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THE IMPACT OF THE ESG PILLARS ON THE PAYOUT POLICY AMONG G7 COUNTRIES' FIRMS

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Master in Finance

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ISCTE-IUL

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BUSINESS
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Department of Finance

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Resumo

Este estudo investiga a influência que os Pilares *Environmental*, *Social* e *Governance*, pertencentes ao *ESG performance*, têm sobre as decisões de distribuição de lucro das empresas. A amostra analisada é constituída por 3,057 empresas distintas, pertencentes aos países que formam o grupo G7, nomeadamente, a Alemanha, o Canadá, os EUA, a França, a Itália, o Japão e o Reino Unido. Adicionalmente, o estudo realizado analisa dados que abrangem o período de 2000 a 2022. Os resultados demonstram que à medida que as empresas se preocupam com questões ambientais, maior será a probabilidade destas distribuírem dividendos e maior será a quantia paga de dividendos. Subsequentemente, à medida que as empresas se preocupam com problemas sociais, maior será a quantia paga de dividendos aos acionistas. No entanto, à medida que as empresas dão importância ao seu modelo de governação, menor será a quantia paga de dividendos. Efetivamente, ao longo dos anos, tem-se notado uma crescente preocupação com os problemas ambientais, bem como com o impacto social e a eficiência governativa das empresas. Consequentemente, é importante realçar a relevância deste estudo sobre as decisões de distribuição de lucro das empresas nos dias que correm.

Palavras-chave: *Environmental Pillar*, *Social Pillar*, *Governance Pillar*, *ESG Performance*, *payout decisions*, *G7 countries*.

Abstract

This study investigates whether and how the Environmental, Social and Governance Pillars from the ESG performance influence the firms' payout decisions. The sample is composed by 3,057 firms from the G7 countries, and the period range is from 2000 to 2022. The G7 group is formed by Germany, Canada, the USA, France, Italy, Japan, and the United Kingdom. The findings demonstrate that, at firm level, the more companies focus on Environmental issues the higher the probability of paying cash dividends and the higher the dividend amounts paid. Additionally, when firms increase their concern about Social matters the higher the dividend amounts paid, however, the more importance they give to Governance matters the lower the dividend amounts paid. Throughout the years, the concern about environmental issues, firm's social impact and effective governance increased. Consequently, this study is highly relevant in today's context, particularly concerning payout decisions.

Keywords: Environmental Pillar, Social Pillar, Governance Pillar, ESG Performance, payout decisions, G7 countries.

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1 - Introduction

Over the years, the concept Sustainable Finance has become a relevant and a widely discussed topic. With Paris Agreement on climate change and the UN 2030 Agenda for Sustainable Development, countries from around the globe started to focus on a more sustainable path for the planet and for the economy. Consequently, investors began to gain preference on companies that prioritize sustainability and the use of Environmental, Social and Governance (ESG) ratings increased.

As a result, our study focuses on the influence of Environmental, Social and Governance Pillars on the G7 countries' firms' payout decisions. The findings give an international perspective of how these ESG Pillars effect companies from around the globe on their payout decisions. Moreover, these G7 countries' group includes Germany, Canada, USA, France, Italy, Japan, and the United Kingdom. The forecast period ranges from 2000 to 2022 and the control explanatory variables are Size, Profitability, Investment Opportunities, Leverage, Cash Holdings, Retained Earnings, R&D and Capex. Furthermore, as expected, the new explanatory variables are Environmental Pillar Score, Social Pillar Score and Governance Pillar Score.

Subsequently, three hypotheses are formulated. Firstly, Environmental Pillar influences negatively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid; secondly, Social Pillar influences positively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid; and thirdly, Governance Pillar influences positively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid.

In order to determine the validity of the hypotheses, this study employs a panel regression analysis, a method used by Fama and French (2001), Denis and Osobov (2008), Eije and Megginson (2008), Samet and Jarboui (2017) and Bilyay-Erdogan et al. (2023). Moreover, it is used logistic regression to compute the effects of the ESG Pillars on both the probability of a company to pay dividends and repurchase shares and it is also used multiple regression to calculate the influence of the ESG Pillars on both amounts paid by cash dividends payers and repurchasers.

Interestingly, at firm level, the more companies focus on Environmental issues the higher the probability of paying cash dividends and the higher the dividend amounts paid. Furthermore, when firms increase their concern about Social matters the higher the dividend amounts paid; yet, the more importance they give to Governance matters the lower the dividend amounts paid.

Lastly, it is crucial to emphasize the importance of this study for investors since it demonstrates whether and how the ESG Pillars influence a company's decision to choose between dividends, share repurchases, and their amounts paid.

2 - Literature Review

2.1 – Dividend Theories and Empirical Evidence

2.1.1 – Dividend Theories

It is always a crucial decision for firms to choose how to allocate the free cash flow generated from their investments. There are some approaches used by firms to make use of the excess cash. First, firms can retain the free cash flow, or by investing on positive NPV investment opportunities to increase the value of the firm, or by investing in financial securities, or simply by increasing their cash reserves. Alternatively, firms can choose to pay out the cash by distributing it to their shareholders through dividends or share repurchases. The last approach related to the payout policy is the main focus of this study.

The aim of a manager is to do everything to maximize the wealth of shareholders. Consequently, firms' managers have to figure what is the best payout policy decision for their investors. These decisions have a huge impact not only on the market and on each investor's portfolio but also on the valuation of the company. Thus, it is essential to understand what can influence these payout decisions as well as acknowledge the firms' tendencies throughout the years.

Let us begin with the understanding of previous theories about dividends and share repurchases. Firstly, an important theory is the Modigliani and Miller (1961) dividend irrelevance that states that in perfect capital markets the choice of dividend policy does not matter, and it does not affect the initial stock price. Through their study, they also noted that in perfect capital markets when there is a dividend payment, the share price drops by the dividend amount paid on the ex-dividend date. Furthermore, if a firm chooses to repurchase shares, the share price is not affected and is equal to the cum-dividend price. When comparing both choices they concluded that the method of payment is irrelevant not only because the initial share price is always the same but also the fact that investors can replicate the method of payout which they prefer by reinvesting dividends and by selling shares.

Furthermore, there is a theory that addresses the issue of tax disadvantages related to dividends (Brigham, 1964; Bierman & West, 1966). Taxes are a market imperfection and are an important factor to take into account when deciding between dividends and share repurchases. When dividends are taxed at a higher rate compared to capital gains, it is obvious that shareholders will prefer share repurchases (Brigham, 1964; Bierman & West, 1966). Throughout the years the number of firms choosing share repurchases instead of dividends increased because of the tax disadvantages regarding

dividends (Berk & DeMarzo, 2014). According to Berk and DeMarzo (2014), only in 2003, since the dividend tax cut (Jobs and Growth Tax Relief Reconciliation Act), the firms that choose share repurchases remained constant and the number of firms that pay dividends increased a bit.

Additionally, there is a phenomenon called clientele effects which demonstrates the existence of investors' segments with special preferences for firms that pay dividends. According to Modigliani and Miller (1961) this clientele effect is an optimal match between the firm's dividend policy and the dividend preferences of its shareholders. These clienteles, for instance, can be originated based on investor's age, income, or tax preferences (Graham & Kumar, 2006). Regarding the tax preferences (Bierman & West, 1966), for buy-and-hold individual investors, the dividend tax is higher than the capital gain tax, so they will not choose firms that are dividend payers (Berk & DeMarzo, 2014). Furthermore, for institutions, one-year individual investors, and pension funds there are no tax preferences, so they will choose a firm with a payout policy that matches their capital needs (Berk & DeMarzo, 2014) (they may prefer high dividends to avoid brokerage fees and other transaction costs (Elton & Gruber, 1968)). Lastly, corporations will prefer dividends rather than capital gains, since the capital gain tax is higher than the dividend tax, so they will choose firms that pay dividends (Berk & DeMarzo, 2014). Additionally, in a study conducted by Allen et al. (2000), the same conclusion was validated affirming that when institutional investors pay less taxes than individual investors, the paying dividends firms will attract more institutional investors.

Interestingly, based on Berk and DeMarzo's (2014) book, considering tax effect, when firms choose to retain excess cash by holding in the bank or by investing in financial securities, they have to pay corporate tax on the interest that they receive. Then, if the firm chooses to repurchase shares, the investor has to pay capital gains tax for the increase in the value of the firm and, consequently, the interest on retained cash is taxed twice. Alternatively, the firm could distribute the excess cash, and the shareholders could invest and be taxed only one time on the interest they received. Hence, it is not always an advantage holding cash, it depends on the specific situation.

Moreover, according to Jensen's (1986) study, agency problems are conflicts of interest between shareholders and managers. Notably, there are agency costs associated with the free cash flow and particularly regarding the decision of firms to retain cash. These agency costs include investing in negative NPV projects (Jensen, 1986; Stulz, 1990), over-paying for acquisitions (Slusky & Caves, 1991; Gondhalekar et al., 2004) and excessive executive salaries (Murphy, 1999; Bebchuk & Fried, 2003). However, according to Jensen (1986), dividends, share repurchase and leverage are good instruments to reduce these agency costs. Distributing the excess cash to investors through dividends and share repurchases as well as providing compensations and incentives to managers, such as stock options

(Smith & Watts, 1992; Fenn & Liang, 2001), is one approach to tackle the agency problem. Furthermore, debt holders can introduce covenants to monitor and control the firms' actions related to excess cash (Nikolaev, 2010), impose debt service obligations, consequently, reducing the free cash flow under managerial control (D'Mello & Miranda, 2010), and can reduce firms' overinvestment and underinvestment costs (Jensen, 1986; Stulz, 1990).

A recent study conducted by Burns et al. (2015) revealed that companies with growth opportunities and those operating in environments with weak investor protection opt for equity incentive compensation as an alternative to dividends to mitigate agency costs. Furthermore, a negative correlation was observed between equity incentive compensation and dividends, whereas, conversely, a positive correlation was noted between equity incentive compensation and repurchases. In contrast, when the incentive compensation is dividend protected, the dividend amounts paid increase. Furthermore, firms in weak investor protection countries pay higher cash dividends, however, growth firms reduce dividends and increase repurchases.

Conversely, there are some companies that choose to retain cash not only for safety, to be able to cover future cash needs (precautionary motive) (Keynes, 1936; Bates et al., 2009), to invest in R&D (Bates et al., 2009) and to build up cash reserves (Berk & DeMarzo, 2014), but also to avoid the transaction costs of raising new capital (Bates et al., 2009), to delay raising external funds in the future (Berk & DeMarzo, 2014), to pay debt obligations (Bates et al., 2009) and to avoid financial distress costs (Keynes, 1936; Bates et al., 2009). An interesting study conducted by Jo and Pan (2009) affirmed that a significant cash reserve can serve as a defense against hostile takeovers. Additionally, showed that firms with entrenched managers have more probability to pay dividends but paying dividends diminishes cash holdings, making the firm more susceptible to such takeovers.

Additionally, another market imperfection that is essential to consider is asymmetric information. This problem happens when managers have more information related to the future prospects than shareholders (Farinha & Soro, 2012). Consequently, payout decisions can reflect and signal this information differences. Moreover, it is noted that firms tend to have their dividends' amount practically constant, being this phenomenon called dividend smoothing. As Lintner (1956) discovered, managers understand that investors prefer dividend stability with sustained growth and that managers also desire to maintain a long-term target level of dividends as a fraction of earnings. Hence, based on Lintner's (1956) study, firms will only increase their dividends when they know that in the long-term they will have an increase in the expected level of future earnings and that companies will try to avoid cutting dividends at any cost.

Furthermore, knowing the preference for constant dividends and that managers have more information about the firm's future earnings, when firms make changes in their dividend decisions, it can transmit signals to investors. When firms increase their dividend amounts it can signal both positive and negative signals. On one hand, it shows that managers are optimistic regarding future earnings (Lintner, 1956; Black, 1976) and that the firm is able to afford a higher dividend amount (Lintner, 1956). On the other hand, it can signal that the firm has a lack of investment opportunities (Brav et al., 2005). Conversely, when firms cut dividends, it can also signal both negative and positive signals. It can transmit that in the long-term future earnings will decrease and so the firm needs to save cash (Lintner, 1956). Or can simply be the case where the firm wants to use the excess cash to invest on a new positive NPV project (Brav et al., 2005). This signal phenomenon is known as the dividend signaling hypothesis.

In order to understand better the signaling implications tied to dividend changes, a study was conducted by Benartzi et al. (1997) which examined the information content of past and future earnings in dividend changes. The paper found a strong correlation between dividend changes and past earnings, indicating that when dividend payments are increased, earnings show an upward trend. Companies that increase (decrease) dividends tend to exhibit positive (negative) excess returns upon the announcement. However, there was no evidence of a positive correlation between dividend changes and future earnings changes. Additionally, the research revealed that firms that increase dividends have a lower probability of experiencing subsequent declines in earnings, aligning with the notion that firms only increase dividends when management is convinced that earnings have permanently increased. Thus, changes in dividend signals predominantly inform us about events that have already occurred. Furthermore, a study conducted by Grullon et al. (2005) investigated whether dividend changes do or do not signal future changes in profitability and earnings. Similarly with the study above, it was concluded that dividend changes do not convey information regarding future earnings changes.

Notably, share repurchases, as a kind of payout policy, can also signal managers' information to shareholders. However, based on the Jagannathan and Stephens' (2003) study, share repurchase can have two different signals to investors. When a firm chooses to repurchase shares, it can be a signal of undervalued shares (Vermaelen, 1981; Asquith & Mullins Jr, 1986; Healy & Palepu, 1993; Ikenberry et al., 1995; Ho et al., 1997; Brockman & Chung, 2001; Peyer & Vermaelen, 2007) which is associated with the issue of asymmetric information. Simultaneously, it may also indicate a favorable expectation related to the firm's future earnings and evolution (Miller & Rock, 1985; Grullon & Michaely, 2004; Lie, 2005). Additionally, new sign explanations have emerged. Firms sometimes engage in share

repurchases when they lack future growth opportunities (Grullon & Michaely, 2004; Brav et al., 2005), to boost employee incentives (Babenko, 2009), to mitigate the dilutive effect of stock option exercises (Kahle, 2002; Brav et al., 2005) or to distribute excess capital (Dittmar, 2000).

Moreover, the bird-in-the-hand theory, based on the Gordon's (1962) and Lintner's (1962) studies, explains that shareholders will prefer dividends to capital gains. Dividends are more money-safe than capital gains since they are marked by uncertainty. Thus, dividends would reduce the risk of the investment made by the shareholders. However, Modigliani and Miller (1961) demonstrated that the investment risk is not related to dividends but to the operation's assets. Therefore, investors should be indifferent between dividends and capital gains.

Additionally, the catering theory developed by Baker and Wurgler (2004) suggests that firms tend to correspond their dividend policies with current investors' preferences and sentiments regarding dividends. Therefore, managers are inclined to initiate dividends when investors assign a relatively high stock price to dividend payers and tend to cut dividends when investors prefer nonpayers.

Furthermore, the life-cycle theory also explained in Fama and French (2001), Grullon et al. (2002) and DeAngelo et al. (2006) affirms that mature firms are more profitable and have fewer investment opportunities and, thus are more likely to pay dividends to the shareholders. Conversely, younger firms tend to have much more investment opportunities but are less profitable and, hence are less likely to pay dividends to their investors.

2.1.2 – Empirical Evidence

Interestingly, a study conducted by Denis and Osobov (2008), examined the validity of clientele theory, signaling theory, catering theory and life-cycle theory using as a sample some of the G7 countries and a forecast period ranging from 1994 to 2002. Firstly, it was concluded that clientele theory was not supported due to the rejection of the assumption that investors can choose dividends and simultaneously have a diversified portfolio. They found that 90% of the total market capitalization was attributed to dividend-paying companies, with the top 20% of these firms holding most of the market capitalization. Secondly, the signaling theory appeared inconsistent, because it would be expected that firms with low earned/contributed equity and less mature (DeAngelo et al., 2006) as well as small and less profitable firms would initiate dividend payments since they are in need to signal their future prospects. On the contrary, it was noted that large firms with high earnings paid dividends. Thirdly, except for the US, there was limited evidence to support the catering theory, as changes in dividend policies do not appear to be significantly driven by investor sentiment towards dividend-paying stocks.

Lastly, the life-cycle theory was supported by the data as it revealed a concentration of dividends among the largest and most profitable companies.

Regarding institutional shareholders previously mentioned, a paper from Allen et al. (2000) concluded that firms that pay dividends and have higher institutional ownership tend to have better performance and management and signals quality to the market. The reason for this is that institutional investors are more likely to monitor and detect firms' quality and they also oversee management (signaling and agency effects), so their presence adds value to the firm.

Additionally, a paper conducted by Grinstein and Michaely (2005) also studied the relation between institutional holdings and payout policy. It was concluded that institutional investors tend to favor dividend-paying firms over non-dividend-paying ones and are more attracted to firms that do not pay high dividends. Moreover, these institutional investors also prefer firms that repurchase shares, and they are more attracted to firms that repurchase more shares and do it frequently. Notably, an increase in institutional ownership or in ownership concentration does not result in a subsequent increase in dividends, repurchases, or total payout. They summarize by saying that institutional investors opt for firms that repurchase more and pay fewer dividends.

To understand better the fraction of Initial Public Offering (IPO) firms that have the capacity to initiate cash flow distributions, a study conducted by Jain et al. (2009) was analyzed. It was discovered that the preferred method of payout initiation among IPO firms is share repurchases, particularly when they have venture capital support, diverse capital needs, and face strong competition in their product markets. Furthermore, it was noted that the dividend IPO firms exhibit higher leverage, profitability, maturity, sales, and total assets. However, they have lower growth prospects, initial returns, R&D intensity, venture capital backing and less probability to be in high-tech industries compared to repurchase firms. Moreover, dividend initiation choices align more with life-cycle and catering theory, whereas repurchase decisions seem to be influenced by signaling theory.

Remarkably, the findings of a study conducted by Banyi and Kahle (2014) on U.S. firms from 1973 to 2011 suggest that firms which went public in the 1980s or later tend to favor repurchases over dividends, due to the lower profitability and higher risk levels that they exhibit. In contrast, for older firms, repurchases are complementary to dividends. The results also reveal that the number of firms paying dividends or other payouts to shareholders during the 2000s surpasses expectations. They understood by studying tax regimes, that this occurrence is, at least in part, attributed to the 2003–2011 period when taxes on payouts were reduced (Jobs and Growth Tax Relief Reconciliation Act). Lastly, the study found support for the life-cycle theory using as a measure the RE/TA (Retained

Earnings as a proportion of Total Assets), indicating that the probability of providing shareholder payouts increases as firms age.

2.2 – Share Repurchase's Determinants and Substitution Effect

In accordance with the study conducted by Grullon and Michaely (2004), between 1980 and 2000, it was evident the importance of share repurchases and the substitution effect between dividends and share repurchases.

According to Jolls' (1998) and Weisbenner's (2004) studies, share repurchases became popular in payout policy due to the higher utilization of stock options as a compensation tool. The tax advantage of stock options (Section 424 of the Internal Revenue Code) relative to salary was a reason presented in Lambert et al.'s (1989) study for the increased use of stock options as a form of compensation. Based on Fenn and Liang's (1998) and Dittmar's (2000) studies, stock option as a way of compensating managers, cause a reduction of dividends (Lambert et al., 1989) since they noted a positive relation between the increasing amount of executive stock options and the hypothesis of the substitution effect of dividends for share repurchases. Additionally, it was also mentioned in these studies that repurchasing shares gives the ability to manage the dilutive effect of stock options. Moreover, a recent study conducted by De Cesari and Ozkan (2015) also noted that executive stock option holdings result in lower dividend payments. In contrast, with the studies above it was demonstrated that larger executive stock option holdings do not totally result in substitution from dividend payments to share repurchases. Additionally, without dividend protection for executive stock option holdings, executives become more hesitant to pay dividends as their stock option holdings increase.

Furthermore, stock options are also used by the firms to compensate employees (Jolls, 1998; Weisbenner, 2004; Sonika & Shackleton, 2020). A study conducted by Bens et al. (2003) found that the increase in the dilutive effect of Employee Stock Options (ESO) plans on diluted Earnings Per Share (EPS) is associated with executives' decisions to engage in stock repurchases. However, it was noted that actual ESO exercises are not related with the executives' decision to undertake repurchases. Furthermore, it was discovered that executives are more likely to repurchase shares when earnings are below the required level to meet EPS growth targets. Hence, these observations demonstrate that executives use stock repurchases as a strategy to manage diluted EPS. Additionally, the findings also suggested that the dilutive impact of ESOs on repurchases is more significant in firms with high Price-to-Earnings (P/E) ratios, likely due to the larger financial reporting advantages associated with meeting EPS targets for these companies.

Notably, an intriguing study conducted by Brav et al. (2005) analysed interviews with 384 U.S. financial executives about the factors that influence payout decisions. They understood that the dividend policy is very conservative and that share repurchasing is very flexible, which is why it has increased throughout the years and why firms are reluctant to initiate dividends. They also concluded that the flexibility of repurchases allows managers to spend capital on good investment opportunities, allows manipulation of EPS or of stock valuation, permits offsetting stock option dilution, and is a form of returning capital to investors. Furthermore, it was noted that taxes do not affect payout decisions, that repurchases are as attractive as dividends to institutional investors, and that payout is not used to separate a company from its competitors. Moreover, this study presented a set of principles that influence many corporate decisions. These principles include the knowledge of negative consequences associated with dividend cuts, the importance of staying aligned with competitors, the necessity of maintaining a good credit rating, the benefits of having a diverse and extensive investor base, the value of preserving flexibility, and the importance of avoiding actions that may reduce EPS. This last point is particularly crucial, considering that many investors price stocks using earnings multiples.

