The Impact of Unrealized Fair Value Adjustments on Dividend Policy

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ABSTRACT We examine the impact of unrealized fair value adjustments on dividend policy. Dividend payouts should include only persistent income [Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings and taxes. American Economic Review, 46(2), 97–113]. In our institutional setting, however, regulators recommend the non-distribution of any income from fair value adjustments, which suggests that they interpret them as transitory. We empirically demonstrate that fair value adjustments on investment property are persistent, while those on financial securities are transitory. We further show that only fair value adjustments from investment properties are distributed. We argue that managers perceive the persistence of the two fair value components correctly, and by doing so, they distribute income consistent with the Lintner framework rather than on regulatory recommendations. Finally, by focusing on managerial optimism, debt contracting, and insider ownership, we demonstrate the conditions under which firms choose to deviate from regulator recommendations and to distribute fair value profits.

1. Introduction

In this study, we investigate whether the adjustments of investment properties and financial securities influence dividend policy by examining the extent of dividend changes related to those adjustments. We further examine the impact of firm-specific characteristics that have been conceptually demonstrated as influencing the distribution of fair value adjustments. Specifically, we examine the impact of managerial optimism, a firm’s borrowing capacity, and insider ownership.

The debate over fair value accounting (FVA) dates back to the 1930s, and it continues to rage on with particular intensity among regulators, academics, the media, and various market participants (e.g. Barth, 2007; Christensen & Nikolaev, 2013; Wallison, 2008). Critics argue that FVA is costly and difficult to implement and actually decreases the reliability of financial reporting (Ball, 2006). An additional argument is that it further increases managerial discretion (Hail, Leuz, & Wysocki, 2010). Thus, FVA creates ‘noise’ around decision-making. FVA also creates transitory components in net income (Penman, 2007), which are potentially used to

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calculate excessive executive bonuses and high dividends (Hatherly, 2013). Defenders of FVA counter argue that it bypasses the inconsistencies of historical cost accounting by providing relevant information in a timely manner (Barth, 2007; Barth, Beaver, & Landsman, 1996, 2001; Hitz, 2007). Hence, FVA increases transparency and supports better decision-making by market participants. In this paper, we investigate the impact of mark-to-market adjustments on dividend policy to examine whether FVA affects managerial decision-making.

In theory, if managers assess fair value adjustments as persistent, they should include them as part of distributable income (Lintner, 1956). However, opponents of FVA claim that in cases of unrealized profits such practices increase corporate leverage (Enria et al., 2004), induce excessive degrees of procyclicality in the real economy (Laux & Leuz, 2009), and destabilize the entire financial system (Hatherly, 2013). The impact of International Financial Reporting Standards (IFRS) on profit distribution and capital maintenance is an active area of research (Hail, Tahoun, & Wang, 2014). The topic is on the current agenda of many regulatory committees, including the European Commission (KPMG, 2008), which seeks to harmonize the wide diversity of permitted practices related to dividend distribution in its member states. Therefore, in view of long academic debates, regulatory considerations, the interests of the investment community, and the media, ‘whether and how dividend policy is influenced by FVA is an important empirical question’ (Goncharov & van Triest, 2011, p. 52).

We analyze Greece for three reasons. First, Greece (similar to other EU members) has adopted the European Commission Second Company Law Directive on the capital of public limited companies. However, in contrast to the majority of EU members, which prohibit any distribution of unrealized earnings (KPMG, 2008), the Greek Oversight Board (the Hellenic Commission of Auditing and Accounting Regulation [HCAAR]) recommends (but does not mandate) the distribution of realized earnings only (HCAAR, 2006). Thus, in effect, we are examining a managerial decision concerning an important corporate policy (which is of broader interest in the EU regulatory setting) in which good practice is prescribed but the actual decision remains entirely voluntary. Second, the Greek legal framework requires the distribution of a minimum cash dividend (minimum dividend requirement) on the part of profitable firms (Law 148/1967), similar to Germany, Russia, Brazil, and other countries (Goncharov & van Triest, 2014). This requirement refers to single-entity reported earnings and can be waived only by a substantial shareholder vote against it (above 70%). Thus, fair value adjustments might influence dividend policy decisions if investors tend to fixate on bottom-line earnings (Hribar & Collins, 2000) and expect a minimum dividend (Brav, Graham, Harvey, & Michaely, 2005; Goncharov & van Triest, 2011). In particular, investors might respond negatively to a waiver of the minimum dividend requirement, which can be a strong negative signal of future profitability (Dasillas & Leventis, 2011). Finally, Greek firms operate within an ‘insider’ financial system (La Porta, López De Silanes, & Shleifer, 1999), in which leverage and insider corporate ownership are relatively high (Dasillas & Leventis, 2013). Moreover, our sample period is perceived as a ‘boom’ period for Greek companies, and therefore, managerial optimism is likely to be present.1

We employ Lintner’s (1956) model to examine the impact of fair value adjustments on dividend policy for a sample consisting of 693 firm-year observations of Greek listed firms during the period of 2006–2008. We assess the effects of two types of fair value adjustments which the HCAAR recommends as non-distributable if not realized (i.e. adjustments on investment properties and on financial securities). We initially examine the persistence of fair value adjustments, an essential first step because theoretically transitory income should not be distributed. We demonstrate that IFRS fair value adjustments on investment property are persistent, while adjustments on financial securities are not. We then examine the impact of fair value adjustments on dividend policy, after.

1These features increase the salience of the tests focusing on firm characteristics.
controlling for other determinants of dividend policy and for self-selection. Our results suggest that companies which revalue investment properties significantly increase the amounts of their dividend payouts, which is not the case for companies revaluing financial securities. These results suggest that managers perceive the persistence of fair value components correctly.

We make three contributions to the ongoing debate about the economic consequences of FVA. First, in contrast to the polemics of FVA (Poon, 2004; Wallison, 2008) but in line with theory, we demonstrate that investment property adjustments are persistent, similar to other historical cost income, while financial security adjustments are transitory. Second, we demonstrate that managers distribute fair value adjustments in a manner consistent with economic theory and contrary to the recommendations of the local oversight board. Third, we assess the cross-sectional variation in firm-specific characteristics associated with the decision to distribute fair value income. More specifically, we provide evidence on the role of insider ownership and the importance of managerial optimism and debt contracting.

2. Institutional Framework and Changes in Accounting Regulation

2.1. Institutional Framework

The Athens Stock Exchange (ASE) is small relative to other European stock exchanges in terms of market capitalization, number of listed firms, and turnover volume (Dasilas & Leventis, 2013; Tsalavoutas, 2011). The financial system is a ‘relationship-based’ or ‘insider’ system since the main sources of funding are internal financing and corporate debt, and corporate ownership is highly concentrated in the hands of corporate insiders and/or their families (Dasilas & Leventis, 2013; La Porta et al., 1999), who quite often have significant positions on the board of directors. The Greek legal system closely resembles a French-code legal system. La Porta et al. (1999) suggest that minority shareholders and creditors have less protection in such a system, while the enforcement of legal requirements is not particularly strong (Caramanis, Dedoulis, & Leventis, 2015).

To minimize potential agency conflicts and to protect minority shareholders, Greek law requires a minimum dividend when the firm has positive earnings (Corporate Law 2190/1920, as amended by Laws 148/1967 and 876/1979). The minimum dividend requirement is equal to 35% of net distributable earnings or 6% of share capital, whichever is higher, and it refers to single (parent) accounts only. Furthermore, adherence to IFRS in individual financial statements is required by all listed companies in Greece (Sellhorn & Gornik-Tomaszewski, 2006). Thus, we are concerned with single-entity accounts, in contrast to other studies which examine group accounts (e.g. Goncharov & van Triest, 2011). Single entities can waive the minimum dividend requirement and pay a zero dividend if shareholders who represent 70% of share capital vote to do so at the annual general meeting. However, shareholders are most likely to vote in favor of proposed dividends (see Dasilas, 2009); in fact, Greek firms report the highest dividend payout ratios in Europe (see Truong & Heaney, 2007).

2.2. Changes in Greek Accounting Regulation

The ASE experienced rapid growth in the 1990s, with record volumes reached by the end of the decade, after which an intensive downward spiral occurred (ASE, 2001). This ‘bubble’ period of the ASE coincided with numerous instances of fraudulent practices and corporate scandals, which prompted the government to enact legislation to restore public confidence in the stock exchange (Caramanis et al., 2015). This action took the form of new corporate governance

\[ \text{Net distributable earnings} = \text{net earnings} + \text{retained earnings of previous years} - \text{tax obligations from previous years} - \text{statutory reserves}. \]

The total amount of net distributable earnings is the maximum that a firm can distribute.
legislation (Law 3016/2002), the establishment of a new regulatory and oversight board for
accounting and audit practices (similar to the US Public Company Accounting Oversight
Board), and the (early) application of EU-endorsed IFRS (Caramanis et al., 2015). Greek legis-
lation passed in 2002 required listed firms to develop their financial systems according to both
Greek Generally Accepted Accounting Principles (GAAP) and IFRS from 2003 onwards (Law
2992/2002). However, in 2004, Law 3301/2004 introduced Regulation 1606/2002 which made
the use of IFRS mandatory for all listed firms and essentially rendered the use of Greek GAAP
obsolete. After inter-professional conflict and public debate, IFRS were finally adopted on 1
January 2005, although early (voluntary) adoption was encouraged.

IFRS mandate the extensive use of FVA and permit firms to include gains and losses from
FVA in their income statements. For this reason and because IFRS do not deal with distribution
issues, the Greek Ministry of Finance issued guidelines through the HCAAR on 27 February
2006, to define distributable earnings for firms adopting IFRS from 2005 onwards. Specifically,
the HCAAR distinguished the different types of income that can be considered as distributable.
These guidelines were a response to the European Commission Second Company Law Directive
that each country should make individual modifications in adopting IFRS to achieve a smooth
and effective transition from the local GAAP.

