,t-1} + \beta_3 RISK_{i,t-1} + \beta_4 DEBT_{i,t-1} + \beta_5 FCF_{i,t-1} + \beta_6 LIQ_{i,t-1} + \beta_7 TANG_{i,t-1} + \beta_8 AGE_{i,t-1} + \beta_9 SIZE_{i,t-1} + \beta_{10} PERIOD_{i,t} + \beta_{11}(PERIOD_{i,t} x\ ROA_{i,t-1}) + \beta_{12}(PERIOD_{i,t} x\ M/B_{i,t-1}) + \beta_{13}(PERIOD_{i,t} x\ RISK_{i,t-1}) + \beta_{14}(PERIOD_{i,t} x\ DEBT_{i,t-1}) + \beta_{15}(PERIOD_{i,t} x\ FCF_{i,t-1}) + \beta_{16}(PERIOD_{i,t} x\ LIQ_{i,t-1}) + \beta_{17}(PERIOD_{i,t} x\ TANG_{i,t-1}) + \beta_{18}(PERIOD_{i,t} x\ AGE_{i,t-1}) + \beta_{19}(PERIOD_{i,t} x\ SIZE_{i,t-1}) + \beta_j INDUSTRY_{j,i,t} + u$$

Model 3B:
$$DYIELD_{i,t} = \gamma_0 + \gamma_1 ROA_{i,t-1} + \gamma_2 M/B_{i,t-1} + \gamma_3 RISK_{i,t-1} + \gamma_4 DEBT_{i,t-1} + \gamma_5 FCF_{i,t-1} + \gamma_6 LIQ_{i,t-1} + \gamma_7 TANG_{i,t-1} + \gamma_8 AGE_{i,t-1} + \gamma_9 SIZE_{i,t-1} + \gamma_{10} PERIOD_{i,t} + \gamma_{11}(PERIOD_{i,t} x\ ROA_{i,t-1}) + \gamma_{12}(PERIOD_{i,t} x\ M/B_{i,t-1}) + \gamma_{13}(PERIOD_{i,t} x\ RISK_{i,t-1}) + \gamma_{14}(PERIOD_{i,t} x\ DEBT_{i,t-1}) + \gamma_{15}(PERIOD_{i,t} x\ FCF_{i,t-1}) + \gamma_{16}(PERIOD_{i,t} x\ LIQ_{i,t-1}) + \gamma_{17}(PERIOD_{i,t} x\ TANG_{i,t-1}) + \gamma_{18}(PERIOD_{i,t} x\ AGE_{i,t-1}) + \gamma_{19}(PERIOD_{i,t} x\ SIZE_{i,t-1}) + \gamma_j INDUSTRY_{j,i,t} + \omega$$

6. Conclusions

In this study, we examine the effects of firm-specific factors on the dividend payment decisions of Turkish publicly-listed firms, over the period 2003–2012. This period witnessed major economic and structural reforms implemented by the Turkish authorities to promote market integration, and saw significant changes in the regulatory framework of cash dividend policy rules imposed by the CMB of Turkey. Based on a sample of 264 ISE-listed firms over the period 2003–2012, we attempt to identify the most important firm-specific characteristics that would have an impact on the dividend policies of ISE-listed firms, analysing their decisions to pay or not pay dividends (the probability of paying a cash dividend) and how much dividend to pay (employing the dividend

payout ratio and dividend yield). The findings, thus, lead to several conclusions about dividend policy in the Turkish market.

First, we find a positive relationship between profitability and dividend payments, which is consistent with the signalling theory of dividends: more profitable ISE firms pay larger dividends, to show their better financial performance to the market. On the other hand, we find there is a negative effect of growth (investment) opportunities on corporate dividend decisions, in accordance with the pecking order and transactions cost theories. This implies that high-growth ISE firms need more funds to finance their expansion, hence they are more likely to preserve internally generated earnings for investment projects rather than paying dividends, because external finance is costly. Similarly, it is found that debt level is another firm-specific factor that negatively influences dividend policy. This inverse association implies that the use of debt and dividends are substitute tools to control agency-related problems, and therefore higher debt levels reduce the need for paying dividends to mitigate such problems in Turkey. This might also indicate that highly-leveraged ISE firms tend to maintain internal funds to pay their obligations and lower external financing costs instead of paying the cash to shareholders, consistent with transactions cost theory.

