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Institutional investment horizon and dividend policy: An empirical study of UK firms

Erhan Kilincarslan[a,*], Ozgur Ozdemir[b]

[a] Istanbul Gelisim University, Faculty of Economics, Administrative and Social Sciences, International Trade (Eng), 34310 Avcilar, Istanbul, Turkey
[b] Birkbeck University of London, School of Business, Economics and Informatics, Department of Management, Malet Street, WC1E 7HX London, UK

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ABSTRACT

This paper investigates the effect of the institutional investment horizon on dividend policy. Using a panel dataset of non-financial UK firms over the period 2000–2010, we measure institutional investors' investment horizons by the churn rate of their overall stock positions in a firm. We find that there is a significantly negative relationship between the churn rate and dividend payments, and this negative relation is robust to the usage of different dividend policy proxies, substitute methodologies and alternative churn rate measures. Thus, our findings suggest that institutions with shorter term investment horizons (with higher churn rates) have a negative impact on dividends, whereas longer term institutional investors (with lower churn rates) have a positive one. Overall, our evidence is consistent with the notion that long-horizon institutions are more concerned with monitoring, compared to short-horizon institutions, and prefer higher dividends to increase dividend-induced capital market monitoring in order to lower the agency costs of managerial discretion. In addition, this positive influence may also reflect the preferences of tax-neutral long-horizon institutions for dividend income due to their liquidity needs, as well as the common institutional charter and prudent-man rule restrictions.

1. Introduction

There is a sizeable literature about the impact of institutional ownership on dividend policy (see, e.g., Demsetz and Lehn, 1985; Shleifer and Vishny, 1986; Zeckhauser and Pound, 1990; Short et al., 2002; Grinstein and Michaely, 2005; Renneboog and Trojanowski, 2005; Khan, 2006; Jain, 2007; Amihud and Li, 2006). This is because institutional investors generally hold very large pools of investment funds, which enable them to invest larger amounts in each stock. Hence, they can affect the investee firm's corporate financial policies (including dividend policy), especially in cases where the ownership structure is dispersed or an organisation is majority owned by a high number of outsiders (Grinstein and Michaely, 2005; Ozkan, 2007; Elyasiani and Jia, 2010). Accordingly, corporate dividend policy literature offers several plausible explanations to describe the interaction between institutional investors and dividends, mostly based on the relative weights of agency, signalling and tax considerations.

Agency cost theory suggests that dividend payments can be used to minimise the conflicts of interest between managers and outside shareholders by reducing free cash flows and forcing corporations to enter the external capital markets for additional funding, therefore increasing monitoring by the market (Rozeff, 1982; Easterbrook, 1984). However, institutional investors (as they hold larger amounts of stocks and are more sophisticated shareholders) have the expertise and incentive to monitor the firm's management (Grossman and Hart, 1980; Demsetz and Lehn, 1985; Shleifer and Vishny, 1986). In this context, monitoring by institutional investors

* Corresponding author.
E-mail address: ekilincarslan@gelisim.edu.tr (E. Kilincarslan).

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may replace the monitoring role of cash dividends and consequently reduce the need for high dividend payouts in firms with large institutional holdings. Moreover, the signalling perspective recommends that managers may use cash dividends to convey their private insider information about the firm's future earnings to outsiders in reducing the information asymmetry – they distribute larger dividends as a credible signal to show their confidence in the future performance (Bhattacharya, 1979; Miller and Rock, 1985). It is, however, argued that institutions are well-informed investors with effective information-gathering abilities and are often privy to corporate inside information. Thus, the presence of large institutional investors in a company may also be considered a credible signal of good future performance (as a substitute signalling mechanism), which in turn diminishes the use of dividend payments[1] (Michaely and Shaw, 1994; Allen et al., 2000). Consequently, the combinations of explanations of institutional investors' better monitoring and information-gathering abilities imply a negative relation between dividend policy and institutional ownership.

At the other end of the spectrum, there are explanations claiming that institutional investors have a positive effect on dividend payments. According to the tax perspective, tax-exempt financial institutions (i.e., pension funds, insurance companies and not-for-profit institutions) prefer dividend income to retentions, and therefore their tax preference in favour of dividends will result in significantly higher dividend payments (Bond et al., 1995; Short et al., 2002). Furthermore, it is disputed that institutional investors do not provide direct monitoring themselves, owing to their arm's-length investment perspective and free-rider problems. Instead, institutions prefer to encourage managers to pay higher dividends in order to increase dividend-induced capital market monitoring (Zeckhauser and Pound, 1990), and so to reduce the agency costs of free cash flow (Jensen, 1986).[2] In addition, prior research also points out that institutional investors have other motivations to desire for dividends, such as the common institutional charter and prudent-man rule restrictions (Allen et al., 2000). Institutions are fiduciaries since they invest on behalf of others and are, thus, subject to several rules to prevent them from misusing other peoples' money. For example, institutional managers are expected to behave in the manner of a prudent person and invest a substantial amount of their holdings in "prudent" stocks that are highly validated and have long-term and steady dividends and earnings records. In fact, some institutions have restrictions in their charter prohibiting them from investing in non-paying stocks. Also, institutional investors may be entailed to spend only "investment income", and not the "principal", to fund their activities, such as paying out in pensions and covering insurance policies. This issue raises liquidity concerns for the need of institutions for funds on an ongoing basis, and therefore institutions cannot rely on capital gains but require certain levels of dividend income to finance their own liabilities, which suggests that larger institutional holdings will lead to higher dividend payouts (Short et al., 2002; Grinstein and Michaely, 2005; Khan, 2006).

