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Impact of industrial and geographical diversifications on earnings management: the case of European Union's target firms

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Abstract

Extant literature indicates the existence of information asymmetries as an enabling condition for earnings management. Therefore, studying diversification's impact on earnings management may provide further insight into diversification's impact on information asymmetries. Following previous research, industrial and geographical diversifications are considered different corporate strategies, with their impact on accruals-based and real earnings management assessed separately.

After estimating discretionary working capital accruals through performance-matching methods for a sample of 150 listed targets from the European Union, from 2010 to 2019, the results of fixed-effects panel regressions suggest that industrial diversification mitigates accruals-based earnings management, which is consistent with extant literature. The accruals of different industry segments may not be perfectly correlated, offsetting each other through a diversification effect and mitigating their manipulation. These conclusions appear to be robust to alternative earnings management measures. After estimating discretionary production costs and discretionary expenses, results suggest industrial diversification does not impact the manipulation of real activities, which is inconsistent with past research.

Geographical diversification appears to mitigate the manipulation of accruals, as well as a combination of both diversification strategies, while it seems that it does not impact real earnings management. Both conclusions are inconsistent with past research. To the best of my knowledge, this is the first research concluding that geographical diversification mitigates accruals-based earnings management. Further robustness tests suggest that, when including the period prior to IFRS' adoption in the sample, geographical diversification does not impact accruals' manipulation and exacerbates real activities' manipulation, in particular of production costs. These conclusions appear to be limited to the UK. To the best of my knowledge, this is also the first research suggesting that IFRS' adoption may have changed the impact of geographical diversification on earnings management.

Keywords: Mergers and acquisitions; accruals earnings management; real earnings management; corporate diversification; geographical diversification; information asymmetries

JEL classification: G30; G34; M41

Resumo

A literatura aponta a existência de assimetrias de informação como uma condição necessária à manipulação de resultados. Por isso mesmo, estudar o impacto da diversificação na manipulação de resultados poderá permitir aprofundar o conhecimento sobre o seu impacto no mercado pela informação. Seguindo a literatura, diversificação industrial e geográfica são consideradas como sendo duas estratégias intrinsecamente distintas e o seu impacto nas práticas de manipulação de *accruals* e de atividades reais é estimado para uma amostra de 150 *targets* cotadas em bolsa, da União Europeia, entre 2010 e 2019.

Após usar métodos de *performance-matching* para estimar *discretionary working capital accruals*, os resultados sugerem que a diversificação industrial mitiga a manipulação de *accruals*, consistente com a literatura. Estes resultados suportam o argumento que os *accruals* das diferentes unidades industriais de uma empresa não se encontram perfeitamente correlacionados, ocorrendo um efeito de diversificação que mitiga a possibilidade de manipulá-los. Após estimar *discretionary production costs* e *discretionary expenses*, os resultados sugerem que a diversificação industrial não afeta a manipulação de atividades reais, o que é inconsistente com a literatura existente.

A diversificação geográfica aparenta mitigar a manipulação de *accruals*, assim como uma combinação de ambas as estratégias de diversificação, e aparenta não afetar a manipulação de atividades reais, o que é inconsistente com a literatura. Além disso, posteriores testes de robustez sugerem que a adoção das *IFRS* na União Europeia poderá ter alterado o impacto da diversificação geográfica na manipulação de resultados dos gestores das *target*. Os resultados sugerem que, incluindo o período precedente à adoção das *IFRS* na amostra, a diversificação geográfica não afeta a manipulação de *accruals* e aumenta a manipulação de atividades reais. No entanto, estas conclusões aparentam aplicar-se apenas ao Reino Unido. Este aparenta ser o primeiro estudo cujos resultados sugerem tal relação.

Palavras-chave: Fusões e aquisições; manipulação de resultados; manipulação de atividades reais; diversificação industrial; diversificação geográfica; assimetrias de informação

Classificação JEL: G30; G34; M41

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1. Introduction

Literature dedicated to earnings management (EM) has been developed over the past four decades. Nevertheless, recent accounting frauds at Toshiba, in 2015, and at Wirecard, in 2020, showcase that manipulating earnings is still a relevant issue. Managers can manipulate reported earnings either by selecting different accounting techniques, known as accruals-based EM (*e.g.* Trueman & Titman, 1988; Dye, 1988; Dechow, Sloan & Sweeney, 1996; Degeorge, Patel & Zeckhauser, 1999), or by deviating from their normal operational decisions, known as real EM (*e.g.* Roychowdhury, 2006; Zang, 2012). Irrespective of the specific form of manipulation employed, extant literature consistently highlights the presence of information asymmetries between managers and outside agents as an enabling condition for EM (*e.g.* Dye, 1988; Key, 1997; Nan, 2008; Ali & Zhang, 2015). M&As are a particular set of corporate events that creates such information asymmetries. For example, targets' managers may intentionally manipulate earnings upwards before receiving a bid to increase the share price and the value premium extracted for their shareholders (Campa & Hajbaba, 2016), or to dissuade shareholders from accepting a hostile takeover bid (Easterwood, 1998).

Literature is mixed regarding diversification's impact on information asymmetries. Some authors argue it improves resource allocation amongst business units (*e.g.* Stein, 1997; Thomas, 2002; Ataullah, Davidson, Le & Wood, 2014), while others argue it increases information asymmetries due to increased operational complexity (*e.g.* Berger & Ofek, 1995; Denis, Denis & Sarin, 1997; Scharfstein & Stein, 2000). Furthermore, several authors suggest that industrial and geographical diversifications are two intrinsically different corporate strategies. Duru and Reeb (2002) suggest geographically diversified firms are harder to value due to their increased operational complexity, while Khan, Bhatti, Hassan and Fraz (2020) suggest that only industrial diversification is positively associated with performance in developing markets.

Since higher levels of information asymmetries appear to be related with higher levels of EM (Richardson, 2000), studying diversification's impact on EM may provide further insight on the subject. Evidence suggests industrial diversification appears to mitigate accruals-based EM, both for US firms (Jiraporn, Kim & Mathur, 2008; El Mehdi & Seboui, 2011) and UK targets (Vasilescu & Millo, 2016), while US firms appear to have higher levels of real EM (Farooqi, Harris & Ngo, 2014). The evidence on geographically diversified firms is mixed, as El Mehdi and Seboui (2011) report a statistically significant increase of accruals-

based EM, while Jiraporn *et al.* (2008) and Vasilescu and Millo (2016) conclude that it does not impact EM. Additionally, Farooqi *et al.* (2014) conclude that geographically diversified firms in the US have lower levels of real EM.

In this dissertation, the impact of industrial and geographical diversifications on accruals-based and real EM in a sample of 150 European Union's (EU) non-financial listed targets, from 2010 to 2019, is assessed. Consistent with extant literature, it is argued that industrial diversification mitigates the manipulation of accruals, since accruals of different industry segments should not be perfectly correlated, creating an offsetting effect and mitigating discretionary accruals (*e.g.* Jiraporn *et al.*, 2008; Vasilescu & Millo, 2016). Additionally, it is posited that geographical diversification increases accruals-based EM, as managers take advantage of increased information asymmetries, such as increased complexity of operations and increased volatility of cashflows arising from political risk (Duru & Reeb, 2002). Regarding real EM, considering that targets seem to prefer it to avoid detection in the due diligence process (Campa & Hajbaba, 2016), it is argued that managers perceive greater diversification, both industrial and geographical, to increase the amount of information asymmetries and, therefore, increase their manipulation of real activities.

Prior research suggests EM seems to be more pervasive in countries with weaker investor rights and underdeveloped stock markets (Leuz, Nanda & Wysocki, 2003). Additionally, EM is found to be more pronounced in more individualistic, uncertainty avoidant cultures (Han, Kang, Salter & Yoo, 2010). Thus, the aforementioned conclusions should take into account country-specific factors that might influence firms' decisions on EM, that is, conclusions based on US or UK samples may not hold for different economies. In this regard, this dissertation hopes to contribute to the debate on diversification's role on the market for information and the potential different impacts that industrial and geographical diversifications have on it. Additionally, by studying diversification's impact on real EM preceding an important corporate event, which has been neglected in literature compared to the impact of diversification on accruals-based EM within that context (*e.g.* Lim, Thong & Ding, 2008; Vasilescu & Millo, 2016), it is expected to better understand firms' behaviour prior to M&A deals.

To estimate accruals-based EM proxies, the performance-matching methodology followed by Anagnostopoulou and Tsekrekos (2015) and Botsari and Meeks (2018) in order to estimate discretionary working capital accruals is implemented. Furthermore,

Roychowdhury (2006) is used to estimate discretionary production costs and discretionary expenses in order to measure real EM, as well as a composite indicator suggested by Zang (2012) that aggregates these two real EM proxies to assess the overall manipulation of real activities. Finally, diversification's impact on accruals-based and real EM is assessed through the use of dichotomic variables in fixed-effects panel regressions, incorporating the absolute value of each EM proxy as the dependent variable. The regressions used are similar to Lim *et al.* (2008) and Vasilescu and Millo (2016) to assess diversification's impact on accruals-based EM, and similar to Farooqi *et al.* (2014) to assess its impact on real EM.

The results suggest that both types of diversification mitigate accruals' manipulation by EU's targets from 2010 to 2019. However, robustness tests suggest that these results are driven by UK targets, since removing them from the sample turns the coefficient associated with exclusively industrially diversified targets not statistically significant. Furthermore, it is concluded that diversification does not impact real EM, with the exception of a combination of both diversification strategies which appears to exacerbate discretionary expenses. Results also weakly suggest that industrial diversification, outside the UK, may increase the manipulation of discretionary expenses, while geographical diversification appears to mitigate it. Further robustness checks suggest that the impact of geographical diversification on EM may have changed after IFRS' adoption in the EU, as results suggest that, for the period 1997-2019, which includes a period prior to IFRS' adoption, geographical diversification did not impact accruals' manipulation and increased the manipulation of discretionary production costs and real EM overall. These conclusions appear, however, to be limited to UK targets. To the best of my knowledge, this is the first research suggesting that geographical diversification's impact on targets' EM choices may have changed after the IFRS' mandatory adoption.