Furthermore, Hribar et al.'s (2006) paper indicates that certain firms opt for stock repurchases in order to meet or surpass analysts' forecasts. It was noted that these specific firms seem to mitigate some of the negative stock price reactions typically associated with missing analysts' forecasts.

Regarding EPS management, a paper from Almeida et al. (2016) studies the effect of share repurchases on company investment, employment, and R&D. They concluded that firms that opt for share repurchases to meet analyst forecasts, specifically related to EPS, tend to reduce employment, capital investment, R&D expenditures as well as their financial slack which has a negative impact on the stock price reactions to earnings announcements. Additionally, they affirm that EPS management is an important variable that influences firms’ decisions regarding payout policy.

To gain deeper insights into the determinants that influences firms to choose share repurchases, Andriosopoulos and Hoque (2013) conducted a comprehensive study. It was studied only three countries, namely the UK, France, and Germany. The findings indicate that larger and widely held firms are more prone to publicly announce their intention to repurchase on the open market. It was noted that in the UK and Germany, share repurchases, and dividends are complements; on the contrary, in France they are substitutes. Moreover, the existence of tax advantage regarding repurchase shares over dividends and governance frameworks influences payout policy. Combining both low growth and excess cash, only the UK firms demonstrate a higher inclination to announce a buyback. In addition, in France and in Germany, a firm's potential undervaluation influences the decision to share repurchase. Additionally, firms that have low leverage are more prone to announce a share repurchase. In all three

countries, repurchasing firms exhibit notably higher excess cash and are larger in size compared to non-repurchasing firms.

2.3 – Recent Studies and Determinants for Payout Policy

A study conducted by Zadeh, (2021) discovered that firm's Environmental and Social (E&S) transparency has an impact on corporate payout policies, being them, dividend and stock repurchase payouts. It was observed that E&S transparency is positively correlated with higher dividend and stock repurchase payouts. Moreover, it was found that firms with higher E&S transparency tend to have more stable dividend payouts compared to those with lower transparency levels. In addition, a study conducted by Satt and Iatridis (2023) noted that companies with more complex annual reports have the tendency to distribute more dividends.

Let us now consider two studies, one from Malaysia and the other one from Turkey. The first one conducted by Tahir et al. (2020), discovered that board independence, board tenure, board size, and CEO duality have a positive impact on dividend payouts. On the other hand, corporate board diversity and board member age have a negative correlation with dividend payouts. This implies that companies with well-organized corporate boards tend to have a positive influence on their dividend payout policy. Furthermore, the second paper conducted by Khan et al. (2022) noted that board diversity in nationality, experience and educational background had a substantial influence on motivating firms to pay high dividends. In contrast to the first paper, factors like board gender diversity, board tenure diversity and board age diversity were found to have no significant effect on dividend distributions. Additionally, the research findings indicated that family-owned companies with diverse board members had a negative impact on dividend payment intensity.

2.4 – International Trends in Payout Policy

To examine the evolution and trends of payout policies in G7 countries, it is important to consider the findings of three main studies. Beginning with the well-known published research conducted by Fama and French (2001), this paper reveals a significant decrease in the percentage of U.S. dividend-paying firms, specifically those listed on NYSE, AMEX, and NASDAQ. The percentage dropped from 66.5% in 1978 to 20.8% in 1999. These changes were caused firstly by shifts in the characteristics of the newly listed firms, which entered the public market in large numbers, and secondly by a general reduction in firms' propensity to pay dividends. These new firms were typically small-sized, less profitable, had large and strong investment opportunities, and never paid dividends. This underscores the influence of factors such as size, profitability, and investment opportunities on the decision to pay dividends. The

second aspect can be explained by the fact that both firms with fewer and those with many investments reduced or ceased dividend payments. This indicates that the benefits of dividends have declined because even dividend-paying firms stopped making such payments.

Furthermore, according to Fama and French (2001), there are some reasons for the declining of dividends, such as, reduced transactions costs for selling stocks for consumption purposes, greater holdings of stock options by managers that prefer capital gains to dividends, and better corporate governance technologies that reduces the benefits of dividends associated with the control of agency problems between investors and managers.

Similarly, a study conducted by Denis and Osobov (2008) analyses internationally the determinants of dividend policy including some of the G7 countries, namely: U.S., Canada, UK, Germany, France, and Japan. In this published research a relatively short forecast period is used, ranging from 1994 to 2002. It was noted that the firm size, profitability, growth opportunities, and earned/contributed equity mix (the ratio of retained earnings to the book value of total equity) are the main variables that influence dividends. It was also remarked that larger, mature, and profitable firms, have more probability to pay dividends and that the impact of growth opportunities on dividend payments was not consistent. Additionally, it was also noted a small decline in the propensity to pay dividends caused by the non-dividend initiation of the new lists. Moreover, aggregate dividends have not decreased and are concentrated among the largest and most profitable companies.

Notably, an equally important study conducted by Eije and Megginson (2008) analyse and investigate if the trends from Fama and French (2001) are equally observed for European Union firms. This research has used data between 1989 and 2005 and has included 15 European Union member countries that had joined the EU before May 2004. In comparison with the American study, the percentage of European dividend payers also dropped, and the number of firms that repurchase their own shares increased. Additionally, it was noted a decrease in the propensity to pay by all European firms. Nevertheless, the total real dividend and share repurchase amounts increased during the study period. Moreover, size, profitability, and investment opportunities were also important determinants for payout policy.

According to Eije and Megginson (2008), new influences in payout policy were found between the years 1991 to 2005, such as, an increase in the average reporting frequency correlated with higher dividend amounts; old state-owned (privatized) firms showed a connection to higher dividend and share repurchase amounts; country-specific catering had a significant negative impact on the likelihood of paying cash dividends and repurchasing shares, affecting the real amounts paid as well;

firms in common law countries exhibited a higher probability of being dividend payers compared to firms in civil law countries; companies from the euro area tended to pay lower cash dividends a lower repurchase amounts; higher leverage was linked to a lower probability of paying dividends and repurchasing shares. Furthermore, during the period from 2001 to 2005, it was noted that companies with higher cash holdings were less likely to pay dividends and more likely to repurchase shares, however, if the firm was a dividend payer the amount paid was higher. Additionally, firms with a higher dependency on a major shareholder repurchase less amount.

2.5 – The Covid-19 Effect

A recent article from Mazur et al. (2023), states interesting conclusions about dividends and share repurchases of Standard and Poor (S&P) 1500 firms in the COVID-19 crisis period. The study found that in the midst of the COVID-19 pandemic, struggling companies with the lowest earnings have the highest relative payouts (dividend payouts and share repurchases). Most of the firms maintained or increased the amount of dividends even though reporting bad earnings. The percentage of firms cutting dividends in a crisis and noncrisis moment is similar, however, the percentage of firms that increased their dividend amount was higher than in noncrisis periods. It was discovered that firms that chose share repurchases were the ones with the lowest earnings and that in crisis times repurchases are more responsive than dividends. It was also identified that the sectors heavily impacted by COVID-19 had higher dividend payouts. Furthermore, the paper found a negative correlation between payouts (dividends and share repurchase) and both forecasted and realized future earnings, indicating that when firms expect low future earnings they increase their payouts. Lastly, in Covid-19 period firms were hesitant to reduce and adjust the payouts to realized earnings and future earnings potential.

2.6 – Environment, Social and Governance Score (ESG Score)

Finance plays a crucial role in supporting economic activities, job creation, and growth. Since the Paris Agreement on climate change and the United Nations (UN) 2030 Agenda for Sustainable Development in 2015, governments opted for a more sustainable path for the planet and economy. According to the COM (2018), when making investment decisions is important to consider environmental and social factors, consequently, that leads to an increase of investments that take in account longer-term sustainability interests and activities. In contrast, with current market practices often focus on producing high returns over a short timeframe. This Sustainable Finance is economically beneficial and does not necessarily compromise investor returns. Thus, to build a Sustainable Finance it is necessary to incorporate environmental, social and governance (ESG) factors into investment decision-making.

Furthermore, based on the COM (2018), Environmental considerations refer to climate change mitigation and adaptation, resource depletion, environmental degradation, air and water pollution, and biodiversity loss. Social considerations are associated with issues of inequality, inclusiveness, labour relations, investment in human capital and communities. Governance is a way to integrate environmental and social objectives in public and private investment decisions.

According to the International Organization of Securities Commissions (2021) conducted by The International Organization of Securities Commissions, the use of ESG ratings and data products has increased in response to the growing interest of investors in companies that prioritize sustainability. Furthermore, based on the European Commission (2022), ESG ratings are used by a variety of investors as part of their sustainable investment strategy to embed risks and opportunities associated with ESG issues. Considering that the Environment, Social, and Governance (ESG) Pillars scores are going to be used as explanatory variables for this study, it is crucial to notice what is indicated in relevant literature about this subject matter and also extract insights from existing papers to then infer from them.

2.6.1 – CSR Performance

Recently, it was conducted a study, from Samet and Jarboui (2017), that tries to understand and investigate if Corporate Social Responsibility (CSR) contributes to corporate payout policy decisions. The sample is constituted of European companies listed in STOXX Europe 600 index and the data is from 2009 to 2014. In this study it was demonstrated that firms with higher CSR performance pay higher amounts of dividends and share repurchases. They presented three reasons for this observation. One results from addressing agency conflicts and cash flow issues due to managers incentives to overinvest in socially responsible activities for personal benefits (based on Barnea and Rubin's (2010) study, corporate charity can represent an agency cost). The second one is the fact that mature socially responsible firms tend to invest strategically in CSR activities because they have more resources and experience (Attig et al., 2013). The third one is the consideration of payout policy not only in terms of wealth creation but also in light of the ethical aspects of wealth distribution (He et al., 2012). Furthermore, it was discovered that these firms with higher CSR performance prefer share repurchases. This preference is linked to large holdings of stock options, compensation structures that reward managers with stock options from CSR investments (Jian & Lee, 2015), and good corporate governance practices (Harjoto and Jo, 2011). Moreover, it was also observed that firms with higher CSR have higher substitution effect between dividends and repurchase shares. This point can be explained by showing two perspectives: Primarily, socially responsible firms are typically large, which aligns with the substitution of share repurchases for dividends. Subsequently, these firms often

possess robust corporate governance structures and compensate their executive with significant stock options, which further reinforces the preference for substituting dividends with share repurchases.

2.6.2 – ESG Performance

A study conducted by Bilyay-Erdogan et al. (2023) analyses the impact of ESG performance on corporate dividend policy from 2002 to 2019. The sample is constituted by 1094 non-financial listed firms from 21 European countries. They noted that companies with better ESG performance attain higher earnings and lower income risk since ESG activities result in more efficient management, optimized asset allocation, enhanced stakeholder relations, decreased transaction costs, improved competitive advantage, and lower cash flow shocks during negative events. Consequently, their findings demonstrated that firms with higher ESG performance and higher performance on the three pillars (Environmental Pillar, Social Pillar and Governance Pillar) are more likely to pay higher dividends. In addition, their findings generally indicated that the ten subcategories of the ESG Score (Emissions, Resource Use, Environmental Product Innovation, Product Responsibility, Human Rights, Workforce, Community, CSR Strategy, Shareholder and Management) are positively associated with dividend payout. However, they demonstrated that firms with higher ESG Controversy score are associated with lower dividend payouts. Moreover, they suggest that a way to increase shareholders' payment is by engaging in ESG activities.

Furthermore, regarding the ESG Controversies score, a paper conducted by Malm and Kanuri (2020) found that companies involved in legal disputes are less likely to distribute dividends to their shareholders. Moreover, it was noted a negative correlation between litigation risk and payout policy (measured by dividend payout likelihood and dividend yield). These results are corroborated by Bilyay-Erdogan et al.'s (2023) findings.

3 – Data, Variables, Hypotheses and Methodology

3.1 – Data

Our study will employ accounting and financial data as well as data regarding ESG performance from Refinitiv EIKON, now named LSEG. This database is one of many agencies that compute the ESG Score and each Pillar and Category Scores. Furthermore, the study will use yearly data from 2000 to 2022, being a 23 years' period marked by the beginning of a new century. The sample firms will correspond to the listed firms of countries that belong to the G7 group, namely, Germany, Canada, USA, France, Italy, Japan, and the United Kingdom. This G7 country group is consisted by the world's advanced economies. Thus, in this study it will be used Panel Data since it is going to be analysed many companies in various periods of time.

Moreover, following Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies, it was removed from the sample Financial firms (Financial and Insurance Activities (NACE code K) and Real Estate Activities (NACE code L)), specifically, Central banking (NACE code K64.11), Other monetary intermediation (NACE code K64.19), Activities of holding companies (NACE code K64.20), Trusts, funds and similar financial entities (NACE code K64.30), Financial leasing (NACE code K64.91), Other credit granting (NACE code K64.92), Other financial service activities, except insurance and pension funding n.e.c. (NACE code K64.99), Life insurance (NACE code K65.11), Non-life insurance (NACE code K65.12), Reinsurance (NACE code K65.20), Pension funding (NACE code K65.30), Administration of financial markets (NACE code K66.11), Security and commodity contracts brokerage (NACE code K66.12), Other activities auxiliary to financial services, except insurance and pension funding (NACE code K66.19), Risk and damage evaluation (NACE code K66.21), Activities of insurance agents and brokers (NACE code K66.22), Other activities auxiliary to insurance and pension funding (NACE code K66.29), Fund management activities (NACE code K66.30), Buying and selling of own real estate (NACE code L68.10), Renting and operating of own or leased real estate (NACE code L68.20), Real estate agencies (NACE code L68.31), Management of real estate on a fee or contract basis (NACE code L68.32).

Furthermore, following again Fama and French (2001), Denis and Osobov (2008) and Eije and Megginson (2008), it was also removed from the sample Utility firms (Electricity, Gas, Steam and Air Conditioning Supply (NACE code D) and Water Supply, Sewerage, Waste Management and Remediation Activities (NACE code E)), specifically, Production of electricity (NACE code D35.11), Transmission of electricity (NACE code D35.12), Distribution of electricity (NACE code D35.13), Trade

of electricity (NACE code D35.14), Manufacture of gas (NACE code D35.21), Distribution of gaseous fuels through mains (NACE code D35.22), Trade of gas through mains (NACE code D35.23), Steam and air conditioning supply (NACE code D35.30), Water collection, treatment and supply (NACE code E36.00), Sewerage (NACE code E37.00), Collection of non-hazardous waste (NACE code E38.11), Collection of hazardous waste (NACE code E38.12), Treatment and disposal of non-hazardous waste (NACE code E38.21), Treatment and disposal of hazardous waste (NACE code E38.22), Recovery of sorted materials (NACE code E38.32), Remediation activities and other waste management services (NACE code E39.00). The reason for their removal is that financial firms usually have different leverage levels compared to non-financial firms and both utility and financial firms have different regulatory environments compared to non-financial firms. Additionally, following Denis and Osobov's (2008) study it was also removed firms with negative book equity.

Regarding accounting and financial data, it was taken from Refinitiv the Earnings Before Interest and Taxes (EBIT), Research and Development expenditures, Total Assets, Total Equity, Total Debt, Cash and Short-Term Investments, Cash from Investing Activities, Cash from Operating Activities, Retained Earnings, Cash Dividends Paid (Common), Repurchases (Retirement of Common and Preferred), Company Market Capitalization, Issuance (Retirement) of Stock.

The component of the ESG performance are the new explanatory variables that will be added to the study. As it says in the document about "Environmental, social, and governance scores from Refinitiv", this ESG score was created to be able to measure the firm's ESG performance, commitment, and effectiveness in a transparent, accurate, and comparable way. This procedure begins with the collection of data from the company's website and annual reports, NBO websites, stock exchange filings, CSR reports, and news sources.

Refinitiv calculates and collects more than 630 ESG metrics (in data points). From these metrics, a subset is created with the 186 metrics (in data points) that are the most relevant and comparable for each industry. This subset is then grouped into 10 categories (in scores), and these categories are also a part of the three tree Pillars of Environment, Social, and Governance (in scores resulting from the sum of the categories' weights). Additionally, each pillar has its specific weight (percentages in a range between 0 and 100). Subsequently, the ESG score is the sum of the score multiplied by the weight of each pillar.

The 10 categories are Emission, Innovation, Resource use (these 3 belong to Environment's Pillar), Community, Human rights, Product responsibility, Workforce (these 4 belong to Social's Pillar), CSR strategy, Management, and Shareholders (these 3 belong to Governance's Pillar). The weights of the

Environment and Social categories vary by industry; however, the Governance Pillar's category weights are equal throughout all industries. Furthermore, each category has its own themes as it is noted in the Refinitiv table (Appendix A).

3.2 – Variables Definition

For this study it is essential to understand which are de determinants that influence managers' decisions regarding payout policy. Regarding the theories and the studies analysed and presented, the control variables used will be enumerated.

First, SIZE which was mentioned in life-cycle theory, Fama and French (2001) paper, Bens et al.'s (2003) study, Eije and Megginson's (2008) and Denis and Osobov's (2008) studies, as well as in Jain et al.'s (2009), Andriosopoulos and Hoque's (2013), Banyi and Kahle's (2014), Burns et al.'s (2015), Almeida et al.'s (2016), Samet and Jarboui's (2017) and Mazur et al.'s (2023) studies. The formula used to calculate this variable was based on the Andriosopoulos and Hoque's (2013), Burns et al.'s (2015) and Mazur et al.'s (2023) studies which is the Logarithm of Total Assets.

PROFITABILITY which was referred in life-cycle theory, Fama and French (2001) paper, Brav et al.'s (2005), Eije and Megginson's (2008), Denis and Osobov's (2008) studies, as well as in Jain et al.'s (2009), Andriosopoulos and Hoque's (2013), Banyi and Kahle's (2014), Burns et al.'s (2015), Almeida et al.'s (2016), Samet and Jarboui's (2017) and Mazur et al.'s (2023) studies. Based on these studies, Profitability is measured by EBIT divided by Total Assets.

INVESTMENT OPPORTUNITIES which was mentioned in life-cycle theory, Fama and French's (2001) paper, Brav et al.'s (2005), Eije and Megginson's (2008), and Denis and Osobov's (2008) studies, as well as in Jain et al.'s (2009), Andriosopoulos and Hoque's (2013), Banyi and Kahle's (2014), Burns et al.'s (2015) and Samet and Jarboui's (2017) studies. Investment Opportunities is measured by firm's Market-to-Book Ratio which is computed by Market Value of Firm (Total Assets minus Book Equity plus Market Equity) divided by Total Assets (Fama & French, 2001; Eije & Megginson, 2008; Denis & Osobov, 2008; Jain et al., 2009). Additionally, Market Equity is calculated by Stock Price times Shares Outstanding.

LEVERAGE which was mentioned in agency cost theory, in Bens et al.'s (2003), Eije and Megginson's (2008) and Jain et al.'s (2009) studies as well as in Andriosopoulos and Hoque's (2013), Burns et al.'s (2015), Almeida et al.'s (2016), Samet and Jarboui's (2017) and Mazur et al.'s (2023)

studies. Based on Andriosopoulos and Hoque's (2013), Burns et al.'s (2015), Almeida et al.'s (2016), Samet and Jarboui's (2017) studies, Leverage is measured by Total Debt divided by Total Assets.

CASH HOLDINGS, which was mentioned in Eije and Megginson's (2008) study, in Andriosopoulos and Hoque's (2013), Banyi and Kahle's (2014), Burns et al.'s (2015), Almeida et al.'s (2016), Samet and Jarboui's (2017) and Mazur et al.'s (2023) studies. This variable is calculated by the sum of Cash and Cash Equivalent and its division by Total Assets (Almeida et al., 2016; Samet & Jarboui, 2017; Mazur et al., 2023).

RETAINED EARNINGS measured by Retained Earnings as a proportion of Total Assets (RE/TA) was mentioned in Banyi and Kahle's (2014) study. In this study it was not included the Retained Earnings as a proportion of Total Equity (RE/TE) referred in Denis and Osobov's (2008), DeAngelo et al.'s (2006), in Banyi and Kahle's (2014) and in Eije and Megginson's (2008) studies since in Banyi and Kahle's (2014) study it was affirmed that RE/TE is more impacted by mathematical distortions than RE/TA). Thus, in this study it will be used just the RE/TA.

R&D (Research and Development Expenditures) was mentioned in Jain et al.'s (2009) and Almeida et al.'s (2016) studies and is measured by R&D Expenditures divided by Total Assets.

CAPEX was mentioned in Jain et al.'s (2009), Almeida et al.'s (2016), and Mazur et al.'s (2023) studies. Based on Almeida et al.'s (2016) study, this variable is calculated by Capital Expenditures divided by Total Assets.

Next it will be considered the new variables extracted from Refinitiv (LSEG) database linked to the Environmental, Social and Governance Performance and their definitions regarding Refinitiv.