Overall, all of these various explanations are not mutually exclusive, yet one may overrule the others as the main argument that describes institutional investors' attitudes towards dividend policy. Indeed, the empirical research concerning the link between institutions and dividends provides mixed results – for instance, Moh'd et al. (1995), Short et al. (2002), Farinha (2003) and Khan (2006) find a positive relationship, whereas Renneboog and Trojanowski (2005), Amihud and Li (2006) and Jain (2007) report a negative one. Although the empirical evidence is contradictory, previous studies have clearly documented that the control of equity markets by institutional investors has increased dramatically over recent decades (especially in both the US and the UK) and generally confirmed a solid impact (either positive or negative) of institutional shareholders on the investee firms' divided policies.

Nevertheless, the existing research has mainly examined how institutional investors affect dividend policy in only one dimension by using the shareholding proportion as the measure of institutions' impact and therefore ignored the time dimension (in other words, the investment horizon).[3] Institutional investors are not a homogenous group with respect to their investment horizons (Gompers and Metric, 2001; Hotchkiss and Strickland, 2003; Gaspar et al., 2005). Their horizons can differ due to the varying maturities of their liabilities – for instance, pension funds generally have long-term liabilities and hence long investment horizons, whereas mutual funds are likely to have large redemption in the short-run and hence short-term investment horizons (Derrien et al., 2013). Institutions' investment strategies can also lead to differences in investment horizons. Some institutions may have a high portfolio turnover, which buy and sell their investments very quickly, acting as "speculators/transient investors" with a short-term focus, while others may hold their positions unchanged for a considerable length of time (a low portfolio turnover), which are more long-term oriented and behave as "activists/dedicated investors" (Gillan and Starks, 2000; Dong and Ozkan, 2008).

Not surprisingly, the differences in the institutional investment horizon have received more attention nowadays from both academics and practitioners, and some researchers comparatively recently have started examining how institutional investment horizons affect firm performance and corporate control and policies, such as mergers and acquisitions, cash flow decisions and director pay (see, e.g., Gaspar et al., 2005; Chen et al., 2007; Dong and Ozkan, 2008; Yan and Zhang, 2009; Elyasiani and Jia, 2010; Attig et al., 2012; Andriosopoulos and Yang, 2015). These studies document that differences in investment horizon do indeed form the impact of institutional investors on corporate governance and policy, and help to identify this impact in relation to the existing explanations. For example, it is generally suggested that long-term institutional investors are efficient monitors to reduce the agency cost of managerial discretion, since they decrease their trading frequency, while increasing their involvement in firm governance and influence on managers (Chen et al., 2007; Dong and Ozkan, 2008). On the contrary, short-horizon institutions pay less attention to monitoring (Gaspar et al., 2005; Attig et al., 2012), because they trade actively to exploit their informational advantage (Yan and

[1] Amihud and Li (2006) report that the increase in holdings by institutional investors that are more sophisticated and informed is an important reason for a decline in the information content of dividends.

[2] Farinha (2003) states that when institutional shareholders think that their own direct monitoring practices are inefficient or too costly, they may exert more pressure on managers to distribute higher dividends.

[3] Assuming that two identical firms with the same proportion of institutional ownership but institutional shareholders in one firm change very often, whereas those of the other stay constant over time, then the institutions' influence on these two firms' managements (and their corporate policy decisions) will not be the same. Thus, shareholding proportion alone cannot fully explain the effect of these investors (Elyasiani and Jia, 2010).

Zhang, 2009) – however, the evidence is not clear on whether short- or long-term institutional investors have an informational advantage. Some claim that institutions with a long-term investment horizon exert more effective monitoring and this allows them to gather better information (Chen et al., 2007; Elyasiani and Jia, 2010), whereas others argue that short-horizon institutions are more efficient in acquiring and exploiting private information and thus trade actively on negative or positive news (Yan and Zhang, 2009). Yet it is commonly accepted that long-term institutional investors may possibly exercise direct pressure to influence corporate decisions, while short-term institutions may have an indirect impact on the decisions through their trading behaviour.

Given that the institutional investment horizon is a relatively new research area, there is very little research on the impact of institutional investment horizon on corporate dividend policy by a limited number of studies that are conducted only in the US (see, e.g., Hovakimian and Li, 2010; Gaspar et al., 2013; Derrien et al., 2013). Thus far, no research investigating this impact exists in other countries. However, considering the fact that financial institutions are the major investor group in the UK equity market[4] and that UK companies generally have a record of significantly higher dividend payout rates than those of other countries, such as the US, Germany, Japan and Canada (Short et al., 2002; Khan, 2006; Dong and Ozkan, 2008; Andriosopoulos and Yang, 2015), the UK offers an ideal setting for the study of the relationship between institutions and dividend policy. Accordingly, using a large UK panel dataset, our paper examines the possible effect of the institutional investment horizon on corporate dividend policy. Hence, we contribute to the emerging argument of institutional investment horizon in the dividend policy literature by providing empirical evidence from the UK, and also fill the gap of the non-existence of research outside the US on this subject. To the best of our knowledge, this paper is the first to investigate the association between institutional investment horizon and dividends in the UK.

The paper proceeds as follows. Section 2 discusses the data and methodology. Section 3 presents the empirical results and Section 4 concludes.