The remaining dissertation is organized as follows. Chapter 2 presents the literature review, which includes a summary of previous research on motives to manipulate earnings, whether preceding a M&A or not, and on diversification's impact on information asymmetries. It also includes a subchapter on similar studies to this dissertation and a brief critical review. In chapter 3, the main hypotheses are developed. Chapter 4 presents the main methodology adopted. In chapter 5, the descriptive statistics, main results and robustness checks employed are discussed. Finally, in chapter 6, the main conclusions are presented, including the research's limitations and suggestions for future research.

2. Literature Review

2.1. Motives for accruals-based and real earnings management

EM can emerge as an optimal mechanism when information asymmetries are prevalent. For example, the level of effort a manager exerts is non-observable to the firm's ownership. To incite managers to exert a nontrivial level of effort, the firm's ownership may design a managerial compensation system contingent on the firm's earnings, even if it also incentivizes managers to manipulate earnings upwards. Dye (1998) labels this as internal demand for EM. In an overlapping generations model, Dye (1988) also argues that shareholders can create an external demand for EM. In other words, by manipulating earnings upwards, shareholders expect the share price to increase, which increases their returns when selling their stock.

The incentives to manage earnings can change throughout the tenure of a manager. Early in his career, a manager is concerned with increasing short-term performance, even using EM, to boost his reputation in the labour market (Ali & Zhang, 2015). Approaching retirement, managers increase EM as well, as the probability of only being detected after leaving the company increases (Ali & Zhang, 2015) and the manager may want to maximize his savings for retirement plans (Marinovic & Varas, 2019).

Managing earnings to meet analysts' forecasts may be a rational response by managers (Fogel-Yaari & Ronen, 2020). Growth firms need to meet expectations in the short-term in order to ensure its survival, even if they forego some future cashflows, while value firms can transfer some income into future periods (*e.g.* manipulating accruals downwards in the present) when meeting expectations is more important. Psychological factors can also impact EM decisions. For example, narcissistic managers seem more likely to manipulate earnings to not report earnings' losses and to meet analysts' forecasts, as they may want to preserve their reputation or cannot bear the psychological cost of reporting losses (Lin, Lin & Fang, 2020). However, the labour market can mitigate EM, as managers with more employment options seem to manipulate earnings less (Peng & Yin, 2021). According to these authors, flexible labour legislation that increases labour mobility seems to have a similar impact.

Extant literature has divided research of EM into accruals-based EM and real EM. The former is related to the accounting choices of managers. For example, when managers can choose two different periods in which to recognize a certain income, they choose the one which allows for a smoother income stream (Trueman & Titman, 1988). Stakeholders

interpret it as a signal of lower cashflow volatility and diminished probability and expected costs of bankruptcy, which lowers the cost of debt. Managers also use accruals-based EM to reduce compensation risk, seeing it as a substitute to hedging (Nan, 2008). In other words, when the compensation system is contingent on the reported earnings, managers may want to decrease the variability of the firm's earnings and, consequently, of their compensation.

Managers seem to manipulate accruals upwards to lower the cost of capital and evade debt covenant violations (Dechow *et al.*, 1996). Dechow *et al.* (1996) also suggest that weaker corporate governance structures, including the lack of an external blockholder monitor, are positively correlated with income-increasing EM. Key (1997) provides evidence suggesting that firms in the US cable industry adopt income-decreasing accruals-based EM during periods of increased political enquiry to reduce political costs. Some evidence suggests managers use this type of EM to not report earnings' losses or decreases and to match analysts' earnings forecasts (Degeorge *et al.*, 1999). Degeorge *et al.* (1999), drawing from prospect theory, posit this is a result of the loss aversion and tendency of humans to use reference points when evaluating changes in wealth. These authors also suggest that firms that barely match those earnings targets appear to have worse future performance than firms that just fail them or that vastly surpass them.

Some institutional and cultural factors can impact these practices as well. EM seems more pervasive in economies with weaker investor rights, underdeveloped stock markets and typically concentrated firm's ownership structures (Leuz *et al.*, 2003) and in more individualistic, uncertainty avoidant cultures (Han *et al*, 2010). Even after IFRS' adoption, national culture seems to continue to impact EM choices in the EU (Gray, Kang, Lin & Tang, 2015). The degree of institutional ownership and the attention devoted by institutional shareholders to monitor managers can also impact EM. Garel, Martin-Flores, Petit-Romec and Scott (2021) conclude that, in the US, higher levels of institutional ownership are negatively related with accruals-based and real EM. However, institutional investors that experience attention-grabbing shocks in their portfolios seem to devote less attention to firms that did not experience those shocks. In those firms, the authors find evidence suggesting that institutional investors' distraction is positively associated with EM.

Managers might prefer manipulating a firm's real activities instead of its accruals since it is less likely to draw regulatory attention (Graham, Harvey & Rajgopal, 2005). For example, managers seem to increase sales by the use of price discounts and overproduction to meet

extra demand, reduce the reported cost of goods sold through overproduction and improve reported margins through, once more, overproduction and a decrease of discretionary expenditures, such as R&D and advertising expenses, to avoid reporting earnings' losses (Roychowdhury, 2006). Badertscher (2011) provides evidence suggesting managers engage in EM to sustain the overvaluation of their firm's equity. In order to accomplish this, managers start by manipulating accruals. As it becomes more difficult to manipulate accruals due to their inevitable reversal at some point in time, managers start engaging in real EM.

Evidence suggests managers use the type of EM which is relatively less costly, using real EM when accounting flexibility is reduced and it is costlier to manipulate accruals (Zang, 2012). There is also the possibility of a substitution effect between both types of EM. Real EM is performed during the fiscal year, with its results being known at the end of it. When they are larger than expected, managers use accruals-based EM to mitigate them, and vice-versa. Additionally, Gunny (2010) concludes that firms whose managers use real EM to match analysts' forecasts have superior long-term operating performance than firms that do not match the benchmark and do not manipulate real activities. Managers may then use real EM to meet earnings' targets as a credible signalling mechanism.

2.2. Earnings management preceding M&As

Incentives to manage earnings may be different when associated with important corporate events, such as M&As. For instance, Erickson and Wang (1999) analyse 55 US acquirers, between 1985 and 1990, and conclude that acquirers manage discretionary accruals upwards in the quarter preceding an all-stock financed acquisition. Managers may engage in EM to minimize the probability of earnings dilution and voting power dilution of existing shareholders and minimize the cost to acquire the target. Louis (2004) finds evidence in the US consistent with Erickson and Wang (1999) even after controlling for performance, from 1992 to 2000. Furthermore, managing discretionary working capital accruals upwards is negatively related with acquirers' abnormal stock returns in the window surrounding the deal announcement and in the long-run, suggesting that the market partially detects EM. Managing earnings before all-stock financed acquisitions has been detected in 30 countries outside the US, and it seems more frequent in countries with greater economic development but with weaker investor rights' legislation, less strict financial reporting disclosure requirements and less developed financial markets (Karim, Sarkar & Zhang, 2016).

Further research has been directed at the consequences and drivers of earnings management by acquirers. Botsari and Meeks (2018) conclude that, in the UK, acquirers engage in EM in the year preceding an all-stock financed acquisition, both during and outside mergers waves. Moreover, in the 3-day window surrounding the deal announcement, acquirers experience positive abnormal returns when inside a merger wave, but they experience negative abnormal returns when a deal is announced in a "cold" M&A market. This suggests investors do not detect EM during merger waves; consequently, the stock price increases. During "cold" markets, investors seem more rational, interpreting all-stock financed bids as a signal of overvaluation of the acquirer's equity and appropriately discounting the share price before the transaction.

Note that targets' managers may accept overvalued equity as payment even if they know it is overvalued. Managers may own stock in the target and want to sell it due to their imminent retirement or to ownership of illiquid stock options (Shleifer & Vishny, 2003). They may have been promised prominent positions in the firm post-merger (Hartzell, Ofek & Yermack, 2004). Managers may also underestimate the overvaluation of the bidder, particularly in periods of overvalued markets when expected synergies arising from the deal may be overestimated (Rhodes-Kropf & Viswanathan, 2004). Furthermore, Doukas and Zhang (2020) conclude that US acquirers managed by high-ability managers appear to smooth earnings more frequently than acquirers managed by low-ability managers. They also realize significantly higher positive abnormal returns and superior operating performance after the completion of the deal. This suggests high-quality managers may smooth earnings to indicate their ability to both capital and labour markets.

Targets did not receive as much attention for some time as it was believed they didn't have as many opportunities to engage in EM due to timing issues. While the acquirer knows when it will bid, the target does not know when it will receive one. This reduces the window of opportunity when the target can intentionally manipulate earnings to increase its stock price preceding a bid (Erickson & Wang, 1999). However, research on the topic has been conducted. Easterwood (1998) suggests managers of US targets manipulate discretionary accruals upwards in the quarter preceding a hostile takeover bid. Managers may want to dissuade shareholders from accepting the bid and convince them that the target's performance is better than it really is, preserving their own jobs. Eddey and Taylor (1999) conclude the opposite for Australian targets, who do not seem to manage accruals when

rejecting a bid and seem to manage them down when accepting one. This may suggest that firms with poor financial performance are targeted in the M&A market. Additionally, in the previous year to receiving a friendly takeover bid, Swiss firms appear to manipulate discretionary accruals downwards (Ben-Amar & Missonier-Piera, 2008). Targets' managers involved in a friendly negotiation may want to accommodate the transaction or even manipulate earnings downwards so that the post-merger performance seems better.

Evidence suggests that US targets that released a "seeking buyer" announcement, from 1990 to 2012, manipulate accruals downwards during the two years preceding the announcement (Anagnostopoulou & Tsekrekos, 2015). By studying targets that emitted these announcements, the limitation of a target not controlling the timing of the M&A is circumvented. These targets may want to lower the potential price of the transaction, in order to maximize the probability of receiving bids. It also provides the managers with an opportunity to report a greater operational performance improvement after the takeover. Alternatively, targets may want to recognize all the problems they have before negotiating with an acquirer, possibly reversing previous EM attempts and increase transparency in the due diligence. Anagnostopoulou and Tsekrekos (2013) confirm these findings for the UK and Italian markets, but not for the German and French markets.