The first one is ENVIRONMENTAL (Environmental Pillar Score) (Bilyay-Erdogan et al., 2023) which "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). "It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value" (Refinitiv definition).

Then SOCIAL (Social Pillar Score) (Bilyay-Erdogan et al., 2023) which "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). "It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value" (Refinitiv definition).

Lastly, GOVERNANCE (Governance Pillar Score) (Bilyay-Erdogan et al., 2023) which "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition). "It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long term shareholder value" (Refinitiv definition).

Regarding the dependent variables, to investigate which variables influence the amounts of real dividends paid it was used the dependent variable computed by Total Cash Dividends divided by Total Assets (DIV) and for the amounts of shares repurchased it is used the dependent variable computed by Total Repurchase Amount divided by Total Assets (REP). To examine the probability of paying cash dividends it was used a binary dependent variable (YN_DIV) that takes the value of one if the company paid cash dividends, and for the probability of repurchasing shares it was used a binary dependent variable (YN_REP) that takes the value of one if the company repurchased shares.

In conclusion, the control variables that will be introduced in this study are SIZE, PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE, CASH HOLDINGS, RETAINED EARNINGS, R&D and CAPEX. The new variables constitute the ESG performance being them ENVIRONMENTAL, SOCIAL and GOVERNANCE. The dependent variables are YN_DIV, YN_REP, DIV and REP.

3.3 – Hypotheses

A company that develops plans to reduce its emissions, invests in sustainable innovation and undergoes restructuring for better resource use incurs significant expenditures, ultimately leading to an inability to distribute cash to shareholders.

H1: Environmental Pillar influences negatively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid.

A company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. In addition, a company that compensate employees using stock options (Jolls, 1998; Weisbenner, 2004; Sonika & Shackleton, 2020) values employment efficiency, creating a corporate environment where the workforce feels valued, incentivized, and stimulated. Consequently, these leads to more profitability and future growth, which translates into the possibility to distribute cash to shareholders. Furthermore, addressing agency conflicts and cash flow issues due

to overinvestments made by managers in socially responsible activities for personal benefits (Samet & Jarboui, 2017), where corporate charity can represent an agency cost (Barnea & Rubin, 2010), ultimately results in the distribution of cash to shareholders.

H2: Social Pillar influences positively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid.

Companies that not only consider payout policy as a means of wealth creation, but also recognize the ethical and moral necessity to return the investment made by the shareholders (He et al., 2012) will distribute cash to the shareholders. Additionally, companies with compensation structures that reward managers with stock options for CSR investments (Jian & Lee, 2015) and for efficient corporate governance practices (Harjoto and Jo, 2011) as well as those that reward employees for their efficiency (Jolls, 1998; Weisbenner, 2004; Sonika & Shackleton, 2020), will also increase and initiate repurchasing shares. Moreover, companies more focused on Governance matters will have better mechanisms to reduce agency cost related to the free cash flow (Jensen, 1986), therefore they will increase the stream of cash to the shareholders. Furthermore, since higher Governance Pillar score is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility, these will lead to a greater defence of shareholders' rights and more profitability, and, consequently, will result in distribution of cash to investors.

H3: Governance Pillar influences positively both the likelihood to pay cash dividends and repurchase shares as well as both the dividend and repurchase amounts paid.

3.4 – Methodology

In this study, it will be calculated the summary statistics as well as the multiple regression using the Stata software. In the summary statistics it was used the variables DIV, REP, SIZE, PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE, CASH HOLDINGS, R&D, RETAINED EARNINGS, CAPEX, ENVIRONMENTAL, SOCIAL and GOVERNANCE.

Beginning with the first and the second multiple regressions, that showed which variables influence the probability of a company to pay dividends (YN_DIV) and to repurchase shares (YN_REP). It was used logistic regressions (Fama & French, 2001) having as independent variables SIZE, PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE, CASH HOLDINGS, R&D, RETAINED EARNINGS, CAPEX, ENVIRONMENTAL, SOCIAL and GOVERNANCE. In the third and the fourth multiple regressions it was noted which variables influence the amounts of dividends paid (DIV) and shares

repurchased (REP). It was used linear regressions having as independent variables SIZE, PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE, CASH HOLDINGS, R&D, RETAINED EARNINGS, CAPEX, ENVIRONMENTAL, SOCIAL and GOVERNANCE.

Regarding the linear regressions it was computed the Breusch and Pagan (1980) Lagrange multiplier test for random effects to know which is the most appropriate choice between simple Ordinary Least Squares Regression (OLS) and Random Effects Regression. Since in the DIV_{it} regression (Appendix B) and in the REP_{it} regression (Appendix C) (where the $_i$ represents the company and the $_t$ the year) the null hypothesis was rejected, the most appropriate choice for both is not the OLS, but the Random Effects Regression. The logistic regressions are not OLS, thus this test was not computed.

The next step was to conduct the Hausman (1978) test to know which is the most appropriate choice between Random Effects Regression and Fixed Effects Regression. For the logistic (Appendix D and Appendix E) and linear regressions (Appendix F and Appendix G), in the Hausman (1978) test the null hypothesis was rejected and was concluded that the companies' specific characteristics were statistically significant, thus it was rejected the Random Effects Regression and accepted as the most appropriate regression the Fixed Effects Regression.

After choosing Fixed Effects Regression it was tested for heteroskedasticity in the linear regressions with the Modified Wald test (Greene, 2000) for groupwise heteroskedasticity in fixed effect regression model. In both linear regressions (Appendix H and Appendix I) the null hypothesis was rejected, thus it was concluded heteroskedasticity. In order to control for heteroskedasticity, it was included in the regression the option "robust" to obtain the heteroskedasticity-robust standard errors (Huber (1967)/White (1980) or sandwich estimators).

The subsequent phase involves testing for serial correlation using the Wooldridge (2002) test for autocorrelation in panel data. Both the logistic (Appendix J and Appendix K) and the linear (Appendix L and Appendix M) regressions rejected the null hypothesis concluding that exists first order autocorrelation. In order to control for serial correlation and having in account the pre-existence of heteroscedastic in the linear regressions, it was included in the regression the option "cluster (id)" to obtain the robust standard error estimates for lineal panel models.

Since logistic fixed effects regression does not have options as "robust" or "cluster" it was not corrected the problem of serial correlation. The Modified Wald test (Greene, 2000) for groupwise heteroskedasticity in fixed effect regression model is for linear regression, thus the command was not executed in logistic regressions. I did find a command to compute the Newey and West (1987) standard

errors for coefficients, but they are estimated by OLS regression and logistic regression is not OLS. However, having in account that fixed effects regressions can mitigate some concerns related to heteroscedasticity and serial correlation, the logistic regressions were maintained with just the "fixed effects" option.

There are no multicollinearity tests, but there are diagnostics where fixed effects models are OLS on transformed variables. Following this, it was used one of the most important diagnostic measures for multicollinearity called Variance Inflation Factor (VIF). Both variables from the logistic (Appendix N and Appendix O) and the linear (Appendix P and Appendix Q) regressions had VIF lower than 10, thus what can be concluded is that the explanatory variables are not exhibiting strong multicollinearity among themselves.

The final multiple logistic and linear regressions are as follow:

1. Probability of a company to pay dividends:

$$P(YN_DIV = 1) = \frac{1}{1+e^{-g(x)}}, \qquad (1)$$

with

$$g(x) = \beta_0 + \beta_1 SIZE_{it} + \beta_2 PROFITABILITY_{it} + \beta_3 INVESTMENT\ OPPORTUNITIES_{it} + \beta_4 LEVERAGE_{it} + \beta_5 CASH\ HOLDINGS_{it} + \beta_6 R\&D_{it} + \beta_7 RETAINED\ EARNINGS_{it} + \beta_8 CAPEX_{it} + \beta_9 ENVIRONMENTAL_{it} + \beta_{10} SOCIAL_{it} + \beta_{11} GOVERNANCE_{it} + \epsilon_{it}\ ,$$

where ϵ_{it} is the error term, in other words, the unexplained part of the independent variable, not explained by the independent variables, for the respective firm $_i$ and the year $_t$.

2. Probability of a company to repurchase shares:

$$P(YN_REP = 1) = \frac{1}{1+e^{-g(x)}}, \qquad (2)$$

with

$$g(x) = \beta_0 + \beta_1 SIZE_{it} + \beta_2 PROFITABILITY_{it} + \beta_3 INVESTMENT\ OPPORTUNITIES_{it} + \beta_4 LEVERAGE_{it} + \beta_5 CASH\ HOLDINGS_{it} + \beta_6 R\&D_{it} + \beta_7 RETAINED\ EARNINGS_{it} + \beta_8 CAPEX_{it} + \beta_9 ENVIRONMENTAL_{it} + \beta_{10} SOCIAL_{it} + \beta_{11} GOVERNANCE_{it} + \epsilon_{it}$$

3. Amounts paid by cash dividends payers:

$$DIV_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 PROFITABILITY_{it} + \beta_3 INVESTMENT\ OPPORTUNITIES_{it} + \beta_4 LEVERAGE_{it} + \beta_5 CASH\ HOLDINGS_{it} + \beta_6 R\&D_{it} + \beta_7 RETAINED\ EARNINGS_{it} + \beta_8 CAPEX_{it} + \beta_9 ENVIRONMENTAL_{it} + \beta_{10} SOCIAL_{it} + \beta_{11} GOVERNANCE_{it} + \epsilon_{it} \quad (3)$$

4. Amounts paid by Repurchasers:

$$REP_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 PROFITABILITY_{it} + \beta_3 INVESTMENT\ OPPORTUNITIES_{it} + \beta_4 LEVERAGE_{it} + \beta_5 CASH\ HOLDINGS_{it} + \beta_6 R\&D_{it} + \beta_7 RETAINED\ EARNINGS_{it} + \beta_8 CAPEX_{it} + \beta_9 ENVIRONMENTAL_{it} + \beta_{10} SOCIAL_{it} + \beta_{11} GOVERNANCE_{it} + \epsilon_{it} \quad (4)$$

4 - Results and Discussion

This section presents the empirical results and their corresponding discussion.

Table 1. – Summary Statistics
Summary Statistics of the sample, which includes the Obs (total number of observations), the mean, the standard deviation, the minimum and the maximum. DIV is measured by Total Cash Dividends divided by Total Assets, REP is measured by Total Repurchase Amounts divided by Total Assets, SIZE is the Logarithm of Total Assets, PROFITABILITY is EBIT divided by Total Assets, INVESTMENT OPPORTUNITIES is the Market-to-Book Ratio, LEVERAGE is Total Debt divided by Total Assets, CASH HOLDINGS is the sum of Cash and Cash Equivalent and its division by Total Assets, RETAINED EARNINGS is measured by Retained Earnings as a proportion of Total Assets, R&D (Research and Development Expenditures) is computed by R&D Expenditures divided by Total Assets, CAPEX is the Capital Expenditures divided by Total Assets. Regarding INVIRONMENTAL, SOCIAL and GOVERNANCE Pillar, these variables were extracted from Refinitiv already computed. The Environmental Pillar Score "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). The Social Pillar Score "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). The Governance Pillar Score "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition).

Variable	Obs	Mean	Std. dev.	Min	Max
DIV	22,302	0.0252	0.0416	0.0000	1.3295
REP	17,677	0.0308	0.0705	0.0000	2.7439
SIZE	26,233	23.1959	2.7412	14.8737	31.7625
PROFITABILITY	26,233	0.0891	0.1043	-2.1870	3.1168
INVESTMENT OPPORTUNITIES	26,233	1.9792	3.2422	0.0053	167.4784
LEVERAGE	26,233	0.2326	0.1670	0.0000	0.9087
CASH HOLDINGS	26,233	0.1353	0.1332	0.0000	0.9977
R&D	26,233	0.0157	0.0386	0.0000	1.4837
RETAINED EARNINGS	26,233	0.2508	0.9498	-41.3448	2.5205
CAPEX	26,233	-0.0586	0.1252	-0.8520	12.6086
ENVIRONMENTAL	26,233	38.6680	29.1411	0.0000	99.0969
SOCIAL	26,233	45.2947	23.8396	0.1907	98.2021
GOVERNANCE	26,233	52.2842	22.1579	0.1008	99.4416

Table 2. – Firms by year and country
The total number of observations between 2000 and 2022 from each G7 country. The last row corresponds to the total number of different companies from each G7 country included in the sample.

	Canada	France	Germany	Italy	Japan	United Kingdom	United States	Total
2000	0	2	1	0	15	12	21	51
2001	0	3	2	0	17	13	31	66
2002	6	20	18	4	95	49	159	351
2003	7	19	18	4	183	58	171	460
2004	26	30	27	5	254	86	211	639
2005	36	39	34	5	278	104	241	737
2006	36	43	37	6	285	105	263	775
2007	59	47	41	8	291	113	283	842
2008	81	53	48	8	298	114	351	953
2009	82	53	45	8	302	114	366	970
2010	92	58	49	8	307	122	397	1,033
2011	100	58	54	8	308	126	428	1,082
2012	101	55	51	7	311	128	422	1,075
2013	106	57	51	9	315	131	438	1,107
2014	113	57	57	7	322	137	493	1,186
2015	128	62	61	9	330	151	727	1,468
2016	129	61	60	13	338	161	899	1,661
2017	128	74	78	23	349	175	1,014	1,841
2018	141	101	115	47	370	218	1,054	2,046
2019	167	103	129	52	382	261	1,102	2,196
2020	190	114	171	69	379	326	1,100	2,349
2021	168	113	164	62	185	273	1,009	1,974
2022	97	93	144	62	30	199	746	1,371
Total Observations	1,993	1,315	1,455	424	5,944	3,176	11,926	26,233
Total Companies	250	136	206	82	417	380	1,586	3,057

Starting by analysing table 1 and table 2, it is noted that the sample has 26,233 observations from 3,057 different companies. From these 26,233 observations, 1,993 are from Canada, 1,315 are from France, 1,455 are from Germany, 424 are from Italy, 5,944 are from Japan, 3,176 are from United Kingdom and 11,926 are from United States. Hence, it is visible that 45% of the observations are from American companies followed by 23% from Japanese companies and 12% from British companies. Furthermore, from the 3,057 different companies, 250 are from Canada, 136 are from France, 206 are from Germany, 82 are from Italy, 417 are from Japan, 380 are from United Kingdom and lastly 1,586 are from United States. Thus, it is also evident that 52% of the companies are American, followed by 14% Japanese and 12% British. Additionally, it is noted that throughout the years, in each country, the number of companies prioritizing the ESG performance generally increased.

Table 3. – Likelihood to pay dividends

Logistic fixed effects panel regression coefficients were estimated to assess the likelihood to pay cash dividends among listed companies (excluding financial and utilities firms as well as firms with negative book equity) in the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States) from 2000 to 2022. The dependent variable applies to cash dividends and is a dummy variable that takes the value 1 if the company pays dividends and zero otherwise. The first number on each column corresponds to the coefficients and the number in parenthesis corresponds to the standard error. Regarding the asterisks, the three asterisks (***) are indicating p-values lower or equal to 0.01, the two asterisks (**) are indicating p-values lower or equal to 0.05 and lastly the one asterisks (*) is indicating p-values lower or equal to 0.1. SIZE is the Logarithm of Total Assets, PROFITABILITY is EBIT divided by Total Assets, INVESTMENT OPPORTUNITIES is the Market-to-Book Ratio, LEVERAGE is Total Debt divided by Total Assets, CASH HOLDINGS is the sum of Cash and Cash Equivalent and its division by Total Assets, RETAINED EARNINGS is measured by Retained Earnings as a proportion of Total Assets, R&D (Research and Development Expenditures) is computed by R&D Expenditures divided by Total Assets, CAPEX is the Capital Expenditures divided by Total Assets. Regarding INVIRONMENTAL, SOCIAL and GOVERNANCE Pillar, these variables were extracted from Refinitiv already computed. The Environmental Pillar Score "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). The Social Pillar Score "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). The Governance Pillar Score "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition).

YN_DIV	Global	Canada	France	Germany	Italy	Japan	UK	USA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	0.8803 ***	1.8610 ***	1.8024 ***	0.8690	3.5390	2.2014 *	0.3531	0.6736 ***
	(0.1302)	(0.5972)	(0.6406)	(0.6081)	(2.9312)	(1.1603)	(0.2930)	(0.1942)
PROFITABILITY	8.6061 ***	5.9906 **	26.8829 ***	12.5155 ***	12.8642	-6.8229	23.0025 ***	3.5914 ***
	(0.8231)	(2.8786)	(6.7102)	(3.4917)	(14.6272)	(4.6872)	(2.7691)	(1.0784)
INVESTMENT OPPORTUNITIES	0.0261	-0.1228	0.0100	0.0789	0.0718	-0.7723	0.0492	0.2520 ***
	(0.0353)	(0.2931)	(0.0473)	(0.4113)	(0.8162)	(0.5903)	(0.2497)	(0.0960)
LEVERAGE	-2.9204 ***	-2.8526	-9.5413 ***	-3.8406	-17.1324 *	-18.7904 ***	0.6546	0.2218
	(0.4934)	(1.8575)	(3.3936)	(2.5392)	(9.0632)	(4.2392)	(1.2750)	(0.7868)
CASH HOLDINGS	-3.2999 ***	-3.1491	-0.3245	-3.3415	-5.6478	-8.2259 **	-4.5993 ***	-1.6640 *
	(0.6079)	(2.5384)	(3.9880)	(2.5449)	(7.2872)	(3.6904)	(1.5757)	(0.8707)
R&D	-6.2812	-2.3965	40.3041	-18.2614	14,527.69	-26.8739	-19.3280	4.6252
	(5.0273)	(30.1102)	(45.4558)	(18.6066)	(1,674,772)	(18.3536)	(16.4215)	(7.7999)
RETAINED EARNINGS	0.3321 **	0.7428	4.4991 *	0.1553	-2.9597	5.2034 *	4.4064 ***	0.1334
	(0.1503)	(0.8762)	(2.3990)	(1.3376)	(7.7556)	(3.1112)	(0.9227)	(0.1570)
CAPEX	0.3071	0.1983	-5.5522 *	-1.3080	-19.4004 *	-4.0217	-1.2944	1.4186 **
	(0.4229)	(1.3147)	(3.2533)	(1.1689)	(10.5363)	(3.9822)	(1.1170)	(0.6673)
ENVIRONMENTAL	0.0061 *	0.0343 **	0.0177	-0.0009	-0.0230	0.0056	-0.0120	0.0031
	(0.0035)	(0.0155)	(0.0176)	(0.0134)	(0.0563)	(0.0124)	(0.0089)	(0.0058)
SOCIAL	0.0014	-0.0277	-0.0215	0.0114	-0.0310	0.0085	-0.0155	0.0150 **
	(0.0041)	(0.0190)	(0.0164)	(0.0146)	(0.0573)	(0.0145)	(0.0099)	(0.0073)
GOVERNANCE	-0.0026	-0.0009	-0.0252 *	-0.0038	-0.0551	-0.0185 *	0.0006	0.0080
	(0.0030)	(0.0122)	(0.0149)	(0.0106)	(0.0387)	(0.0113)	(0.0067)	(0.0050)

Beginning with the results of all G7 country companies (Global) of Table 3, it is clear that the control variables' SIZE, PROFITABILITY and RETAINED EARNINGS influence positively the likelihood of companies to pay cash dividends (in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies the variables' size, profitability have a positive coefficient as well; in DeAngelo et al.'s (2006), Denis and Osobov (2008) and Banyi and Kahle's (2014) the variable retained earnings has a positive coefficient as well, although, in Eije and Megginson's (2008) study this variable

in not statistically significant). One the other hand, the control variables' LEVERAGE and CASH HOLDINGS influence negatively the likelihood of companies to pay cash dividends (in Eije and Megginson's (2008) study the variables' leverage and cash holdings have a negative coefficient as well). The great novelty is that the variable ENVIRONMENTAL is the only Pillar from ESG performance that affects the probability of a company to pay dividends and influences it positively. Hence, since the SOCIAL and the GOVERNANCE variables are not statistically significant, and that the ENVIRONMENTAL variable has a positive coefficient, none of the hypotheses for this regression are validated. These results indicate that as the company grows, increases its profitability and retained earnings, the probability of it to pay cash dividends increases. However, as the company increases its leverage levels and cash holdings, the probability of it to pay cash dividends decreases. Furthermore, as a company starts to give more importance to Environmental issues that constitute this Environmental Pillar, the probability of it to pay cash dividends increases. A possible reason for this is that a company that reduces its emissions, invests in sustainable innovation and has a better resource use has a higher lifetime and future growth compared to others, leading to a higher probability of paying cash dividends.

Moving on to the analysis for each specific country, beginning with Canada, regarding the control variables' SIZE and PROFITABILITY influence positively the likelihood of companies to pay dividends (in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies the variables' size, profitability have a positive coefficient as well). Regarding the ESG Pillar, also only the ENVIRONMENTAL affects the probability of a company to pay dividends and influences it positively. Thus, since the SOCIAL and the GOVERNANCE variables are not statistically significant, and that the ENVIRONMENTAL variable has a positive coefficient, none of the hypotheses for this regression are validated. These results indicate that as a Canadian company grows and increases its profitability, the probability of paying cash dividends increases. Moreover, as a Canadian company starts investing and giving more importance to Environmental issues that constitute this Environmental Pillar, the probability of paying dividends increases. A possible reason for this is that a company that reduces its emissions, invests in sustainable innovation and has a better resource use has a higher lifetime and future growth compared to others, leading to a higher probability of paying cash dividends.