The main types of income that the HCAAR recommends as non-distributable, and that we
focus on, are adjustments of

- **Investment property** *(IAS 40).* Initially, investments in property are recognized at their
  acquisition cost. Subsequently, they can be measured at their fair value, with independent
  estimators determining fair values annually.
- **Financial securities** *(IAS 39).* Financial securities are initially valued at cost. Sub-
 sequently, they are measured at fair value, and any changes in fair values are transferred
  to the income statement.

Realized earnings are defined by the HCAAR (2006) as earnings derived from transactions
and events which involve cash inflows or have a very high probability of involving cash
inflows. The HCAAR appears to adopt a very narrow approach to the distribution of IFRS
income, possibly owing to the conservative legacy of the Greek GAAP. Caramanis, Dedoulis,
and Leventis (2010, p. 39) argue that the advocates of traditional historical cost accounting
are well represented in the HCAAR and are therefore likely to influence relevant decisions.
However, the HCAAR guidelines are not compulsory, and managers may distribute this type
of income or waive it. Thus, we examine an entirely voluntary policy choice, but one that is
made within the context of best practice being prescribed and encouraged. This background pro-
vides an ideal setting to examine corporate characteristics which determine accounting policy
decisions regarding fair value adjustment distribution.

### 3. Theoretical Background and Hypothesis Development

#### 3.1. Earnings Persistence and Dividends

Lintner (1956) developed the first model to propose that dividends depend on current earnings and
past dividends. He suggested that firms smooth and adjust their dividends to achieve their target
payout ratio. Later studies (Fama & Babiak, 1968) provide support for the Lintner model and

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3 Modigliani and Miller (1958) also argue that there is an established payout ratio for each firm. Any deviation from that
ratio reflects changes in management perceptions of the firm’s future prospects.
extend it. DeAngelo and DeAngelo (1990) document a high frequency of dividend reductions for firms with persistent losses, while DeAngelo, DeAngelo, and Skinner (1992) report that dividend cuts are influenced by the firm’s profitability in the years surrounding the dividend announcement and persistent future earnings (see also Brav et al., 2005; Correia da Silva, Marc, & Renneboog, 2004; Goergen, Renneboog, & Correia da Silva, 2005; Kasanen, Kinnunen, & Niskanen, 1996; Renneboog & Szilagyi, 2007). Lintner (1956) additionally proposed that firms with higher and more stable earnings pay higher dividends, suggesting a strong link between persistent income and dividend levels that many empirical studies support (see Jagannathan, Stephens, & Weisbach, 2000; Kormendi & Zarowin, 1996; Skinner & Soltes, 2011).

3.2. Hypothesis Development

Since FVA incorporates market expectations about future cash flows and reflects present economic conditions (Goncharov & van Triest, 2011), it is expected to increase the transparency and value relevance of financial reporting and to decrease information asymmetries (Barth, Beaver, & Landsman, 2001). However, the volatility of aggregate income is increased because transitory income components are recognized (Goncharov & van Triest, 2011). As a consequence, market participants and managers potentially encounter difficulties in accurately assessing long-term profitability which should be the basis of dividend distribution (Hung & Subramanyam, 2007; Lintner, 1956). If market participants cannot successfully cope with income volatility, it may create ‘noise’ around decisions based on the relationship between core earnings and dividends (Poon, 2004; Wilson & Rasch, 1998). Prior studies suggest that firms are keen to distribute only persistent income (see DeAngelo, DeAngelo, & Skinner, 2004; Guay & Harford, 2000; Jagannathan et al., 2000; Skinner & Soltes, 2011). Therefore, examining whether fair value adjustments are persistent, thus distributable, is particularly important. We discuss this issue further with specific reference to the adjustments of financial securities and investment properties.

Hitz (2007) predicts that, in theory, abnormal returns should not be possible in a fair value setting which assumes semi-strong market efficiency (i.e. they should be zero); thus, fair value adjustments of financial securities should be strictly transitory. He explains that this prediction accords with the Samuelson theorem (1965, 1973), which indicates that fair values of financial securities should follow a random walk. The logic is that current values represent the best estimates of future values (LeRoy, 1989), so any fair value adjustments are transitory in nature and lack predictive ability. Theoretical predictions are supported by empirical evidence (Hann, Heflin, & Subramanyam, 2007; O’Hanlon & Pope, 1999) which reports fair value gains and losses to be zero in expectation (Chambers, Linsmeier, Shakespeare, & Sougiannis, 2007). Thus, we expect that fair the value adjustments of financial securities are transitory and consequently, revaluations of financial securities do not impact on dividend decisions. Therefore, our hypothesis 1a is as follows:

Hypothesis 1a: Unrealized income from fair value adjustments of financial securities is transitory and therefore has no impact on dividend policy.

Hitz (2007) argues that changes in fair values for investment properties follow a trend because current fair values form the basis for the next period’s expected fair value income because ‘the position is associated with rents’ (Hitz, 2007, p. 351). Hitz (2007) claims that this is the case when a firm has private information related to its prospective cash flows (e.g. through contracts), which renders relevant income as persistent to a certain degree. Hodder, Hopkins, and Schipper (2014) argue that fair values should theoretically have predictive value when they reflect the present value of opportunity costs and benefits (p. 63). Indeed, prior empirical research
demonstrates that the valuation of investment property is derived by forecasting investment property net cash flows (e.g. rental cash flows) and the consequent discount at the expected rate of return (Christensen & Nikolaev, 2013), which represents the opportunity cost of capital. Hence, compared with the situation for financial securities, fair value changes are more permanent because they are based on contracts and general market conditions, which are less volatile (Christensen & Nikolaev, 2013; Geltner & Mei, 1995; Owusu-Ansah & Yeoh, 2006). In our institutional setting, rentals are usually contracted for a minimum of 9 years (as required by tax legislation⁴), which suggests that future cash flows from investment properties are relatively stable for a long period; thus, future income is more predictable. Prior empirical studies provide ample evidence suggesting that fair value revaluations of nonfinancial assets are value relevant and influential in investment decisions (e.g. Danbolt & Rees, 2008). Thus, we expect that fair value adjustments on investment property are persistent, and consequently, revaluations of investment property consequently impact dividend decisions. Therefore, our hypothesis 1b is as follows:

**Hypothesis 1b**: Unrealized income from fair value adjustments of investment properties is persistent and therefore has an impact on dividend policy.

We additionally examine whether evidence supporting hypotheses 1a and 1b can be generalized to upward and downward fair value adjustments. Next, we focus on managerial optimism, borrowing capacity, and insider ownership to investigate the conditions under which firms might choose to deviate from regulator recommendations and distribute fair value profits.

One of the most robust findings in the psychology of judgment is that people are overconfident⁵ (see DeBondt & Thaler, 1995), and this characteristic is undoubtedly displayed by some managers (Jensen, 1993). While existing literature has explored the implications of managerial optimism for investment, merger, and financing decisions, the implications for dividends remain largely unexplored (Deshmukh, Goel, & Howe, 2013). Based on prior understandings, optimistic managers would likely decrease dividends because they perceive higher investment needs (Ben-David, Graham, & Harvey, 2007). Conversely, it is also likely that they would increase dividends because they expect increased future cash flows from current investments (Wu & Liu, 2011) or consider fair value gains as persistent income (Goncharov & van Triest, 2011, p. 54). The limited empirical research to date tends to support the dividend cut scenario (Deshmukh et al., 2013). In our institutional setting, the regulatory requirement for a minimum dividend aims to reduce the ability of optimistic managers to invest in negative-net present-value projects, and empirical evidence supports the impact of this requirement (Dasilas, 2009). Thus, we formulate our second hypothesis as follows:

**Hypothesis 2**: The positive relationship between dividend payout and persistent income from fair value adjustments is expected to be more pronounced among firms with less optimistic managers.

Whether FVA mitigates agency costs if companies that employ it use more debt than equity is less apparent (Christensen & Nikolaev, 2013). In general, subsequent to borrowing, managers

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⁴Companies cannot exempt VAT on expenses related to investment properties unless rentals are more than 9 years (POL 1122/19-11-2003). Thus, lessees demand and receive long-term contracts, which is an established practice in rent contracting in Greece.

⁵Overconfidence is defined as (a) over-optimism, or an upward bias in expectations of future outcomes; or (b) overestimation, or the lack of precise information and underestimation of risk. Similar to prior studies, we focus on over-optimism (Deshmukh et al., 2013; Malmendier & Tate, 2005).
can enable the transfer of wealth directly from debtholders to shareholders, for example, by increasing debt levels or distributing cash to shareholders through dividends (Taylor, 2013). Such actions reduce the probability that lenders get paid their full dues (Shivakumar, 2013). Specifically, firms might opportunistically use fair value adjustments from investment properties and financial investments to signal their liquidation values to debtholders, aiming for a reduced cost of debt or to avoid debt covenants violation (Shivakumar, 2013). However, the same values become known to shareholders, who expect a minimum dividend payment based on the numbers on the income statement. This higher expectation can increase dividend payouts to the benefit of shareholders and at the expense of debtholders, potentially leading to an increased cost of debt (Shivakumar, 2013). Thus, debtholders might demand that mechanisms be imposed to reduce potential wealth transfers (Leuz, 1998). Dividend restrictions, in the form of restrictive debt covenants, can effectively mitigate shareholder–debtholder conflicts (Jensen & Meckling, 1976). Such conflicts may be particularly evident in Greece since most companies are over-leveraged compared to the European norms (Dasilas & Leventis, 2013). Prior literature suggests that the distribution of unrealized income decreases borrowing capacity at a corporate level, which potentially leads some firms into financial distress (Enria et al., 2004). In particular, decreased borrowing capacity deteriorates corporate flexibility to undertake investment projects because of debt covenants, and thus it increases the probability of default (Farinha, 2003). At a macro-level, increased dividend payouts due to positive fair value adjustments might contribute to the procyclicality of the financial system (Laux & Leuz, 2009, p. 829) and ‘amplify swings in the real economy’ (Goncharov & van Triest, 2011, p. 2). At the Greek national level, the HCAAR warns that unrealized income distribution increases a firm’s default risk and its cost of debt. Based on the preceding discussion, we expect firms with superior borrowing capacity to be more prone to distributing persistent fair value income in comparison with firms with inferior borrowing capacity (i.e. companies with increased capital restrictions and greater probability of default). Thus, our third hypothesis is as follows:

**Hypothesis 3:** The positive relationship between dividend payout and persistent income from fair value adjustments is expected to be more pronounced among firms with a greater borrowing capacity.