Furthermore, we show that mature ISE firms distribute higher dividends, in line with the maturity (firm life-cycle) hypothesis: as they transition from growth to maturity, their investment opportunities and growth rates become slower or even decline, and they start generating larger amounts and steady earnings, which allow them to pay higher dividends. Likewise, firms size also has a positive impact on dividend distributions, reflecting the transactions cost and agency cost explanations. This means that larger ISE firms have easier access to capital markets to raise external finance at minimal costs and face higher potential agency problems compared with smaller ISE corporations. This leads larger ISE firms to pay greater amounts of dividends as a controlling device. Finally, the results present no evidence of a significant effect of business risk, free cash flow, liquidity and asset tangibility on corporate decisions of ISE firms when setting their dividend policies.

Overall, our study shows that firm-specific characteristics affecting the corporate dividend decisions of ISE-listed firms do follow similar patterns to dividend policy factors in more developed economies, following the implementation of major developments in the post-2003 period. Such reforms made Turkish firms comparable to their counterparts in developed markets in terms of dividend policy setting. Our results also illustrate that corporate dividend decisions are sensitive to various financial factors reflecting different dividend theories. Consequently, financial scholars should seek an integrated model that combines various theories for the best explanation of dividend policy, rather than trying hard to develop an explanation based on a single aspect.

Our study, however, has some limitations and hence generalising our findings requires caution. First, under the current Turkish tax system, firms

should pay 20 per cent of their income as corporation tax, and if they distribute cash dividends, their shareholders pay income tax on their dividend payments. Nevertheless, there are differences in the taxation of dividend income among investors in Turkey (since some may receive tax-reduced or even tax-exempt dividends, whereas others might have to pay full income tax on their dividend income). Accordingly, given the nature of high stock-ownership concentration by large shareholders, the tax status of the largest owners (especially controlling shareholders) might have significant implications, rather than a standard flat corporate tax rate of 20 per cent, on the firm-specific tax position towards dividend policy in Turkey. However, there is tax heterogeneity across different groups of blockholders and hence it is not possible to determine accurately the tax position of each firm in our sample. Thus, we are unable to design an explanatory variable that captures precisely the firm-specific tax factor in our research models.

We use time dummies to control for possible variations over time in dividend policy measures caused by unobserved time-related factors, including taxes and shareholders' tax preferences, along with other time-varying dynamics. We then base our analysis on the assumption that investors only invest in firms whose dividend policies complement their particular tax circumstances (consistent with the tax-clientele hypothesis) in order to keep the tax implications minimal; and thereby identify the effects of other important firm-specific determinants on dividend policy more precisely. While we acknowledge that tax may play an important role in the Turkish market, a full analysis of how and to what extent the tax status of large shareholders affects firms' dividend payout choices, or even whether tax heterogeneity among investors has an impact on share prices, is beyond the scope of our paper but could be an interesting subject for future studies.

We also limit our sample to industrial firms by excluding financial companies and utilities. Therefore, further research on dividend policy practices in the financial sector and utility services in Turkey in the post-2003 period could be worthwhile and would provide a more complete picture of the corporate dividend decisions of all corporation trading in the ISE. Finally, our study only focuses on ISE-listed firms, over a time-period when Turkey has undergone major developments to integrate with world markets. However, the implementation of major reforms and regulatory changes may result in different outcomes in different emerging markets. Surely, further empirical work is vital for more knowledge generation and thus we strongly encourage scholars to carry on parallel studies in other emerging markets and make relevant comparisons between the findings in strengthening empirical results and generalising these results for such markets. In this respect, we believe that our study can serve as a valuable benchmark for future longitudinal and cross-country research studies.

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Endnotes

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2. Bekaert et al (2013) state that there is no region in the world which has accomplished more in order to integrate its economies than the EU member countries.