2. Data and methodology

2.1. Data sample

For our empirical analysis, we consider the publicly listed companies on the London Stock Exchange (LSE) (2017) over the period 2000–2010. In particular, we focus on both the LSE Main Market (MAIN) and LSE Alternative Investment Market (AIM) to provide a better representation of large and small cap firms. We compile the data from two different sources. Information on our quarterly ownership and corporate governance measures is obtained from the Hemscott Shareholding and Dealings Database, whereas the data on accounting and financial variables are derived from Datastream database. First, we narrow our initial sample down to companies whose data are available on both Hemscott and Datastream.[5] We then exclude firms that are financials and incorporated outside the UK. Lastly, we include all the remaining companies, which were either delisted or newly listed at different times during the research period, in the sample in order to avoid possible survivorship bias. After all, our sample covers 2364 non-financial companies in total over the period 2000–2010, with a minimum of 1118 firms in 2010 and a maximum of 1551 firms in 2006. Table 1 presents a breakdown of our final sample on a yearly basis, reporting the number of firms covered, new entries, delisted firms, the published official figures of total UK companies (non-financial) listed on the LSE and our coverage percentage for each year.

2.2. Measuring institutional investment horizon and independent variables

Following Gaspar et al. (2005), we use the "churn rate" as a measure of the investment horizon of institutional investors. This measure suggests that institutions with higher churn rates are considered short-term investors, since they alter their stock positions frequently. Conversely, lower churn rates indicate longer term investment horizons. In this respect, by employing the methodology in Gaspar et al. (2005), we first calculate the quarterly churn rates for each institutional investor to find out how frequently they rotate their positions on all stocks of their portfolios. If we denote the set of portfolio companies held by institutional investor i by Q, the churn rate of investor i at quarter t is as follows:

$$CR_{i,t} = \frac{\sum_{j\in Q} |N_{j,i,t}P_{j,t} - N_{j,i,t-1}P_{j,t-1} - N_{j,i,t-1}\Delta P_{j,t}|}{\sum_{j\in Q} \frac{N_{j,i,t}P_{j,t} + N_{j,i,t-1}P_{j,t-1}}{2}}, \tag{1}$$

where $N_{j,i,t}$ and $P_{j,t}$ are the number of shares and the price, respectively, of company j held by institutional investor i at quarter t. We next aggregate the quarterly churn rates obtained from Eq. (1) to the firm level in the second step. We denote the set of shareholders by S in company k, and by $w_{k,i,t}$ the weight of investor i in the total percentage held by institutional investors at quarter t. Then the institutional investor turnover of firm k is the weighted average of the total portfolio churn rates of its institutional investors over the past four quarters is as follows:

[4] According to the Office for National Statistics (ONS) (2010)'s report, institutional investors hold 41% of the beneficial ownership in quoted firms (excluding investors from the rest of the world) in the UK. Also, 56% of firms have at least one institutional shareholder with holdings above the 3% ownership disclosure threshold level.

[5] We matched the Hemscott and Datastream data using the Stock Exchange Daily Official List (SEDOL) codes and International Security Identification Numbers (ISIN) of the companies.

Table 1
Research sample size and population coverage statistics.

Year	Number of listed firms (Our sample)	Sample delisted	Sample added	LSE Official List[a] (Total number of firms)	Coverage (%) (Number of firms)
2000	1381	137		1550	89%
2001	1387	93	143	1521	91%
2002	1374	121	80	1480	93%
2003	1294	83	41	1407	92%
2004	1422	104	211	1509	94%
2005	1538	120	220	1652	93%
2006	1551	152	133	1739	89%
2007	1501	159	102	1615	93%
2008	1363	162	21	1480	92%
2009	1204	119	3	1217	99%
2010	1118		33	1127	99%
Average	1376	125	98.7	1482	93%

Notes: The final sample, in total, covers 2364 non-financial UK firms listed on the LSE's MAIN and AIM across 15 different industries (based on the Industrial Classification Benchmark (ICB) codes) over the period 2000–2010.

[a] These figures represent only the total number of non-financial UK corporations traded on the LSE MAIN and AIM markets, and the relevant information is taken from the LSE's official web site.

Table 2
Independent variables and definitions.

Variables	Abbreviations	Definitions
Test variable		
General churn rate	GChurn	The rate of institutions' stock position turnover in a firm, which is used to proxy the "institutional investment horizon"
Control variables		
Individual ownership concentration	IndvIOC	Total of non-institutional (such as individuals, publicly listed firms, limited companies, government and other organisations) ownership in percentages at 3% threshold level
Executive ownership	OwnEx	Total ordinary stock ownership of executive directors
Non-executive ownership	OwnNonEx	Total ordinary stock ownership of non-executive directors
Board size	BSize	Total number of directors on the board (in logarithm)
Board independence	BIndep	Fraction of non-executive directors to board size
Chairman/CEO duality	Dual	Dummy variable that equals 1 if CEO and Chairman are different people, 0 otherwise
Free cash flow	FCF	Free cash flow per share
Firm size	Size	Retail price index-adjusted annualised market value (in logarithm)
Industry classification	Industry	Industry dummies based on the ICB codes

$$\text{Institutional investor turnover of the firm } k = \sum\nolimits_{i \in S} w_{k,i,t} \left(\frac{1}{4} \sum_{r=1}^{4} CR_{i,t-r+1} \right) \tag{2}$$

After illustrating how to measure our test variable, which we refer to as the "general churn rate" (symbolised as GChurn), we also include in our multivariate analysis a set of explanatory variables that are observed in the literature in influencing dividend policy. In particular, we employ various variables to control for ownership structure, corporate governance and firm-specific factors. In addition, industry dummies are added to control for the effect of different industries. Definitions of the independent variables used in the analysis are shown in Table 2.