Furthermore, in France the control variables' SIZE, PROFITABILITY and RETAINED EARNINGS influence positively the likelihood of companies to pay dividends (the variables' size, profitability have the same coefficient sign noted in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies; in addition the variable retained earnings has also the same coefficient sign observed in DeAngelo et al.'s (2006), Denis and Osobov (2008) and Banyi and Kahle's (2014)

studies, however, in Eije and Megginson's (2008) study this variable in not statistically significant). One the other hand, the control variables' LEVERAGE and CAPEX influence negatively the likelihood of companies to pay cash dividends (in Eije and Megginson's (2008) study the variable leverage has a negative coefficient as well). Regarding the ESG Pillar, only the GOVERNANCE affects the probability of a company to pay dividends and influences it negatively. Hence, since the ENVIRONMENTAL and the SOCIAL variables are not statistically significant, and that the GOVERNANCE variable has a negative coefficient, none of the hypotheses for this regression are validated. These results indicate that as a French company grows, increases its profitability and retained earnings, the probability of paying cash dividends increases. However, as the company increases its leverage and capex levels, the probability of it to pay cash dividends decreases. Additionally, as a French company starts investing and giving more importance to Governance matters, which constitute this Governance Pillar, the probability of paying dividends decrease. A possible reason for this is that is no longer necessary to pay dividends to control managers' decisions and actions (agency cost), since this Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility.

Moving on to another country analysis, in Germany the control variable PROFITABILITY influences positively the likelihood of companies to pay dividends (in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies the variable size has also a positive coefficient). This result indicates that as a Deutsche company increases its profitability, the probability of paying cash dividends increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moreover, in Italy the control variables' LEVERAGE and CAPEX influence negatively the likelihood of companies to pay cash dividends (in Eije and Megginson's (2008) study the variable leverage has also a negative coefficient). These results indicate that as an Italian company increases its leverage and capex levels, the probability of it to pay cash dividends decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in Japan the control variables' SIZE and RETAINED EARNINGS influence positively the likelihood of companies to pay cash dividends (the variable size has the same coefficient sign observed in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies; additionally, the variable retained earnings has also the same coefficient sign noticed in DeAngelo et al.'s (2006), Denis and Osobov (2008) and Banyi and Kahle's (2014) studies, though, in Eije and Megginson's (2008) study this variable in not statistically significant). One the other hand, the control

variables' LEVERAGE and CASH HOLDINGS influence negatively the likelihood of companies to pay cash dividends (in Eije and Megginson's (2008) study the variables' leverage and cash holdings have also a negative coefficient). Regarding the ESG Pillar, only the GOVERNANCE affects the probability of a company to pay dividends and influences it negatively. Thus, since the ENVIRONMENTAL and the SOCIAL variables are not statistically significant, and that the GOVERNANCE variable has a negative coefficient, none of the hypotheses for this regression are validated. These results indicate that as a Japanese company grows and increases its retained earnings, the probability of paying cash dividends increases. However, as the company increases its leverage levels and cash holdings, the probability of it to pay cash dividends decreases. Additionally, as a Japanese company starts investing and giving more importance to Governance matters, which constitute this Governance Pillar, the probability of paying dividends decrease. A possible reason for this is that is no longer necessary to pay dividends to control managers' decisions and actions (agency cost), since this Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility.

Moving on to another country analysis, in UK the control variables' PROFITABILITY and RETAINED EARNINGS influence positively the likelihood of companies to pay dividends (the variable profitability has also positive coefficient in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies; the variable retained earnings has also a positive coefficient in DeAngelo et al.'s (2006), Denis and Osobov (2008) and Banyi and Kahle's (2014) studies, though, in Eije and Megginson's (2008) study this variable in not statistically significant). One the other hand, the control variable CASH HOLDINGS influences negatively the likelihood of companies to pay cash dividends (in Eije and Megginson's (2008) study the variable cash holdings has also a negative coefficient). These results indicate that as a British company increases its profitability and retained earnings, the probability of paying cash dividends increases. However, as the company increases its cash holdings, the probability of it to pay cash dividends decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in USA the control variables' SIZE, PROFITABILITY, INVESTMENT OPPORTUNITIES and CAPEX influence positively the likelihood of companies to pay cash dividends (in Fama and French's (2001), Denis and Osobov's (2008) and Eije and Megginson's (2008) studies the variables' size, profitability have also a positive coefficient; in Eije and Megginson' (2008) study the variable investment opportunities has a negative coefficient). One the other hand, the control variable CASH HOLDINGS influences negatively the likelihood of companies to pay cash dividends (in Eije and

Megginson's (2008) study the variable cash holdings has also a negative coefficient). Regarding the ESG Pillar, also only the SOCIAL affects the probability of a company to pay dividends and influences it positively. Hence, since the ENVIRONMENTAL and the GOVERNANCE variables are not statistically significant, and that the SOCIAL variable has a positive coefficient, only the second hypothesis for this regression is validated. These results indicate that as an American company grows, increases its profitability, has higher investment opportunities and more capex, the probability of paying cash dividends increases. However, as the company increases its cash holdings, the probability of it to pay cash dividends decreases. Additionally, as an American company starts investing and giving more importance to Social matters, which constitute this Social Pillar, the probability of paying dividends increases. A possible reason for this is that a company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. These leads to more profitability, future growth and the ability to focus on responsible investment opportunities, which consequently translates into a higher probability of paying dividends. Conversely, another reason for this is to address agency costs resulting from managers' overinvestment in socially responsible activities for personal benefits (Samet & Jarboui, 2017), leading to a higher probability of paying dividends.

Table 4. – Likelihood to repurchase shares

Logistic fixed effects panel regression coefficients were estimated to assess the likelihood to repurchase shares among listed companies (excluding financial and utilities firms as well as firms with negative book equity) in the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States) from 2000 to 2022. The dependent variable applies to repurchases and is a dummy variable that takes the value 1 if the company repurchase shares and zero otherwise. The first number on each column corresponds to the coefficients and the number in parenthesis corresponds to the standard error. Regarding the asterisks, the three asterisks (***) are indicating p-values lower or equal to 0.01, the two asterisks (**) are indicating p-values lower or equal to 0.05 and lastly the one asterisks (*) is indicating p-values lower or equal to 0.1. SIZE is the Logarithm of Total Assets, PROFITABILITY is EBIT divided by Total Assets, INVESTMENT OPPORTUNITIES is the Market-to-Book Ratio, LEVERAGE is Total Debt divided by Total Assets, CASH HOLDINGS is the sum of Cash and Cash Equivalent and its division by Total Assets, RETAINED EARNINGS is measured by Retained Earnings as a proportion of Total Assets, R&D (Research and Development Expenditures) is computed by R&D Expenditures divided by Total Assets, CAPEX is the Capital Expenditures divided by Total Assets. Regarding INVIRONMENTAL, SOCIAL and GOVERNANCE Pillar, these variables were extracted from Refinitiv already computed. The Environmental Pillar Score "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). The Social Pillar Score "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). The Governance Pillar Score "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition).

YN_REP	Global	Canada	France	Germany	Italy	Japan	UK	USA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	0.2582 **	0.0038	1.6985 **	0.1234	-2.5633	0.3500	0.3417	0.3085 **
	(0.1036)	(0.3458)	(0.7288)	(0.4532)	(1.7947)	(0.3468)	(0.2304)	(0.1553)
PROFITABILITY	7.2497 ***	7.8264 ***	13.3168 *	12.1553 ***	15.2629 *	2.6742	9.1209 ***	6.3300 ***
	(0.7950)	(2.3173)	(7.9393)	(4.0694)	(8.2271)	(2.3501)	(2.0583)	(1.1231)
INVESTMENT OPPORTUNITIES	0.0466	-0.2265	0.2287	-0.1568	-2.1351 *	0.2810 *	0.0620	0.0780
	(0.0566)	(0.2671)	(0.7371)	(0.2103)	(1.1616)	(0.1696)	(0.1099)	(0.0923)
LEVERAGE	-1.4203 ***	-1.1070	-2.8544	-2.2245	-12.5042 *	-5.7878 ***	1.0396	-1.0214
	(0.4635)	(1.4265)	(3.2049)	(2.3453)	(6.6853)	(1.5854)	(1.1016)	(0.7171)
CASH HOLDINGS	0.3093	2.1083	-4.0522	1.7357	14.2457 **	-3.5099 **	2.2036	0.1553
	(0.5975)	(1.9854)	(4.2687)	(2.5360)	(6.0974)	(1.3972)	(1.4157)	(0.9852)
R&D	3.1435	-8.4686	-61.5444	6.3219	-2,684.0770	-11.5195	-13.9370	17.2284 ***
	(4.4615)	(19.7658)	(49.5682)	(14.8536)	(5,403.6050)	(10.1070)	(9.8611)	(6.6961)
RETAINED EARNINGS	1.2298 ***	0.3818	3.6959	-0.4845	-4.5282	-0.4887	1.3234 **	2.4454 ***
	(0.2452)	(0.3656)	(2.6757)	(1.3419)	(5.4502)	(1.2395)	(0.6712)	(0.3940)
CAPEX	0.3863	-0.1601	0.8624	2.3165	-11.7468	-3.6337 *	-0.5332	1.1481 *
	(0.4063)	(1.1118)	(2.8017)	(1.8709)	(7.7039)	(1.8717)	(0.9324)	(0.6456)
ENVIRONMENTAL	0.0013	0.0024	-0.0018	-0.0122	0.0298	0.0027	0.0071	0.0006
	(0.0030)	(0.0110)	(0.0165)	(0.0123)	(0.0290)	(0.0066)	(0.0075)	(0.0047)
SOCIAL	0.0050	0.0172	0.0039	0.0106	-0.0054	0.0169 **	0.0009	-0.0006
	(0.0034)	(0.0132)	(0.0148)	(0.0118)	(0.0316)	(0.0079)	(0.0077)	(0.0059)
GOVERNANCE	0.0034	0.0085	0.0007	0.0033	-0.0360	0.0077	0.0073	-0.0001
	(0.0025)	(0.0085)	(0.0144)	(0.0096)	(0.0239)	(0.0058)	(0.0058)	(0.0042)

Beginning with the results of all G7 country companies (Global) of Table 4, it is clear that the control variables' SIZE, PROFITABILITY and RETAINED EARNINGS influence positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable size has also a positive coefficient; in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient; in Banyi and Kahle's (2014) study the variable retained earnings has also a positive coefficient, although, in Eije and Megginson' (2008) study this

variable in not statistically significant). One the other hand, the control variable LEVERAGE influences negatively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable leverage has a negative coefficient as well). These results indicate that as the company grows, increases its profitability and retained earnings, the probability of it to repurchase shares increases. However, as the company increases its leverage levels, the probability of it to repurchase shares decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moving on to the analysis for each specific country, beginning with Canada, regarding the control variable PROFITABILITY influences positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient). This result indicates that as a Canadian company increases its profitability, the probability of repurchasing shares increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in France the control variables' SIZE and PROFITABILITY influence positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable size has also a positive coefficient; in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient). These results indicate that as a French company grows and increases its profitability, the probability of repurchasing shares increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moving on to another country analysis, in Germany the control variable PROFITABILITY influences positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient). This result indicates that as a Deutsche company increases its profitability, the probability of repurchasing shares increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moreover, in Italy the control variables' PROFITABILITY and CASH HOLDINGS influence positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient; in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable cash holdings has a positive coefficient as well). On the other hand, the control variables' INVESTMENT OPPORTUNITIES and LEVERAGE influence negatively the likelihood

of companies to repurchase shares (in Eije and Megginson's (2008) study the variable investment opportunities has also a negative coefficient; in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable leverage has a negative coefficient as well). These results indicate that as an Italian company increases its profitability and cash holdings, the probability of repurchasing shares increases. However, as the company has higher investment opportunities and increases its leverage levels, the probability of repurchasing shares decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in Japan the control variable INVESTMENT OPPORTUNITIES influences positively the likelihood of companies to repurchase shares (in Eije and Megginson' (2008) study this variable has a negative coefficient). One the other hand, the control variables' LEVERAGE, CASH HOLDINGS and CAPEX influence negatively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable leverage has a negative coefficient as well, however, in these studies the variable cash holdings has a positive coefficient). Regarding the ESG Pillar, also only the SOCIAL affects the probability of a company to repurchase shares and influences it positively. Hence, since the ENVIRONMENTAL and the GOVERNANCE variables are not statistically significant, and that the SOCIAL variable has a positive coefficient, the second hypothesis for this regression is validated. These results indicate that as a Japanese company has higher investment opportunities, the probability of repurchasing shares increases. However, as the company increases its leverage levels, cash holdings and capex, the probability of repurchasing shares decreases. Additionally, as a Japanese company starts investing and giving more importance to Social matters, which constitute this Social Pillar, the probability of repurchasing shares increases. A possible reason for this is that a company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. Additionally, a company that compensate employees using stock options (Jolls, 1998; Weisbenner, 2004; Sonika & Shackleton, 2020) values employment efficiency, creating a corporate environment where the workforce feels valued, incentivized, and stimulated. Consequently, these two reasons lead to future growth and the ability to focus on responsible investment opportunities, which consequently translates into higher probability of repurchasing shares. Conversely, another reason for the positive relation is to address agency costs resulting from managers' overinvestment in socially responsible activities for personal benefits (Samet & Jarboui, 2017), leading to a higher probability of repurchasing shares.

Moving on to another country analysis, in UK the control variables' PROFITABILITY and RETAINED EARNINGS influence positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient; in Banyi and Kahle's (2014) study the variable retained earnings has also a positive coefficient, although, in Eije and Megginson' (2008) study this variable in not statistically significant). These results indicate that as a British company increases its profitability and retained earnings, the probability of repurchasing shares increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in USA the control variables' SIZE, PROFITABILITY, R&D, RETAINED EARNINGS and CAPEX influence positively the likelihood of companies to repurchase shares (in Eije and Megginson's (2008) and Andriosopoulos and Hoque's (2013) studies the variable size has also a positive coefficient; in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient; in Banyi and Kahle's (2014) study the variable retained earnings has also a positive coefficient, although, in Eije and Megginson' (2008) study this variable in not statistically significant). These results indicate that as an American company grows, increases its profitability, its R&D levels, retained earnings and capex, the probability of repurchasing shares increases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Table 5. – Dividend amounts paid

Fixed effects panel regression coefficients were estimated to assess the dividend amounts paid by listed companies (excluding financial and utilities firms as well as firms with negative book equity) in the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States) from 2000 to 2022. The dependent variable is measured by Total Cash Dividends divided by Total Assets. The first number on each column corresponds to the coefficients and the number in parenthesis corresponds to the standard error. Regarding the asterisks, the three asterisks (***) are indicating p-values lower or equal to 0.01, the two asterisks (**) are indicating p-values lower or equal to 0.05 and lastly the one asterisks (*) is indicating p-values lower or equal to 0.1. SIZE is the Logarithm of Total Assets, PROFITABILITY is EBIT divided by Total Assets, INVESTMENT OPPORTUNITIES is the Market-to-Book Ratio, LEVERAGE is Total Debt divided by Total Assets, CASH HOLDINGS is the sum of Cash and Cash Equivalent and its division by Total Assets, RETAINED EARNINGS is measured by Retained Earnings as a proportion of Total Assets, R&D (Research and Development Expenditures) is computed by R&D Expenditures divided by Total Assets, CAPEX is the Capital Expenditures divided by Total Assets. Regarding INVIRONMENTAL, SOCIAL and GOVERNANCE Pillar, these variables were extracted from Refinitiv already computed. The Environmental Pillar Score "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). The Social Pillar Score "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). The Governance Pillar Score "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition).

DIV	Global	Canada	France	Germany	Italy	Japan	UK	USA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	-0.0012	-0.0059 *	-0.0002	-0.0009	-0.0040	0.0033 ***	0.0002	-0.0027
	(0.0012)	(0.0034)	(0.0016)	(0.0042)	(0.0059)	(0.0009)	(0.0028)	(0.0019)
PROFITABILITY	0.1317 ***	0.0707 *	0.1746 ***	0.1643 ***	0.1711 ***	0.0593 ***	0.1958 ***	0.0886 ***
	(0.0207)	(0.0370)	(0.0387)	(0.0542)	(0.0398)	(0.0173)	(0.0318)	(0.0229)
INVESTMENT OPPORTUNITIES	0.0022 **	0.0068 ***	0.0001	0.0032	-0.0001 *	-0.0001	0.0040 **	0.0033 **
	(0.0009)	(0.0023)	(0.0001)	(0.0024)	(0.0001)	(0.0003)	(0.0019)	(0.0014)
LEVERAGE	0.0152 **	-0.0056	-0.0056	0.0054	-0.0128	0.0027	0.0130	0.0380 ***
	(0.0062)	(0.0187)	(0.0072)	(0.0178)	(0.0178)	(0.0036)	(0.0138)	(0.0113)
CASH HOLDINGS	-0.0231 ***	-0.0374 **	-0.0073	0.0072	-0.0012	-0.0179 **	-0.0523 ***	-0.0130
	(0.0078)	(0.0174)	(0.0184)	(0.0167)	(0.0307)	(0.0082)	(0.0185)	(0.0108)
R&D	0.2299 **	0.3602	0.0902 *	0.1663	0.9089	0.0426	0.1457	0.3175
	(0.1082)	(0.2627)	(0.0519)	(0.1476)	(0.7902)	(0.0264)	(0.0962)	(0.2088)
RETAINED EARNINGS	0.0006	0.0104	0.0094	0.0308	0.0162	0.0257 ***	0.0047	-0.0035
	(0.0037)	(0.0091)	(0.0062)	(0.0195)	(0.0113)	(0.0039)	(0.0099)	(0.0049)
CAPEX	0.1058 ***	0.0553 **	0.0374 **	0.0183	-0.0285 *	0.0383	0.0915 ***	0.1409 ***
	(0.0298)	(0.0240)	(0.0167)	(0.0179)	(0.0153)	(0.0363)	(0.0324)	(0.0408)
ENVIRONMENTAL	0.0000 **	0.0001	0.0001 **	0.0000	-0.0001	-0.0000	0.0000	0.0001 *
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
SOCIAL	0.0001 ***	0.0000	-0.0000	0.0001 *	-0.0000	0.0001 ***	0.0001	0.0000
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
GOVERNANCE	-0.0000 **	-0.0002 **	-0.0000	-0.0002 **	0.0000	0.0000 *	-0.0000	-0.0000
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
_cons	0.0365	0.1540 **	0.0110	0.0126	0.1002	-0.0888 ***	0.0074	0.0674 *
	(0.0271)	(0.0734)	(0.0342)	(0.0933)	(0.1227)	(0.0249)	(0.0554)	(0.0404)

Beginning with the results of all G7 country companies (Global) of Table 5, it is clear that the control variables' PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE, R&D and CAPEX influence positively the dividend amounts paid (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient, however, the variables' investment opportunities and leverage have a

negative coefficient). One the other hand, the control variable CASH HOLDINGS influences negatively the dividend amounts paid (in Eije and Megginson' (2008) study this variable has a positive coefficient). The great novelty is that the variable ENVIRONMENTAL, SOCIAL and GOVERNANCE, the three Pillars from ESG performance, affect the dividend amounts paid, the first two Pillars influence it positively and the third Pillar influences it negatively (in Bilyay-Erdogan et al.'s (2023) study the three Pillars affect positively the dividend amounts paid). Thus, since the ENVIRONMENTAL and the SOCIAL variables have a positive coefficient, and that the GOVERNANCE variable has a negative coefficient, only the second hypothesis for this regression is validated. These results indicate that as the company increases its profitability, have higher investment opportunities, increases its leverage, R&D and capex levels, the dividend amounts paid increases. However, as the company increases its cash holdings, the dividend amounts paid decreases. Furthermore, as a company starts to give more importance to Environmental issues and Social matters, that constitutes the Environmental and Social Pillars, the dividend amounts paid increases. Moreover, as a company starts to give more importance to Governance matters, that constitute the Governance Pillar, the dividend amounts paid decreases. A possible reason for these is that a company that reduces its emissions, invests in sustainable innovation and has a better resource use, has a higher lifetime, a higher corporate recognition on the market and higher future growth compared to others, leading to a higher dividend amount paid. In addition, a company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. These leads to future growth, higher profitability and the ability to focus on responsible investment opportunities, which consequently translates into higher dividend amounts paid. Conversely, another reason for this is to address agency costs resulting from managers' overinvestment in socially responsible activities for personal benefits (Samet & Jarboui, 2017) leading to a higher dividend amount paid. Moreover, since Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility, is no longer necessary to pay dividends to control managers' decisions and actions (agency cost), which results in less dividend amounts paid.