Finally, we focus on the impact of insider corporate ownership on the distribution of fair value adjustments. While the basic agency problem in Anglo-Saxon environments refers to manager–shareholder conflicts (La Porta, López De Silanes, Shleifer, & Vishny, 2000), in European Civil Law countries, like Greece, it arises from conflicts between large and small shareholders (see Faccio, Lang, & Young, 2001; La Porta et al., 1999). Indeed, in the case of Greece, where corporate ownership is highly concentrated in the hands of corporate insiders and/or their families (Ballas, 1994; Dasilas & Leventis, 2013), a higher dividend payout ratio might be expected for two reasons. First, a strong need to signal an alignment of interests between controlling and minority owners might exist (Anderson & Reeb, 2003; Farinha & Lopez-de-Foronda, 2009). An increased dividend could serve as a powerful signal that the controlling owners do not misallocate corporate profits by expropriating small shareholders’ wealth (Anderson & Reeb, 2003). Indeed, the minimum dividend requirement imposed by Greek regulation (Law 2190/1920) follows this very reasoning. Second, if minority holdings are low, controlling shareholders might face reduced liquidity for their shares and may therefore be tempted to increase dividend payouts (Farinha, 2003). Thus, while we cannot a priori rule out a ‘rent extraction’ rationale (i.e. controlling shareholders reduce dividend payments to expropriate the wealth of minorities by using freed resources for private benefit [Faccio et al., 2001; Gugler & Yurtoglu, 2003; Mancinelli & Ozkan, 2006]), we can expect that firms with high levels of insider ownership will be
more prone to distribute persistent earnings derived from fair value revaluations. Thus, our fourth hypothesis is stated as follows:

**Hypothesis 4:** The positive relationship between dividend payout and persistent income from fair value adjustments is expected to be more pronounced among firms with higher levels of insider ownership.

4. Research Design

4.1. Sample

We investigate the impact of fair value adjustments on dividend decisions for firms listed on the ASE during 2006–2008. We selected this time frame because 2005 is the first year that financial statements had to be produced according to IFRS. We are thus able to make calculations including lagged variables for the examining period starting in 2006, while also collecting data for the fair value adjustments. We collected fair value adjustment data from the annual reports of 243 companies listed on the ASE for the above period, which represents more than 90% of the market capitalization of firms by the end of 2008. The final sample includes 693 firm observations and spans all sectors of the ASE (with a concentration in the construction and materials, food and beverages, and consumer goods industries). It covers a period during which the distribution of fair value adjustments was based entirely on managerial discretion. We chose 2008 as the cutoff point because Greece has been in a deep, multifaceted crisis following the 2009 financial crisis, making corporate earnings (and thus dividend payouts) pertinent to only a small fraction of listed firms. However, in order to examine the persistence of fair value adjustments over a longer estimation window, we employ data for 2006–2012, resulting in 1510 observations. Accounting data for each firm were taken from the Hellastat’s SA database, and they refer to single-entity accounts.

4.2. Benchmark Equation and Dividend Policy

We test the hypotheses by employing an extension of Lintner’s (1956) model in which firms adjust dividend payments by considering their defined payout ratio. We follow Gugler and Yurtoglu (2003) and Correia da Silva et al. (2004) in our model specification. They argue that the change in dividends based on the Lintner (1956) framework can be modeled for regression purposes as follows:

\[
\Delta D_{it} = a_0 + \beta_1 D_{it-1} + \beta_2 E_{it} + e_{it}. \tag{1}
\]

In the above equation, for any firm \(i\) and year \(t\), \(\Delta D\) is the actual change in dividends (\(D\)) from year \(t - 1\) to year \(t\); net distributable earnings are \(E\); \(\alpha\) is a constant term which captures the drift in dividends through time; \(\beta_1\) and \(\beta_2\) are the model coefficients; and \(e\) is the error term.

To examine the persistence of fair value adjustments, we follow Sloan (1996) and Goncharov and van Triest (2011) and test this condition by employing the following earnings persistence regression:

\[
ROA_{BFV_{it+1}} = a_0 + a_1 ROA_{BFV_{it}} + a_2 INVPR_{REV_{it}} + a_3 SEC_{REV_{it}} + \sum DINDUSTRY + \sum DYEAR + e_{it}, \tag{2}
\]

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6 Hellastat SA is a major provider of financial and accounting data of Greek firms. Hellastat SA is a strategic partner of Thomson-Reuters plc for Greek data.
where $ROA_{BFV_{t+1}}$, ($ROA_{BFV}$) is the ROA (earnings before interest and taxes on assets) before fair value adjustments from investment properties and financial securities one year forward (any current year $t$); $INVPR\_REV$ ($SEC\_REV$) is the value of unrealized revaluations of investment properties (financial securities) over assets. All the preceding figures are scaled by average total assets. We additionally control for industry and time. All variables are described in the Appendix. If fair value adjustments predict future income as we hypothesize, they constitute earnings components that are persistent and should therefore be part of distributable earnings (Lintner, 1956). In this case, the adjustment coefficients ($\alpha_2$ and $\alpha_3$) should be statistically significant. If the coefficients are positive, then fair value adjustments convey good news about future profitability; negative coefficients signal a decrease in future earnings. Finally, we also examine whether an asymmetrical effect exists between positive and negative fair value adjustments on future earnings (model 3)

\[
ROA_{BFV_{it+1}} = a_0 + a_1ROA_{BFV_{it}} + a_2INVPR\_REV_{it}^+ + a_3INVPR\_REV_{it}^- + a_4SEC\_REV_{it}^+ + a_5SEC\_REV_{it}^- + \sum D\_INDUSTRY + \sum D\_YEAR + \epsilon_t. \tag{3}
\]

In model 3, $INVPR\_REV^+$ ($INVPR\_REV^-$) and $SEC\_REV^+$ ($SEC\_REV^-$) stand for positive (negative) fair value adjustments of investment property and financial securities over total assets, respectively. We additionally test whether different types of fair value adjustments relate to earnings in future periods, and we run the above model again with $ROA_{BFV_{t+2}}$ as dependent variable.

The model for the multivariate analysis is based on Equation (1) and the model of Correia da Silva et al. (2004). Specifically, in Equation (4) we use $DDIFF$, which is the difference of total dividends between year $t$ and $t-1$ over total assets, and $D_{t-1}$, which is the lagged dividend over total assets. We include the $ROA_{BFV}$ ($ROA$ before fair values) variable as a substitute for the $E$ variable for scaling purposes. $ROA_{BFV}$ is our measure of core earnings. We also include a number of firm-specific control variables. The model is as follows:

\[
DDIFF_{it} = a_0 + a_1INVPR\_REV_{it} + a_2SEC\_REV_{it} + a_3ROA_{BFV_{it}} + a_4D_{it-1} + a_5ROA_{BFV_{it-1}} + a_6SIZE_{it} + a_7DEBT_{it} + a_8CASH_{it} + a_9GROWTH_{it} + \sum D\_INDUSTRY + \sum D\_YEAR \tag{4} + \epsilon_t.
\]

In this model, $INVPR\_REV$ and $SEC\_REV$ are defined as previously; $ROA_{BFV}$ and lagged $ROA_{BFV}$ are proxies for current and past profitability, respectively, and are defined as above; $SIZE$ is the logarithm of the book value of assets and is a proxy for firm size; $DEBT$ is the debt-to-asset ratio and is a proxy for leverage; $CASH$ is the cash-to-asset ratio and is a proxy for free cash flow; and $GROWTH$ is the percentage of sales increase and is a proxy for growth opportunities. The variables $ROA_{BFV_{t-1}}$, $SIZE$, $DEBT$, $CASH$, and $GROWTH$ are our control variables. We additionally include industry and year dummies. Standard errors are clustered by firm.

Following hypotheses 1a and 1b, we expect $\alpha_1$ in model 4 to be significant and $\alpha_2$ to be non-significant. We predict a positive association between dividends and profitability measures (current and past) and a negative relationship for lagged dividend payments, and we form no particular prediction about the coefficient of $SIZE$ because prior results are ambiguous.
For example, while DeAngelo et al. (2004) suggest that larger firms should pay higher dividends, Smith and Watts (1992) argue for a negative association. \textit{DEBT} is expected to have a negative coefficient since high debt decreases managers’ flexibility in using corporate resources. Moreover, debt restricts dividend payments because of debt covenants aimed at securing the returns of debtholders (Farinha, 2003). We expect a positive coefficient for \textit{CASH} since cash-rich firms could pay dividends more easily to decrease free cash flows and potential agency costs. We expect a negative coefficient for \textit{GROWTH} since firms with high growth opportunities are more likely to decrease dividend payments so they can internally finance their expansion.