2.3. Research design and model

Since the purpose of this paper is to study the relationship between institutional investment horizon and dividend policy, we attempt to examine the impact of institutional investment horizon on the probability of paying a cash dividend. This means that when firms make their dividend policy decisions, they face a choice: to pay dividends or not to pay dividends. Therefore, we estimate a probit model by the following equation:

$$\begin{aligned} \text{Model 1: DPay}_{i,t} &= \alpha + \beta_1 \text{GChurn}_{i,t-1} + \beta_2 \text{IndvIOC}_{i,t-1} + \beta_3 \text{OwnEx}_{i,t-1} + \beta_4 \text{OwnNonEx}_{i,t-1} \\ &\quad + \beta_5 \text{BSize}_{i,t-1} + \beta_6 \text{BIndep}_{i,t-1} + \beta_7 \text{Dual}_{i,t-1} + \beta_8 \text{FCF}_{i,t-1} + \beta_9 \text{Size}_{i,t-1} \\ &\quad + \sum\nolimits_{j=1}^{n} \beta_j \mathit{Industry}_{j,i,t-1} + \varepsilon_{i,t-1} \\ \text{DPay}_{i,t} &= \begin{cases} 0 & \text{if } \text{DPay}_{i,t} = 0, \\ 1 & \text{if } \text{DPay}_{i,t} > 0, \end{cases} \end{aligned}$$

Table 3
Descriptive statistics.

Panel A: Financial characteristics by dividend payment groups

Dividend category	Cash dividends (million £)	Market value (million £)	Total assets (million £)	Total sales (million £)	Total cash (million £)	Leverage ratio
Never paid (n = 568)						
Mean	0	80.11	84.17	35.37	11.40	0.24
Median	0	11.13	9.60	2.81	1.50	0.30
St. Dev.	0	775.54	755.14	246.13	57.42	1.94
Always paid (n = 687)						
Mean	87.86	2280.51	2691.13	2289.88	189.92	0.19
Median	5.20	174.38	191.67	232.67	14.09	0.18
St. Dev.	411.79	9917.79	12851.49	11895.67	790.24	0.16
Paid at least once (n = 1109)						
Mean	10.82	445.99	608.27	474.12	59.24	0.17
Median	0.21	31.60	48.41	48.54	3.70	0.16
St. Dev.	63.11	2233.55	2661.18	1595.28	314.41	0.21

Panel B: Institutional investment horizon and corporate governance variables by dividend payment groups

	General churn rate	Ownership concentration (%)	Institutional ownership (%)	Executive ownership (%)	Non-executive ownership (%)	Board size	Board independence (%)
Never paid (n = 568)							
Mean	0.54	40.36	15.84	11.73	5.45	5.66	49.94
Median	0.50	39.04	11.09	3.96	0.72	5.00	50.00
St. Dev.	0.34	26.07	16.74	17.11	12.71	2.01	18.29
Always paid (n = 687)							
Mean	0.47	35.57	22.34	8.06	2.96	7.67	52.40
Median	0.45	33.84	19.70	0.79	0.12	7.00	50.00
St. Dev.	0.25	23.64	17.55	16.05	8.60	2.55	15.17
Paid at least once (n = 1109)							
Mean	0.49	39.55	20.53	12.84	4.48	6.42	49.76
Median	0.47	38.94	16.55	2.96	0.37	6.00	50.00
St. Dev.	0.27	24.01	18.54	19.02	10.12	2.16	16.03

Notes: In Panel A, cash dividends refer to the total annual common and preferred dividends paid in cash to shareholders; market value equals to the share price (year-end) multiplied by the common shares outstanding; total assets represent the sum of total current assets, long-term receivables, investments in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets; total sales are the total of annual gross sales and other operating revenue; total cash represents the sum of cash and short-term investment; leverage ratio is calculated as total debt divided by total assets. To avoid the inflation effect, variables are measured in real terms and normalised by the retail price index (RPI) deflator using 2000 as a base year. In Panel B, general churn rate represents the annual rate at which institutional investors alter their stock positions in a firm; ownership concentration is the total proportion of ordinary shares held by major shareholders who have more than 3% of the total shares; institutional ownership refers to the total percentage of shares owned by institutional investors; executive ownership is the sum of total ordinary shares held by executive directors; non-executive ownership refers to the total ordinary shares owned by non-executive directors; board size represents the total number of directors on the board; board independence is calculated as the fraction of non-executive directors to board size.

where $DPay_{i,t}$ (dependant variable) is the probability of paying dividends, which is a binary code (0/1) that equals 1 if the firm pays a dividend, and 0 otherwise, and the independent variables have the same definitions as previously explained. Furthermore, in estimating our probit model, we also consider the issue of endogeneity. We use one-year lagged values for all independent variables in the model, ensuring that institutional investor churn rate and other explanatory variables are predetermined with respect to the dividend payment decision, and thus alleviate endogeneity concerns.