In addition, having a positive coefficient in the leverage variable is unusual, since leverage is associated with significant costs, leading to the normal conclusion of lower cash dividends paid. Girerd-Potin et al. (2011) found that firms with weaker social commitment tend to have a higher debt ratio target (based on research conducted on European firms between 1999 and 2007). Additionally, a significant and negative link was identified between the debt level and certain social dimension, including Human Resources, Corporate Governance, Business Behavior, and Human Rights (excluding Environment and Community Involvement). Debt mitigates the impact of low social commitment on

the firms' cost of capital, hence diminishing the pressure on firms to comply with investor social responsibility requirements. In light of these conclusions, a plausible opposing reason for the usual leverage's negative coefficient would be the higher cost associated with investor social responsibility requirements, leading to the need for leverage. Since socially responsible firms are typically large (Samet & Jarboui, 2017), in Eiji and Megginson' (2008) study it was presented a perspective where higher leverage was associated with larger, order, stable and more profitable firms which can afford to pay higher dividend amounts.

Moving on to the analysis for each specific country, beginning with Canada, regarding the control variables' PROFITABILITY, INVESTMENT OPPORTUNITIES and CAPEX influence positively the dividend amounts paid (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient, however, the variable investment opportunities has a negative coefficient). One the other hand, the control variables' SIZE and CASH HOLDINGS influences negatively the dividend amounts paid (in Eije and Megginson' (2008) study the variables' size and cash holdings have a positive coefficient). Regarding the ESG Pillar, only the GOVERNANCE affects the dividend amounts paid and influences it negatively (in Bilyay-Erdogan et al.'s (2023) study this Pillar affect positively the dividend amounts paid). Hence, since the ENVIRONMENTAL and the SOCIAL variables are not statistically significant, and that the GOVERNANCE variable has a negative coefficient, none of the hypotheses for this regression are validated. These results indicate that as a Canadian company increases its profitability, has higher investment opportunities and increases its capex, the dividend amounts paid increases. However, as the company grows and increases its cash holdings, the dividend amounts paid decreases. Moreover, as a Canadian company starts investing and giving more importance to Governance matters, which constitute this Governance Pillar, the dividend amounts paid decreases. A possible reason for this is that is no longer necessary to pay dividends to control managers' decisions and actions (agency cost), since this Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility.

Furthermore, in France the control variables' PROFITABILITY, R&D and CAPEX influence positively the dividend amounts paid (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient). Regarding the ESG Pillar, also only the ENVIRONMENTAL affects the dividend amount paid and influences it positively (in Bilyay-Erdogan et al.'s (2023) study this Pillar affect positively the dividend amounts paid). Hence, since the GOVERNANCE and the SOCIAL variables are not statistically significant, and that the ENVIRONMENTAL variable has a positive coefficient, none of the hypotheses for this regression are validated. These results indicate that as a French company increases its profitability, its R&D levels and its capex, the dividend amounts paid increases. Moreover,

as a French company starts investing and giving more importance to Environmental issues that constitute this Environmental Pillar, the dividend amounts paid increases. A possible reason for this is that a company that reduces its emissions, invests in sustainable innovation and has a better resource use has a higher lifetime and future growth compared to others, leading to a higher dividend amount paid.

Moving on to another country analysis, in Germany the control variable PROFITABILITY influences positively the dividend amounts paid (in Eije and Megginson's (2008) study this variable has also a positive coefficient). Regarding the ESG Pillar, the SOCIAL affects positively the dividend amounts paid, and the GOVERNANCE influences it negatively (in Bilyay-Erdogan et al.'s (2023) study this two Pillars affect positively the dividend amounts paid). Thus, since the ENVIRONMENTAL variable is not statistically significant, the GOVERNANCE variable has a negative coefficient, and the SOCIAL variable has a positive coefficient, only the second hypothesis for this regression is validated. This result indicates that as a Deutsche company increases its profitability, the dividend amounts paid increases. Furthermore, as a company starts to give more importance to Social matters, that constitutes the Social Pillar, the dividend amounts paid increases. Moreover, as a company starts to give more importance to Governance matters, that constitute the Governance Pillar, the dividend amounts paid decrease. A possible reason for these is that a company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. These leads to future growth, higher profitability and the ability to focus on responsible investment opportunities, which consequently translates into higher dividend amounts paid. Conversely, another reason for this is to address agency costs resulting from overinvestment in socially responsible activities (Samet & Jarboui, 2017) leading to a higher dividend amount paid. In addition, since Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility, is no longer necessary to pay dividends to control managers' decisions and actions (agency cost), which results in less dividend amounts paid.

Moreover, in Italy the control variable PROFITABILITY influence positively the dividend amount paid (in Eije and Megginson's (2008) study this variable has also a positive coefficient). On the other hand, the control variables' INVESTMENT OPPORTUNITIES and CAPEX influence negatively the dividend amount paid (in Eije and Megginson's (2008) study the variable investment opportunities has also a negative coefficient). These results indicate that as an Italian company increases its profitability, the dividend amounts paid increases. However, as the company have higher investment opportunities and increases its capex, the dividend amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and

GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in Japan the control variables' SIZE, PROFITABILITY, and RETAINED EARNINGS influence positively the dividend amount paid (in Eije and Megginson's (2008) study the variables' size and profitability have also a positive coefficient, however, the variable retained earnings is not statistically significant). One the other hand, the control variable CASH HOLDINGS influences negatively the dividend amount paid (in Eije and Megginson' (2008) study this variable has a positive coefficient). Regarding the ESG Pillar, the SOCIAL and GOVERNANCE affects positively the dividend amount paid (in Bilyay-Erdogan et al.'s (2023) study the three Pillars affect positively the dividend amounts paid). Thus, since the ENVIRONMENTAL variable is not statistically significant, and the SOCIAL and GOVERNANCE variables have a positive coefficient, only the second and the third hypotheses for this regression are validated. These results indicate that as a Japanese company grows, increases its profitability and retained earnings, the dividend amounts paid increases. However, as the company increases its cash holdings, the dividend amounts paid decreases. Additionally, as a Japanese company starts investing and giving more importance to Social and Governance matters, which constitute the Social and Governance Pillars, the dividend amounts paid increases. A possible reason for this is that a company that helps the community, fights and defends human rights, has product responsibility and cares about the workforce will have a higher employee efficiency and satisfaction as well as higher corporate recognition in the market. These leads to future growth and higher profitability, which consequently translates into higher dividend amounts paid. Conversely, another reason for this result is to address agency costs resulting from managers' overinvestment in socially responsible activities for personal benefits (Samet & Jarboui, 2017), leading to a higher dividend amount paid. Regarding the positive coefficient from Governance, a possible reason can be the fact that these companies more focused on Governance matters will have better mechanisms to reduce agency cost related to the free cash flow (Jensen, 1986), therefore, leading to a higher dividend amount paid. Moreover, since this Governance Pillar is associated with better relations with shareholders, more responsible decisions from managers and more corporate social responsibility, these leads to a greater defence of shareholders' rights and more profitability, which consequently results in higher dividend amounts paid.

Moving on to another country analysis, in UK the control variables' PROFITABILITY, INVESTMENT OPPORTUNITIES and CAPEX influence positively the dividend amounts paid (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient, however, the variable investment opportunities has a negative coefficient). One the other hand, the control variable CASH HOLDINGS influences negatively the dividend amounts paid (in Eije and Megginson' (2008) study this variable has

a positive coefficient). These results indicate that as a British company increases its profitability, has higher investment opportunities and increases its capex levels, the dividend amounts paid increases. However, as the company increases its cash holdings, the dividend amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in USA the control variables' PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE and CAPEX influence positively the dividend amounts paid (in Eije and Megginson's (2008) study the variable profitability has also a positive coefficient, however, the variables' investment opportunities and leverage have a negative coefficient). Regarding the ESG Pillar, also only the ENVIRONMENTAL affects the dividend amounts paid and influences it positively (in Bilyay-Erdogan et al.'s (2023) study this Pillar affect positively the dividend amounts paid). Hence, since the SOCIAL and the GOVERNANCE variables are not statistically significant, and that the ENVIRONMENTAL variable has a positive coefficient, none of the hypotheses for this regression are validated. These results indicate that as an American company increases its profitability, has higher investment opportunities, increases its leverage and capex levels, the dividend amounts paid increases. Additionally, as an American company starts investing and giving more importance to Environmental issues that constitute this Environmental Pillar, the dividend amounts paid increases. A possible reason for this is that a company that reduces its emissions, invests in sustainable innovation and has a better resource use has a higher lifetime and future growth compared to others, leading to a higher dividend amount paid.

Table 6. – Repurchase amounts paid

Fixed effects panel regression coefficients were estimated to assess the repurchase amounts paid by listed companies (excluding financial and utilities firms as well as firms with negative book equity) in the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States) from 2000 to 2022. The dependent variable is measured by Total Repurchase Amounts divided by Total Assets. The first number on each column corresponds to the coefficients and the number in parenthesis corresponds to the standard error. Regarding the asterisks, the three asterisks (***) are indicating p-values lower or equal to 0.01, the two asterisks (**) are indicating p-values lower or equal to 0.05 and lastly the one asterisks (*) is indicating p-values lower or equal to 0.1. SIZE is the Logarithm of Total Assets, PROFITABILITY is EBIT divided by Total Assets, INVESTMENT OPPORTUNITIES is the Market-to-Book Ratio, LEVERAGE is Total Debt divided by Total Assets, CASH HOLDINGS is the sum of Cash and Cash Equivalent and its division by Total Assets, RETAINED EARNINGS is measured by Retained Earnings as a proportion of Total Assets, R&D (Research and Development Expenditures) is computed by R&D Expenditures divided by Total Assets, CAPEX is the Capital Expenditures divided by Total Assets. Regarding INVIRONMENTAL, SOCIAL and GOVERNANCE Pillar, these variables were extracted from Refinitiv already computed. The Environmental Pillar Score "measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems" (Refinitiv definition). The Social Pillar Score "measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices" (Refinitiv definition). The Governance Pillar Score "measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders" (Refinitiv definition).

REP	Global	Canada	France	Germany	Italy	Japan	UK	USA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	-0.0109 ***	-0.0055	-0.0076 *	-0.0332 **	-0.0102 *	-0.0104 **	-0.0082	-0.0127 ***
	(0.0020)	(0.0040)	(0.0044)	(0.0137)	(0.0053)	(0.0051)	(0.0059)	(0.0028)
PROFITABILITY	0.3252 ***	0.1461 ***	-0.0124	0.0693	0.1323 ***	0.2424	0.4422 ***	0.3095 ***
	(0.0497)	(0.0369)	(0.0368)	(0.0539)	(0.0397)	(0.1577)	(0.1138)	(0.0410)
INVESTMENT OPPORTUNITIES	0.0030	0.0076	0.0074	-0.0035	-0.0048	0.0013	0.0054 *	0.0007
	(0.0020)	(0.0055)	(0.0046)	(0.0050)	(0.0034)	(0.0025)	(0.0028)	(0.0011)
LEVERAGE	0.0659 ***	0.0108	0.0044	0.0790	0.0072	0.0836	0.0779 ***	0.0768 ***
	(0.0092)	(0.0209)	(0.0147)	(0.0493)	(0.0199)	(0.0590)	(0.0255)	(0.0125)
CASH HOLDINGS	-0.0838 ***	-0.0865	-0.0378	-0.0331	0.0245	-0.0867 *	-0.1369 ***	-0.0798 ***
	(0.0143)	(0.0544)	(0.0247)	(0.0444)	(0.0287)	(0.0446)	(0.0461)	(0.0150)
R&D	0.3709 ***	-0.8178	-0.0864 *	0.2181	0.1182	0.0726	-0.2138	0.4751 ***
	(0.0641)	(1.1515)	(0.0500)	(0.2818)	(1.0169)	(0.0525)	(0.3593)	(0.0890)
RETAINED EARNINGS	0.0027	-0.0116 **	0.0085	0.0483 *	0.0072	0.0801	0.0189	0.0053
	(0.0051)	(0.0051)	(0.0109)	(0.0276)	(0.0238)	(0.0486)	(0.0168)	(0.0048)
CAPEX	0.1534 ***	0.1300 **	0.0632	0.3354 ***	-0.0477	0.0656	0.1643 **	0.1577 ***
	(0.0172)	(0.0568)	(0.0546)	(0.0975)	(0.0714)	(0.0436)	(0.0694)	(0.0174)
ENVIRONMENTAL	0.0000	0.0001	-0.0000	0.0002	-0.0000	0.0000	-0.0002	0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0000)	(0.0001)	(0.0001)
SOCIAL	0.0000	0.0001	0.0001	-0.0001	0.0001	-0.0000	-0.0002 *	-0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
GOVERNANCE	-0.0000	-0.0002	-0.0001	0.0004 *	-0.0001	0.0000	-0.0000	0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
_cons	0.2446 ***	0.1408	0.1759 *	0.7213 **	0.2108 *	0.2429 **	0.1581	0.2813 ***
	(0.0481)	(0.0932)	(0.0978)	(0.2955)	(0.1103)	(0.1142)	(0.1264)	(0.0604)

Beginning with the results of all G7 country companies (Global) of Table 6, it is clear that the control variables' PROFITABILITY, LEVERAGE, R&D and CAPEX influence positively the repurchase amounts paid (in Eije and Megginson' (2008) study the variables' profitability and leverage are not

statistically significant). One the other hand, the control variables' SIZE and CASH HOLDINGS influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable size has a positive coefficient and the variable cash holdings is not statistically significant). These results indicate that as the company increases its profitability, increases its leverage, R&D and capex levels, the repurchase amounts paid increases. However, as the company grows and increases its cash holdings, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moving on to the analysis for each specific country, beginning with Canada, regarding the control variables' PROFITABILITY and CAPEX influence positively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable profitability is not statistically significant). One the other hand, the control variable RETAINED EARNINGS influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study this variable is not statistically significant). These results indicate that as a Canadian company increases its profitability and its capex, the repurchase amounts paid increases. However, as the company grows and increases its retained earnings, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in France the control variables' SIZE and R&D influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable size has a positive coefficient). These results indicate that as a French company grows and increases its R&D levels, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moving on to another country analysis, in Germany the control variables' RETAINED EARNINGS and CAPEX influences positively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable retained earnings is not statistically significant). One the other hand, the control variable SIZE influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study this variable has a positive coefficient). Regarding the ESG Pillar, only the GOVERNANCE affects the repurchase amounts paid and influences it positively. Hence, since the ENVIRONMENTAL and the SOCIAL variables are not statistically significant, and that the GOVERNANCE variable has a positive coefficient, only the third hypothesis for this regression is validated. This result indicates that as a Deutsche company increases its retained earnings and capex levels, the repurchase amounts paid increases. However, as the company grows, the repurchase amounts paid decreases. Furthermore, as a company starts to give more importance to Governance matters, that constitutes the Governance Pillar, the repurchase amounts paid increases. A possible reason for this is that since this Governance Pillar is associated with

better relations with shareholders, more responsible decisions from managers and more corporate social responsibility, these leads to a greater defence of shareholders' rights and more profitability, which consequently results in higher repurchase amounts paid. In addition, another reason for this positive coefficient is the firms' compensation structures that reward managers with stock options for CSR investments (Jian & Lee, 2015) and for efficient corporate governance practices (Harjoto and Jo, 2011) as well as compensations for employees for their efficiency (Jolls, 1998; Weisbenner, 2004; Sonika & Shackleton, 2020), leading to higher repurchase amounts paid. Moreover, companies more focused on Governance matters will have better mechanisms to reduce agency cost related to the free cash flow (Jensen, 1986), therefore, resulting in higher repurchase amounts paid.

Moreover, in Italy the control variable PROFITABILITY influences positively the repurchase amounts paid (in Eije and Megginson' (2008) study this variable is not statistically significant). On the other hand, the control variable SIZE influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study this variable has a positive coefficient). These results indicate that as an Italian company increases its profitability, the repurchase amounts paid increases. However, as the company grows, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Furthermore, in Japan the control variables' SIZE and CASH HOLDINGS influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable size has a positive coefficient and the variable cash holdings is not statistically significant). These results indicate that as a Japanese company grows and increases its cash holdings, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

Moving on to another country analysis, in UK the control variables' PROFITABILITY, INVESTMENT OPPORTUNITIES, LEVERAGE and CAPEX influence positively the repurchase amounts paid. (in Eije and Megginson' (2008) study the variable profitability and leverage are not statistically significant and the variable investment opportunities has a negative coefficient). One the other hand, the control variable CASH HOLDINGS influences negatively the repurchase amounts paid (in Eije and Megginson' (2008) study this variable in not statistically significant). Regarding the ESG Pillar, also only the SOCIAL affects the repurchase amounts paid and influences it negatively. Hence, since the ENVIRONMENTAL and the GOVERNANCE variables are not statistically significant, and that the SOCIAL variable has a negative coefficient, none of the hypotheses for this regression are validated. These results indicate that as a British company increases its profitability, has higher investment opportunities and increases its

leverage and capex levels, the repurchase amounts paid increases. However, as the company increases its cash holdings, the repurchase amounts paid decreases. Additionally, as a British company starts investing and giving more importance to Social matters, which constitute this Social Pillar, the repurchase amounts paid decreases. A possible reason for this is that it gets costly when a company helps the community, fights and defends human rights, has product responsibility and cares about the workforce, which translates into lower repurchase amounts paid.

Furthermore, in USA the control variables' PROFITABILITY, LEVERAGE, R&D and CAPEX influence positively the repurchase amounts paid (in Eije and Megginson' (2008) study the variables' profitability and leverage are not statistically significant). One the other hand, the control variables' SIZE and CASH HOLDINGS influence negatively the repurchase amounts paid (in Eije and Megginson' (2008) study the variable size has a positive coefficient and the variable cash holdings is not statistically significant). These results indicate that as an American company increases its profitability, increases its leverage, R&D and capex levels, the repurchase amounts paid increases. However, as the company grows and increases its cash holdings, the repurchase amounts paid decreases. Since the ENVIRONMENTAL, SOCIAL and GOVERNANCE variables are not statistically significant, none of the hypotheses for this regression are validated.

5 – Conclusions and Recommendations

Using a database of 26,233 firm-year observations from 3,057 different companies across G7 countries it was possible to determine if the Environmental, Social and Governance Pillars influence both the likelihood to pay cash dividends and to repurchase as well as the amounts paid for both dividends and repurchases from 2000 to 2022.

The results demonstrate that, for the G7 countries, at firm level, the more they focus on Environmental issues the higher the probability of paying cash dividends and the higher the dividend amounts paid. Additionally, when firms increase their concern about Social matters the higher the dividend amounts paid, however, the more importance they give to Governance matters the lower the dividend amounts paid.

Furthermore, regarding each country the findings indicate that when Canadian companies concern about Environmental issues the likelihood of paying dividends increase and when these companies prioritize Governance matters the dividend amounts paid decrease. Moreover, when French companies focus on Governance matters the probability of paying cash dividends decrease and when these companies give importance to Environmental issues the dividend amounts paid increase. Regarding Deutsch companies, when they concern about Social matters the dividend amounts paid increase, however, when these companies focus on Environmental issues the dividends amounts paid decrease, but the repurchase amounts paid increase. Furthermore, when Japanese companies give importance to Governance matters the likelihood of paying cash dividends decrease but the dividend amounts paid increase. Additionally, when these Japanese firms concern about Social matters the probability to repurchase shares increase as well as the dividend amounts paid. Moreover, when British companies focus on Social matters the repurchase amounts decrease. Regarding American companies, when they give more importance to Social matters the probability of paying dividends increase and when they focus on Environmental issues the dividend amounts paid increase.

Therefore, with this study it is possible to conclude that the Environmental, Social and Governance Pillar influence the payout decisions across G7 countries, except Italy, in various ways.

In conclusion, knowing that through 2000 to 2022 the payout decisions were affected by these three ESG Pillars, that investors are becoming more concerned about ESG matters, and that managers and companies will focus more to align their actions and decisions with investors preferences, in the future it is expected that the payout decisions will be more influenced by these ESG scores.

5.1 – Limitations

The ESG scores are proxies used to evaluate sustainability and sustainable development in organizations. However, doubts have arisen regarding whether ESG Scores truly represent companies' sustainability in a reliable way. According to Clément et al.'s (2022) paper, later studies have demonstrated that ESG scores do not measure sustainability concepts, such as temporality, impact, resources management, and interconnectivity. Additionally, although ESG scores incorporate materiality principles, what they measure is not always quantifiable, and most agencies that produce ESG scores lack transparency.

Furthermore, regarding European Union (EU), on 13 June 2023, the COM (2023), published a proposal for a regulation on transparency and integrity of ESG rating activities. The goal is to make the ESG ratings more reliable, increase transparency on the methodologies, objectives, characteristics, and data sources used, and also increase clarity concerning the operations of ESG rating providers, mitigating the risks associated with conflicts of interest. Moreover, any agency established in the EU that wants to become ESG rating provider must be subject to authorization and supervision by the European Securities and Markets Authority (ESMA). This proposal is aligned with the European Green Deal and the transition to a climate-neutral and sustainable economy by 2050.

5.2 – Future Investigations

Furthermore, it would be important to analyse, for the G7 countries, the influence not only from the 10 categories that constitute the ESG Performance (Emission, Innovation, Resource use, Community, Human rights, Product responsibility, Workforce, CSR strategy, Management, and Shareholders) but also from some specific themes on payout policy decisions (dividends and share repurchases). These themes would be Policy Executive Compensation ESG Performance, CSR Sustainability Reporting Score, Board Structure Policy Score, Average Board Tenure Score, Board Size, Board Gender Diversity Percent Score, Board Member Compensation Score, Anti-Takeover Devices Above Two Score, Board Cultural Diversity Percent Score, CSR Sustainability Committee Score, Shareholders Rights Policy Score, Human Rights Policy Score, Policy Community Involvement Score and Environmental Expenditures Investments Score and Environmental Partnerships Score.