US targets appear to only engage in EM when receiving all-cash financed bids (Campa & Hajbaba, 2016). When stock is involved, targets avoid EM because the overpayment by the acquirer would harm the targets' shareholders that would receive a stake in the post-merger performance of the acquirer. Furthermore, evidence suggests targets manipulate real activities, but not accruals, in the year preceding the operation, specifically through sales' manipulation. Targets' managers may choose real EM since it is less likely to be detected in the due diligence process in comparison with accruals-based EM.

A target's earnings quality may also decrease because of EM. Bidders that acquire targets with higher earnings quality seem to experience greater returns around the announcement day, suggesting the higher quality of accounting information allows the bidders to estimate a more precise and truthful value of the target (McNichols & Stubben, 2015). Raman, Shivakumar and Tamayo (2013) provide evidence suggesting acquirers favour friendly bids when the target has lower earnings quality. Through the negotiations, the bidder can discover more information about the target. Marquardt and Zur (2015) suggest that targets with lower earnings quality are expected to be involved in auctions instead of friendly

negotiations. The due diligence takes longer because it is harder to understand all the relevant information, and the probability of the deal failing is higher because it is more probable that relevant information regarding the target's value emerges from an outside source.

2.3. Diversification and information asymmetries

Theory and evidence on diversification's impact on information asymmetries are mixed. According to Thomas (2002), the information transparency hypothesis states diversification exacerbates information asymmetries. Managers of less productive divisions may engage in rent-seeking behaviour to improve their bargaining power in contract renegotiations (Scharfstein & Stein, 2000). For example, they may create more opaque accounting and information systems, increasing the information asymmetries a new manager must sort out when taking over. Managers of weaker divisions may also be less cooperative with other divisions and choose less efficient investment projects that best serve the division's interest but not the overall firm's (Rajan *et al.*, 2000). Additionally, a diversified firm's share price is less informative about the prospects of each investment project, since multiple investment projects trade in the market under only one price (Chang & Yu, 2004). Berger and Ofek (1995) provide evidence suggesting a diversification discount and overinvestment in industries with limited investment opportunities. According to the authors, weaker business units also seem to be cross-subsidized by stronger units. Firms where managers have a stake in equity or compensation linked to equity seem to diversify less, suggesting managers see diversification as a value-reducing strategy (Denis *et al.*, 1997).

Meanwhile, the information diversification hypothesis suggests diversification mitigates the effects of information asymmetries (*e.g.* Thomas, 2002). Lewellen (1971) suggests that the reduced volatility of a diversified firm's cashflows decreases not only the probability of default, but also the expected shortfall to the creditors. Additionally, internal capital markets may allow a more efficient allocation of resources amongst business units, as well as increased monitoring of managers in comparison to external capital markets (Stein, 1997). Thomas (2002) suggests diversified firms do not suffer from significantly higher information asymmetries. The author finds diversification is negatively associated with earnings' forecast errors and dispersion among forecasts. Even if the initial diversification could increase information asymmetries between managers, who have access to detailed segment information, and outsiders, who only have access to consolidated information,

forecast errors are not perfectly correlated and offset each other, mitigating the effects of information asymmetries. Ataullah *et al.* (2014) provide evidence suggesting that managerial purchase of stock increases with the level of industrial diversification. The authors interpret this as evidence suggesting that managers disagree with investors and consider that industrial diversification increases the value of the firm. Therefore, managerial insider trading in diversified firms may decrease information asymmetries between insiders and outside stakeholders.

It is important to distinguish between geographical diversification and industrial diversification. Duru and Reeb (2002) suggest that geographically diversified firms are harder to value due to their increased operational complexity. They are subject to more political and currency risks, regulatory oversight and other country-specific events that increases the volatility of their cashflows. Denis, Denis and Yost (2002) conclude geographical diversification is positively correlated with industrial diversification, suggesting managers see both types of diversification as complementary.

While both types of diversification provide real benefits, that is, both allow a firm to increase its value due to its intangible assets, like those associated with R&D or advertising, reaching markets they wouldn't have reached otherwise, only geographical diversification seems to provide a financial benefit (Gande, Schenzler & Senbet, 2009). Geographical diversification allows shareholders to diversify their portfolios across countries with restrictions on portfolio holdings, that is, the firm invests in countries that investors could not have invested in on their own. Finally, Khan *et al.* (2020) suggest that only industrial diversification is positively related with performance in developing markets. Additionally, information asymmetries seem to mediate the relation between diversification and performance, especially in developing markets. Developing economies usually have weaker corporate governance mechanisms and financial reporting requirements. Therefore, diversification may not lead to poorer performance; instead, it increases information asymmetries between managers and outsiders due to poor corporate governance mechanisms, with managers trying to monetize their informational advantage. This means that it does not necessarily increase information asymmetries either, since they can be mitigated by appropriate corporate governance.

2.4. Earnings management and diversification - similar studies

Evidence suggests that higher levels of information asymmetries are related with higher levels of EM (Richardson, 2000). Therefore, studying diversification's impact on EM may provide further insight on diversification's impact on the market for information. Evidence suggests industrially diversified firms in the US have lower levels of accruals-based EM (Jiraporn *et al.*, 2008; El Mehdi & Seboui, 2011). According to Jiraporn *et al.* (2008), geographical diversification does not impact EM, while a combination of both strategies mitigates it, in the period 1994-1998. The authors consider that this supports the offsetting accruals hypothesis, *i.e.* the cashflows of different units of a diversified firm offset each other, limiting the potential for EM. However, El Mehdi and Seboui (2011) conclude that geographical diversification, as well as a combination of both strategies, increases EM, in the period 1998-2005. This could be caused by the different periods analysed or the different methodologies. Geographical diversification in Taiwanese firms seems to increase the likelihood of EM and of meeting earnings forecasts (Chin, Chen & Hsieh, 2009). Chin *et al.* (2009) also conclude that a bigger proportion of operations in common-law countries mitigates EM.

Research on the topic when associated with corporate events has also been conducted, although it is, so far, scarce. Lim, Thong and Ding (2008) conclude that industrially diversified SEO issuers, in the US, engage more aggressively in EM than focussed firms. Vasilescu and Millo (2016) analyse a sample of listed UK targets from 1990 to 2008, with the results being consistent with Jiraporn *et al.* (2008)'s empirical evidence.

Industrial diversification may increase real EM, according to Farooqi *et al.* (2014). A combination of both strategies, as well as geographical diversification by itself, seems to lower the levels of real EM. Shi, Sun and Luo (2015) provide evidence suggesting US firms that operate across multiple states engage more in real EM than firms that operate in only one state, but manipulate accruals less. These firms enjoy a greater investor base and attract more attention, which can make the detection of accruals-based EM more likely.

Japanese multinational firms appear to coordinate real EM between the parent firm and the subsidiaries (Yamada, Sakurai & Ishida, 2020). As the physical distance between them increases, real (accruals-based) EM by the subsidiary decreases (increases), but part of that decrease is compensated by an increase in real EM by the parent. This may be a result of the increased communication and transport costs between parent and subsidiaries, which

increase with the physical distance between both firms and hamper potential manipulation of real activities by the parent through its subsidiaries. Finally, Beuselinck, Cascino, Deloof and Vanstraelen (2019) conclude that parent firms take advantage of arbitrage opportunities in the regulatory framework, increasing EM in the subsidiaries inserted in countries with weaker regulations.

Overall, the evidence suggests that industrial and geographical diversification impact EM differently, which is consistent with diversification literature that suggests these two strategies are intrinsically different. It also seems that their impact on accruals-based EM is the opposite of its impact on real EM, which suggests that these are substitutes, supporting Zang (2012).

2.5. Critical review of the literature

Extant literature on EM is heavenly influenced by agency theory and considers information asymmetries between managers and outsiders as a necessary condition for EM. Those information asymmetries may exist between the managers and their shareholders (internal demand[1] for EM), such as in Dye (1988) and Nan (2008), or between managers and other external stakeholders, such as in Trueman and Titman (1988) and Fogel-Yaari and Ronen (2020).

Similarly, empirical research conducted on EM preceding M&As implicitly assumes information asymmetries between managers and other stakeholders as an enabling condition for EM. Managers may explore information asymmetries between themselves and their shareholders (EM deviates from the optimal solution, rather than being an equilibrium mechanism), although empirical evidence is mixed. As stated before, Easterwood (1998) and Ben-Amar and Missonier-Piera (2008) conclude that targets manipulate accruals, while Eddy and Taylor (1999) conclude the opposite in Australia.

Managers may also try to explore information asymmetries between the firm and a potential acquirer/target. As stated before, acquirers seem to manage earnings upwards before all-stock financed bids (*e.g.* Erickson & Wang, 1999), while targets seem to only manage earnings upwards before receiving all-cash financed bids (*e.g.* Campa & Hajbaba,

[1] Note that internal demand models rely heavily on neoclassical assumptions which have limited applicability in designing real contracts.

2016). However, even statistically significant results may not lead to the conclusion that targets' managers manipulated earnings because they anticipated receiving a bid (as they may lack the opportunity to do so), instead of another reason not linked to the potential M&A, such as signalling managerial ability to the market (*e.g.* Doukas & Zhang, 2020).

The importance of studying EM can be explained through two distinct views. Some empirical evidence, such as Badertscher (2011) or Botsari and Meeks (2018), suggests that EM impacts the stock price. EM can then be a result of managers manipulating the market, introducing noise into the price and passing it off as information to investors. As the price system aggregates all the available information in an economy, EM can create inefficiencies in the price system and, consequently, in the real economy. Another view is that EM is used to send signals to the market, that is, to incorporate information, instead of noise, into the price system. This hypothesis is supported by Gunny (2010) and Doukas and Zhang (2020).