3. Empirical results and discussion

3.1. Descriptive statistics

We provide summary statistics of the sample subgroups categorised on the basis of their dividend payment strategies, as illustrated in Table 3. Our sample contains 568 firms (24%) which did not pay dividends over the period 2000–2010 (subsample named as "never paid"); 687 firms (29%) distributed dividends every year ("always paid"), whereas 1109 firms (47%) paid a dividend at least one year during the research period but not each year they were listed ("paid at least once"). Of the 2364 firms covered in our sample, 1796 firms (76%), in total, paid dividends in one or more accounting years in the sample period.

Panel A of Table 3 presents descriptive statistics for the main financial characteristics of our subsamples. The mean cash dividend paid for the "always paid" group is £87.86 million compared to £10.82 million for the "paid at least once" group. There is a

Table 4
Probit estimation results for the probability of paying dividends.

Model variables:	Model 1: Probit regression	
Dependent variable	Dividend payment – DPay (0/1)	
Independent variables	Coefficient estimates	Marginal effects
GChurn	−.486*** (−4.93)	−.170*** (−4.92)
IndvIOC	−.00542*** (−3.57)	−.00190*** (−3.56)
OwnEx	.00556*** (2.77)	.00195*** (2.77)
OwnNonEx	−.00225 (−0.64)	−.000789 (−0.64)
BSize	.174* (1.86)	.0610* (1.87)
BIndep	−.00436** (−2.52)	−.00153** (−2.52)
Dual	0.0784 (1.39)	0.0275 (1.39)
FCF	2.109*** (17.59)	.740*** (17.72)
Size	.328*** (17.31)	.115*** (17.53)
Industry	Yes	Yes
Constant	−4.026*** (−18.04)	
Pseudo R^2 (%)	36.5%	
Number of observations	5566	5566

Notes: The table reports the probit estimations and *z*-statistics in the parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged. The model is tested using White's corrected heteroscedasticity robust regression.

significant difference between the mean market values of the "always paid" and "never paid" (£2280 million and £80.11 million, respectively). Similarly, firms in the "never paid" subsample have relatively lower total assets, total sales and total cash; however, they attain a higher mean leverage ratio (0.24) compared to those firms in the "always paid" subsample (0.19).

Panel B of Table 3 reports the statistics on institutional investment horizon and corporate governance variables. At first glance, firms that have never paid a dividend experience a higher mean churn rate than the other firms in "paid at least once" and "always paid" categories (0.54, 0.49 and 0.47, respectively). This means that they have high-turnover institutional investors in their ownership base, indicating a possible negative association between the churn rate and dividends. Moreover, never-paying firms have higher ownership concentration, lower institutional ownership and smaller board sizes, whereas always-paying firms have slightly higher board independence than the other two groups. Mean executive ownership is 11.73% in never-paying firms compared to the 8.06% of always-paying firms and 12.84% of firms that paid a dividend at least once.

3.2. Regression analysis

Table 4 shows the results of estimating the probit model under our research specification (Model 1). As illustrated in the table, we also calculate the marginal effects (economic significance) of the independent variables to provide further interpretations of the estimation coefficients (statistical significance).[6] In addition, we use White's corrected heteroscedasticity robust regression in testing the model, and hence our results do not suffer from heteroscedasticity.[7]

The results present that the coefficient of GChurn is negative and statistically significant ($z = -4.93$, $p < .01$), indicating an important negative association between general churn rate and the probability of paying dividends. The marginal effect of this variable is −0.170, implying that one unit of increase in GChurn will decrease the likelihood of a dividend payment by 17% for an average British firm. Since our general churn rate measures the frequency with which institutional investors alter their stock portfolios in a firm, a higher churn rate represents a shorter institutional investment horizon, and vice versa. Accordingly, we interpret the evidence of this negative relationship as follows: short-term (high-turnover) institutional investors have a negative impact on dividend payment decisions, whereas long-term (low-turnover) institutions have a positive impact. This is consistent with the findings provided by Hovakimian and Li (2010) and Gaspar et al. (2013), but contrary to Derrien et al. (2013).

Our evidence indeed shows that institutional investors' investment horizons affect corporate dividend decisions. Thus, the differences of motivations and preferences in their investment horizons may help distinguish between alternative dividend policy theories. In this respect, our evidence indicates the monitoring role of long-term institutional investors in line with the traditional agency-cost-based explanation: instead of providing direct monitoring themselves, institutions with longer investment horizons prefer dividend-induced capital market monitoring by encouraging managers to pay dividends, which, in turn, reduces free cash flow problems and increases the screening and monitoring by the market when the firm raises capital (Easterbrook, 1984; Jensen, 1986). This is also consistent with the studies conducted in the US by Hovakimian and Li (2010) and Gaspar et al. (2013), who report that long-term institutions play a monitoring role and their influence leads to higher dividend payouts. Furthermore, this positive impact of long-term institutional investors on dividend decisions may be attributed to the tax-based dividend clientele argument: if long-

[6] We evaluate the marginal effects of each independent variable on the dependent variable at the mean values of other independent variables.