To examine whether fair value adjustments affect dividend policy symmetrically, we distinguish between positive and negative adjustments. Negative unrealized adjustments might not have negative effects to the same degree as the positive effects from positive fair value adjustments. This asymmetry could arise from the different reactions of managers and shareholders regarding expected returns because these are based on positive or negative news. For this purpose, we estimate model 5:

$$DDIFF_{it} = a_0 + a_1 INVPR_{REV_{it}}^+ + a_2 INVPR_{REV_{it}}^- + a_3 SEC_{REV_{it}}^+ + a_4 SEC_{REV_{it}}^- + a_5 ROA_{BFV_{it}} + a_6 D_{it-1} + Controls + \sum DINDUSTRY + \sum DYEAR + \epsilon_{it}. \quad (5)$$

In model 5, \textit{INVPR_{REV}^{+,-}} (\textit{SEC_{REV}^{+,-}}) are defined as previously. We expect \(a_1\) and \(a_2\) to be statistically significant and \(a_3\) and \(a_4\) to be non-significant. If fair value adjustments are highly persistent, the effect of positive or negative adjustments should be the same and equivalent to the effect of current profitability measure (\textit{ROA_{BFV}}).

To examine hypotheses 2–4, we use different versions of model 4. Specifically, following Landsman, Peasnell, and Shakespeare (2008), we use median split variables to distinguish firms in terms of borrowing capacity and levels of insider ownership. We use conditioning variables to allow the possibility that the relation between dividend changes and fair value adjustments is not symmetric for high and low levels of optimism, borrowing capacity, or insider ownership; this method is similar to Nissim and Ziv (2001). Thus, we interact our income from fair value adjustment variables with the conditioning variables that distinguish over-optimistic firms from less optimistic ones (\textit{DOverOPT} and \textit{DUnderOPT}); firms with higher borrowing capacity from firms with lower borrowing capacity (\textit{DHighCOV} and \textit{DLowCOV}); and firms with high levels of insider ownership from those with lower levels of insider ownership (\textit{DHighINS} and \textit{DLowINS}).

Our models have the following structure:

$$DDIFF_{it} = a_0 + a_1 \left[ \text{Conditioning Variable 1} \right] \times INVPR_{REV_{it}} + a_2 \left[ \text{Conditioning Variable 2} \right] \times INVPR_{REV_{it}} + a_3 SEC_{REV_{it}} + a_4 ROA_{BFV_{it}} + a_5 ROA_{BFV_{it-1}} + a_6 D_{it-1} + a_7 SIZE_{it} + a_8 DEBT_{it} + a_9 CASH_{it} + a_{10} GROWTH_{it} + \sum DINDUSTRY + \sum DYEAR + \epsilon_{it}, \quad (6a)$$
\[ DDIFF_{it} = a_0 + a_1 \left[ \text{Conditioning Variable 1} \right] \times \text{SEC.REV}_{it} + a_2 \left[ \text{Conditioning Variable 2} \right] \times \text{SEC.REV}_{it} + a_3 \text{INVPR.REV}_{it} + a_4 \text{ROA.BFV}_{it} + a_5 \text{ROA.BFV}_{it-1} + a_6 \text{DIV}_{it} + a_7 \text{SIZE}_{it} + a_8 \text{DEBT}_{it} + a_9 \text{CASH}_{it} + a_{10} \text{GROWTH}_{it} + \sum \text{DINDUSTRY} + \sum \text{DYEAR} + e_{it}. \]  

In the above models, conditioning variable 1 can be \( DOverOPT \), \( DHighCOV \), or \( DHighINS \). Whenever \( DOverOPT \) is conditioning variable 1, \( DUnderOPT \) is conditioning variable 2. Similarly, \( DHighCOV \) pairs with \( DLowCOV \) and \( DHighINS \) pairs with \( DLowINS \). We operationalize managerial optimism based on the concept that managers invest more than their peers (see Schrand & Zechman, 2012). Thus, \( DOverOPT \) (\( DUnderOPT \)) takes the value 1 (0) if the residual from a regression of total asset growth on sales growth is higher (lower) than the median residual of industry peers and 0 otherwise (see Schrand & Zechman, 2012). We assume, based on prior literature (Schrand & Zechman, 2012), that high investment behavior indicates managerial optimism (Campbell, Galleyer, Johnson, Rutherford, & Stanley, 2011; Malmendier & Tate, 2005). \( DHighCOV \) (\( DLowCOV \)) distinguishes firms with high (low) coverage of financial expenses ratio from firms with a low (high) ratio. Specifically, \( DHighCOV \) (\( DLowCOV \)) takes the value 1 if a firm’s coverage ratio is above (below) the median coverage ratio of firms in the sample and 0 otherwise. We operationalize borrowing capacity by employing the financial expenses coverage ratio (operating profit over financial expenses; see Whited, 1992) for two reasons. First, Dichev and Skinner (2002) suggest that the leverage variable is a relatively noisy proxy for closeness to debt covenants. Second, prior literature concludes that debt covenants most commonly relate to coverage of financial expenses (Christensen, Lee, & Walker, 2009; Citron, 1992; Day & Taylor, 1996; Moir & Sudarsanam, 2007). \( DHighINS \) (\( DLowINS \)) distinguishes firms with high (low) levels of insider corporate ownership from those with low (high) levels. Specifically, \( DHighINS \) (\( DLowINS \)) takes the value 1 if the percentage of share capital controlled by corporate insiders is above (below) the median of sample, and 0 otherwise. According to hypotheses 2–4, the coefficients of interactions \( DUnderOPT \), \( DHighCOV \), and \( DHighINS \) with persistent fair value adjustments should be higher than \( DOverOPT \), \( DLowCOV \), and \( DLowINS \) interactions with persistent fair value adjustments, respectively.

4.3. Selection Bias Issues

Sample selection bias is quite common in research on accounting choice (Lennox, Francis, & Wang, 2012). Since the use of FVA is a voluntary accounting choice, we employ a propensity score-matching method (PSM)\(^7\) to correct the estimation of the treatment effect (i.e. choice to make fair value adjustments) for omitted variable bias (Goncharov & van Triest, 2011). Specifically, we construct a matched sample of firms that are as similar as possible in terms of firm characteristics. We follow prior studies (Goncharov & van Triest, 2011; Leuz, 2003) which suggest that financial performance, leverage, size, growth, and cash levels all influence the accounting choices of fair value adjustments. We use probit models to analyze the sample firms’ decisions to revalue investment property and financial securities. In these

\(^7\)We choose to use propensity score matching since the two-stage selection procedure has been argued to produce inferior results (Lennox et al., 2012).
models, we additionally include industry and year dummies to control for industry and time effects. The models are as follows:

\[
(DFVINV_{it}, DFVSEC_{it}) = a_0 + a_1(ROA_{BINV_{it-1}}, ROA_{BSEC_{it-1}}) + a_2DEBT_{it}
+ a_3SIZE_{it} + a_4GROWTH_{it} + a_5CASH_{it} + \sum DINDUSTRY
+ \sum DYEAR + e_{it}.
\]  

where \(DFVINV\) is an indicator variable which takes the value 1 when a firm makes a fair value adjustment on investment property in year \(t\), and 0 otherwise; and \(DFVSEC\) is an indicator variable which takes the value 1 when a firm makes a fair value adjustment on financial securities in year \(t\), and 0 otherwise. Our independent variables are lagged profitability (defined as lagged return on assets before fair value adjustments), leverage, size, growth, and cash or cash equivalents. All independent variables are defined as previously. We estimate probit regressions on a sample of 693 observations. Results are presented in Table 1.

According to the results in Table 1, the decision to revalue investment properties (\(DFVINV\)) is more likely for larger firms, while a revaluation is less likely for firms with high growth opportunities. In addition, leverage and size seem to positively affect the possibility of a revaluation of financial securities (\(DFVSEC\)), but growth and cash balance appear to have no significant effect. To assess whether self-selection affects our inferences, we use a matched sample of firms with

\[\text{Table 1. Likelihood of fair value revaluation}\]

| Dependent variables | A \(DFVINV\) | B \(DFVSEC\) |
|---------------------|--------------|--------------|
| Explanatory variables | Cf. | Cf. |
| \(ROA_{BINV_{t-1}}\) | \(-1.404^*\) | \(-0.515\) |
| \(ROA_{BSEC_{t-1}}\) | \((0.803)\) | \((0.818)\) |
| \(DEBT\) | \(-0.506\) | \(0.581^*\) |
| \(SIZE\) | \((0.398)\) | \((0.347)\) |
| \(GROWTH\) | \(0.604^{***}\) | \(0.190^*\) |
| \(CASH\) | \(0.097^{***}\) | \(0.046\) |
| \(Intercept\) | \(0.026\) | \(0.036\) |
| \(CASH\) | \(0.827\) | \(-0.284\) |
| \(CASH\) | \(0.970\) | \((0.875)\) |
| Industry/year dummies | Yes | Yes |
| Pseudo-\(R^2\) | 0.172 | 0.062 |
| \(N\) | 693 | 693 |

Notes: This table reports the results of the probit regressions using DFINV and DFVSEC as dependent variables respectively for firm-year observations from fiscal years 2006–2008. The panel data models that are estimated are as follows: A: \(DFVINV = f(x)\), where \(x\) is the group of variables related to each specification; B: \(DFVSEC = f(x)\), where \(x\) is the group of variables related to each specification. Robust standard errors clustered by firm are displayed in parentheses. All numbers are rounded up to third decimal place.

Variable definitions are shown in the Appendix.

\(^{*}\) indicate significance at the 10% level.
\(^{*}\) indicate significance at the 5% level.
\(^{*}\) indicate significance at the 1% level.
similar economic characteristics that differ in choosing to make fair value adjustments. One type of firm makes no adjustments, while the other type chooses to make fair value adjustments on investment property and/or financial securities. Using propensity score matching, we match each adjustment observation with at least one observation where revaluation has not taken place with common support (i.e., we match firms that cannot be distinguished from revaluers by their characteristics). In order to match observations, we use the fitted values of $DFVINV$ and $DFVSEC$ derived from a reduced version of model 7 in which we use only statistically significant variables. The result of this procedure is a sample of 306 (250) observations, where 141 (125) firms revalue their investment property (financial securities). Using these new samples we perform the tests for models 4–6.