Additionally, the evidence cited supports that tighter disclosure requirements and other investor protection legislation, as well as stronger corporate governance, mitigates the use of, at least, accruals-based EM, even in an M&A context and within multinational firms. Conclusions on EM must then take into consideration the legal and cultural environment specific to each country included in the sample, including conclusions on diversification's impact on EM. Furthermore, research on EM practices by multinational firms suggests that real EM is used as a response to tighter regulatory environments, which can also suggest that diversification's impact on EM is dependent on the regulatory framework a firm is inserted into. This further motivates the need for research on diversification's impact on EM outside the usual settings for this empirical research, such as the US.

3. Hypotheses development

In this dissertation, the impact of industrial and geographical diversifications on accruals-based and real EM in a sample of EU's non-financial listed targets, from 2010 to 2019, is assessed. As explained in subchapter 2.4, evidence suggests that higher levels of information asymmetries are related with higher levels of EM (Richardson, 2000). Since M&As may create information asymmetries, as stated in subchapter 2.2, they provide an useful setting to study EM and diversification's impact on information asymmetries. Targets are chosen as the subject of the analysis instead of acquirers because the impact that diversification may have on information asymmetries in the due diligence process is more explicit. Any acquirer must estimate the target's value and negotiate the value of the transaction, which must be accepted by the target's shareholders. Therefore, diversification impacts the financial reporting of the target, as suggested by the information transparency hypothesis, potentially increasing the difficulty of the acquirer interpreting the information.

Furthermore, evidence suggests accruals-based EM is more pervasive in economies with weaker investor rights and underdeveloped stock markets (Leuz *et al.*, 2003), while real EM seems more pervasive in economies with stronger investor protection legislation (Francis, Hasan & Li, 2016). Thus, the conclusions drawn from literature on diversification's impact on EM should take into account country-specific factors that might influence firms' decisions on EM. It is then important to study samples outside the US and UK, the most common countries used to draw samples.

Moreover, research on EM by targets has been focussed on the type of bid received and the mode of payment. Recently, research on EM's impact on targets' earnings quality and its interaction with the acquirer's behaviour has also been conducted. However, diversification's impact on EM preceding corporate events, such as M&As, has received little attention. EM motives can be quite different outside that context, such as increasing managerial compensation or avoid debt covenant violations. In this regard, this dissertation hopes to contribute to better understand the relation between industrial and geographical diversifications and firms' behaviour preceding an M&A announcement. Finally, diversification's impact on real EM before an important corporate event has not been as researched as the impact on accruals-based EM. To the best of my knowledge, this dissertation is the first paper to research diversification's impact on real EM before an M&A.

I posit that the accruals of different industry segments are less than perfectly correlated, creating an offsetting effect and mitigating discretionary accruals[2] (*e.g.* Jiraporn *et al.*, 2008; Vasilescu & Millo, 2016). This should provide less opportunities for industrially diversified firms to manipulate accruals, which is consistent with most of the evidence cited in chapter 2. Furthermore, Campa and Hajbaba (2016) suggest that, on average, targets prefer real EM, which may also create a negative association between industrial diversification and accruals-based EM. Therefore, in the first hypothesis, it is argued that industrial diversification mitigates the manipulation of accruals by targets.

H1: Industrially diversified targets have lower levels of accruals-based EM than focussed targets, *ceteris paribus*.

Regarding geographical diversification, I argue that it increases accruals-based EM, as managers take advantage of increased information asymmetries, such as increased complexity of operations and volatility of cashflows arising from political risk (Duru & Reeb, 2002). Furthermore, as discussed in chapter 2, a target's manager may have incentives to manage earnings. For instance, he may want to increase earnings to receive the highest bid possible to benefit its shareholders or to convince them that the target is performing well. He may want to decrease earnings to increase the probability of the deal being completed, because he was promised a position on the firm post-merger. Additionally, the evidence cited weakly suggests that geographical diversification increases accruals-based EM, even though only El Mehdi and Seboui (2011) and Chin *et al.* (2009) obtained statistically significant results. Hence, the second hypothesis is defined as geographical diversification exacerbates the manipulation of discretionary accruals by targets' managers.

H2: Geographically diversified targets higher levels of accruals-based EM than focussed targets, *ceteris paribus*.

Regarding real EM, I posit that industrial diversification increases it. Targets seem to prefer it to avoid detection in the due diligence process (Campa & Hajbaba, 2016). Therefore, it is expected that targets' managers take advantage of the increased information asymmetries and complexity of information that industrial diversification may provide to outside agents, and increase their manipulation of real activities, as defined in the third hypothesis.

H3: Industrial diversification increases real EM by targets, *ceteris paribus*.

[2] Similar to the information diversification hypothesis explained by Thomas (2002).

Finally, it is posited that geographical diversification increases real EM, which is inconsistent with Farooqi *et al.* (2014). However, those authors did not study a sample of firms involved in a M&A transaction. The higher complexity of operations in a geographically diversified firm may deter managers, in general, from using real EM. On one hand, the increased complexity to coordinate real EM across geographic units or the increased monitoring from corporate headquarters may deter the use of real EM[3]. On the other hand, the incentives that those managers may have, such as increased compensation or reputation, may not overcome the costs of manipulating real activities. In a M&A deal, the incentives may be stronger. A target's manager may want to manipulate earnings upwards to receive the highest bid possible to the advantage of its shareholders or to persuade the shareholders that the target is performing well. He may want to manipulate earnings downwards to increase the probability of the deal being completed, because they were promised a position on the firm post-merger. In these scenarios, taking advantage of the increased complexity of geographical diversification may be worthwhile to corporate headquarters, as outsiders have limited attention and cognitive capabilities (Hirshleifer & Teoh, 2003) preventing them from understanding all the relevant information of a diversified firm in an earnings report. It is also harder to understand the macroeconomic environment of all the different countries/geographic regions a firm operates in (Duru & Reeb, 2002), which makes it easier for targets to justify, for instance, a cut in R&D expenses due to low prospects in a specific country. Therefore, in the fourth hypothesis, it is posited that geographical diversification increases the manipulation of real activities by targets.

H4: Geographical diversification increases real EM by targets, *ceteris paribus*.

[3] Yamada *et al.* (2020) conclude that there is a substitution effect between the parent and subsidiaries. However, a firm can be geographically diversified and not have subsidiaries, by, for example, outsourcing the transportation of consumer goods.

4. Methodology

4.1 Discretionary accruals measures

Following several previous studies on EM preceding M&As (*e.g.* Vasilescu & Millo, 2016; Botsari & Meeks, 2008; 2018; Anagnostopoulou & Tsekrekos, 2013; 2015), different EM measures are used to estimate discretionary accruals. The main analysis focuses on discretionary working capital accruals measured through the balance sheet and the cashflow approaches, using performance-matching models similar to Botsari and Meeks (2018) and Anagnostopoulou and Tsekrekos (2015). In further robustness checks, the cross-sectional modified-Jones model (Dechow, Sloan & Sweeney, 1995) and a linearly-adjusted version of it (Kothari, Leone & Wasley, 2005) are also used.

$$\frac{WCA_{it}}{A_{it-1}} = \beta_0 + \beta_{1jt}\left(\frac{1}{A_{it-1}}\right) + \beta_{2jt}\left(\frac{\Delta REV_{it}}{A_{it-1}} - \frac{\Delta REC_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad \textbf{(4.1)}$$

Equation (4.1) is used to estimate the modified-Jones model (Dechow *et al.*, 1995), where WCA_{it} is working capital accruals for firm i in year t, ΔREV_{it} is the change in revenues for firm i in year t, ΔREC_{it} is the change in accounts receivables for firm i in year t, A_{it-1} is assets of firm i at the beginning of year t and ε_{it} is the error term. The regression assumes that nondiscretionary accruals are dependent on the economic environment faced by the firm[4]. By using cross-sectional data to estimate the normal levels of accruals, macroeconomic shocks should have its effects mitigated, since systemic shocks on an industry will be accounted for. Naturally, the shocks may be asymmetric to the firm we are specifically estimating the accruals for, which constitutes a limitation of the model.

All variables are scaled by lagged assets to mitigate heteroskedasticity. Note that these models are used for predictive purposes instead of statistical inference. Therefore, even if heteroskedasticity is present, while not ideal, it does not invalidate the coefficient estimates (Botsari & Meeks, 2008). An unscaled and a scaled intercept are also included. Following Kothari *et al.* (2005), an unscaled intercept should be included, since it also controls for heteroskedasticity. The intercept also mitigates potential biases produced by omitted size variables. Finally, models without an intercept should have reduced power and be more

[4] It also assumes that revenue recognition can be manipulated through credit sales. Therefore, changes in credit sales are represented by adjusting the change in receivables for the change in revenues, that is, they are a result of managing earnings.

asymmetric. All variables included in the estimation are winsorized at the 1th and 99th percentile, so as to mitigate the effect of extreme observations.

Normal levels of accruals are estimated by estimating (4.1) for each industry[5]-country-year group in which each of the targets is inserted in. At least ten observations for each group are required. The estimates for each parameter are then combined with firm-specific data in equation (4.1) to estimate a firm's normal level of working capital accruals. The difference between the real levels of accruals and the estimated levels is the discretionary accruals ($DWCA_{it}$). Unlike Dechow *et al.* (1995), the change in revenues is not adjusted by the change in accounts receivables only when firm-specific data is combined with the parameter estimates. Instead, that adjustment is performed when estimating the equations by industry-country-year, as suggested by Kothari *et al.* (2005), since the estimation technique followed by Dechow *et al.* (1995) may estimate larger discretionary accruals than it should whenever a firm experiences extreme growth.

Similar to past research on accruals-based EM preceding M&As (Louis, 2004; Botsari & Meeks, 2008; 2018; Anagnostopoulou & Tsekrekos, 2013; 2015; Vasilescu & Millo, 2016), I focus on working capital accruals, which, compared to total accruals, exclude depreciations and amortizations as an EM instrument. Depreciations and amortizations are considered too transparent for external agents, as its manipulation may be easily detected by them.