3. Each of the research variables has 2,112 firm-year observations, except dividend payout ratio (*DPOUT*). When firms make losses, their earnings per share become negative, and even if these firms distribute a cash dividend, their dividend payout ratio will be negative – nevertheless, a firm's dividend payout ratio cannot be negative. Hence, such observations are excluded and this in turn leads to 2,066 firm-year observations for *DPOUT*.

4. It is worth noting that since we run OLS cross-sectional regressions for each year, the year dummies become redundant. Thus, we take out the year dummies from the models.

References

Adaoglu C (1999) 'Regulation Influence on the Dividend Policy of the Istanbul Stock Exchange (ISE) Corporations', *The Istanbul Stock Exchange (ISE) Review – Quarterly Economics and Finance Review,* 3, 1-19.

Adaoglu C (2000) 'Instability in the Dividend Policy of the Istanbul Stock Exchange (ISE) Corporations: Evidence from an Emerging Market', *Emerging Markets Review,* 1, 252-270.

Adaoglu C (2008) 'Dividend Policy of the ISE Industrial Corporations: The Evidence Revisited (1986–2007)', *Journal of BRSA Banking and Financial Markets,* 2, 113-135.

Aivazian V, Booth L and Cleary S (2003) 'Do Emerging Market Firms Follow Different Dividend Policies from US Firms?', *Journal of Financial Research,* 26, 371-387.

Aksu M and Kosedag A (2006) 'Transparency and Disclosure Scores and Their Determinants in the Istanbul Stock Exchange', *Corporate Governance: An International Review*, 14, 277-296.

Al-Najjar B (2009) 'Dividend Behaviour and Smoothing: New Evidence from Jordanian Panel Data', *Studies in Economics and Finance,* 26(3), 182-197.

Al-Najjar B and Hussainey K (2009) 'The Association between Dividend Payout and Outside Directorships', *Journal of Applied Accounting Research,* 10(1), 4-19.

Al-Najjar B and Kilincarslan E (2016) 'The effect of Ownership Structure on Dividend Policy: Evidence from Turkey', *Corporate Governance: The International Journal of Business in Society,* 16(1), 135-161.

Anderson RC and Reeb D (2003) 'Founding-Family Ownership and Firm Performance: Evidence from the S&P 500', *Journal of Finance*, 58(3), 1301-1328.

Ararat M and Ugur M (2003) 'Corporate Governance in Turkey: An Overview and Some Policy Recommendations', *Corporate Governance: The International Journal of Business in Society,* 3(1), 58-75.

Baker M and Wurgler J (2004) 'A Catering Theory of Dividends', *Journal of Finance,* 59(3), 1125-1165.

Balsari C K and Varan S (2014) 'IFRS Implementation and Studies in Turkey', *Accounting and Management Information Systems,* 13(2), 373-399.

Barclay M J, Smith Jr C W and Watts R L (1995) 'The Determinants of Corporate Leverage and Dividend Policies', *Journal of Applied Corporate Finance,* 7(4), 4-19.

Bekaert, G. (1995) Market Integration and Investment Barriers in Emerging Equity Markets', *World Bank Economic Review*, 9(1), 75-107.

Bekaert G, Harvey C R and Lumsdaine R L (2002) 'The Dynamics of Emerging Market Equity Flows', *Journal of International Money and Finance,* 21, 295-350.

Bekaert G, Harvey C R and Lundblad C T (2011) 'Financial Openness and Productivity', *World Development,* 39(1), 1-19.

Bekaert G, Harvey C R, Lundblad C T and Siegel S (2013) 'The European Union, the Euro, and Equity Market Integration', *Journal of Financial Economics,* 109, 583-603.

Bhattacharya S. (1979) 'Imperfect Information, Dividend Policy, and "The Bird in the Hand" Fallacy', *Bell Journal of Economics,* 10(1), 259-270.

Birol O H (2011) 'The Effects of the Global Economic Crisis on Turkey's Economy and the Recent Tilt in Her International Relations', *International Journal of Business and Management Studies,* 3(2), 227-236.

Bishop S R, Harvey R C, Robert W F and Garry J T (2000) *Corporate Finance,* Sydney: Prentice Hall.

Brealey A and Myers S (2003) *Principles of Corporate Finance*, 7e, New York NY: McGraw-Hill.