5. Empirical Findings

5.1. Descriptive Statistics

Table 2 summarizes the financial characteristics of our initial sample (Panel A) and the two samples created after the propensity score matching based on firms’ decision to use fair values to revalue investment properties (Panel B) and financial securities (Panel C). The mean and the median return on assets before any fair value adjustments ($ROA_{BFV}$) and leverage ratio ($DEBT$) are similar in all three samples, suggesting that the distribution of observations is symmetric. Regarding $GROWTH$, large differences exist between the mean (0.273, 0.231, 0.277) and median (0.075, 0.064, 0.075) in all three samples, respectively, suggesting that some firms have very high growth opportunities which affect the mean figure upwards.

Table 3 presents the correlations between variables. The sign of the correlation between dividends changes, and the control variables generally follow our initial predictions. Other inferences suggest that multicollinearity is not a serious problem.

5.2. Multivariate Analysis

5.2.1. Persistence of Income from Fair Value Adjustments

In this section, we examine the persistence of fair value adjustments (model 2). We regress future net income (one and two years ahead) before fair value adjustments on current net income before revaluations and current revaluation income from investment property and financial securities revaluations, while we also control for year and industry effects. We further assess whether the effect on future earnings is asymmetrical between positive and negative fair value adjustments (model 3). Results are reported in Table 4.

Table 4, Panel A, shows that IFRS fair value adjustments of investment properties are persistent in future periods, while those of financial securities are not. In Table 4, Panel B, both positive and negative adjustments on investment property are persistent; however, financial securities do not have predictive ability for future earnings (both $t + 1$ and $t + 2$), which is similar to Goncharov and van Triest (2011). The persistence of investment property adjustments decreases but remains significant in the following two periods. Thus, IFRS adoption allows including some

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8In the Online Supplemental Material, we demonstrate that $T$-tests, Wilcoxon two-sample rank-sum tests, and bias analyses (standardized differences) show that revaluers cannot be distinguished from a control sample in terms of size, growth, leverage, lagged profitability, cash balance, and lagged dividends.

9We perform our main analysis after winsorization with qualitatively similar results. Specifically, we treat outliers of our variables by setting the smallest percentile (1) equal to the smallest value of the 2nd percentile and the largest percentile (100) equal to the largest value of the 99th percentile.
Table 2. Descriptive characteristics

Panel A: Descriptive characteristics of the initial sample prior to PSM

| Variables   | Mean   | Median  | St. dev | Minimum | p25       | p75       | Maximum |
|-------------|--------|---------|---------|---------|-----------|-----------|---------|
| DDIFF       | 0.001  | 0.000   | 0.019   | −0.217  | −0.003    | 0.001     | 0.194   |
| ROA         | 0.060  | 0.057   | 0.103   | −0.940  | 0.015     | 0.093     | 0.854   |
| D_{t−1}     | 0.015  | 0.005   | 0.034   | 0.000   | 0.000     | 0.020     | 0.540   |
| SIZE        | 8.090  | 7.990   | 0.725   | 6.501   | 7.601     | 8.450     | 10.970  |
| DEBT        | 0.530  | 0.540   | 0.230   | 0.010   | 0.380     | 0.670     | 0.930   |
| CASH        | 0.049  | 0.022   | 0.090   | 0.000   | 0.008     | 0.052     | 0.736   |
| GROWTH      | 0.273  | 0.075   | 1.890   | −0.986  | −0.030    | 0.203     | 4.148   |
| INVRPR_REV  | 0.001  | 0.000   | 0.023   | −0.239  | 0.000     | 0.000     | 0.268   |
| SEC_REV     | −0.001 | 0.000   | 0.011   | −0.133  | 0.000     | 0.000     | 0.187   |

Panel B: Descriptive characteristics subsequent to PSM based on the decision to revalue investment properties

| Variables   | Mean   | Median  | St. dev | Minimum | p25       | p75       | Maximum |
|-------------|--------|---------|---------|---------|-----------|-----------|---------|
| DDIFF       | −0.001 | 0.000   | 0.022   | −0.217  | −0.004    | 0.001     | 0.194   |
| D_{t−1}     | 0.014  | 0.005   | 0.023   | 0.000   | 0.000     | 0.021     | 0.217   |
| SIZE        | 8.142  | 8.126   | 0.538   | 6.501   | 7.726     | 8.491     | 10.144  |
| DEBT        | 0.471  | 0.494   | 0.208   | 0.010   | 0.330     | 0.620     | 0.930   |
| CASH        | 0.051  | 0.018   | 0.092   | 0.000   | 0.006     | 0.052     | 0.736   |
| GROWTH      | 0.231  | 0.064   | 1.462   | −0.986  | −0.099    | 0.064     | 4.148   |
| ROA_BFV     | 0.048  | 0.043   | 0.081   | −0.271  | 0.010     | 0.077     | 0.466   |
| INVRPR_REV  | 0.004  | 0.000   | 0.033   | −0.239  | 0.000     | 0.000     | 0.268   |
| SEC_REV     | −0.001 | 0.000   | 0.012   | −0.133  | 0.000     | 0.000     | 0.074   |

Panel C: Descriptive characteristics subsequent to PSM based on the decision to revalue financial securities

| Variables   | Mean   | Median  | St. dev | Minimum | p25       | p75       | Maximum |
|-------------|--------|---------|---------|---------|-----------|-----------|---------|
| DDIFF       | −0.001 | 0.000   | 0.022   | −0.217  | −0.003    | 0.001     | 0.194   |
| D_{t−1}     | 0.012  | 0.002   | 0.022   | 0.000   | 0.000     | 0.015     | 0.217   |
| SIZE        | 8.024  | 7.979   | 0.570   | 6.687   | 7.608     | 8.435     | 10.112  |
| DEBT        | 0.556  | 0.579   | 0.225   | 0.018   | 0.423     | 0.678     | 0.930   |
| CASH        | 0.047  | 0.020   | 0.083   | 0.001   | 0.008     | 0.050     | 0.682   |
| GROWTH      | 0.277  | 0.075   | 1.478   | −0.976  | −0.047    | 0.235     | 4.148   |
| ROA_BFV     | 0.041  | 0.044   | 0.100   | −0.940  | 0.013     | 0.083     | 0.269   |
| INVRPR_REV  | 0.001  | 0.000   | 0.019   | −0.147  | 0.000     | 0.000     | 0.180   |
| SEC_REV     | −0.002 | 0.000   | 0.018   | −0.133  | 0.000     | 0.000     | 0.187   |

Notes: The table provides summary statistics for the main variables for firm-year observations from fiscal years 2006–2008. Panel A reports summary statistics for the main variables for the initial sample (n = 693) prior to propensity score matching. Panel B reports summary statistics for the main variables for the sample (n = 306) subsequent to propensity score matching based on the decision to revalue investment properties. Panel C reports summary statistics for the main variables for the sample (n = 250) subsequent to propensity score matching based on the decision to revalue financial securities. All numbers are rounded up to third decimal place. Variable definitions are shown in the Appendix.
## Table 3. Correlations

### Panel A: Initial sample prior to PSM

| Variables | DDIFF | D t | SIZE | DEBT | CASH | GROWTH | ROA_BFV | INVPR_REV | SEC_REV |
|-----------|-------|-----|------|------|------|--------|---------|-----------|---------|
| DDIFF     | 1     | -0.313*** | -0.050 | -0.093** | 0.042 | 0.126*** | 0.121*** | -0.008 | 0.074*  |
| ROA       | 0.213*** | 1   | 0.048*** | -0.036 | -0.039 | 0.243*** | 0.319*** | 0.946*** | 0.015 | 0.045 |
| D t-1     | -0.067** | 0.536*** | 1    | 0.241*** | -0.261*** | 0.223*** | 0.067* | 0.402*** | 0.002 | -0.018 |
| SIZE      | 0.002  | 0.048 | 0.156*** | 1    | 0.106*** | 0.121*** | 0.067* | -0.047 | 0.063 | 0.006 |
| DEBT      | -0.053 | -0.209*** | -0.131*** | 0.173*** | 1     | -0.039 | 0.068* | 0.052 | 0.001 | -0.001 |
| CASH      | 0.113*** | 0.226*** | 0.294*** | 0.017 | -0.208*** | 1    | 0.126*** | 0.226*** | 0.062 | -0.036 |
| GROWTH    | 0.079** | 0.039 | 0.005 | 0.066* | -0.050 | 0.041 | 1    | 0.285*** | 0.044 | 0.052 |
| ROA_BFV   | 0.213*** | 0.969*** | 0.528*** | 0.040 | -0.208*** | 0.224*** | 0.025 | 1    | -0.101** | 0.007 |
| INVPR_REV | -0.017 | 0.021 | -0.015 | 0.017 | -0.007 | -0.020 | 0.056 | -0.188*** | 1 | -0.046 |
| SEC_REV   | 0.007  | 0.026 | 0.008 | 0.019 | 0.005 | 0.001 | 0.002 | -0.065* | -0.078** | 1 |

### Panel B: Sample after PSM based on the decision to revalue investment properties

| Variables | DDIFF | D t-1 | SIZE | DEBT | CASH | GROWTH | ROA_BFV | INVPR_REV | SEC_REV |
|-----------|-------|-------|------|------|------|--------|---------|-----------|---------|
| DDIFF     | 1     | -0.323*** | -0.108* | -0.129** | 0.012 | 0.141** | 0.159** | -0.023 | 0.063 |
| D t-1     | -0.492*** | 1   | 0.357*** | -0.243*** | 0.257*** | 0.001 | 0.346*** | 0.026 | 0.027 |
| SIZE      | -0.061 | 0.275*** | 1    | 0.026 | 0.172*** | 0.069 | 0.064 | 0.072 | 0.019 |
| DEBT      | -0.089 | -0.179*** | -0.091 | 1    | -0.073 | 0.092 | 0.057 | -0.059 | -0.071 |
| CASH      | 0.014  | -0.172*** | -0.007 | -0.293*** | 1     | 0.058 | 0.169*** | 0.080 | -0.057 |
| GROWTH    | 0.059  | -0.020 | 0.069 | -0.078 | 0.027 | 1    | 0.238*** | 0.053 | 0.002 |
| ROA_BFV   | 0.128** | 0.299*** | 0.080 | -0.038 | 0.115** | 0.034 | 1    | -0.178*** | -0.001 |
| INVPR_REV | -0.019 | -0.026 | 0.022 | 0.022 | -0.030 | 0.113** | -0.351*** | 1 | -0.093 |
| SEC_REV   | 0.014  | 0.025 | -0.023 | -0.023 | 0.009 | -0.013 | -0.065 | -0.101* | 1 |
Table 3. Continued