To estimate discretionary accruals using performance-matching methods, I estimate equation (4.1) for each firm, both the targets included in the sample and their industry peers. Then, four portfolios are created for each industry-country-year sorted by current return on assets (as well as lagged ROA as an alternative measure to increase robustness), with each portfolio corresponding to firms that are in the same ROA quartile. The performance-matched discretionary accruals of each target, $PDWCA_{it}$, is then the difference between the discretionary accrual estimated using (4.1), $DWCA_{it}$, and the median discretionary accrual of the matched portfolio (firms in the same ROA quartile), as shown in equation (4.2).

$$PDWCA_{it} = DWCA_{it} - industry\ median\ DWCA \quad \textbf{(4.2)}$$

Note that return on assets (ROA) is defined as earnings before interest and taxes (EBIT) divided by total assets. EBIT is used instead of net income because EBIT is not

[5] Each industry is identified by the ICB supersector code (ICBSSC) and contains only listed firms.

directly impacted by the capital structure, allowing to better isolate and measure the profitability of the firm as a direct result of operating performance.

Following Botsari and Meeks (2008), working capital accruals are defined using the balance sheet and the cashflow approaches (see **appendix A** for the list of variables used). The balance sheet approach may cause measurement errors if firms experience non-articulating events such as M&As, divestitures and foreign currency translation, which will impact accruals measured by the balance sheet but not accruals measured through the cashflow statement (Hribar & Collins, 2002). While targets should not be particularly impacted by the operation in itself (for example, an acquirer would see its balance sheet increase in the period after the completion of the M&A, unlike a target preceding the M&A announcement), potential divestiture of assets and foreign currency translation are relevant concerns. Furthermore, the industry peers included in the estimation of accruals can be contaminated with firms experiencing non-articulating events even if the researcher tries to control the sample and mitigate the effects.

4.2 Real earnings management measures

Following Roychowdhury (2006)[6] to assess real EM, discretionary production costs and discretionary expenses are estimated. Equation (4.3) is used to estimate the normal level of $PROD_{it}$, that is, production costs of firm *i* in year *t*. Production costs are the sum of the cost of goods sold in year *t* and the change in inventory from year *t-1* to year *t* for firm *i*. S_{it} is the net sales for firm *i* in year *t* and ΔS_{it} is the change in net sales from year *t-1* to year *t* for firm *i*.

$$\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \alpha_2\left(\frac{S_{it}}{A_{it-1}}\right) + \alpha_3\left(\frac{\Delta S_{it}}{A_{it-1}}\right) + \alpha_4\left(\frac{\Delta S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \qquad \textbf{(4.3)}$$

Equation (4.4) is used to estimate normal levels of $DISX_{it}$, *i.e.* the sum of advertising, R&D and SG&A expenses for firm *i* in year *t*. Once again, these equations are estimated for every peer group and, then, the parameter estimates are combined with firm-specific data to

[6] The abnormal cashflows from operations could be calculated to assess real EM (Roychowdhury, 2006). However, as Zang (2012) argues, this variable should not be used due to ambiguous effects of real EM on it. While overproduction may reduce cashflows from operations, for example, reducing discretionary expenditures increases them.

estimate the normal level of each variable. The difference between the real level and the estimated level is the abnormal level, as explained in the previous subchapter.

$$\frac{DISX_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \quad \textbf{(4.4)}$$

Finally, RM_{total} is calculated, which is the sum of these two measures. More specifically, I sum the discretionary production costs and the product of -1 with discretionary expenses[7]. This indicator is suggested by Zang (2012) and Farooqi *et al.* (2014) as an appropriate measure of total real EM, with positive values indicating income-increasing real EM. In both equations (4.3) and (4.4) all variables included in the estimation are winsorized at the 1th and 99th percentile to mitigate the impact of extreme observations.

4.3 Diversification measures and panel data analysis

A target is defined as industrially diversified if it reports sales on two or more different industry segments in Worldscope. Each industry is identified by its two-digit SIC code. Similarly, a target is classified as geographically diversified if it reports sales on at least two different geographic regions in Worldscope. Three dichotomic variables are used to measure diversification's impact on EM, following Jiraporn *et al.* (2008), Farooqi *et al.* (2014) and Vasilescu and Millo (2016): *ID*, 1 if the target is industrially diversified but operates in only one geographic region, 0 otherwise; *GD*, 1 if the target is geographically diversified but operates only in one industry, 0 otherwise; *IG*, 1 if the target operates in more than one industry segment and in more than one geographic region, 0 otherwise.

An alternative measure commonly adopted is also used, the Herfindahl Index (*e.g.* Thomas, 2002; Jiraporn *et al.*, 2008; Farooqi *et al.*, 2014; Vasilescu & Millo, 2016). Since it is an entropy statistic, it measures the concentration of a firm's revenues over its industry or geographic segments. The industrial Herfindahl index is calculated as shown in equation (4.5), where $HERF_{it}$ is the Herfindahl index of firm *i* in year *t*, $SSales_{it}$ is the revenues of each industry segment, *i.e.* the sales in each two-digit SIC industry, of firm *i* in year *t,* and $Sales_{it}$ is

[7] Positive discretionary expenses represent income-decreasing real EM, while positive discretionary production costs represent income-increasing real EM. Therefore, multiplying discretionary expenses by -1 is necessary before summing both.

the total revenues of firm *i* in year *t*. The geographical Herfindahl index, $HERF\_GEO_{it}$ is analogous to the industrial Herfindahl index, with the only difference being that $SSales_{it}$ is the revenues of each geographic segment as reported in Worldscope.

$$HERF_{it} = \sum \left(\frac{SSales_{it}}{Sales_{it}}\right)^2 \quad \textbf{(4.5)}$$

Following Lim *et al.* (2008) and Vasilescu and Millo (2016), equation (4.6), which follows a fixed-effects specification, is used to assess the impact of diversification on targets' EM choices:

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 Diversification_{it} + \beta_2 SIZE_{it} + \beta_3 SGROW_{it} + \beta_4 LEV_{it} \\ & + \beta_5 DECLINE_{it} + \beta_6 LOSS_{it} + \beta_7 RND_{it} + \beta_8 GDPgrowth \\ & + \beta_9 SMliq + \beta_{10} TIME + \mu_i + \varepsilon_{it} \end{aligned} \quad \textbf{(4.6)}$$

where, EM_{it} represents the absolute value of discretionary accruals, since I test hypotheses related to the impact of diversification on overall EM, independently of the signal of the discretionary accruals, that is, independently of whether the targets use income-increasing or income-decreasing EM. EM_{it} can be, throughout the main analysis, the absolute value of discretionary working capital accruals estimated through the balance sheet approach, WCA_{bs}_abs, or the absolute value of discretionary working capital accruals estimated through the cashflow approach, WCA_{cf}_abs. $Diversification_{it}$ represents the diversification proxy adopted. In the main analysis, the dichotomic variables *ID*, *GD* and *IG* are used. In further robustness checks, these variables are substituted by $1/HERF_{it}$ and $1/HERF\_GEO_{it}$.

Additionally, some control explanatory variables are included. Following Farooqi *et al.* (2014), $SIZE_{it}$ is the natural logarithm of total assets of firm *i* in year *t*, which controls for the target's size. Theoretically, larger firms should face higher information asymmetries allowing for increased EM (*e.g.* Lim *et al*, 2008; Vasilescu & Millo, 2016). However, Jiraporn *et al.* (2008) and Chin *et al.* (2009) conclude that larger firms manipulate earnings to a lesser extent than smaller firms, perhaps due to increased costs associated with EM. $SGROW_{it}$ is sales' growth for firm *i* in year *t*, and it controls for growth opportunities (*e.g.* Lim *et al.*, 2008; Vasilescu & Millo, 2016), while LEV_{it} is the ratio of total debt to total assets for firm *i* in year *t*, since manipulating earnings should be harder for firms with higher leverage (*e.g.* Rodríguez-Pérez & Hemmen, 2010).

$DECLINE_{it}$ is a dummy with value equal to 1 when pre-managed earnings in year t declined relative to the previous year, 0 otherwise; $LOSS_{it}$ assumes the value of 1 when pre-managed earnings in year t are negative, 0 otherwise (*e.g.* Lim *et al.*, 2008; Vasilescu & Millo, 2016). These two dummies control for EM incentives to avoid reporting earnings' losses and earnings' declines, consistent with Degeorge *et al.* (1999)'s evidence. Pre-managed earnings are defined as net income before extraordinary items and preferred dividends divided by lagged total assets net of discretionary accruals (Lim *et al.*, 2008; Vasilescu & Millo, 2016). RND_{it} is the ratio of R&D expenses to total sales for firm i in year t, following Jiraporn *et al.* (2008), and it proxies for the level of information asymmetry.

Following Zang (2012) and Farooqi *et al.* (2014)[8], equation (4.7), which also follows a fixed-effects specification, is used to assess diversification's impact on real EM:

$$RM_{it} = \beta_0 + \beta_1 Diversification_{it} + \beta_2 ZSCORE_{it-1} + \beta_3 NOA_{it-1} + \beta_4 CYCLE_{it-1} + \beta_5 SIZE_{it} + \beta_6 RND_{it} + \beta_7 LEV_{it} + \beta_8 MTB_{it-1} + \beta_9 ROA_{it} + \beta_{10} GDPgrowth + \beta_{11} SMliq + \beta_{12} TIME + \mu_i + \varepsilon_{it} \quad \textbf{(4.7)}$$

where, RM_{it} can be the absolute value of discretionary production costs (*PROD_abs*), of discretionary expenses (*DISX_abs*) or of RM_{total} (RM_{total}*_abs*).