BRSA (2010) 'From Crisis to Financial Stability - Turkey Experience, Working Paper, 3rd edition, Ankara', 3 September 2010, Banking Regulation and Supervision Agency, Department of Strategy Development.

Bugra A (1994) *State and Business in Modern Turkey*, Albany NY: State University of New York Press.

CMB (2003) *Annual Report 2003,* Ankara: Capital Markets Board of Turkey.

CMB (2012) *Annual Report 2012,* Ankara: Capital Markets Board of Turkey.

Cooke T E and Curuk T (1996) 'Accounting in Turkey with Reference to the Particular Problems of Lease Transactions', *European Accounting Review,* 5(2), 339-359.

Crutchley C E and Hansen R S (1989) 'A Test of the Agency Theory of Managerial Ownership, Corporate Leverage, and Corporate Dividends', *Financial Management,* 18(4), 36- 46.

Crutchley C E, Jensen M R H, Jahera Jr J S and Raymond J E (1999) 'Agency Problems and the Simultaneity of Financial Decision Making: The Role of Institutional Ownership', *International Review of Financial Analysis*, 8(2), 177-197.

Darling P G (1957) 'The Influence of Expectations and Liquidity on Dividend Policy', *Journal of Political Economy*, 65(3), 209-224.

DeAngelo H, DeAngelo L and Stulz R M (2006) 'Dividend Policy and the Earned/ Contributed Capital Mix: A Test of the Life-Cycle Theory', *Journal of Financial Economics,* 81(2), 227-254.

Demsetz H and Lehn K (1985) 'The Structure of Corporate Ownership: Causes and Consequences', *Journal of Political Economy*, 93(6), 1155-1177.

Easterbrook F H (1984) 'Two Agency-cost Explanations of Dividends', *American Economic Review*, 74(4), 650-659.

Erturk I (2003) 'Governance or Financialisation: The Turkish Case', *Competition and Change*, 7(4), 185-204.

Faccio M, Lang L H P and Young L (2001) 'Dividends and Expropriation', *American Economic Review*, 91(1), 54-78.

Fama E F and French K R (2001) 'Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?', *Journal of Financial Economics*, 60(1), 3-43.

Farinha J (2003) 'Dividend Policy, Corporate Governance and the Managerial Entrenchment Hypothesis: An Empirical Analysis', *Journal of Business Finance and Accounting*, 30(9/10), 1173-1209.

Ferris S P, Sen N and Yui H P (2006) 'God Save the Queen and Her Dividends: Corporate Payouts in the United Kingdom', *Journal of Business*, 79(3), 1149-1173.

Gaver, J J and Gaver K M (1993) 'Additional Evidence on the Association between the Investment Opportunity Set and Corporate Financing, Dividend and Compensation Policies', *Journal of Accounting and Economics*, 16(1-3), 125-160.

Glen J D, Karmokolias Y, Miller R R and Shah S (1995) 'Dividend Policy and Behaviour in Emerging Markets: To Pay or not to Pay', IFC Discussion Paper 26, Washington DC International Finance Corporation.

Grossman S J and Hart O D (1980) 'Takeover Bids, the Free-rider Problem, and the Theory of the Corporation', *Bell Journal of Economics*, 11(1), 42-64.

Grullon G, Michaely R and Swaminathan B (2002) 'Are Dividend Changes a Sing of Firm Maturity', *Journal of Business*, 75(3), 387-424.

Gursoy G and Aydogan K (1999) 'Equity Ownership Structure, Risk-taking and Performance: An Empirical Investigation in Turkish Companies'. Paper presented at the ERC/METU International Conference in Economics, Ankara.

Ho H (2003) 'Dividend Policies in Australia and Japan', *International Advances in Economic Research*, 9(2), 91-100.

Holder M E, Langrehr F W and Hexter, J L (1998) 'Dividend Policy Determinants: An Investigation of the Influences of Stakeholder Theory', *Financial Management*, 27(3), 73-82.

IIF (2005) '*Corporate Governance in Turkey – An Investor Perspective*', Task Force Report, Washington DC: Institute of International Finance.