Panel C: Sample after the PSM based on the decision to revalue financial securities

| Variables     | $DDIFF$ | $D_{t-1}$ | SIZE | DEBT  | CASH  | GROWTH | ROA_BFV | INVPR_REV | SEC_REV |
|---------------|---------|-----------|------|-------|-------|--------|---------|-----------|---------|
| $DDIFF$       | 1       |           |      |       |       |        |         |           |         |
| $D_{t-1}$     | -0.523*** | 1        | 0.317*** | -0.234*** | 0.074 | 0.062 | 0.306*** | 0.008 | -0.028 |
| SIZE          | -0.044  | 0.227***  | 1    | -0.051 | 0.054 | 0.107* | 0.063   | 0.093   | -0.005 |
| DEBT          | -0.058  | -0.121*   | -0.125** | 1     | -0.042 | 0.070   | -0.046 | -0.007   | 0.026   |
| CASH          | 0.056   | 0.206***  | -0.010 | -0.195*** | 1     | 0.093 | 0.230*** | 0.053   | -0.100 |
| GROWTH        | 0.054   | -0.050    | 0.125** | -0.045 | 0.016 | 1      | 0.298*** | 0.008   | 0.062   |
| ROA_BFV       | 0.043   | 0.284***  | 0.127** | -0.386*** | 0.176*** | -0.001 | 1      | -0.128** | -0.043 |
| INVPR_REV     | -0.019  | -0.028    | -0.003 | 0.028  | -0.144** | -0.005 | -0.172*** | 1     | -0.115* |
| SEC_REV       | 0.008   | 0.009     | 0.033 | 0.017  | -0.002 | 0.014 | -0.028** | -0.149** | 1      |

Notes: The table provides correlations for the main variables for firm-year observations from fiscal years 2006-2008. Panel A reports correlations for the main variables for the initial sample ($n = 693$) prior to propensity score matching. Panel B reports correlations for the main variables for the sample ($n = 306$) subsequent to propensity score matching based on the decision to revalue investment properties. Panel C reports correlations for the main variables for the sample ($n = 250$) subsequent to propensity score matching based on the decision to revalue financial securities. Top right shows Spearman and bottom left Pearson correlations. Variable definitions are shown in the Appendix. All numbers are rounded up to third decimal place.

*** indicate significance at the 1% level.
** indicate significance at the 5% level.
* indicate significance at the 10% level.
new income components that do not change the persistence of net income as well as others that do. Our empirical findings support the theoretical predictions of Hitz (2007), although they generally go against the opponents of FVA (Poon, 2004; Wallison, 2008); they also support prior studies on the relevance of FVA. Therefore, since fair value adjustments of investment properties are persistent, according to Lintner’s (1956) model, distribution consequences are expected.

Table 4. Earnings persistence

Panel A: Fair value adjustments and future earnings

| Dependent variable | ROA_BFV_{t+1} | ROA_BFV_{t+2} |
|-------------------|---------------|---------------|
| Explanatory variables |           |               |
| ROA_BFV          | 0.679***     | 0.529***      |
|                  | (0.075)      | (0.126)       |
| INVPR_REV        | 0.598***     | 0.332**       |
|                  | (0.207)      | (0.158)       |
| SEC_REV          | -0.069       | -0.038        |
|                  | (0.074)      | (0.305)       |
| Intercept        | 0.018**      | 0.026***      |
|                  | (0.007)      | (0.008)       |
| Industry/Year dummies | Yes    | Yes            |
| R^2              | 0.3728       | 0.2445       |
| N                | 1510         | 1252          |
| Prob > χ^2       | 0.000        | 0.000         |

Panel B: Positive and negative fair value adjustments and future earnings

| Dependent variable | ROA_BFV_{t+1} | ROA_BFV_{t+2} |
|-------------------|---------------|---------------|
| Explanatory variables |           |               |
| ROA_BFV           | 0.679***     | 0.529***      |
|                   | (0.075)      | (0.126)       |
| INVPR_REV^+       | 0.558***     | 0.284**       |
|                   | (0.196)      | (0.132)       |
| INVPR_REV^-       | 0.750***     | 0.508*        |
|                   | (0.265)      | (0.293)       |
| SEC_REV^+         | -0.028       | -0.147        |
|                   | (0.244)      | (0.281)       |
| SEC_REV^-         | -0.069       | -0.022        |
|                   | (0.075)      | (0.324)       |
| Intercept         | 0.018**      | 0.026***      |
|                   | (0.008)      | (0.009)       |
| Industry/year dummies | Yes    | Yes            |
| R^2               | 0.373        | 0.245         |
| N                 | 1510         | 1252          |
| Prob > χ^2        | 0.000        | 0.000         |

Notes: This table examines earnings persistence and reports the results of the relevant OLS regressions. In the first column, the sample consists of 1510 firm-year observations from fiscal years 2006–2012, where the dependent variable is return on assets before fair value adjustments of year t + 1 (ROA_BFV_{t+1}). In the second column, the sample consists of 1252 firm-year observations from fiscal years 2006–2012, where the dependent variable is return on assets before fair value adjustments of year t + 2 (ROA_BFV_{t+2}). The panel data models estimated are as follows: ROA_BFV_{t+n} = f(x), where x is the group of variables related to each specification and n signifies the years ahead of current year t. Robust standard errors clustered by firm are displayed in parentheses. All numbers are rounded up to third decimal place. Variable definitions are shown in the Appendix.

*** indicate significance at the 1% level.
** indicate significance at the 5% level.
* indicate significance at the 10% level.
However, if Greek firms follow the HCAAR recommendations they might not distribute income derived from unrealized profits, even though our results suggest that investment property adjustments are persistent, similar to other (realized) income. We explore this theme further in the following sections.

5.2.2. The Effect of Fair Value Adjustments On Dividend Policy

We initially assess whether the revaluation component of net income impacts dividend payout. Based on our propensity matched samples, the results of models 4 and 5 are reported in Table 5.

As shown in Table 5, investment property fair value adjustments affect dividend policy. More specifically, in specification A, the coefficient of $INVPR_{REV}$ is positive (0.058) and significant at the 1% level, while in specification B, financial security revaluation has no effect on dividend changes. Thus, the findings support hypotheses 1a and 1b since investment property revaluations impact dividend payouts and financial securities do not. The coefficient of interaction $INV_{REV}^+$ is positive (0.052) and significant at the 5% level (specification C), suggesting that only the positive fair value adjustments of investments affect the dividend payout, despite both positive and negative revaluations being persistent (see Table 4). If negative adjustments do not have material impacts on future cash flows, managers might not wish to significantly change their dividend policy. Additionally, the minimum dividend requirement can prevent any significant decrease of dividend distribution. No evidence exists for positive or negative financial security fair value adjustments affecting dividend changes differently, since the coefficients of $SEC_{REV}^+$ and $SEC_{REV}^-$ are not statistically significant (specification D). Based on our results, unrealized gains and losses on financial securities do not appear to affect dividend policies. Overall, we demonstrate that managers perceive the predictability of fair value adjustments correctly and that they distribute profits based on theoretical anticipations, ignoring the recommendations made by the HCAAR.

The results of models 6a and 6b are reported in Table 6.

When the effect of managerial optimism on the relationship between income from investment property revaluations and dividend policy is considered (specification A), the coefficient of interaction $DOverOPT^{*}INVPR_{REV}$ is not significant; however, the coefficient of interaction $DUnderOPT^{*}INVPR_{REV}$ is positive (0.065) and significant at the 5% level. This finding suggests that less optimistic managers increase dividends based on income derived from investment properties. In specifications B and C, the coefficient signs for $DHighCOV^{*}INVPR_{REV}$ and $DHighINS^{*}INVPR_{REV}$ interactions are both positive (0.066 and 0.075, respectively) and statistically significant (at 1% for both). In contrast, the coefficients for $DLowCOV^{*}INVPR_{REV}$ and $DLowINS^{*}INVPR_{REV}$ are not statistically significant. Therefore, the distribution of unrealized income from investment properties is more pronounced for firms with high borrowing capacity and high insider concentration ($DHighCOV$ and $DHighINS$, respectively). Our findings support accepting hypotheses 2, 3 and 4 for investment property revaluations. These results compel us to argue that when considering the average level of investment property revaluation income, the effect of having a less optimistic manager, a higher borrowing capacity and higher levels of insider ownership imply 0.065, 0.066 and 0.075 times higher dividend differences ($DDIFF$). These differences translate to increases of 26%, 26.4%, and 30% in the absolute value of a firm’s average $DDIFF$, and they appear to be economically significant. Therefore,