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Appendixes

Appendix A: Refinitiv table - Detailed view on the ESG Pillars, Categories and Themes.

Pillars	Catagories	Themes	Data points	Weight method
Environmental	Emmission	Emissions	TR.AnalyticCO2	Quant industry median
		Waste	TR.AnalyticTotalWaste	Quant industry median
		Biodiversity*		
		Environmental management systems*		
	Innovation	Product innovation	TR.EnvProducts	Transparency weights
		Green revenues, research and development (R&D) and capital expenditures (CapEx)	TR.AnalyticEnvRD	Quant industry median
	Resource use	Water	TR.AnalyticWaterUse	Quant industry median
		Energy	TR.AnalyticEnergyUse	Quant industry median
		Sustainable packaging*		
		Environmental supply chain*		
Social	Community	Equally important to all industry groups, hence a median weight of five is assigned to all		Equally important to all industry groups
	Human rights	Human rights	TR.PolicyHumanRights	Transparency weights
	Product responsibility	Responsible marketing	TR.PolicyResponsibleMarketing	Transparency weights
		Product quality	TR.ProductQualityMonitoring	Transparency weights
		Data privacy	TR.PolicyDataPrivacy	Transparency weights
	Workforce	Diversity and inclusion	TR.WomenEmployees	Quant industry median
		Career development and training	TR.AvgTrainingHours	Transparency weights
		Working conditions	TR.TradeUnionRep	Quant industry median
		Health and safety	TR.AnalyticLostDays	Transparency weights
Governance	CSR strategy	CSR strategy	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		ESG reporting and transparency		
	Management	Structure (independence, diversity, committees)	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		Compensation		
	Shareholders	Shareholder rights	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		Takeover defenses		

*No data points available that may be used as a proxy for ESG magnitude/materiality

Refinitiv | Environmental, social and governance scores from Refinitiv

Appendix B: Breusch and Pagan Lagrange multiplier test for random effects – linear regression for the amounts paid by cash dividends payers.

```
. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, re

Random-effects GLS regression                   Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1662                                         min =          1
     Between = 0.3625                                         avg =        9.7
     Overall = 0.3394                                         max =         22

                                                Wald chi2(11)     =    5415.33
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       Div_TA | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0024558     .00021   -11.69   0.000    -.0028674   -.0020442
Profitability |   .1450595   .0033372    43.47   0.000     .1385188    .1516003
   Inv_Opport |   .0016724   .0001246    13.42   0.000     .0014281    .0019167
     Leverage |   .0070124   .0021783     3.22   0.001     .0027431    .0112817
Cash_Holdings |  -.0048051   .0028306    -1.70   0.090     -.010353    .0007427
          R_D |   .2143941   .0149516    14.34   0.000     .1850896    .2436986
        RE_TA |  -.0047567   .0007021    -6.78   0.000    -.0061328   -.0033807
        Capex |   .1097361   .0022771    48.19   0.000     .1052732    .1141991
      environ |   .0000438   .0000143     3.06   0.002     .0000157    .0000719
       social |   .0000598   .0000162     3.69   0.000      .000028    .0000915
       govern |  -.0000293   .0000123    -2.37   0.018    -.0000535   -5.11e-06
        _cons |   .0668168    .004755    14.05   0.000     .0574971    .0761365
-------------+----------------------------------------------------------------
      sigma_u |  .02530396
      sigma_e |  .02619908
          rho |  .48262524   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        Div_TA[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                ---------+-----------------------------
                  Div_TA |   .0017287       .0415778
                       e |   .0006864       .0261991
                       u |   .0006403        .025304

        Test: Var(u) = 0
                                 chibar2(01) =  6321.07
                              Prob > chibar2 =   0.0000
```

Appendix C: Breusch and Pagan Lagrange multiplier test for random effects – linear regression for the amounts paid by Repurchasers.

```
. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, re

Random-effects GLS regression                   Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2198                                         min =          1
     Between = 0.5726                                         avg =        6.4
     Overall = 0.4621                                         max =         21

                                                Wald chi2(11)     =    7551.10
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       Rep_TA | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0024914    .000322    -7.74   0.000    -.0031226   -.0018602
Profitability |   .2917094   .0052212    55.87   0.000     .2814761    .3019426
   Inv_Opport |   .0033043   .0002246    14.71   0.000      .002864    .0037445
     Leverage |   .0380783   .0035226    10.81   0.000     .0311742    .0449825
Cash_Holdings |  -.0202553   .0044378    -4.56   0.000    -.0289532   -.0115575
          R_D |   .3668747   .0153323    23.93   0.000     .3368239    .3969256
        RE_TA |  -.0013224   .0005992    -2.21   0.027    -.0024968   -.0001479
        Capex |   .1706814   .0030543    55.88   0.000     .1646951    .1766676
      environ |  -.0000754    .000026    -2.89   0.004    -.0001264   -.0000243
       social |   .0000113   .0000301     0.38   0.706    -.0000476    .0000703
       govern |  -.0000214   .0000228    -0.94   0.347    -.0000661    .0000232
        _cons |   .0539333   .0072999     7.39   0.000     .0396256    .0682409
-------------+----------------------------------------------------------------
      sigma_u |  .03559379
      sigma_e |  .04323122
          rho |  .40401024   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        Rep_TA[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                ---------+-----------------------------
                  Rep_TA |   .0049761       .0705413
                       e |   .0018689       .0432312
                       u |   .0012669       .0355938

        Test: Var(u) = 0
                                 chibar2(01) =  2706.84
                              Prob > chibar2 =   0.0000
```

Appendix D: Hausman test – logistic regression for the probability of a company to pay dividends.

```
. xtlogit Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, re

Fitting comparison model:

Iteration 0:  Log likelihood = -3821.1782
Iteration 1:  Log likelihood = -3499.3887
Iteration 2:  Log likelihood = -3389.7797
Iteration 3:  Log likelihood = -3387.5318
Iteration 4:  Log likelihood = -3387.3416
Iteration 5:  Log likelihood = -3387.3396
Iteration 6:  Log likelihood = -3387.3396

Fitting full model:

tau =  0.0    Log likelihood = -3387.3396
tau =  0.1    Log likelihood = -3363.3258
tau =  0.2    Log likelihood = -3341.0173
tau =  0.3    Log likelihood = -3322.3842
tau =  0.4    Log likelihood = -3309.9542
tau =  0.5    Log likelihood =  -3307.142
tau =  0.6    Log likelihood = -3318.9988

Iteration 0:  Log likelihood = -3307.1386
Iteration 1:  Log likelihood = -3252.5497
Iteration 2:  Log likelihood = -3251.9046
Iteration 3:  Log likelihood = -3251.9012
Iteration 4:  Log likelihood = -3251.9012

Random-effects logistic regression              Number of obs     = 22,302
Group variable: id                              Number of groups =  2,291

Random effects u_i ~ Gaussian                   Obs per group:
                                                             min =      1
                                                             avg =    9.7
                                                             max =     22

Integration method: mvaghermite                 Integration pts. =     12

                                                Wald chi2(11)     = 516.12
Log likelihood = -3251.9012                     Prob > chi2       = 0.0000

------------------------------------------------------------------------------
           Y_N | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
---------------+--------------------------------------------------------------
          Size |   .3875816   .0259899    14.91   0.000     .3366423    .438521
Profitability  |    7.62157   .6206104    12.28   0.000     6.405196    8.837944
   Inv_Opport  |    .001882   .0140799     0.13   0.894    -.0257141    .029478
     Leverage  |  -2.228169    .308601    -7.22   0.000    -2.833016   -1.623322
Cash_Holdings  |  -2.884654   .4011533    -7.19   0.000      -3.6709   -2.098408
          R_D  |   4.872452   1.884171     2.59   0.010     1.179545    8.565359
        RE_TA  |   .4823975   .1275137     3.78   0.000     .2324753    .7323197
        Capex  |   .2455286   .3312606     0.74   0.459    -.4037302    .8947874
      environ  |   .0009462   .0025867     0.37   0.715    -.0041236     .006016
       social  |  -.0016567   .0029959    -0.55   0.580    -.0075287    .0042152
       govern  |   .0040007   .0022817     1.75   0.080    -.0004714    .0084728
        _cons  |  -4.885436    .556309    -8.78   0.000    -5.975781    -3.79509
---------------+--------------------------------------------------------------
     /lnsig2u  |   .7523727   .1116687                      .5335061    .9712392
---------------+--------------------------------------------------------------
      sigma_u  |   1.456719   .0813349                      1.305718    1.625182
          rho  |   .3921044   .0266172                      .3413371    .4453175
------------------------------------------------------------------------------
LR test of rho=0: chibar2(01) = 270.88                 Prob >= chibar2 = 0.000

. estimates store new_random_effects

. xtlogit Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,714 groups (16,612 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1410.5808
Iteration 1:  Log likelihood = -1381.1244
Iteration 2:  Log likelihood = -1380.9533
Iteration 3:  Log likelihood = -1380.9532
Iteration 4:  Log likelihood = -1380.9532

Conditional fixed-effects logistic regression   Number of obs     =  5,690
Group variable: id                              Number of groups =    577

                                                Obs per group:
                                                             min =      2
                                                             avg =    9.9
                                                             max =     22

                                                LR chi2(11)       = 288.45
Log likelihood = -1380.9532                     Prob > chi2       = 0.0000

------------------------------------------------------------------------------
           Y_N | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
---------------+--------------------------------------------------------------
          Size |   .8802728   .1302364     6.76   0.000     .6250141    1.135532
Profitability  |   8.606075   .8230956    10.46   0.000     6.992838    10.21931
   Inv_Opport  |   .0260942   .0352501     0.74   0.459    -.0429947     .095183
     Leverage  |  -2.920359   .4934179    -5.92   0.000     -3.88744   -1.953277
Cash_Holdings  |  -3.299923   .6079202    -5.43   0.000    -4.491424   -2.108421
          R_D  |  -6.281191   5.027278    -1.25   0.212    -16.13448    3.572093
        RE_TA  |   .3320517   .1503187     2.21   0.027     .0374324    .6266709
        Capex  |   .3071182   .4228881     0.73   0.468    -.5217272    1.135964
      environ  |   .0061228   .0035405     1.73   0.084    -.0008163     .013062
       social  |   .0014403   .0041392     0.35   0.728    -.0066724     .009553
       govern  |  -.0025506   .0029926    -0.85   0.394     -.008416    .0033148
------------------------------------------------------------------------------

. hausman . new_random_effects

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |        .       new_random~s    Difference       Std. err.
-------------+----------------------------------------------------------------
        Size |   .8802728      .3875816       .4926912        .1276168
Profitabil~y |   8.606075       7.62157       .9845058        .5406747
  Inv_Opport |   .0260942       .001882       .0242122         .032316
    Leverage |  -2.920359     -2.228169      -.6921894        .3850021
Cash_Holdi~s |  -3.299923     -2.884654      -.4152692        .4567746
         R_D |  -6.281191      4.872452      -11.15364         4.66084
       RE_TA |   .3320517      .4823975      -.1503459        .0795988
       Capex |   .3071182      .2455286       .0615896        .2628702
     environ |   .0061228      .0009462       .0051766        .0024174
      social |   .0014403     -.0016567        .003097        .0028561
      govern |  -.0025506      .0040007      -.0065513        .0019363
------------------------------------------------------------------------------
                           b = Consistent under H0 and Ha; obtained from xtlogit.
            B = Inconsistent under Ha, efficient under H0; obtained from xtlogit.

Test of H0: Difference in coefficients not systematic

   chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            =  33.91
Prob > chi2 = 0.0004
(V_b-V_B is not positive definite)

.
```

Appendix E: Hausman test – logistic regression for the probability of a company to repurchase shares.

```
. xtlogit Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, re

Fitting comparison model:

Iteration 0:  Log likelihood = -6074.0175
Iteration 1:  Log likelihood = -5669.5236
Iteration 2:  Log likelihood =  -5617.165
Iteration 3:  Log likelihood =   -5613.93
Iteration 4:  Log likelihood = -5610.3753
Iteration 5:  Log likelihood = -5609.6522
Iteration 6:  Log likelihood = -5609.6378
Iteration 7:  Log likelihood = -5609.6378

Fitting full model:

tau =  0.0    Log likelihood = -5609.6378
tau =  0.1    Log likelihood = -5505.4047
tau =  0.2    Log likelihood = -5408.9533
tau =  0.3    Log likelihood =  -5322.466
tau =  0.4    Log likelihood =  -5246.624
tau =  0.5    Log likelihood =  -5182.278
tau =  0.6    Log likelihood = -5131.8899
tau =  0.7    Log likelihood = -5101.7187
tau =  0.8    Log likelihood = -5103.5571

Iteration 0:  Log likelihood = -5100.9562
Iteration 1:  Log likelihood = -5002.0285
Iteration 2:  Log likelihood = -4999.4055
Iteration 3:  Log likelihood =  -4999.369
Iteration 4:  Log likelihood =  -4999.369
Iteration 5:  Log likelihood = -4999.3621
Iteration 6:  Log likelihood = -4999.3621

Random-effects logistic regression              Number of obs     = 17,677
Group variable: id                              Number of groups =  2,741

Random effects u_i ~ Gaussian                   Obs per group:
                                                             min =      1
                                                             avg =    6.4
                                                             max =     21

Integration method: mvaghermite                 Integration pts. =     12

                                                Wald chi2(11)     = 462.34
Log likelihood = -4999.3621                     Prob > chi2       = 0.0000

------------------------------------------------------------------------------
        Y1_N1 | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .2386757   .0240333     9.93   0.000     .1915714    .2857801
Profitability |   7.857127   .5141733    15.28   0.000     6.849366    8.864889
   Inv_Opport |   .0020242   .0177895     0.11   0.909    -.0328425     .036891
     Leverage |  -1.148152   .2828651    -4.06   0.000    -1.702557   -.5937461
Cash_Holdings |   .5769192   .3733379     1.55   0.122    -.1548097    1.308648
          R_D |   8.616087   1.279883     6.73   0.000     6.107562    11.12461
         RE_TA |   .1886481   .0517432     3.65   0.000     .0872334    .2900628
        Capex |   .4947825   .3411352     1.45   0.147    -.1738303    1.163395
      environ |  -.0051028   .0023144    -2.20   0.027    -.0096389   -.0005667
       social |   .0096026   .0026686     3.60   0.000     .0043723     .014833
       govern |   .0062356   .0019982     3.12   0.002     .0023193    .0101519
        _cons |  -3.627568   .5410893    -6.70   0.000    -4.688084   -2.567053
-------------+----------------------------------------------------------------
     /lnsig2u |   1.502342   .0797708                      1.345994     1.65869
-------------+----------------------------------------------------------------
      sigma_u |    2.11948   .0845363                      1.960103    2.291817
          rho |     .57725   .0194667                       .538709     .614873
------------------------------------------------------------------------------
LR test of rho=0: chibar2(01) = 1220.55               Prob >= chibar2 = 0.000

. estimates store new_random_effects

. xtlogit Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,960 groups (11,734 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1974.4312
Iteration 1:  Log likelihood = -1946.6243
Iteration 2:  Log likelihood = -1946.4175
Iteration 3:  Log likelihood = -1946.4174

Conditional fixed-effects logistic regression   Number of obs     =  5,943
Group variable: id                              Number of groups =    781

                                                Obs per group:
                                                             min =      2
                                                             avg =    7.6
                                                             max =     21

                                                LR chi2(11)       = 252.29
Log likelihood = -1946.4174                     Prob > chi2       = 0.0000

------------------------------------------------------------------------------
        Y1_N1 | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .2582238    .103601     2.49   0.013     .0551697    .4612779
Profitability |   7.249719   .7950312     9.12   0.000     5.691486    8.807952
   Inv_Opport |   .0465616   .0565802     0.82   0.411    -.0643335    .1574567
     Leverage |  -1.42025   .4634757    -3.06   0.002    -2.328646   -.5118542
Cash_Holdings |   .3092815   .5974563     0.52   0.605    -.8617113    1.480274
          R_D |    3.14352   4.461491     0.70   0.481    -5.600842    11.88788
         RE_TA |   1.229797   .2451832     5.02   0.000     .7492467    1.710347
        Capex |   .3863072   .4062514     0.95   0.342     -.409931    1.182545
      environ |   .0013185   .0029586     0.45   0.656    -.0044802    .0071172
       social |    .005008   .0033634     1.49   0.136    -.0015841    .0116001
       govern |    .003417   .0024902     1.37   0.170    -.0014637    .0082978
------------------------------------------------------------------------------

. hausman . new_random_effects

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       .       new_random~s    Difference       Std. err.
-------------+----------------------------------------------------------------
        Size |   .2582238     .2386757        .0195481        .1007748
Profitabil~y |   7.249719     7.857127       -.6074084        .6063831
  Inv_Opport |   .0465616     .0020242        .0445374        .0537108
     Leverage |  -1.42025    -1.148152       -.2720984        .3671472
Cash_Holdi~s |   .3092815     .5769192       -.2676377         .466447
         R_D |    3.14352     8.616087       -5.472567        4.273968
        RE_TA |   1.229797     .1886481        1.041149        .2396611
        Capex |   .3863072     .4947825       -.1084753        .2206059
      environ |   .0013185    -.0051028        .0064213         .001843
       social |    .005008     .0096026       -.0045946        .0020472
       govern |    .003417     .0062356       -.0028186        .0014861
------------------------------------------------------------------------------
                           b = Consistent under H0 and Ha; obtained from xtlogit.
            B = Inconsistent under Ha, efficient under H0; obtained from xtlogit.

Test of H0: Difference in coefficients not systematic

   chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            =  43.88
Prob > chi2 = 0.0000

.
```

Appendix F: Hausman test – linear regression for amounts paid by cash dividends payers.

```
. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, re

Random-effects GLS regression                   Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1662                                         min =          1
     Between = 0.3625                                         avg =        9.7
     Overall = 0.3394                                         max =         22

                                                Wald chi2(11)     =    5415.33
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       Div_TA | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
--------------+---------------------------------------------------------------
         Size |  -.0024558     .00021   -11.69   0.000    -.0028674   -.0020442
Profitability |   .1450595   .0033372    43.47   0.000     .1385188    .1516003
   Inv_Opport |   .0016724   .0001246    13.42   0.000     .0014281    .0019167
     Leverage |   .0070124   .0021783     3.22   0.001     .0027431    .0112817
Cash_Holdings |  -.0048051   .0028306    -1.70   0.090     -.010353    .0007427
          R_D |   .2143941   .0149516    14.34   0.000     .1850896    .2436986
        RE_TA |  -.0047567   .0007021    -6.78   0.000    -.0061328   -.0033807
        Capex |   .1097361   .0022771    48.19   0.000     .1052732    .1141991
      environ |   .0000438   .0000143     3.06   0.002     .0000157    .0000719
       social |   .0000598   .0000162     3.69   0.000      .000028    .0000915
       govern |  -.0000293   .0000123    -2.37   0.018    -.0000535   -5.11e-06
        _cons |   .0668168    .004755    14.05   0.000     .0574971    .0761365
--------------+---------------------------------------------------------------
      sigma_u |  .02530396
      sigma_e |  .02619908
          rho |  .48262524   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estimates store new_random_effects

. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe

Fixed-effects (within) regression               Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1707                                         min =          1
     Between = 0.2739                                         avg =        9.7
     Overall = 0.2951                                         max =         22

                                                F(11, 20000)      =     374.32
corr(u_i, Xb) = 0.1185                          Prob > F          =     0.0000

------------------------------------------------------------------------------
       Div_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
--------------+---------------------------------------------------------------
         Size |  -.0011867   .0006043    -1.96   0.050    -.0023712   -2.15e-06
Profitability |    .131715   .0037112    35.49   0.000     .1244407    .1389893
   Inv_Opport |   .0021983   .0001631    13.48   0.000     .0018787     .002518
     Leverage |   .0151988    .002591     5.87   0.000     .0101202    .0202774
Cash_Holdings |  -.0230517   .0032987    -6.99   0.000    -.0295174    -.016586
          R_D |   .2299007   .0214569    10.71   0.000     .1878434     .271958
        RE_TA |   .0006246   .0009005     0.69   0.488    -.0011404    .0023896
        Capex |   .1057935   .0023437    45.14   0.000     .1011996    .1103874
      environ |    .000044   .0000154     2.86   0.004     .0000138    .0000741
       social |   .0000685   .0000176     3.89   0.000      .000034     .000103
       govern |  -.0000413    .000013    -3.16   0.002    -.0000668   -.0000157
        _cons |   .0364555   .0138554     2.63   0.009     .0092978    .0636133
--------------+---------------------------------------------------------------
      sigma_u |  .03196244
      sigma_e |  .02619908
          rho |  .59812877   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(2290, 20000) = 6.80                 Prob > F = 0.0000

. hausman . new_random_effects

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |        .       new_random~s    Difference       Std. err.
-------------+----------------------------------------------------------------
        Size |  -.0011867    -.0024558        .0012691        .0005667
Profitabil~y |    .131715     .1450595       -.0133445        .0016237
  Inv_Opport |   .0021983     .0016724         .000526        .0001052
    Leverage |   .0151988     .0070124        .0081864        .0014031
Cash_Holdi~s |  -.0230517    -.0048051       -.0182466        .0016938
         R_D |   .2299007     .2143941        .0155066        .0153899
       RE_TA |   .0006246    -.0047567        .0053813        .0005639
       Capex |   .1057935     .1097361       -.0039426        .0005549
     environ |    .000044     .0000438        1.60e-07        5.59e-06
      social |   .0000685     .0000598        8.75e-06        6.88e-06
      govern |  -.0000413    -.0000293        -.000012        4.22e-06
------------------------------------------------------------------------------
                           b = Consistent under H0 and Ha; obtained from xtreg.
            B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

   chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            = 540.34
Prob > chi2 = 0.0000
```