[7] It is worth noting that although not separately reported here, using Pearson's correlation and Variance Inflation Factor (VIF) values, we detect that no multicollinearity problem exists between our independent variables. The results are available from authors upon request.

horizon investors are the tax-exempt institutions (e.g., pension funds), they are indifferent with respect to the capital gains or dividend income. In such cases, long-term institutional investors prefer dividends due to a common institutional charter and prudent-man rule restrictions (Allen et al., 2000), and their liquidity concerns (Short et al., 2002; Jain, 2007): since they cannot rely on capital gains to satisfy their fund requirements on an ongoing basis, they desire certain levels of dividend income, which explains the positive relation between the long-term institutional investment horizon and dividend payments. However, previous research (see, e.g., Kalay, 1982; Michaely, 1991, among others) documents that in the presence of the uneven taxation of capital gains and dividends, short-term traders, such as tax-neutral institutional investors, seek arbitrage profits and attempt to capture dividend income by buying the stock with the dividend before it goes ex-dividend and selling it just after the dividend payment. This is contradictory to our evidence of the inverse correlation between short-term institutional investment horizon and dividend policy decisions. Therefore, we suggest that the tax-based argument plays an incomplete role in understanding our finding.

Moreover, the signalling hypothesis posits that dividend payments are used to convey favourable insider information about future high performance of the firm to the market (Bhattacharya, 1979; Miller and Rock, 1985). In the presence of information asymmetry, uninformed investors, therefore, perceive higher payouts as a credible sign and favour larger cash dividends, whereas informed investors do not opt for dividends as they have already had the private insider information. Yan and Zhang (2009) advocate that short-term institutions are more efficient in acquiring private information and hence better informed, compared to institutions with longer investment horizons. Under this scenario, long-term institutions that do not possess favourable short-run information are likely to put a premium on stocks with larger dividends, whereas short-horizon institutions do not favour dividends but tend to trade actively to exploit their short-run information advantage. This signalling view could explain our evidence that indicates a positive (negative) relationship between long-term (short-term) institutional investors and dividend payments. Nevertheless, several researchers (see, e.g., Gaspar et al., 2005, 2013; Chen et al., 2007; Elyasiani and Jia, 2010) raise objections to this view. They argue that long-term institutional investors, as they are shareholders for longer, have had more time to learn about the firm and their monitoring role also requires the ability to gather information about the management at a lower cost. Thus, they have more motivation to acquire information because they will remain in their position in the firm for longer. Besides, it is not clear how to reconcile the favourable information of short-term institutions with the monitoring role of long-term shareholders. Overall, the argument is inconclusive on whether short- or long-term institutional investors have an informational advantage, and hence the signalling point of view is inconclusive in terms of explaining our evidence.

Table 4 further shows the estimation results for other independent variables. We observe that the majority of these variables are statistically significant, in line with the previous literature. In particular, the results indicate that executive ownership (OwnEx), board size (BSize), free cash flow (FCF) and firm size (Size) have all positive effects but individual (non-institutional) ownership concentration (IndvIOC) and board independence (BIndep) have a negative impact on corporate dividend decisions, while there is no association between either non-executive ownership (OwnNonEx) or chairman/CEO duality (Dual) and the likelihood of paying dividends in the UK.

3.3. Robustness tests

We perform several robustness checks. We first attempt to address the issue of whether our findings hold for the intensity (and not only the probability) of paying dividends. This is done by using an alternative dividend policy measure, namely "dividend payout ratio". The dividend payout ratio will never be negative (it is left censored at zero), and has two outcomes: either zero (discrete

Table 5
Tobit estimation results for dividend payout ratio.

Model variables:	Model 2: Tobit regression	
Dependent variable	Dividend payout ratio (DPout)	
Independent variables	Coefficient estimates	Marginal effects
GChurn	−.0136*** (−7.58)	−.00607*** (−7.59)
IndvIOC	−.0000842*** (−2.98)	−.0000377*** (−2.98)
OwnEx	.000220*** (6.08)	.0000986*** (6.08)
OwnNonEx	0.00000832 (0.12)	0.00000373 (0.12)
BSize	−0.00106 (−0.64)	−0.000474 (−0.64)
BIndep	−.0000672** (−2.21)	−.0000301** (−2.21)
Dual	0.00160 (1.59)	0.000716 (1.59)
FCF	.0324*** (17.60)	.0145*** (17.75)
Size	.00530*** (16.60)	.00237*** (16.65)
Industry	Yes	Yes
Constant	−.0560*** (−14.38)	
Pseudo R^2 (%)	21.4%	
Number of observations	5566	5566

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

Table. 6
Probit and Tobit estimations results for the impact of alternative institutional investment horizon measures on dividend policy.