$ZSCORE_{it-1}$ is a modified Altman (1968)'s Z-score measured at the beginning of the year, suggested by Zang (2012) to assess the firm's financial situation and defined in equation (4.8). Higher values indicate lower costs associated with real EM. Net operating assets at the beginning of the year, $NOA_{i,t-1}$, proxies for accruals-based EM in the preceding year, while the operating cycle, $CYCLE_{i,t-1}$, controls for the firm's accounting flexibility. *NOA* is defined as shareholders' equity less cash and short-term investments plus total debt, while *CYCLE* is defined as days receivable plus days inventory less days payable, measured at the beginning of the year (Farooqi *et al.*, 2014). When operating cycles are longer, firms tend to engage more in accruals-based EM because they have a longer period to reverse accruals. Previous accrual manipulation also decreases EM flexibility due to its inevitable reversal (Zang, 2012). The market-to-book ratio measured at the beginning of the year, $MTB_{i,t-1}$, proxies for growth opportunities, while ROA_{it} proxies for profitability (Zang, 2012). All continuous variables

[8] They also include the marginal tax rate (*MTR*) in the model. However, the *MTR* is calculated by professor John Graham for US companies; since it is not available for the EU, it is not used to avoid adopting unreliable methodology.

included in equations (4.6) and (4.7) are winsorized at the 1th and 99th percentiles to alleviate the effect of extreme observations, *i.e.* discretionary accruals and real EM measures are winsorized pre and post estimation[9].

$$Zscore_t = 0{,}3\frac{Net\ income_t}{Assets_t} + \frac{Sales_t}{Assets_t} + 1{,}4\frac{Retained\ earnings_t}{Assets_t} + 1{,}2\frac{Working\ capital_t}{Assets_t} + 0{,}6\frac{Market\ cap_t}{Total\ liabilities_t} \quad \textbf{(4.8)}$$

Note that Zang (2012) and Farooqi *et al.* (2014) also include the market share of firm *i* as an explanatory variable. However, the industry peers considered would have been the same used to estimate equations (4.6) and (4.7), *i.e.* listed firms. Since capital markets in the EU, barring the UK, are not as developed as the US capital market, outliers can severely impact the results due to poor representativeness of the real market faced by each target. Nevertheless, the model including the market share is also estimated, but the results (not reported) are not impacted. Therefore, I keep the initial choice of excluding this variable.

Considering that the sample analysed contains several EU countries, factors such as national culture, stock market development, business cycles and other macroeconomic shocks or different legal frameworks may impact the EM incentives faced by targets. Despite the models including firm and time fixed-effects, there are some additional controls added to both regressions. *GDPgrowth* represents the percentage change in *per capita* gross domestic product in current US dollars, retrieved from World Bank (*e.g.* Yung & Root, 2019; Haga & Sundvik, 2019). While the time dummies control for time-variant factors such as business cycles, they are more effective in controlling for symmetric macroeconomic shocks. *GDPgrowth* allows to control for asymmetric macroeconomic shocks to the business cycle, such as the 2010-2012 sovereign debt crisis in the EU which impacted Mediterranean countries more severely than northern Europe.

SMliq proxies for the stock market liquidity, and it is defined as the ratio of the stock market's total market capitalization to the GDP of the home country (*e.g.* Zhang, Uchida & Dong, 2020). Since World Bank lacks coverage for the entire period of the sample, the ratio

[9] In unreported results, the main analysis was re-done using EM proxies that were winsorized only pre-estimation, and the conclusions presented in chapter 5 are qualitatively the same.

is calculated using the total market capitalization data available in Worldscope[10], while the GDP is retrieved from World Bank. This allows to control for asymmetric changes to the stock market liquidity, such as asymmetric shocks to the legislation of each country, behaviour of its regulatory authorities or investor sentiment.

Diversification's impact on each target's EM is estimated for the three years with reported data immediately preceding the deal announcement; therefore, the data assumes the shape of panel data. To control for time invariant factors, *i.e.* firm-specific factors, equations (4.6) and (4.7) are estimated using firm fixed-effects, following Vasilescu and Millo (2016). In equations (4.6) and (4.7), μ_i represents the individual specific effects while ε_{it} represents the random disturbance. Time-invariant factors such as contractually defined compensation schemes, managerial and institutional ownership, the motivation and quality of managers, or even each target's internal accounting policies, may vary cross-sectionally but can be assumed to be constant for each target (particularly when the period analysed for potential EM is short). Using fixed-effects models controls for the effect of these time-invariant factors and mitigates a potential omitted variable bias. This econometric specification also controls for time-invariant industry and country effects, which is particularly useful to mitigate the impact of time-invariant national cultures and legal frameworks in the international sample analysed. The specification chosen is also supported by the Hausman test statistic (unreported results).

Time dummies (*TIME*) are also included in the model, one for each year included, in order to control for time-variant factors such as macroeconomic changes (*e.g.* 2010-2012 sovereign debt crisis), accounting changes (*e.g.* the adoption of IFRS 2016) or any other change in the legal framework faced by these targets that may impact their EM incentives.

4.4 Sample selection

The sample is composed of EU's listed targets, as per the EU composition at the end of 2019, in a M&A announced and completed between 1 January 2010 and 31 December 2019. The M&A deals' details were retrieved from the Zephyr database. The only restriction placed on the acquirer is that it must be non-financial.

[10] The database provides this information by requesting the datatype MV, that is, market value, for the equity indices prefixed by TOTMK and followed by two letters that identify each country (for example, TOTMKBD identifies the German market).

Following McNichols and Stubben (2015) and Vasilescu and Millo (2016), a target is defined as a firm that received a tender offer and whose percentage of shares under the acquirer's ownership preceding the deal was less than 50% and after the acquisition was higher than 50%. Targets from the financial and utility sectors (identified by their ICB codes) are excluded due to the different regulations these firms are subjected to. Financial firms also have a different accrual-determining process which could compromise the comparability of results with non-financial firms (*e.g.* Louis, 2004). Distress sales are excluded. When Zephyr reports that a firm was a target in more than in one deal, only the older deal is retained.

Data retrieved from Zephyr includes listed and delisted targets, since the database usually returns the public status of a firm at the moment a search is requested instead of the public status of each firm at the moment the M&A was announced (Bollaert & Delanghe, 2015). In order to retain only listed targets, the information retrieved from Zephyr is cross-checked with data from Worldscope regarding the public status of each target at the time of the announcement of the M&A.

Additionally, the target must have the required financial data reported on Worldscope in order to estimate discretionary working capital and total accruals (used in robustness checks), production costs and discretionary expenses. Firms with abnormal data reported, such as zero cash or zero sales, are excluded. As Vasilescu and Millo (2016) state, these firms might be shell companies with low operational activity which could bias the results.

Finally, following Berger and Ofek (1995), Jiraporn *et al.* (2008) and Farooqi *et al.* (2014), the difference between the sum of segment sales (either industry or geographic segments) and total reported sales must not exceed 1%, in order to preserve the consistency and validity of the data used. This sum must not exceed total reported sales as well, as computation of the Herfindahl index would be impossible (*i.e.* it would exceed 1 and be devoid of meaning).

A sample of listed non-targets from each ICBSSC industry is used to estimate discretionary accruals, discretionary production costs and discretionary expenses. At least ten observations in each country-industry-year are required to preserve the necessary degrees of freedom in the estimation of EM measures and to avoid non-trivial results. Firm-year observations with missing values of total assets, revenues/sales, cost of goods sold, market cap and cash and other short-term investments are excluded. Firm-year observations with abnormal data reported, such as negative total assets, revenues, cost of goods sold, gross

property, plant and equipment, or zero assets, cash, revenues, among others, are also excluded (see **annex A**). Missing values of R&D and of SG&A expenses are set to zero, as many firms have missing data in these fields because they do not have R&D expenses, or because they report SG&A expenses as part of cost of goods sold (according to Worldscope).

Finally, the period 2010-2019 is selected to avoid using financial information prior to IFRS' adoption in 2005. Before its adoption in the EU, firms used their national GAAP; therefore, comparison of financial information using these two different sets of accounting rules must be cautious. For example, Callao, Jarne and Lainez (2007) conclude that there were significant differences between the financial statements of Spanish firms that used IFRS and their national GAAP, hampering local comparability of financial information. While Spain did not ultimately become part of the final sample, this evidence raises concerns about the comparability of financial information produced under national GAAP and IFRS.

Furthermore, since a cross-border sample is used, concerns regarding the comparability of national GAAPs used to produce financial statements are even more relevant. Petaibanlue, Walker and Lee (2015) conclude that analysts' forecasts became more accurate after introducing the IFRS, due to the increased comparability of cross-border financial information. Aboud, Roberts and Zalata (2018) conclude that analysts' forecasts using geographic segment's information became more accurate after the introduction of IFRS 8. This is particularly relevant, as reliable segment data is required to study the diversification of targets.

The final sample[11] is composed of 150 targets from 10 EU countries, and the total pooled dataset is composed of 450 firm-year observations. Each firm-year has estimated discretionary working capital accruals via the balance sheet and the cashflow approaches, as well as estimated discretionary expenses and production costs. This allows for a direct comparison of results through different methodologies and between accruals-based EM and real EM, even though it can induce a survivorship bias in the results.

[11] In unreported tests, equation (4.6) was tested using discretionary accruals estimated through the balance sheet without the restriction of every target having discretionary accruals estimated through the cashflow statement and real EM proxies, ending up with 182 targets. The same was done using discretionary accruals estimated through the cashflow statement, and then for equation (4.7) and the real EM proxies adopted, ending up with, respectively, 159 targets and 288 targets. The results were materially the same as the sample of 150 targets reported in the following sections, *i.e.* the results don't appear to be driven by a survivorship bias.

5. Empirical results

5.1 Descriptive statistics

Panel A of **table 1** presents the distribution of deals by industry. The sample contains fifteen different industries, with half of it concentrated in two industries, 28.67% in Industrial Goods and Services and 22.67% in Technology, which have some of the lowest average deal size (in millions of euros). Contrastingly, the Media industry has the highest average deal size (5048 million euros), followed by Consumer Products and Services[12].

Table 1 – Deals' summary statistics

Panel A: Deal distribution by ICB supersector industry

ICB Supersector	Freq.	%	Avg. Deal Value (€m)
Automobiles and Parts	3	2.00	850.58
Basic Resources	4	2.67	1,802.319
Chemicals	1	0.67	1,381.065
Construction and Materials	2	1.33	107.7091
Consumer Products and Services	7	4.67	4,362.394
Energy	8	5.33	674.9551
Food, Beverage and Tobacco	8	5.33	878.405
Health Care	13	8.67	654.757
Industrial Goods and Services	43	28.67	519.4159
Media	10	6.67	5,048.594
Personal Care, Drug and Grocery Stores	3	2.00	2,387.159
Retailers	1	0.67	7.722243
Technology	34	22.67	500.433
Telecommunications	5	3.33	113.0171
Travel and Leisure	8	5.33	2,294.192
Total	150	100.00	1,191.709

[12] In unreported mean differences one-tailed tests, it is also concluded that the average deal value of focussed targets is smaller than that of diversified targets (firms with reported sales in at least two industry segments and/or in two different geographic segments), at a 5% level of significance.