Appendix G: Hausman test – linear regression for amounts paid by Repurchasers.

```
. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, re

Random-effects GLS regression                   Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2198                                         min =          1
     Between = 0.5726                                         avg =        6.4
     Overall = 0.4621                                         max =         21

                                                Wald chi2(11)     =    7551.10
corr(u_i, X) = 0 (assumed)                      Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       Rep_TA | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0024914    .000322    -7.74   0.000    -.0031226   -.0018602
Profitability |   .2917094   .0052212    55.87   0.000     .2814761    .3019426
   Inv_Opport |   .0033043   .0002246    14.71   0.000      .002864    .0037445
     Leverage |   .0380783   .0035226    10.81   0.000     .0311742    .0449825
Cash_Holdings |  -.0202553   .0044378    -4.56   0.000    -.0289532   -.0115575
          R_D |   .3668747   .0153323    23.93   0.000     .3368239    .3969256
        RE_TA |  -.0013224   .0005992    -2.21   0.027    -.0024968   -.0001479
        Capex |   .1706814   .0030543    55.88   0.000     .1646951    .1766676
      environ |  -.0000754    .000026    -2.89   0.004    -.0001264   -.0000243
       social |   .0000113   .0000301     0.38   0.706    -.0000476    .0000703
       govern |  -.0000214   .0000228    -0.94   0.347    -.0000661    .0000232
        _cons |   .0539333   .0072999     7.39   0.000     .0396256    .0682409
-------------+----------------------------------------------------------------
      sigma_u |  .03559379
      sigma_e |  .04323122
          rho |  .40401024   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estimates store new_random_effects

. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe

Fixed-effects (within) regression               Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2333                                         min =          1
     Between = 0.4157                                         avg =        6.4
     Overall = 0.3508                                         max =         21

                                                F(11, 14925)      =     412.78
corr(u_i, Xb) = -0.3360                         Prob > F          =     0.0000

------------------------------------------------------------------------------
       Rep_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0109214   .0011472    -9.52   0.000    -.0131701   -.0086727
Profitability |   .3252498   .0067345    48.30   0.000     .3120492    .3384503
   Inv_Opport |   .0029591   .0003042     9.73   0.000     .0023629    .0035552
     Leverage |   .0659105   .0047655    13.83   0.000     .0565694    .0752515
Cash_Holdings |  -.0837961   .0060025   -13.96   0.000    -.0955617   -.0720305
          R_D |   .3709003   .0273399    13.57   0.000     .3173108    .4244899
        RE_TA |   .0027228   .0012611     2.16   0.031     .0002508    .0051948
        Capex |   .1534111   .0046451    33.03   0.000     .1443061    .1625162
      environ |   .0000197   .0000297     0.66   0.507    -.0000386     .000078
       social |   .0000332   .0000346     0.96   0.338    -.0000347     .000101
       govern |  -5.29e-06   .0000255    -0.21   0.835    -.0000552    .0000446
        _cons |   .2445544   .0261292     9.36   0.000     .1933379    .2957708
-------------+----------------------------------------------------------------
      sigma_u |  .05727453
      sigma_e |  .04323122
          rho |   .6370507   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(2740, 14925) = 3.64                 Prob > F = 0.0000

. hausman . new_random_effects

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |        .       new_random~s    Difference       Std. err.
-------------+----------------------------------------------------------------
        Size |  -.0109214    -.0024914        -.00843        .0011011
Profitabil~y |   .3252498     .2917094        .0335404        .0042537
  Inv_Opport |   .0029591     .0033043       -.0003452        .0002051
    Leverage |   .0659105     .0380783        .0278321        .0032096
Cash_Holdi~s |  -.0837961    -.0202553       -.0635408        .0040418
         R_D |   .3709003     .3668747        .0040256         .022636
       RE_TA |   .0027228    -.0013224        .0040452        .0011097
       Capex |   .1534111     .1706814       -.0172702        .0034998
     environ |   .0000197    -.0000754        .0000951        .0000144
      social |   .0000332     .0000113        .0000218        .0000171
      govern |  -5.29e-06    -.0000214        .0000161        .0000114
------------------------------------------------------------------------------
                           b = Consistent under H0 and Ha; obtained from xtreg.
            B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

   chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            = 505.78
Prob > chi2 = 0.0000

.
```

Appendix H: Modified Wald test for groupwise heteroskedasticity in fixed effect regression model – linear regression for amounts paid by cash dividends payers.

```
. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe

Fixed-effects (within) regression               Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1707                                         min =          1
     Between = 0.2739                                         avg =        9.7
     Overall = 0.2951                                         max =         22

                                                F(11, 20000)      =     374.32
corr(u_i, Xb) = 0.1185                          Prob > F          =     0.0000

------------------------------------------------------------------------------
       Div_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
--------------+---------------------------------------------------------------
         Size |  -.0011867   .0006043    -1.96   0.050    -.0023712   -2.15e-06
Profitability |    .131715   .0037112    35.49   0.000     .1244407    .1389893
   Inv_Opport |   .0021983   .0001631    13.48   0.000     .0018787     .002518
     Leverage |   .0151988    .002591     5.87   0.000     .0101202    .0202774
Cash_Holdings |  -.0230517   .0032987    -6.99   0.000    -.0295174    -.016586
          R_D |   .2299007   .0214569    10.71   0.000     .1878434     .271958
         RE_TA |   .0006246   .0009005     0.69   0.488    -.0011404    .0023896
        Capex |   .1057935   .0023437    45.14   0.000     .1011996    .1103874
      environ |    .000044   .0000154     2.86   0.004     .0000138    .0000741
       social |   .0000685   .0000176     3.89   0.000      .000034     .000103
       govern |  -.0000413    .000013    -3.16   0.002    -.0000668   -.0000157
        _cons |   .0364555   .0138554     2.63   0.009     .0092978    .0636133
--------------+---------------------------------------------------------------
      sigma_u |  .03196244
      sigma_e |  .02619908
          rho |  .59812877   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(2290, 20000) = 6.80                 Prob > F = 0.0000

. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2291)  =  9.8e+35
Prob>chi2 =      0.0000
```

Appendix I: Modified Wald test for groupwise heteroskedasticity in fixed effect regression model – linear regression for amounts paid by Repurchasers.

```
. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe

Fixed-effects (within) regression               Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2333                                         min =          1
     Between = 0.4157                                         avg =        6.4
     Overall = 0.3508                                         max =         21

                                                F(11, 14925)      =     412.78
corr(u_i, Xb) = -0.3360                         Prob > F          =     0.0000

------------------------------------------------------------------------------
       Rep_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
--------------+---------------------------------------------------------------
         Size |  -.0109214   .0011472    -9.52   0.000    -.0131701   -.0086727
Profitability |   .3252498   .0067345    48.30   0.000     .3120492    .3384503
   Inv_Opport |   .0029591   .0003042     9.73   0.000     .0023629    .0035552
     Leverage |   .0659105   .0047655    13.83   0.000     .0565694    .0752515
Cash_Holdings |  -.0837961   .0060025   -13.96   0.000    -.0955617   -.0720305
          R_D |   .3709003   .0273399    13.57   0.000     .3173108    .4244899
         RE_TA |   .0027228   .0012611     2.16   0.031     .0002508    .0051948
        Capex |   .1534111   .0046451    33.03   0.000     .1443061    .1625162
      environ |   .0000197   .0000297     0.66   0.507    -.0000386     .000078
       social |   .0000332   .0000346     0.96   0.338    -.0000347     .000101
       govern |  -5.29e-06   .0000255    -0.21   0.835    -.0000552    .0000446
        _cons |   .2445544   .0261292     9.36   0.000     .1933379    .2957708
--------------+---------------------------------------------------------------
      sigma_u |  .05727453
      sigma_e |  .04323122
          rho |   .6370507   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(2740, 14925) = 3.64                 Prob > F = 0.0000

. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2741)  =  3.4e+31
Prob>chi2 =      0.0000
```

Appendix J: Wooldridge test for autocorrelation in panel data – logistic regression for the probability of a company to pay dividends.

```
. xtlogit Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,714 groups (16,612 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1410.5808
Iteration 1:  Log likelihood = -1381.1244
Iteration 2:  Log likelihood = -1380.9533
Iteration 3:  Log likelihood = -1380.9532
Iteration 4:  Log likelihood = -1380.9532

Conditional fixed-effects logistic regression        Number of obs    =  5,690
Group variable: id                                   Number of groups =    577

                                                     Obs per group:
                                                                  min =      2
                                                                  avg =    9.9
                                                                  max =     22

                                                     LR chi2(11)      = 288.45
Log likelihood = -1380.9532                          Prob > chi2      = 0.0000

------------------------------------------------------------------------------
          Y_N | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .8802728   .1302364     6.76   0.000     .6250141    1.135532
Profitability |   8.606075   .8230956    10.46   0.000     6.992838    10.21931
   Inv_Opport |   .0260942   .0352501     0.74   0.459    -.0429947     .095183
     Leverage |  -2.920359   .4934179    -5.92   0.000     -3.88744   -1.953277
Cash_Holdings |  -3.299923   .6079202    -5.43   0.000    -4.491424   -2.108421
          R_D |  -6.281191   5.027278    -1.25   0.212    -16.13448    3.572093
        RE_TA |   .3320517   .1503187     2.21   0.027     .0374324    .6266709
        Capex |   .3071182   .4228881     0.73   0.468    -.5217272    1.135964
      environ |   .0061228   .0035405     1.73   0.084    -.0008163     .013062
       social |   .0014403   .0041392     0.35   0.728    -.0066724     .009553
       govern |  -.0025506   .0029926    -0.85   0.394     -.008416    .0033148
------------------------------------------------------------------------------

. xtserial Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,    2010) =    338.508
           Prob > F =      0.0000
```

Appendix K: Wooldridge test for autocorrelation in panel data – logistic regression for the probability of a company to repurchase shares.

```
. xtlogit Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,960 groups (11,734 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1974.4312
Iteration 1:  Log likelihood = -1946.6243
Iteration 2:  Log likelihood = -1946.4175
Iteration 3:  Log likelihood = -1946.4174

Conditional fixed-effects logistic regression        Number of obs    =  5,943
Group variable: id                                   Number of groups =    781

                                                     Obs per group:
                                                                  min =      2
                                                                  avg =    7.6
                                                                  max =     21

                                                     LR chi2(11)      = 252.29
Log likelihood = -1946.4174                          Prob > chi2      = 0.0000

------------------------------------------------------------------------------
        Y1_N1 | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .2582238    .103601     2.49   0.013     .0551697    .4612779
Profitability |   7.249719   .7950312     9.12   0.000     5.691486    8.807952
   Inv_Opport |   .0465616   .0565802     0.82   0.411    -.0643335    .1574567
     Leverage |   -1.42025   .4634757    -3.06   0.002    -2.328646   -.5118542
Cash_Holdings |   .3092815   .5974563     0.52   0.605    -.8617113    1.480274
          R_D |    3.14352   4.461491     0.70   0.481    -5.600842    11.88788
        RE_TA |   1.229797   .2451832     5.02   0.000     .7492467    1.710347
        Capex |   .3863072   .4062514     0.95   0.342     -.409931    1.182545
      environ |   .0013185   .0029586     0.45   0.656    -.0044802    .0071172
       social |    .005008   .0033634     1.49   0.136    -.0015841    .0116001
       govern |    .003417   .0024902     1.37   0.170    -.0014637    .0082978
------------------------------------------------------------------------------

. xtserial Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,    1918) =   1348.148
           Prob > F =      0.0000

.
```

Appendix L: Wooldridge test for autocorrelation in panel data – linear regression for amounts paid by cash dividends payers.

```
. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe robust

Fixed-effects (within) regression               Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1707                                         min =          1
     Between = 0.2739                                         avg =        9.7
     Overall = 0.2951                                         max =         22

                                                F(11, 2290)       =      32.84
corr(u_i, Xb) = 0.1185                          Prob > F          =     0.0000

                                 (Std. err. adjusted for 2,291 clusters in id)
------------------------------------------------------------------------------
             |               Robust
       Div_TA | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0011867   .0011585    -1.02   0.306    -.0034585    .0010851
Profitability |    .131715   .0206704     6.37   0.000     .0911803    .1722498
   Inv_Opport |   .0021983   .0009366     2.35   0.019     .0003616    .0040351
     Leverage |   .0151988   .0061587     2.47   0.014     .0031216     .027276
Cash_Holdings |  -.0230517   .0078244    -2.95   0.003    -.0383953    -.007708
          R_D |   .2299007   .1081555     2.13   0.034     .0178077    .4419936
         RE_TA |   .0006246   .0037013     0.17   0.866    -.0066336    .0078828
         Capex |   .1057935   .0298384     3.55   0.000     .0472804    .1643066
       environ |    .000044   .0000187     2.35   0.019     7.27e-06    .0000806
        social |   .0000685   .0000189     3.62   0.000     .0000314    .0001056
        govern |  -.0000413    .000017    -2.43   0.015    -.0000746   -7.95e-06
         _cons |   .0364555   .0271334     1.34   0.179    -.0167531    .0896642
-------------+----------------------------------------------------------------
       sigma_u |  .03196244
       sigma_e |  .02619908
           rho |  .59812877   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtserial Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,    1963) =     12.081
           Prob > F =      0.0005
```

Appendix M: Wooldridge test for autocorrelation in panel data – linear regression for amounts paid by Repurchasers.

```
. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe robust

Fixed-effects (within) regression               Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2333                                         min =          1
     Between = 0.4157                                         avg =        6.4
     Overall = 0.3508                                         max =         21

                                                F(11, 2740)       =      16.51
corr(u_i, Xb) = -0.3360                         Prob > F          =     0.0000

                                 (Std. err. adjusted for 2,741 clusters in id)
------------------------------------------------------------------------------
             |               Robust
       Rep_TA | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0109214   .0020318    -5.38   0.000    -.0149055   -.0069373
Profitability |   .3252498   .0497188     6.54   0.000     .2277596      .42274
   Inv_Opport |   .0029591   .0020393     1.45   0.147    -.0010396    .0069577
     Leverage |   .0659105   .0091952     7.17   0.000     .0478802    .0839407
Cash_Holdings |  -.0837961   .0143298    -5.85   0.000    -.1118944   -.0556978
          R_D |   .3709003   .0641119     5.79   0.000     .2451879    .4966128
         RE_TA |   .0027228    .005099     0.53   0.593    -.0072756    .0127212
         Capex |   .1534111    .017245     8.90   0.000     .1195966    .1872256
       environ |   .0000197   .0000388     0.51   0.611    -.0000564    .0000959
        social |   .0000332   .0000414     0.80   0.423    -.0000481    .0001144
        govern |  -5.29e-06   .0000282    -0.19   0.851    -.0000607    .0000501
         _cons |   .2445544   .0480767     5.09   0.000     .1502841    .3388246
-------------+----------------------------------------------------------------
       sigma_u |  .05727453
       sigma_e |  .04323122
           rho |   .6370507   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtserial Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,    1639) =     23.456
           Prob > F =      0.0000
```

Appendix N: VIF, Diagnostic for multicollinearity – logistic regression for the probability of a company to pay dividends.

```
. xtlogit Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,714 groups (16,612 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1410.5808
Iteration 1:  Log likelihood = -1381.1244
Iteration 2:  Log likelihood = -1380.9533
Iteration 3:  Log likelihood = -1380.9532
Iteration 4:  Log likelihood = -1380.9532

Conditional fixed-effects logistic regression        Number of obs    =  5,690
Group variable: id                                   Number of groups =    577

                                                     Obs per group:
                                                                  min =      2
                                                                  avg =    9.9
                                                                  max =     22

                                                     LR chi2(11)      = 288.45
Log likelihood = -1380.9532                          Prob > chi2      = 0.0000

------------------------------------------------------------------------------
           Y_N | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
---------------+--------------------------------------------------------------
          Size |   .8802728   .1302364     6.76   0.000     .6250141    1.135532
Profitability |   8.606075   .8230956    10.46   0.000     6.992838    10.21931
   Inv_Opport |   .0260942   .0352501     0.74   0.459    -.0429947     .095183
     Leverage |  -2.920359   .4934179    -5.92   0.000     -3.88744   -1.953277
Cash_Holdings |  -3.299923   .6079202    -5.43   0.000    -4.491424   -2.108421
          R_D |  -6.281191   5.027278    -1.25   0.212    -16.13448    3.572093
        RE_TA |   .3320517   .1503187     2.21   0.027     .0374324    .6266709
        Capex |   .3071182   .4228881     0.73   0.468    -.5217272    1.135964
      environ |   .0061228   .0035405     1.73   0.084    -.0008163     .013062
       social |   .0014403   .0041392     0.35   0.728    -.0066724     .009553
       govern |  -.0025506   .0029926    -0.85   0.394     -.008416    .0033148
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of clogit model

             | Y_N
        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern
-------------+-------------------------------------------------------------------------------------------------------------
Y_N          |
        Size |   1.0000
Profitabil~y |   0.1172    1.0000
  Inv_Opport |   0.0846   -0.1843    1.0000
    Leverage |  -0.1981    0.1890    0.0092    1.0000
Cash_Holdi~s |   0.0684   -0.1000   -0.0382    0.0921    1.0000
         R_D |   0.1110    0.0212   -0.0045   -0.0825    0.0227    1.0000
       RE_TA |  -0.1443    0.0204    0.0146    0.1525   -0.0531   -0.6408    1.0000
       Capex |   0.0618    0.1489   -0.0019    0.0651   -0.2045   -0.0481    0.0400    1.0000
     environ |  -0.1809    0.0605   -0.0122   -0.0028   -0.0290    0.0258    0.0070   -0.0560    1.0000
      social |  -0.1360   -0.0249    0.0014   -0.0127    0.0252   -0.0424    0.0189   -0.0187   -0.5790    1.0000
      govern |  -0.1139    0.0255    0.0024   -0.0144   -0.0053   -0.0014    0.0047   -0.0314   -0.1604   -0.1429    1.0000

. reg Y_N Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1

      Source |       SS           df       MS      Number of obs   =    22,302
-------------+----------------------------------   F(11, 22290)    =     91.70
       Model |  38.0293052        11  3.45720956   Prob > F        =    0.0000
    Residual |  840.348239    22,290  .037700684   R-squared       =    0.0433
-------------+----------------------------------   Adj R-squared   =    0.0428
       Total |  878.377545    22,301  .039387361   Root MSE        =    .19417

------------------------------------------------------------------------------
           Y_N | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
---------------+--------------------------------------------------------------
          Size |   .0107779   .0005334    20.21   0.000     .0097323    .0118234
Profitability |   .2385279   .0162837    14.65   0.000     .2066107    .2704452
   Inv_Opport |  -.0011741   .0004596    -2.55   0.011     -.002075   -.0002733
     Leverage |  -.0609868   .0091728    -6.65   0.000    -.0789661   -.0430074
Cash_Holdings |  -.1388317   .0125235   -11.09   0.000    -.1633785   -.1142848
          R_D |  -.0031119   .0512805    -0.06   0.952    -.1036253    .0974015
        RE_TA |   .0339964   .0032639    10.42   0.000      .027599    .0403938
        Capex |  -.0007535   .0146757    -0.05   0.959    -.0295189     .028012
      environ |   -.000011   .0000724    -0.15   0.879    -.0001529    .0001309
       social |  -.0000163   .0000841    -0.19   0.846    -.0001812    .0001485
       govern |   .0001928   .0000661     2.92   0.004     .0000632    .0003223
        _cons |   .6981539    .013075    53.40   0.000     .6725259    .7237818
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of regress model

        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons
-------------+-------------------------------------------------------------------------------------------------------------------------
        Size |   1.0000
Profitabil~y |   0.1681    1.0000
  Inv_Opport |   0.0487   -0.3886    1.0000
    Leverage |  -0.0720    0.0726   -0.0446    1.0000
Cash_Holdi~s |  -0.1071   -0.1094   -0.0739    0.3395    1.0000
         R_D |  -0.0165    0.0517   -0.0513    0.0707   -0.2665    1.0000
       RE_TA |  -0.0941   -0.2138    0.0334    0.2208   -0.0126    0.0518    1.0000
       Capex |  -0.0016    0.1126   -0.0084    0.0782   -0.1211   -0.0114    0.1435    1.0000
     environ |  -0.4094    0.0094   -0.0030    0.0220    0.0758   -0.0293   -0.0054   -0.0340    1.0000
      social |   0.2415   -0.0198   -0.0107   -0.1025   -0.0142   -0.0584   -0.0242   -0.0083   -0.6855    1.0000
      govern |  -0.0019   -0.0384    0.0182    0.0032    0.0416   -0.0449   -0.0216   -0.0006   -0.0905   -0.2561    1.0000
       _cons |  -0.9266   -0.2140   -0.0544   -0.1322   -0.0758    0.0180    0.0226    0.0571    0.3781   -0.2779   -0.1677    1.0000

. estat vif

    Variable |       VIF       1/VIF
-------------+----------------------
     environ |      2.62    0.381583
      social |      2.47    0.404592
Profitabil~y |      1.39    0.717192
Cash_Holdi~s |      1.37    0.730746
    Leverage |      1.32    0.759847
        Size |      1.30    0.769521
      govern |      1.28    0.778908
  Inv_Opport |      1.23    0.811134
       RE_TA |      1.17    0.856213
         R_D |      1.14    0.876906
       Capex |      1.07    0.933393
-------------+----------------------
    Mean VIF |      1.49

.
```