	Panel A: Probit regressions						Panel B: Tobit regressions					
Model variables:	Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Dependent variable	Dividend payment DPay (0/1)		Dividend payment DPay (0/1)		Dividend payment DPay (0/1)		Dividend payout ratio (DPout)		Dividend payout ratio (DPout)		Dividend payout ratio (DPout)	
Independent variables	Coefficient estimates	Marginal Effects	Coefficient estimates	Marginal effects	Coefficient estimates	Marginal Effects	Coefficient estimates	Marginal effects	Coefficient Estimates	Marginal effects	Coefficient estimates	Marginal effects
IndChurn	−.746*** (−7.59)	−.261*** (−7.58)					−.0163*** (−9.35)	−.00729*** (−9.37)				
MarketChurn			−.526*** (−5.28)	−.185*** (−5.28)					−.0139*** (−7.72)	−.00622*** (−7.73)		
SizeChurn					−.516*** (−5.13)	−.181*** (−5.13)					−.0142*** (−7.84)	−.00635*** (−7.84)
IndvIOC	−.00563*** (−3.70)	−.00197*** (−3.70)	−.00551*** (−3.63)	−.00193*** (−3.63)	−.00547*** (−3.60)	−.00192*** (−3.60)	−.000091*** (−3.24)	−.000041*** (−3.24)	−.000087*** (−3.07)	−.000039*** (−3.08)	−.000086*** (−3.03)	−.000038*** (−3.03)
OwnEx	.00544*** (2.71)	.00191*** (2.71)	.00559*** (2.78)	.00196*** (2.78)	.00535*** (2.67)	.00187*** (2.67)	.00022*** (6.14)	.000099*** (6.14)	.00022*** (6.05)	.000098*** (6.05)	.000216*** (5.96)	.000097*** (5.97)
NonEx	−0.00206 (−0.58)	−0.000721 (−0.58)	−0.00215 (−0.61)	−0.000752 (−0.61)	−0.00232 (−0.66)	−0.000814 (−0.66)	0.0000064 (0.10)	0.0000029 (0.10)	0.000011 (0.16)	0.000005 (0.16)	0.000006 (0.08)	0.000003 (0.08)
BSize	.172* (1.84)	.0602* (1.84)	.174* (1.87)	.0612* (1.87)	.177* (1.90)	.0619* (1.90)	−0.00109 (−0.66)	−0.00049 (−0.66)	−0.00105 (−0.63)	−0.000470 (−0.63)	−0.00100 (−0.60)	−0.00045 (−0.60)
BIndep	−.00437** (−2.53)	−.00153** (−2.53)	−.00439** (−2.54)	−.00154** (−2.54)	−.00446*** (−2.58)	−.00156*** (−2.58)	−.000064** (−2.10)	−.000029** (−2.10)	−.000068** (−2.24)	−.000031** (−2.24)	−.000069** (−2.25)	−.000031** (−2.25)
Dual	0.0809 (1.43)	0.0284 (1.43)	0.0789 (1.40)	0.0277 (1.40)	0.0832 (1.48)	0.0292 (1.48)	0.00160 (1.59)	0.000715 (1.59)	0.00160 (1.59)	0.000717 (1.59)	.00169* (1.68)	.000758* (1.68)
FCF	2.107*** (17.53)	.739*** (17.65)	2.106*** (17.56)	.738*** (17.69)	2.107*** (17.57)	.739*** (17.69)	.0323*** (17.60)	.0145*** (17.75)	.0323*** (17.55)	.0145*** (17.71)	.0323*** (17.56)	.0145*** (17.72)
Size	.332*** (17.47)	.116*** (17.69)	.329*** (17.34)	.115*** (17.57)	.331*** (17.44)	.116*** (17.67)	.00534*** (16.73)	.00239*** (16.78)	.00532*** (16.67)	.00238*** (16.72)	.00537*** (16.80)	.00240*** (16.84)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−3.989*** (−17.91)		−4.028*** (−18.07)		−4.068*** (−18.31)		−.0558*** (−14.43)		−.0563*** (−14.49)		−.0568*** (−14.69)	
Pseudo R^2 (%)	37.0%		36.6%		36.5%		21.7%		21.4%		21.5%	
No. of observations	5566	5566	5566	5566	5566	5566	5566	5566	5566	5566	5566	5566

Notes: The table reports the probit/tobit estimations and *z/t* statistics in the parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. Independent variables are one-year lagged. The models are tested using White's corrected heteroscedasticity robust regressions. The models are constructed as below (Models 3–5 report probit estimation results and Models 6–8 report tobit estimation results):

Model 3: $\text{DPay}_{i,t}=\alpha+\beta_1\text{IndChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

Model 4: $\text{DPay}_{i,t}=\alpha+\beta_1\text{MarketChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

Model 5: $\text{DPay}_{i,t}=$
$\alpha+\beta_1\text{SizeChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

Model 6: $\text{DPout}_{i,t}=\alpha+\beta_1\text{IndChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

Model 7: $\text{DPout}_{i,t}=\alpha+\beta_1\text{MarketChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

Model 8: $\text{DPout}_{i,t}=\alpha+\beta_1\text{SizeChurn}_{i,t-1}+\beta_2\text{IndvIOC}_{i,t-1}+\beta_3\text{OwnEx}_{i,t-1}+\beta_4\text{OwnNonEx}_{i,t-1}+\beta_5\text{BSize}_{i,t-1}+\beta_6\text{BIndep}_{i,t-1}+\beta_7\text{Dual}_{i,t-1}+\beta_8\text{FCF}_{i,t-1}+\beta_9\text{Size}_{i,t-1}+\sum_{j=1}^{n}\ \beta_j\text{Industry}_{j,i,t-1}+\varepsilon_{i,t-1}$

numbers), if firms do not pay dividends, or a positive value (continuous numbers), in which case firms pay dividends. Hence, we estimate a tobit model as follows:

$$\text{Model 2: } \text{DPout}_{i,t} = \alpha + \beta_1 \text{GChurn}_{i,t-1} + \beta_2 \text{IndvIOC}_{i,t-1} + \beta_3 \text{OwnEx}_{i,t-1} + \beta_4 \text{OwnNonEx}_{i,t-1} + \beta_5 \text{BSize}_{i,t-1} + \beta_6 \text{BIndep}_{i,t-1} + \beta_7 \text{Dual}_{i,t-1} + \beta_8 \text{FCF}_{i,t-1} + \beta_9 \text{Size}_{i,t-1} + \sum_{j=1}^{n} \beta_j \text{Industry}_{j,i,t-1} + \varepsilon_{i,t-1}$$

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

where $\text{DPout}_{i,t}$ represents the dividend payout ratio (that is, the fraction of total cash dividends paid to total assets)[8] and the independent variables have the same previous definitions as given in Table 2.