Table 1 (continuation)

Panel B: Deal distribution by year

Year	Freq.	%	Avg. Deal value (€m)
2010	3	2.00	1,020.734
2011	10	6.67	1,531.212
2012	24	16.00	427.6687
2013	14	9.33	390.8657
2014	13	8.67	532.11
2015	19	12.67	1,005.449
2016	16	10.67	248.5219
2017	15	10.00	2,077.242
2018	16	10.67	3,832.624
2019	20	13.33	1,108.396
Total	150	100.00	1,191.709

Panel C: Deal distribution by country

Country	Freq.	%	Avg. Deal value (€m)
Denmark	2	1.33	56.54948
Finland	4	2.67	656.395
France	15	10.00	1,087.607
Germany	16	10.67	497.5415
Greece	2	1.33	2,590.813
Italy	3	2.00	5,947.645
Netherlands	1	0.67	48.39247
Poland	5	3.33	44.88168
Sweden	4	2.67	705.3051
United Kingdom	98	65.33	1,281.881
Total	150	100.00	1,191.709

Panel B of **table 1** presents the deal distribution by year. The first year represents only 2% of total deals, which may not be a result of low M&A activity. Instead, it may be a consequence of requiring that all firm-year observations included must be based on financial information produced under IFRS, *i.e.* starting in 2005. Since four consecutive years of information for each target are required, 2010 is more impacted than the rest of the sample. Most targets receiving bids in this year have the earliest financial statement released in 2009,

meaning that it must have accrual and real EM measures estimates until 2006, which would require information produced before 2005 to estimate discretionary production costs.

There is no clear time-series trend, other than a marked stability of M&A deals per year between 2015 and 2019. Note that only targets which have the necessary information to estimate discretionary working capital accruals using both balance sheet and cashflow approaches, real EM measures and that have the necessary segment information are included. This is severely restrictive, meaning that the deal distribution by year in this sample may not reflect the known waves of M&A activity. The average deal value also increased greatly in 2017 and 2018 in comparison with earlier years.

Finally, panel C of **table 1** presents the distribution of deals per country. The United Kingdom (UK) represents 65.33% of the sample, with Germany and France following at 10.67% and 10%, respectively. Despite including ten countries in the sample, 86% of the deals are concentrated in these three countries, which can severely impact the results. This is clearly caused by the small dimension of most European economies, which lack the necessary ten minimum observations per industry-year to estimate EM measures. Despite a very small number of deals in most countries, which would render an analysis of each country individually useless, looking at the EU as an aggregate economy that provides similar EM incentives allows the analysis to be carried out. Even if the UK is excluded, there are still 52 targets in the sample, which is comparable to previous research on EM before M&As, such as Erickson and Wang (1999) which studied 55 US acquirers.

In **table 2** it is presented the diversification profile of the targets. Targets that are exclusively industrially diversified (multi-segment domestic[13]) are the least represented group in the sample (9%). Targets that are geographically diversified (global) clearly dominate the sample, with 76% of the total targets operating in more than one geographic region.

[13] In literature, industrially diversified firms are also called multi-segment firms, while geographically diversified firms are called global firms (non-geographically diversified firms are called domestic). Therefore, these terms are used interchangeably in this dissertation.

Table 2 – Diversification profile matrix

Type of diversification	Number of targets	%
Single-segment domestic	23	15
Single-segment global	54	36
Multi-segment domestic	13	9
Multi-segment global	60	40
Total	150	100

Turning the attention to **Table 3**, it presents the descriptive statistics of the targets. Industrially diversified targets are bigger than focussed targets, using *SIZE*, at a 1% level of significance, which is expected, and consistent with Vasilescu and Millo (2016) and Farooqi *et al.* (2014), considering that industrially diversified firms operate in several industries and should require more total assets to conduct their operations. There are no significant differences in revenues between geographically diversified and domestic targets, despite the mean revenue of geographically diversified targets being higher. The lack of statistical significance is surprising, since most economies present smaller markets to domestic firms in comparison to global firms.

Table 3 – Targets' descriptive statistics

Panel A – Summary statistics for industrially diversified targets

	Full sample		Industrially diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
Revenues (€m)	663,846.8	136,0759	710,840.8	1,159,188	-0.7488	0.4544
SIZE	12.1189	1.8193	12.5652	1.6842	-5.5280	0.0000
SGROW	0.0665	0.2932	0.0477	0.1989	1.3805	0.1684
LEV	0.2255	0.437	0.1849	0.1745	1.9869	0.0480
RND	0.0703	0.2901	0.0296	0.0556	3.0082	0.0029
ZSCORE	2.4744	3.8835	2.9328	2.914	-2.5641	0.0107
NOA (€m)	459,911.7	1,066,713	572,831.8	1,107,287	-2.3346	0.0200
CYCLE (days)	-29.8497	590.6145	-6.7656	507.3315	-0.8479	0.3970
MTB	2.0792	2.0837	2.3517	2.4698	-2.9258	0.0036
ROA	0.0151	0.2294	0.0414	0.1897	-2.4982	0.0129

Note: Mean differences test is a two-tailed test assuming unequal variances and using Welch's approximation

Table 3 (continuation)

Panel B - Summary statistics for geographically diversified targets

	Full sample		Geographically diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
Revenues (€m)	663,846.8	1,360,759	703,141.9	1,422,335	-1.1816	0.2386
SIZE	12.1189	1.8193	12.1237	1.8731	-0.1033	0.9178
SGROW	0.0665	0.2932	0.0497	0.2346	1.6165	0.1083
LEV	0.2255	0.437	0.2372	0.4923	-1.4756	0.1407
RND	0.0703	0.2901	0.0565	0.2198	1.2920	0.1986
ZSCORE	2.4744	3.8835	2.3393	4.1345	1.5059	0.1333
NOA (€m)	459,911.7	1,066,713	450,501.6	1,037,506	0.3078	0.7586
CYCLE (days)	-29.8497	590.6145	-21.1681	601.4599	-0.5619	0.5748
MTB	2.0792	2.0837	2.238	2.2945	-3.8891	0.0001
ROA	0.0151	0.2294	0.0173	0.2496	-0.4621	0.6443

Note: Mean differences test is a two-tailed test assuming unequal variances and using Welch's approximation

Geographically diversified targets do not have statistically significant differences in leverage (*LEV)*, while industrially diversified targets have significantly lower levels of it, contrasting with Jiraporn *et al.* (2008), Farooqi *et al.* (2014) and Vasilescu and Millo (2016). This translates into a statistically significant difference in the *ZSCORE*, suggesting that the lower leverage of industrially diversified targets increases their financial stability and lowers the cost of manipulating real activities. This is consistent with Lewellen (1971)'s predictions of lower probability of default for diversified firms.

Regarding research and development expenses, industrially diversified targets have a statistically significant lower mean *RND*, which is consistent with Jiraporn *et al.* (2008) and Farooqi *et al.* (2014). However, geographically diversified targets do not present significant differences. This may suggest that geographical diversification does not impact information asymmetries in targets (despite mean *RND* being slightly higher), while industrial diversification may mitigate them, at least on a univariate analysis and assuming that *RND* correctly proxies for the presence of information asymmetries.

Moreover, industrially diversified targets appear to have higher profitability (measured by *ROA*), while geographically diversified targets do not present significant differences. Finally, differences in growth opportunities associated with diversification are unclear. There are not significant differences in sales' growth (*SGROW*) between any type of

diversified targets and focussed targets, despite mean *SGROW* of diversified targets (both types) being lower, which, consistent with previous research, could suggest lower growth opportunities. However, *MTB* is higher in geographically diversified targets and in industrially diversified targets (at a 1% level of statistical significance), suggesting higher growth opportunities than focussed targets.

5.2 Discretionary accruals summary statistics and univariate analysis

Table 4 presents the descriptive statistics of discretionary working capital accruals and real EM proxies. It is unclear whether targets, on average, manipulate accruals, since the mean of discretionary working capital accruals calculated through the balance sheet ($PDWCA_{bs}$) is positive (income-increasing EM), while if it is calculated under the cashflow approach ($PDWCA_{cf}$) it is negative (income-decreasing EM). However, in unreported tests, it is concluded that the mean of $PDWCA_{bs}$ is not different from zero at a significant level, while the mean of $PDWCA_{cf}$ is different from zero (at a 1% level of significance). Therefore, at a univariate level, it appears that these targets use income-decreasing accruals-based EM if the cashflow approach is adopted, or that they do not manipulate accruals if the balance sheet approach is adopted instead, which is consistent with Erikson and Wang (1999).