Appendix O: VIF, Diagnostic for multicollinearity – logistic regression for the probability of a company to repurchase shares.

```
. xtlogit Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe
note: multiple positive outcomes within groups encountered.
note: 1,960 groups (11,734 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -1974.4312
Iteration 1:  Log likelihood = -1946.6243
Iteration 2:  Log likelihood = -1946.4175
Iteration 3:  Log likelihood = -1946.4174

Conditional fixed-effects logistic regression        Number of obs    =  5,943
Group variable: id                                   Number of groups =    781

                                                     Obs per group:
                                                                  min =      2
                                                                  avg =    7.6
                                                                  max =     21

                                                     LR chi2(11)      = 252.29
Log likelihood = -1946.4174                          Prob > chi2      = 0.0000

------------------------------------------------------------------------------
        Y1_N1 | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .2582238    .103601     2.49   0.013     .0551697    .4612779
Profitability |   7.249719   .7950312     9.12   0.000     5.691486    8.807952
   Inv_Opport |   .0465616   .0565802     0.82   0.411    -.0643335    .1574567
     Leverage |  -1.42025   .4634757    -3.06   0.002    -2.328646   -.5118542
Cash_Holdings |   .3092815   .5974563     0.52   0.605    -.8617113    1.480274
          R_D |    3.14352   4.461491     0.70   0.481    -5.600842    11.88788
        RE_TA |   1.229797   .2451832     5.02   0.000     .7492467    1.710347
        Capex |   .3863072   .4062514     0.95   0.342     -.409931    1.182545
      environ |   .0013185   .0029586     0.45   0.656    -.0044802    .0071172
       social |    .005008   .0033634     1.49   0.136    -.0015841    .0116001
       govern |    .003417   .0024902     1.37   0.170    -.0014637    .0082978
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of clogit model

             | Y1_N1
        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern
-------------+-------------------------------------------------------------------------------------------------------------
Y1_N1        |
        Size |   1.0000
Profitabil~y |   0.0971    1.0000
  Inv_Opport |   0.0808   -0.3144    1.0000
    Leverage |  -0.1529    0.1655    0.0142    1.0000
Cash_Holdi~s |   0.1270   -0.0560   -0.0330    0.0196    1.0000
         R_D |   0.1143    0.0819   -0.0765    0.0303   -0.0162    1.0000
       RE_TA |  -0.1881   -0.0948    0.0013    0.2842   -0.0877    0.0634    1.0000
       Capex |   0.0401    0.1509   -0.0129    0.1246   -0.1755    0.0281    0.0088    1.0000
     environ |  -0.2361    0.0272    0.0007    0.0072   -0.0574   -0.0249    0.0054   -0.0109    1.0000
      social |  -0.0891    0.0179   -0.0191   -0.0004    0.0119    0.0132    0.0315   -0.0436   -0.5898    1.0000
      govern |  -0.1039    0.0063   -0.0308   -0.0267   -0.0267    0.0106   -0.0423    0.0103   -0.1061   -0.2083    1.0000

. reg Y1_N1 Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1

      Source |       SS           df       MS      Number of obs   =    17,677
-------------+----------------------------------   F(11, 17665)    =     86.18
       Model |  87.1644116        11  7.92403741   Prob > F        =    0.0000
    Residual |  1624.29341    17,665  .091949811   R-squared       =    0.0509
-------------+----------------------------------   Adj R-squared   =    0.0503
       Total |  1711.45783    17,676  .096823819   Root MSE        =    .30323

------------------------------------------------------------------------------
        Y1_N1 | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |   .0155636   .0009703    16.04   0.000     .0136618    .0174654
Profitability |    .495327   .0250972    19.74   0.000      .446134      .54452
   Inv_Opport |  -.0060447   .0010863    -5.56   0.000     -.008174   -.0039154
     Leverage |  -.0679738   .0150195    -4.53   0.000    -.0974136    -.038534
Cash_Holdings |  -.0224618   .0202931    -1.11   0.268    -.0622383    .0173146
          R_D |   .4326405   .0641806     6.74   0.000     .3068403    .5584407
        RE_TA |   .0111499   .0022607     4.93   0.000     .0067188    .0155811
        Capex |   .0330357   .0174379     1.89   0.058    -.0011442    .0672156
      environ |   -.000534   .0001274    -4.19   0.000    -.0007838   -.0002842
       social |   .0008999    .000149     6.04   0.000     .0006079     .001192
       govern |   .0003883   .0001172     3.31   0.001     .0001586    .0006179
        _cons |   .4645704   .0237249    19.58   0.000     .4180672    .5110736
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of regress model

        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons
-------------+-------------------------------------------------------------------------------------------------------------------------
        Size |   1.0000
Profitabil~y |   0.0536    1.0000
  Inv_Opport |   0.1142   -0.5107    1.0000
    Leverage |  -0.0261    0.0804   -0.0358    1.0000
Cash_Holdi~s |  -0.0549   -0.0234   -0.1320    0.3305    1.0000
         R_D |   0.0572    0.2995   -0.2137    0.0688   -0.3644    1.0000
       RE_TA |  -0.0939   -0.2494    0.0720    0.1084    0.0390    0.1336    1.0000
       Capex |   0.0124    0.0738    0.0047    0.0414   -0.0966    0.0501    0.0345    1.0000
     environ |  -0.4462    0.0056   -0.0075    0.0112    0.0576   -0.0033    0.0008   -0.0225    1.0000
      social |   0.2399   -0.0437    0.0043   -0.0894    0.0001   -0.0787   -0.0120    0.0025   -0.6781    1.0000
      govern |   0.0171   -0.0501    0.0112    0.0120    0.0454   -0.0245   -0.0313   -0.0122   -0.1167   -0.2388    1.0000
       _cons |  -0.9372   -0.0922   -0.1226   -0.1486   -0.1125   -0.0506    0.0687    0.0299    0.4323   -0.2905   -0.1859    1.0000

. estat vif

    Variable |       VIF       1/VIF
-------------+----------------------
     environ |      2.68    0.372706
      social |      2.42    0.413558
Profitabil~y |      1.61    0.620235
  Inv_Opport |      1.49    0.669396
Cash_Holdi~s |      1.49    0.672206
         R_D |      1.46    0.683488
        Size |      1.34    0.747068
      govern |      1.29    0.775357
    Leverage |      1.23    0.814863
       RE_TA |      1.17    0.852893
       Capex |      1.02    0.975838
-------------+----------------------
    Mean VIF |      1.56
-------------+----------------------

.
```

Appendix P: VIF, Diagnostic for multicollinearity – linear regression for amounts paid by cash dividends payers.

```
. xtreg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1, fe cluster(id)

Fixed-effects (within) regression               Number of obs     =     22,302
Group variable: id                              Number of groups  =      2,291

R-squared:                                      Obs per group:
     Within  = 0.1707                                         min =          1
     Between = 0.2739                                         avg =        9.7
     Overall = 0.2951                                         max =         22

                                                F(11, 2290)       =      32.84
corr(u_i, Xb) = 0.1185                          Prob > F          =     0.0000

                                 (Std. err. adjusted for 2,291 clusters in id)
------------------------------------------------------------------------------
             |               Robust
       Div_TA | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
        Size |  -.0011867   .0011585    -1.02   0.306    -.0034585    .0010851
Profitability |    .131715   .0206704     6.37   0.000     .0911803    .1722498
   Inv_Opport |   .0021983   .0009366     2.35   0.019     .0003616    .0040351
     Leverage |   .0151988   .0061587     2.47   0.014     .0031216     .027276
Cash_Holdings |  -.0230517   .0078244    -2.95   0.003    -.0383953    -.007708
         R_D |   .2299007   .1081555     2.13   0.034     .0178077    .4419936
        RE_TA |   .0006246   .0037013     0.17   0.866    -.0066336    .0078828
        Capex |   .1057935   .0298384     3.55   0.000     .0472804    .1643066
      environ |    .000044   .0000187     2.35   0.019     7.27e-06    .0000806
       social |   .0000685   .0000189     3.62   0.000     .0000314    .0001056
       govern |  -.0000413    .000017    -2.43   0.015    -.0000746   -7.95e-06
        _cons |   .0364555   .0271334     1.34   0.179    -.0167531    .0896642
-------------+----------------------------------------------------------------
      sigma_u |  .03196244
      sigma_e |  .02619908
          rho |  .59812877   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of xtreg model

+------------------------------------------------------------------------------------------------------------------------------------------+
|        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons |
|-------------+----------------------------------------------------------------------------------------------------------------------------|
|        Size |   1.0000                                                                                                                   |
| Profitabil~y |   0.3358    1.0000                                                                                                         |
|  Inv_Opport |   0.1903    0.0069    1.0000                                                                                               |
|    Leverage |  -0.0992    0.4879    0.1116    1.0000                                                                                     |
| Cash_Holdi~s |  -0.3338   -0.1792   -0.2137   -0.0516    1.0000                                                                         |
|         R_D |   0.4870   -0.0724    0.0498   -0.0678   -0.5207    1.0000                                                               |
|       RE_TA |  -0.4988   -0.0696   -0.0853   -0.0460    0.5967   -0.9418    1.0000                                                     |
|       Capex |   0.2887    0.0256    0.0662    0.1060   -0.6928    0.7046   -0.8052    1.0000                                           |
|     environ |  -0.2311    0.0958    0.0021    0.0581    0.3215   -0.3473    0.3513   -0.4300    1.0000                                 |
|      social |  -0.2412   -0.0877   -0.1759   -0.0766   -0.0853    0.0475   -0.0409    0.1226   -0.5687    1.0000                       |
|      govern |  -0.1296    0.1139    0.0358    0.1584    0.1278   -0.2013    0.1714   -0.2410    0.1238   -0.2299    1.0000             |
|       _cons |  -0.9875   -0.4232   -0.2457    0.0141    0.2723   -0.4121    0.4284   -0.1952    0.1700    0.2660    0.0641    1.0000 |
+------------------------------------------------------------------------------------------------------------------------------------------+

. reg Div_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_div==1

      Source |       SS           df       MS      Number of obs   =    22,302
-------------+----------------------------------   F(11, 22290)    =   1173.56
       Model |  14.1388575        11  1.28535068   Prob > F        =    0.0000
    Residual |  24.4132226    22,290  .001095254   R-squared       =    0.3667
-------------+----------------------------------   Adj R-squared   =    0.3664
       Total |  38.5520801    22,301  .001728715   Root MSE        =    .03309

------------------------------------------------------------------------------
       Div_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0023488   .0000909   -25.83   0.000     -.002527   -.0021706
Profitability |   .2113451   .0027755    76.15   0.000      .205905    .2167853
   Inv_Opport |    .000824   .0000783    10.52   0.000     .0006704    .0009775
     Leverage |  -.0019295   .0015635    -1.23   0.217     -.004994     .001135
Cash_Holdings |    .017748   .0021346     8.31   0.000     .0135641    .0219318
         R_D |   .1073184   .0087405    12.28   0.000     .0901864    .1244503
        RE_TA |  -.0126552   .0005563   -22.75   0.000    -.0137456   -.0115648
        Capex |   .120033   .0025014    47.99   0.000     .1151301     .124936
      environ |   .0000426   .0000123     3.45   0.001     .0000184    .0000668
       social |  -7.33e-06   .0000143    -0.51   0.609    -.0000354    .0000208
       govern |   .0000113   .0000113     1.00   0.316    -.0000108    .0000334
        _cons |   .0649816   .0022286    29.16   0.000     .0606135    .0693498
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of regress model

+------------------------------------------------------------------------------------------------------------------------------------------+
|        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons |
|-------------+----------------------------------------------------------------------------------------------------------------------------|
|        Size |   1.0000                                                                                                                   |
| Profitabil~y |   0.1681    1.0000                                                                                                         |
|  Inv_Opport |   0.0487   -0.3886    1.0000                                                                                               |
|    Leverage |  -0.0720    0.0726   -0.0446    1.0000                                                                                     |
| Cash_Holdi~s |  -0.1071   -0.1094   -0.0739    0.3395    1.0000                                                                         |
|         R_D |  -0.0165    0.0517   -0.0513    0.0707   -0.2665    1.0000                                                               |
|       RE_TA |  -0.0941   -0.2138    0.0334    0.2208   -0.0126    0.0518    1.0000                                                     |
|       Capex |  -0.0016    0.1126   -0.0084    0.0782   -0.1211   -0.0114    0.1435    1.0000                                           |
|     environ |  -0.4094    0.0094   -0.0030    0.0220    0.0758   -0.0293   -0.0054   -0.0340    1.0000                                 |
|      social |   0.2415   -0.0198   -0.0107   -0.1025   -0.0142   -0.0584   -0.0242   -0.0083   -0.6855    1.0000                       |
|      govern |  -0.0019   -0.0384    0.0182    0.0032    0.0416   -0.0449   -0.0216   -0.0006   -0.0905   -0.2561    1.0000             |
|       _cons |  -0.9266   -0.2140   -0.0544   -0.1322   -0.0758    0.0180    0.0226    0.0571    0.3781   -0.2779   -0.1677    1.0000 |
+------------------------------------------------------------------------------------------------------------------------------------------+

. estat vif

    Variable |       VIF       1/VIF
-------------+----------------------
     environ |      2.62    0.381583
      social |      2.47    0.404592
Profitabil~y |      1.39    0.717192
Cash_Holdi~s |      1.37    0.730746
    Leverage |      1.32    0.759847
        Size |      1.30    0.769521
      govern |      1.28    0.778908
  Inv_Opport |      1.23    0.811134
       RE_TA |      1.17    0.856213
         R_D |      1.14    0.876906
       Capex |      1.07    0.933393
-------------+----------------------
    Mean VIF |      1.49

.
```

Appendix Q: VIF, Diagnostic for multicollinearity – linear regression for amounts paid by Repurchasers.

```
. xtreg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1, fe cluster(id)

Fixed-effects (within) regression               Number of obs     =     17,677
Group variable: id                              Number of groups  =      2,741

R-squared:                                      Obs per group:
     Within  = 0.2333                                         min =          1
     Between = 0.4157                                         avg =        6.4
     Overall = 0.3508                                         max =         21

                                                F(11, 2740)       =      16.51
corr(u_i, Xb) = -0.3360                         Prob > F          =     0.0000

                                 (Std. err. adjusted for 2,741 clusters in id)
------------------------------------------------------------------------------
             |               Robust
       Rep_TA | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
        Size |  -.0109214   .0020318    -5.38   0.000    -.0149055   -.0069373
Profitability |   .3252498   .0497188     6.54   0.000     .2277596     .42274
   Inv_Opport |   .0029591   .0020393     1.45   0.147    -.0010396    .0069577
     Leverage |   .0659105   .0091952     7.17   0.000     .0478802    .0839407
Cash_Holdings |  -.0837961   .0143298    -5.85   0.000    -.1118944   -.0556978
         R_D |   .3709003   .0641119     5.79   0.000     .2451879    .4966128
        RE_TA |   .0027228    .005099     0.53   0.593    -.0072756    .0127212
        Capex |   .1534111    .017245     8.90   0.000     .1195966    .1872256
      environ |   .0000197   .0000388     0.51   0.611    -.0000564    .0000959
       social |   .0000332   .0000414     0.80   0.423    -.0000481    .0001144
       govern |  -5.29e-06   .0000282    -0.19   0.851    -.0000607    .0000501
        _cons |   .2445544   .0480767     5.09   0.000     .1502841    .3388246
-------------+----------------------------------------------------------------
      sigma_u |  .05727453
      sigma_e |  .04323122
          rho |   .6370507   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of xtreg model

        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons
-------------+------------------------------------------------------------------------------------------------------------------------
        Size |   1.0000
Profitabil~y |   0.2766    1.0000
  Inv_Opport |   0.1296    0.1689    1.0000
    Leverage |  -0.2024    0.4529    0.0199    1.0000
Cash_Holdi~s |  -0.1473   -0.5724   -0.3107   -0.1848    1.0000
         R_D |   0.2277    0.2989   -0.0912    0.1325   -0.0443    1.0000
       RE_TA |  -0.3406   -0.3387   -0.1654    0.1228    0.1833   -0.2960    1.0000
       Capex |  -0.1572    0.2042    0.0992    0.2535   -0.2788    0.0204    0.0542    1.0000
     environ |  -0.2654    0.1931    0.0309    0.1217   -0.0686    0.0023   -0.0344    0.0270    1.0000
      social |  -0.1309   -0.1539   -0.2162   -0.0367    0.1068   -0.0478   -0.0113   -0.0771   -0.5945    1.0000
      govern |  -0.0372    0.0074    0.0208   -0.0760    0.0177    0.0585    0.0646   -0.0242    0.0504   -0.3133    1.0000
       _cons |  -0.9903   -0.3719   -0.2004    0.1164    0.1801   -0.2642    0.3488    0.1477    0.2294    0.1478    0.0128    1.0000

. reg Rep_TA Size Profitability Inv_Opport Leverage Cash_Holdings R_D RE_TA Capex environ social govern if sample_Rep==1

      Source |       SS           df       MS      Number of obs   =    17,677
-------------+----------------------------------   F(11, 17665)    =   1430.80
       Model |  41.4425039        11  3.76750036   Prob > F        =    0.0000
    Residual |  46.5145319    17,665  .002633146   R-squared       =    0.4712
-------------+----------------------------------   Adj R-squared   =    0.4708
       Total |  87.9570358    17,676  .004976071   Root MSE        =    .05131

------------------------------------------------------------------------------
       Rep_TA | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         Size |  -.0016243   .0001642    -9.89   0.000    -.0019461   -.0013025
Profitability |   .3154614   .0042471    74.28   0.000     .3071368    .3237861
   Inv_Opport |   .0046196   .0001838    25.13   0.000     .0042592    .0049799
     Leverage |   .0278716   .0025417    10.97   0.000     .0228897    .0328535
Cash_Holdings |   .0103354   .0034341     3.01   0.003     .0036043    .0170665
         R_D |   .2952829   .0108609    27.19   0.000     .2739945    .3165714
        RE_TA |  -.0016344   .0003826    -4.27   0.000    -.0023842   -.0008845
        Capex |   .1768207   .0029509    59.92   0.000     .1710366    .1826047
      environ |  -.0001406   .0000216    -6.52   0.000    -.0001829   -.0000983
       social |   .0000739   .0000252     2.93   0.003     .0000245    .0001233
       govern |  -8.21e-06   .0000198    -0.41   0.679    -.0000471    .0000307
        _cons |   .0295589   .0040148     7.36   0.000     .0216894    .0374284
------------------------------------------------------------------------------

. estat vce, corr

Correlation matrix of coefficients of regress model

        e(V) |     Size  Profit~y  Inv_Op~t  Leverage  Cash_H~s       R_D     RE_TA     Capex   environ    social    govern     _cons
-------------+------------------------------------------------------------------------------------------------------------------------
        Size |   1.0000
Profitabil~y |   0.0536    1.0000
  Inv_Opport |   0.1142   -0.5107    1.0000
    Leverage |  -0.0261    0.0804   -0.0358    1.0000
Cash_Holdi~s |  -0.0549   -0.0234   -0.1320    0.3305    1.0000
         R_D |   0.0572    0.2995   -0.2137    0.0688   -0.3644    1.0000
       RE_TA |  -0.0939   -0.2494    0.0720    0.1084    0.0390    0.1336    1.0000
       Capex |   0.0124    0.0738    0.0047    0.0414   -0.0966    0.0501    0.0345    1.0000
     environ |  -0.4462    0.0056   -0.0075    0.0112    0.0576   -0.0033    0.0008   -0.0225    1.0000
      social |   0.2399   -0.0437    0.0043   -0.0894    0.0001   -0.0787   -0.0120    0.0025   -0.6781    1.0000
      govern |   0.0171   -0.0501    0.0112    0.0120    0.0454   -0.0245   -0.0313   -0.0122   -0.1167   -0.2388    1.0000
       _cons |  -0.9372   -0.0922   -0.1226   -0.1486   -0.1125   -0.0506    0.0687    0.0299    0.4323   -0.2905   -0.1859    1.0000

. estat vif

    Variable |       VIF       1/VIF
-------------+----------------------
     environ |      2.68    0.372706
      social |      2.42    0.413558
Profitabil~y |      1.61    0.620235
  Inv_Opport |      1.49    0.669396
Cash_Holdi~s |      1.49    0.672206
         R_D |      1.46    0.683488
        Size |      1.34    0.747068
      govern |      1.29    0.775357
    Leverage |      1.23    0.814863
       RE_TA |      1.17    0.852893
       Capex |      1.02    0.975838
-------------+----------------------
    Mean VIF |      1.56
-------------+----------------------

.
```