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10This is estimated by initially multiplying the coefficients (0.065, 0.066 and 0.075) with the average level of investment property revaluation income (0.004, Table 2, Panel B) in order to exert the effect of having a less optimistic manager, a higher borrowing capacity and higher levels of insider ownership on $DDIFF$; we then compare this result with the absolute value of a firm’s average $DDIFF$ (-0.001, Table 2, Panel B).
### Table 5. Dividend policy analysis and fair value adjustments

| Samples after PSM control on: | Investment property | Financial securities | Investment property | Financial securities |
|-------------------------------|---------------------|----------------------|---------------------|----------------------|
| Explanatory variables         |                     |                      |                     |                      |
| $INVPR\_REV$                  | Cf.                 | 0.058***             | 0.021               |
|                               | (0.021)             | (0.041)              |                     |
| $SEC\_REV$                    | 0.045*              | -0.042               | 0.044*              |
|                               | (0.026)             | (0.029)              | (0.026)             |
| $INVPR\_REV^+$                |                     | 0.052**              |                     |
|                               | (0.026)             | (0.053)              |                     |
| $INVPR\_REV^-$                |                     | 0.073                | -0.054              |
|                               | (0.053)             | (0.040)              | (0.049)             |
| $ROA\_BFV$                    | 0.074***            | 0.015                | 0.074***            | 0.016                |
|                               | (0.015)             | (0.014)              | (0.016)             | (0.014)              |
| $ROA\_BFV_{t-1}$              | 0.034**             | 0.066**              | 0.034**             | 0.066**              |
|                               | (0.013)             | (0.029)              | (0.014)             | (0.028)              |
| $D_{t-1}$                     | -0.641***           | -0.647***            | -0.642***           | -0.647***            |
|                               | (0.142)             | (0.169)              | (0.143)             | (0.169)              |
| $SIZE$                        | 0.005*              | 0.005                | 0.005               |
|                               | (0.002)             | (0.003)              | (0.002)             |
| $DEBT$                        | -0.015***           | -0.003               | -0.015***           | -0.003               |
|                               | (0.005)             | (0.006)              | (0.005)             |
| $CASH$                        | 0.011               | 0.038**              | 0.011               | 0.038**              |
|                               | (0.008)             | (0.017)              | (0.009)             | (0.017)              |
| $GROWTH$                      | 0.001               | -0.001               | 0.001               | -0.001               |
|                               | (0.001)             | (0.001)              | (0.001)             |
| $Intercept$                   | -0.039*             | -0.041*              | -0.039*             | -0.041*              |
|                               | (0.021)             | (0.023)              | (0.021)             | (0.023)              |
| Industry/year dummies         | Yes                 | Yes                  | Yes                 | Yes                  |
| $R^2$                         | 0.410               | 0.407                | 0.410               | 0.407                |
| $N$                           | 306                 | 250                  | 306                 | 250                  |
| Prob.$>\chi^2$                | 0.000               | 0.000                | 0.000               | 0.000                |

Notes: This table reports the results of the OLS regressions using scaled dividend changes ($DDIFF$) as the dependent variable for firm-year observations from fiscal years 2006–2008. The sample in the first and third column consists of 306 firm-year observations after the propensity score matching where each revaluation observation on investment property is matched to at least one non-revaluation observation. The sample in the second and fourth column consists of 250 firm-year observations after the propensity score matching where each revaluation observation on financial securities is matched to at least one non-revaluation observation. The panel data models that are estimated are as follows: For specifications $A$–$D$: $DDIFF = f(x)$, where $x$ is the group of variables related to each specification. Robust standard errors clustered by firm are displayed in parentheses. All numbers are rounded up to third decimal place.

Variable definitions are shown in the Appendix.

** indicates significance at the 1% level.

*** indicate significance at the 5% level.

* indicate significance at the 10% level.
Table 6. Dividend policy analysis and firm characteristics

| Dependent variable: DDIFF | A | B | C | D | E | F |
|---------------------------|---|---|---|---|---|---|
| Samples after PSM control on: |   |   |   |   |   |   |
| Explanatory variables     |   |   |   |   |   |   |
| Investment property FV adjustments |   |   |   |   |   |   |
| Cf.                        |   |   |   |   |   |   |
| DoverOPT*INVPR_REV         | 0.047 |   |   |   |   |   |
| (0.035)                    |   |   |   |   |   |   |
| DUnderOPT*INVPR_REV        | 0.065** |   |   |   |   |   |
| (0.032)                    |   |   |   |   |   |   |
| DHighCOV*INVPR_REV         |  | 0.066*** |   |   |   |   |
| (0.025)                    |   |   |   |   |   |   |
| DLowCOV*INVPR_REV          |  | 0.012 |   |   |   |   |
| (0.042)                    |   |   |   |   |   |   |
| DHighINS*INVPR_REV         |  | 0.075*** |   |   |   |   |
| (0.029)                    |   |   |   |   |   |   |
| DLowINS*INVPR_REV          |  | 0.025 |   |   |   |   |
| (0.028)                    |   |   |   |   |   |   |
| DOverOPT*SEC_REV           |  |   |   |   |   |   |
| (0.049)                    |   |   |   |   |   |   |
| DUnderOPT*SEC_REV          |  |   |   |   |   |   |
| (0.055)                    |   |   |   |   |   |   |
| DHighCOV*SEC_REV           |  |   |   |   |   |   |
| (0.062)                    |   |   |   |   |   |   |
| DLowCOV*SEC_REV            |  |   |   |   |   |   |
| (0.049)                    |   |   |   |   |   |   |
| DHighINS*SEC_REV           |  |   |   |   |   |   |
| (0.041)                    |   |   |   |   |   |   |
| DLowINS*SEC_REV            |  |   |   |   |   |   |
| (0.035)                    |   |   |   |   |   |   |
| SEC_REV                    | 0.048* | 0.046* | 0.046* |   |   |   |
| (0.026)                    | (0.026) | (0.026) |   |   |   |   |
| INVPR_REV                  |  |   |   |   |   |   |
| (0.042)                    |   |   |   |   |   |   |
| ROA_BFV                    | 0.074*** | 0.073*** | 0.072*** |   |   |   |
| (0.015)                    | (0.014) | (0.015) |   |   |   |   |

Financial securities FV adjustments

| Cf.                        |   |   |   |   |   |   |
| DoverOPT*INVPR_REV         | 0.028 |   |   |   |   |   |
| (0.049)                    |   |   |   |   |   |   |
| DUnderOPT*INVPR_REV        | 0.055 |   |   |   |   |   |
| (0.062)                    |   |   |   |   |   |   |
| DHighCOV*INVPR_REV         | 0.011 |   |   |   |   |   |
| (0.037)                    |   |   |   |   |   |   |
| DLowCOV*INVPR_REV          | 0.074 |   |   |   |   |   |
| (0.049)                    |   |   |   |   |   |   |
| DHighINS*INVPR_REV         | 0.009 |   |   |   |   |   |
| (0.041)                    |   |   |   |   |   |   |
| DLowINS*INVPR_REV          | 0.059* |   |   |   |   |   |
| (0.035)                    |   |   |   |   |   |   |
| SEC_REV                    |   |   |   |   |   |   |
| (0.042)                    |   |   |   |   |   |   |
| INVPR_REV                  |   |   |   |   |   |   |
| (0.040)                    |   |   |   |   |   |   |
| ROA_BFV                    | 0.015 | 0.015 | 0.015 |   |   |   |
| (0.014)                    | (0.014) | (0.014) |   |   |   |   |
### Table 1: Impact of Unrealized Fair Value Adjustments on Dividend Policy

| Variable          | Coefficient | Standard Error | Coefficient | Standard Error | Coefficient | Standard Error |
|-------------------|-------------|----------------|-------------|----------------|-------------|----------------|
| ROA_{BFV}_{t-1}   | 0.034**     | (0.014)        | 0.035***    | (0.014)        | 0.036**     | (0.036)        |
| D_{t-1}           | -0.640***   | (0.144)        | -0.643***   | (0.143)        | -0.642***   | (0.143)        |
| SIZE              | 0.005**     | (0.002)        | 0.005**     | (0.003)        | 0.005**     | (0.002)        |
| DEBT              | -0.015***   | (0.008)        | -0.016***   | (0.008)        | -0.015***   | (0.008)        |
| CASH              | 0.001       | (0.001)        | 0.001       | (0.001)        | 0.001       | (0.001)        |
| GROWTH            | -0.039*     | (0.020)        | -0.041*     | (0.021)        | -0.040*     | (0.021)        |
| Intercept         | Yes         |                | Yes         |                | Yes         |                |
| Industry/year dummies | Yes       |                | Yes         |                | Yes         |                |
| R²                | 0.410       |                | 0.411       |                | 0.411       |                |
| N                 | 306         |                | 306         |                | 306         |                |
| Prob > χ²         | 0.000       |                | 0.000       |                | 0.000       |                |

Notes: This table reports the results of the OLS regressions using scaled dividend changes (DDIFF) as the dependent variable for firm-year observations from fiscal years 2006 to 2008. The sample in the first three columns consists of 306 firm-year observations after the propensity score matching where each revaluation observation on investment property is matched to at least one non-revaluation observation. The sample in the last three columns consists of 250 firm-year observations after the propensity score matching where each revaluation observation on financial securities is matched to at least one non-revaluation observation. The panel data models that are estimated are as follows: For specifications A–F: DDIFF = \( f(x) \), where \( x \) is the group of variables related to each specification. Robust standard errors clustered by firm are displayed in parentheses. All numbers are rounded up to third decimal place.

Variable definitions are shown in the Appendix.

*** indicate significance at the 1% level.

** indicate significance at the 5% level.

* indicate significance at the 10% level.
we argue that insider ownership exerts the strongest effect on the association between dividend changes and unrealized revaluations of investment property.

Further, specifications D–F show the results for variables related to financial security adjustments. The coefficients of the interactions of SEC_REV with DOverOPT, DUnderOPT and with DHighCOV, DLowCOV in specifications D and E are not statistically significant. However, in specification F the coefficient of interaction DLowINS*SEC_REV is negative (−0.059) and significant at 10%. Thus, the distribution of unrealized income from financial securities is less pronounced for firms with low insider concentration. However, because of the transitory nature of fair value adjustments of financial securities, no distributional consequences are expected based on hypothesis 1a.