Jensen M C (1986) 'Agency Costs of Free Cash Flow, Corporate Finance and Takeovers', *American Economic Review*, 76(2), 323-329.

Jensen M C and Meckling W H (1976) 'Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure', *Journal of Financial Economics*, 3(4), 305-360.

Jensen G R, Solberg D P and Zorn T S (1992) 'Simultaneous Determination of Insider Ownership, Debt and Dividend Policies', *Journal of Financial and Quantitative Analysis*, 27(2), 247-263.

John K and Williams J (1985) 'Dividends, Dilution, and Taxes: A Signalling Equilibrium', *Journal of Finance,* 40(4), 1053-1070.

Kirkulak B and Kurt G (2010) 'Are Dividends Disappearing or Shrinking? Evidence from the Istanbul Stock Exchange', *Emerging Markets Finance and Trade*, 46(2), 38-52.

Kumar P C and Tsetsekos G P (1999) 'The Differentiation of "Emerging" Equity Markets', *Applied Financial Economics*, 9(5), 443-453.

La Porta R, Lopez-de-Silanes F and Shleifer A (1999) 'Corporate Ownership around the World', *Journal of Finance*, 54(2), 471-517.

La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R W (1997) 'Legal Determinants of External Finance', *Journal of Finance*, 52, 1131-1150.

La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R W (2000) 'Agency Problems and Dividend Policies around the World', *Journal of Finance*, 55(1), 1-33.

Lease R C, John K, Kalay A, Loewenstein U and Sarig O H (2000) *Dividend Policy: Its Impact on Firm Value*, Boston MA: Harvard Business School Press.

Lloyd W P, Jahera Jr J S and Page D E (1985) 'Agency Costs and Dividend Payout Ratios', *Quarterly Journal of Business and Economics*, 24, 19-29.

Manos R.(2002) 'Dividend Policy and Agency Theory: Evidence on Indian Firms', Working Paper Series No. 41, Institute for Development Policy and Management, University of Manchester.

Miller M H and Rock K (1985) 'Dividend Policy under Asymmetric Information', *Journal of Finance*, 40(4), 1031-1051.

Moh'd M A, Perry L G and Rimbey J N (1995) 'An Investigation of the Dynamic Relationship between Agency Theory and Dividend Policy', *Financial Review*, 30(2), 367-385.

Morck R, and Yeung B (2003) 'Agency Problems in Large Family Business Groups', *Entrepreneurship Theory and Practice*, 27(4), 367-382.

Myers S C (1984) 'The Capital Structure Puzzle', *Journal of Finance*, 39(3), 575-592.

Myers S C and Majluf N S (1984) 'Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have', *Journal of Financial Economics*, 13(2), 187-221.

Odabaşi A, Asku C and Akgiray V (2004) 'The Statistical Evolution of Prices on the Istanbul Stock Exchange', *European Journal of Finance,* 10, 510-525.

Rozeff M S (1982) 'Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios', *Journal of Financial Research*, 5(3), 249-259.

Sevil G, Ozer M and Kulali G (2012) 'Foreign Investors and Noise Trade in Istanbul Stock Exchange', *International Journal of Business and Social Science*, 3(4), 93-101.

Shleifer A and Vishny R W (1986) 'Large Shareholders and Corporate Control, *Journal of Political Economy*, 94(3), 461-488.

Shleifer A and Vishny R W (1997) 'A Survey of Corporate Governance', *Journal of Finance*, 52(2), 737-783.

Smith Jr C W and Watts R L (1992) 'The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies', *Journal of Financial Economics*, 32, 263-292.

UNCTAD (2008) 'Practical Implementation of International Financial Reporting Standards: Lesson Learned, Country Case Studies on IFRS', United Nations Conference on Trade and Development, New York and Geneva 2008, United Nations Publication.

Villalonga B and Amit R (2006) 'How Do Family Ownership, Control and Management Affect Firm Value?', *Journal of Financial Economics*, 80(2), 385-417.

Ward K (1993) *Corporate Financial Strategy*, Oxford: Butterworth-Heinemann.

Yurtoglu B B (2003) 'Corporate Governance and Implications for Minority Shareholders in Turkey', *Journal of Corporate Ownership & Control*, 1(1), 72-86.