Table 5 shows the results of estimating the tobit model under our alternative specification (Model 2). The results show that the coefficient of GChurn is negative and statistically significant ($t = -7.58$, $p < .01$), and the marginal effect of this variable indicates that one unit of increase in general churn rate will, on average, decrease the amount of payout ratio by about 0.61%. Regarding other independent variables, the results report very similar findings consistent with the previous results with the same significance levels and directional impacts (except board size, which is not statistically significant in the tobit model). Consequently, our quantitative findings from the tobit model support the findings of the probit model.

Furthermore, we consider alternative churn rate measures to check whether our main results, which we obtain using the general churn rate proposed by Gaspar et al. (2005), are sensitive to the usage of different institutional investor turnover measures. These measures include industry churn rate, market churn rate and size churn rate (indicated by IndChurn, MarketChurn and SizeChurn, respectively).[9] We then conduct a number of tests to provide the probit (Models 3–5) and tobit (Models 6–8) estimations for each alternative measure alone (by replacing our main churn rate measure), as illustrated in Table 6. The results, however, remain very similar to what we report in Tables 4 and 5, and therefore confirm the robustness of our previous findings.

4. Conclusion

We investigate the relationship between institutional investors' investment horizon and dividend policy, using a large panel dataset of publicly listed non-financial UK companies over the period 2000–2010. By employing the churn rate approach proposed by Gaspar et al. (2005), we measure the investment horizon of institutional shareholders, in particular the frequency with which institutions alter their stock positions in a firm. Accordingly, our empirical analyses show that there is a significantly negative association between the churn rate and cash dividend payments, and this inverse association is robust to the usage of different dividend policy proxies, substitute methodologies and alternative churn rate measures. Hence, we interpret this evidence as indicating that short-term (higher churn rates) institutional investors have a negative effect on dividends, whereas long-term (lower churn rates) institutional investors have a positive impact on dividend decisions.

Our finding on the positive relationship between long-term institutional investors and dividend policy is consistent with the notion that institutions with longer investment horizons prefer higher dividends to increase dividend-induced capital market monitoring, and thus suggests that their involvement leads to higher payouts and, in turn, lower agency costs of managerial discretion. This positive relationship may also indicate the preferences of long-term institutions based on the tax considerations. Since the majority of them have a neutral tax-treatment with respect to dividends and capital gains, they opt for dividend income with which they can abide by the common institutional charter and prudent-man rules, and satisfy their liquidity needs. Moreover, our evidence on the negative impact of a short-term institutional investment horizon on corporate dividends shows that short-term institutions dislike cash dividends. This could be explained by the signalling view that short-term-oriented institutions are better informed and they do not see dividends as a credible signal since they have already had superior insider information. Hence, they do not favour dividend payments. However, considering their monitoring abilities and the fact that they have been shareholders of the firm for longer, long-term institutions may have an informational advantage compared to short-termers. We then conclude that the signalling

[8] The most commonly used dividend payout ratio, which is calculated as dividend per share divided by earnings per share, suffers from some measurement errors associated with negative or astronomic payout ratios when firms make losses or their net earnings are close to zero. Thus, we employ another popular measure, the ratio of total cash dividends to total assets, to avoid such problems.

[9] We slightly modify the Gaspar et al.'s (2005) formulas – previously explained as Eq. (1) and (2) – to calculate our alternative churn rates. First, we construct three subgroups of institutional equity investment portfolios according to industry (using ICB codes), market (using MAIN and AIM indices) and firm size (using annual market values) to identify the three different investment orientations. Second, we adjust Eq. (1) and (2) by adding the dimension "*m*", which reflects the factors of industry or market or firm size (depending on the factor of interest), as below:

$$CR_{i,m,t} = \frac{\sum_{i \in Q} |N_{j,i,m,t} P_{j,m,t} - N_{j,i,m,t-1} P_{j,m,t-1} - N_{j,i,m,t-1} \Delta P_{j,m,t}|}{\sum_{j \in Q} \frac{N_{j,i,m,t} P_{j,m,t} + N_{j,i,m,t-1} P_{j,m,t-1}}{2}} \tag{3}$$

$$\text{Institutional investor turnover of the firm } k = \sum_{i \in S} w_{k,i,m,t} \left(\frac{1}{4} \sum_{r=1}^{4} CR_{i,m,t-r+1} \right) \tag{4}$$

Using Eq. (3), we estimate separate quarterly churn rates for each institutional investor across the three different sub-groups. We then aggregate these churn rates to the firm level by Eq. (4) for each sub-group alone. Finally, this procedure yields three more alternative churn rates (IndChurn, MarketChurn and SizeChurn) for each given firm, in addition to our general churn rate.

view is weak in explaining our evidence.

Given our evidence, Hovakimian and Li (2010) and Gaspar et al. (2013) report very similar findings; that is, long-term institutional holdings increase both the likelihood and the amount of dividend payouts, whereas short-term institutional shareholders tend to decrease it. They argue that this inverse effect of short-term institutions on dividend policy exists because short-term institutional investors prefer share repurchases over dividends as a form of payout in the US. It could be a promising avenue for future research to explore whether dividends and share repurchases are concurrent or not, and to provide a more complete understanding of payout policy in the UK. Our study, however, serves as a valuable benchmark for such research.

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