Furthermore, following Gelman and Stern (2006), we use the Wald test to formally assess whether the coefficients of the interactions of fair value adjustments with the conditioning variables in models 6a and 6b are statistically different. According to Table 7, differences between the coefficients of DHighCOV*INVPR_REV and DHighINS*INVPR_REV with DLowCOV*INVPR_REV and DLowINS*INVPR_REV, respectively, are positive and significant at the 5% level (p-values are .026 and .012, respectively), providing evidence which supports our previous inferences related to hypotheses 3 and 4. Regarding managerial optimism, we observe that the p-value of the difference in the coefficients of the interactions DOverOPT*SEC_REV and DUnderOPT*SEC_REV is 0.563, suggesting that these coefficients are not different. However, as we demonstrate in the Online Supplemental Material, significant differences do occur when we employ alternative measures of optimism. Regarding financial securities, we do not detect significant differences between the coefficients of the interactions of variable SEC_REV with our conditioning variables. This is to be expected because of the transitory nature of this particular income component. Overall, these tests support our previous analysis and the evidence reported.

Table 7. Wald test results for coefficients of the interactions of conditioning variables with fair value adjustments

| Explanatory variables | Cf. | Wald test p-value for coefficients difference | Model/regression results: table and specification |
|-----------------------|-----|---------------------------------------------|-------------------------------------------------|
| DOverOPT*INVPR_REV    | 0.047 | 0.563 | Table 6, spec. A |
| DUnderOPT*INVPR_REV   | 0.065*** | 0.026** | Table 6, spec. B |
| DHighCOV*INVPR_REV    | 0.066*** | 0.011 | Table 6, spec. C |
| DLowCOV*INVPR_REV     | 0.012 | 0.026 | Table 6, spec. D |
| DHighINS*INVPR_REV    | 0.075*** | 0.012** | Table 6, spec. E |
| DLowINS*INVPR_REV     | 0.025 | 0.074 | Table 6, spec. F |
| DOverOPT*SEC_REV      | −0.028 | 0.765 | Table 6, spec. A |
| DUnderOPT*SEC_REV     | −0.055 | 0.329 | Table 6, spec. B |
| DHighCOV*SEC_REV      | −0.011 | 0.142 | Table 6, spec. C |
| DLowCOV*SEC_REV       | −0.074 | 0.142 | Table 6, spec. D |
| DHighINS*SEC_REV      | −0.009 | 0.142 | Table 6, spec. E |
| DLowINS*SEC_REV       | −0.059* | 0.142 | Table 6, spec. F |

Notes: This table reports the p-values for Wald tests used to compare the coefficient difference deriving from the reported regression results as seen in the Table & Specification column. All numbers are rounded up to third decimal place. Variable definitions are shown in the Appendix.

*** indicate significance at the 1% level.
** indicate significance at the 5% level.
* indicate significance at the 10% level.

11In the Online Supplemental Material, we show that our inferences are similar when the models are run without controlling for lagged profitability and when we apply alternative measures of optimism.
6. Conclusions

This paper examines the impact of fair value adjustments on dividend policy. According to the Lintner (1956) framework, firms should only distribute persistent earnings to enable investors to more accurately estimate future corporate performance and value and to support more efficient management and distribution of economic resources. However, the distribution of unrealized earnings, such as revaluations of investment property and financial securities, causes concern among regulators and market participants since higher dividends are likely to increase leverage and risk, which potentially contribute to the procyclicality of the financial system. Our institutional framework is characterized by high leverage and insider ownership, while our examination window is perceived as a growth period during which managerial optimism is likely to be present. During this period, the Greek regulator (HCAAR) recommends distributing only realized earnings, while the legal framework (via the minimum dividend requirement) potentially creates incentives for fair value profit distribution. Using the Lintner framework, we investigate whether corporate practice incorporates regulator recommendations for excluding unrealized fair value adjustments from distributable income. By focusing on the impact of managerial optimism, debt contracting, and insider ownership on dividend policy, we examine the conditions under which firms choose to deviate from the recommendations.

Our results suggest that IFRS fair value adjustments on investment property are persistent (i.e., they reliably predict future income), but adjustments for financial securities are transitory. We also demonstrate that companies which revalue investment properties tend to increase dividend payouts, while those that revalue financial securities do not distribute significant proportions. Thus, we argue that corporate practice is consistent with the Lintner framework of dividend distribution rather than with the HCAAR recommendations, particularly in reference to the distribution of investment property revaluations. Regarding the conditions under which firms choose to deviate from HCAAR recommendations, we show that less optimistic managers, firms with a higher borrowing capacity, and firms with higher levels of insider ownership are more likely to increase dividend payouts coming from investment property adjustments, with insider ownership exerting the strongest effect. We claim that less optimistic managers offer higher dividends, aiming to invest further and not retain capital. Our findings on borrowing capacity support the effect of debt contracting on dividend policy as suggested by Leuz (1998); that is, debtholders achieve the imposition of mechanisms that reduce potential wealth transfers. The findings on insider ownership suggest that insiders apply the strongest pressure to distribute persistent fair value adjustments in a ‘relationship-based’ financial system (La Porta et al., 1999), aiming to align their interests with those of minority investors and thus decrease potential agency costs. We additionally show that financial security adjustments are negatively associated with dividend changes when firms have a low level of insider corporate ownership. To understand this result, we rely on the interpretation of Goncharov and van Triest (2011). We argue that managers in firms with a low level of insiders might use financial security adjustments opportunistically to justify dividend reduction. This action might be easier for financial securities than for investment properties, which have less volatile future cash flows. Thus, if managers generally prefer internal funds and simultaneously struggle to avoid any negative share price reactions due to dividend cuts, they might refer to the unrealized and transitory nature of financial security adjustments to justify lower dividend payouts (Goncharov & van Triest, 2011). Firms with a strong financial position (access to both equity and debt capital is easier) and firms in which owners are not strong enough to influence corporate decisions (including dividend policy) might be particularly inclined to take this route. However, if strong insider shareholders who would prefer high dividend returns are absent, as discussed earlier, then a dividend decrease might be easier. Overall, considering that dividend
announcements convey strong signals in the Greek capital market (Dasilas & Leventis, 2011), we argue that managers adjust the relevant policies while considering signaling outcomes, institutional characteristics, and perceptions regarding the persistence of fair value adjustments. We identify important market implications. We show that IFRS adoption leads to the inclusion of new income components, some of which do not change the persistence of net (distributable) income. We also draw attention to how gains from investment property adjustments are returned to investors through dividends, in contrast to those from financial security adjustments. This suggests that managers understand the persistence of income components adequately. Moreover, we illuminate the corporate conditions associated with the distribution of dividends, potentially to the benefit of market participants making portfolio management decisions. We also demonstrate the incompatibility between HCAAR guidelines and IFRS, suggesting that remedies introduced by national regulators upon IFRS adoption may not be successful (Caramanis et al., 2015). Our analysis can also be extended to other EU countries since the Second Company Law Directive indicates that member states may introduce mechanisms which restrict the distribution of unrealized income (KPMG, 2008). Finally, our results might be relevant in countries which have a minimum dividend requirement which impacts dividend policy (e.g. Germany, Russia, Brazil, Chile, Colombia, and Venezuela).

This study has several limitations. First, similar to other studies, our sample refers to firms in a single country. Second, our optimism proxies are operationalized based on managerial investment policies and profitability. Proxies related to managerial option-holding behavior and stock purchases are alternatives which would be worth investigating (Schrand & Zechman, 2012) subject to the availability of data. The results and limitations provide avenues for further research. The investigation of fair value adjustments and dividend distributions could be extended to include samples from other European or international domains. Additionally, the financial sector requires more focused investigation given its strategic importance and the criticism leveled at intensive fair value distributions by banks (Hatherly, 2013). Finally, further research could examine fair value distributions in the form of managerial compensation.

The impact of unrealized fair value adjustments - Online supplementary material

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Supplemental Data and Research Materials

The underlying research materials for this paper, e.g. data, samples or models, can be accessed at 10.1080/09638180.2016.1146153

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Appendix

Variable definitions

| Variable | Definition |
|----------|------------|
| DFVINV   | 1 if a fair value adjustment on investment property takes place, 0 otherwise |
| DFVSEC   | 1 if a fair value adjustment on financial securities takes place, 0 otherwise |
| DDIFF    | the difference in dividend over total assets between any current year $t$ and $t-1$ |
| ROA_BFV  | earnings/losses before fair value adjustments on investment property and/or financial securities over total assets |
| ROA_BINV | earnings/losses before fair value adjustments on investment property over total assets |
| ROA_BSEC | earnings/losses before fair value adjustments on financial securities over total assets |
| INVPR_REV| earnings/losses from fair value adjustments on investment property over total assets |
| SEC_REV  | earnings/losses from fair value adjustments on financial securities over total assets |
| INVPR_REV$^+$ | positive (negative) fair value adjustments on investment property over total assets |
| (INVPR_REV$^-$) | |
| SECREV$^+$ | positive (negative) fair value adjustments on financial securities over total assets |
| (SECREV$^-$) | |
| DOverOPT | 1 if the residual from the excess investment regression less the industry median residual is higher (lower) than zero, 0 otherwise |
| (DUnderOPT) | |
| DHighCOV | 1 if a firm’s coverage ratio (operating profit over financial expenses) is above (below) the median coverage ratio of the sample, 0 otherwise |
| (DLowCOV) | |
| DHighINS (DLowINS) | 1 if a firm’s insider ownership is above (below) the median corporate insider ownership of the sample, 0 otherwise |
| ROA      | earnings/losses over total assets |
| D        | paid dividend over total assets |
| SIZE     | natural logarithm of total assets |
| DEBT     | book value of total debt over total assets |
| CASH     | cash and cash equivalents over total assets |
| GROWTH   | ratio of sales change to sales at the beginning of the year in any current year $t$ |