Table 4 – Summary statistics of earnings management proxies

Panel A – discretionary accruals, production costs and expenses for industrially diversified targets

	Full sample		Industrially diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
$PDWCA_{bs}$	0.0008	0.0928	0.0008	0.095	0.0013	0.9989
$PDWCA_{cf}$	-0.0231	0.1208	-0.0205	0.1244	-0.4703	0.6384
DPROD	0.002	0.2797	-0.0344	0.2635	2.8613	0.0044
DDISX	-0.0066	0.2394	0.0023	0.2468	-0.8163	0.4147
RM_{total}	0.0064	0.4715	-0.0376	0.484	2.0501	0.0409

Table 4 (continuation)

Panel B – discretionary accruals, production costs and expenses for geographically diversified targets

	Full sample		Geographically diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
$PDWCA_{bs}$	0.0008	0.0928	0.0018	0.0963	-0.4279	0.6691
$PDWCA_{cf}$	-0.0231	0.1208	-0.0289	0.1231	1.8665	0.0634
DPROD	0.002	0.2797	-0.0223	0.2822	3.3844	0.0009
DDISX	-0.0066	0.2394	0.0126	0.253	-3.4997	0.0005
RM_{total}	0.0064	0.4715	-0.0366	0.4904	3.8429	0.0002

Note: Mean differences tests, in both panels, are two-tailed tests assuming unequal variances and using Welch's approximation

Regarding real EM, targets, on average, do not appear to use it since the mean of each real EM proxy is not different from zero at a significant level (unreported tests). Conclusions based on univariate tests may be erroneous though, since other factors can impact the relation. Focusing on the signal of each real EM measure's mean, they suggest that targets use overproduction to increase sales, as suggested by the positive mean of discretionary production costs (*DPROD*), and reduce discretionary expenses (*DDISX*), which translates into a positive mean of RM_{total}. This seems consistent with the substitution effect described by Zang (2012) between real and accruals-based EM. However, diversified targets, irrespective of the type of diversification, appear to use income-decreasing real EM. The differences in the mean of RM_{total} between non-diversified and industrially diversified targets are significant at a 5% level, and at a 1% level for geographically diversified targets. While I do not test income-smoothing, this could be a result of diversification reducing information asymmetries, leading managers to use income-decreasing real EM to revert and avoid detection of previous income-increasing real EM, similar to Anagnostopoulou and Tsekrekos (2015; 2013)'s argument for the use of income-decreasing EM by targets.

Proceeding to a univariate analysis (**table 5**), there is not statistically significant differences between the absolute value of discretionary accruals, whether applying the balance sheet (WCA_{bs}_abs) or the cashflow approaches (WCA_{cf}_abs), of non-diversified and diversified targets, irrespective of the type of diversification, despite the mean of WCA_{bs}_abs of geographically diversified targets being higher than that of domestic targets. Regarding real EM, similar conclusions are withdrawn. The only exception concerns the manipulation of discretionary expenses, which is higher, and significant at a 5% level, in global firms than

domestic firms. At a univariate level, none of the hypotheses tested are supported. However, it is necessary to control for the effect of other determinants of EM before rejecting the hypotheses tested. It is worth noting that the means of WCA_{bs}_abs and WCA_{cf}_abs are different at a 1% level of statistical significance. Therefore, both approaches are reported.

Table 5 – Univariate analysis

Panel A – Absolute value of discretionary accruals, production costs and expenses for industrially diversified targets

	Full sample		Industrially diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
WCA_{bs}_abs	0.0598	0.0709	0.0614	0.0723	-0.5104	0.6100
WCA_{cf}_abs	0.0803	0.0931	0.0802	0.0972	0.0261	0.9791
PROD_abs	0.1904	0.2048	0.1867	0.1887	0.3872	0.6988
DISX_abs	0.1718	0.1666	0.1729	.1757	-0.1409	0.8880
RM_{total}_abs	0.328	0.3385	0.3284	0.3569	-0.0253	0.9798

Panel B – Absolute value of discretionary accruals, production costs and expenses for geographically diversified targets

	Full sample		Geographically diversified		Mean differences	
	Mean	SD	Mean	SD	*t*-statistic	*p*-value
WCA_{bs}_abs	0.0598	0.0709	0.0616	0.074	-1.0648	0.2881
WCA_{cf}_abs	0.0803	0.0931	0.0811	0.097	-0.3481	0.7281
PROD_abs	0.1904	0.2048	0.1932	0.2066	-0.5201	0.6036
DISX_abs	0.1718	0.1666	0.1803	0.1777	-2.2200	0.0272
RM_{total}_abs	0.328	0.3385	0.3399	0.3549	-1.4596	0.1457

Note: Mean differences tests, in both panels, are two-tailed tests assuming unequal variances and using Welch's approximation

Table 6 presents the correlation matrix. A strategy of only industrial diversification (*ID*) is significantly negatively correlated with WCA_{bs}_abs, while a combination of both diversification strategies (*IG*) is significantly positively correlated with it. The statistical significance is lost if the EM proxy is calculated using the cashflow approach (not reported). There is not statistical significance between any diversification dummy and real EM measures (*PROD_abs* and *DISX_abs* are not reported). Additionally, the correlations between the two control variables of time-variant factors, *GDPgrowth* and *SMliq*, and most of the other variables are not statistically significant, which alleviates concerns regarding potential endogeneity between these country-specific variables and other firm-specific variables.

Table 6 – Pearson's correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18
1.WCA_{bs}_abs	1																	
2.RM_{total}_abs	0.05	1																
3.*ID*	-0.09*	-0.07	1															
4.*GD*	-0.04	0.01	-0.26***	1														
5.*IG*	0.08*	0.04	-0.29***	-0.6***	1													
6.*SIZE*	-0.11**	-0.19***	0.11**	-0.19***	0.19***	1												
7.*SGROW*	0.05	0.04	0.01	-0.01	-0.08*	0	1											
8.*LEV*	0.32***	0.07	0	0.14***	-0.1**	-0.09*	0.05	1										
9.*Decline*	0.02	0.04	-0.05	0	0.02	-0.06	0.01	0	1									
10.*LOSS*	0.26***	-0.07	-0.06	0.05	-0.1**	-0.21***	-0.03	0.17***	0.36***	1								
11.*RND*	0.03	0.04	-0.07	0.03	-0.1**	-0.16***	0.15***	0.01	0	0.18***	1							
12.*Zscore*	-0.27***	0	0.04	-0.17***	0.10**	0.16***	-0.07	-0.8***	0	-0.25***	0.1**	1						
13.*NOA*	-0.03	-0.15***	0.12**	0.02	-0.02	0.58***	-0.01	0.08*	0.01	-0.07	-0.08*	0.01	1					
14.*CYCLE*	-0.07	-0.03	0.02	-0.04	0.06	0.06	0.1**	-0.1**	0.07	-0.1**	-0.66***	-0.02	0.03	1				
15.*MTB*	0.02	0.36***	-0.09*	-0.09*	0.2***	0.16***	0.1**	-0.17***	0.07	-0.17***	0.01	0.32***	0.06	0.04	1			
16.*ROA*	-0.22***	0.03	0.06	-0.07	0.09*	0.22***	0.03	-0.58***	-0.14***	-0.42***	-0.15***	0.61***	0.02	0.14***	0.31***	1		
17.GDP_{growth}	0.03	0.01	0.03	-0.03	0.06	0.02	0.01	0.04	-0.07	-0.1**	-0.05	0.02	0.01	0.04	0.01	-0.03	1	
18.SM_{liq}	0.06	0.06	-0.02	0.03	-0.12**	-0.04	0.06	0.06	-0.04	0.05	0.01	-0.04	0.02	0	-0.01	-0.11**	0.13***	1

Note: ***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level.

5.3 Multivariate analysis

In **table 7** the main results from the methodology described in chapter 4 are presented. All three diversification dummies are negative and statistically significant in both accruals-based EM models. In particular, *ID* has a coefficient of -0.0797, significant at a 1% level, using WCA_{bs}_abs, and a coefficient of -0.0660 (significant at a 5% level) using WCA_{cf}_abs. This suggests that industrial diversification mitigates accruals-based EM on targets by, on average, 7.97 percentage points, or 6.6 percentage points if the cashflow approach is preferred, which is consistent with Jiraporn *et al.* (2008) and Vasilescu and Millo (2016) and supports **H1**. The results originated through, in particular, the cashflow approach are similar to Vasilescu and Millo (2016). This may suggest that industrial diversification either has a bigger impact in mitigating accruals-based EM than in a more general sample such as Jiraporn *et al.* (2008), which conclude that it only reduces accruals by 1.8 percentage points, or that it is stronger in the EU than in the US. The combination of both types of diversification also appears to mitigate EM in targets by, approximately, 6 percentage points, regardless of the model, which is consistent with previous literature.

However, **H2** is rejected. *GD* has statistically significant coefficients of -0.0584 through the balance sheet approach and of -0.0869 through the cashflow approach. Geographical diversification seems to mitigate accruals-based EM, which is inconsistent with most literature. Vasilescu and Millo (2016) conclude that it does not impact it, while Chin *et al.* (2009) conclude that it increases EM. Considering that Vasilescu and Millo (2016)'s sample is also of targets, more specifically from the UK, the results may be either driven by the non-UK countries, or by changes post-2008, the last year studied by those authors. Additional robustness checks concerning the impact of the UK in the sample are, thus, necessary.

Regarding other control variables, only when using WCA_{bs}_abs can statistical significance in some variables be detected, namely in *DECLINE* and *LOSS*. While experiencing an earnings' loss is associated with higher EM, consistent with Vasilescu and Millo (2016), an earnings' decline seems to decrease the manipulation of accruals, which is inconsistent with those authors. The lack of impact of other variables is also consistent with extant literature, unlike the apparent lack of impact of *SIZE*. The apparent lack of impact of *RND* is consistent with Jiraporn *et al.* (2008). This may ultimately suggest that diversification does not impact or, at the very least, does not increase information asymmetries in targets, despite mitigating EM.

Table 7 – Regressions of discretionary working capital accruals and real EM on diversification dummies

	WCA$_{bs}$*_abs*	*WCA*$_{cf}$*_abs*	*PROD_abs*	*DISX_abs*	*RMtotal_abs*
ID	-0.0797***	-0.0660**	0.0099	-0.0066	0.0192
	(0.0297)	(0.0296)	(0.0336)	(0.0193)	(0.0517)
GD	-0.0584**	-0.0869***	0.0151	-0.0475	-0.0354
	(0.0263)	(0.0269)	(0.0362)	(0.0335)	(0.0568)
IG	-0.0611**	-0.0602**	0.0208	-0.0480*	-0.0023
	(0.0251)	(0.0236)	(0.0302)	(0.0255)	(0.0486)
SIZE	0.0195	-0.0099	-0.0028	0.0498*	0.0048
	(0.0220)	(0.0444)	(0.0446)	(0.0269)	(0.0557)
SGROW	0.0016	-0.0078			
	(0.0078)	(0.0157)			
LEV	-0.0360	-0.0347	0.0130	0.0020	0.0247
	(0.0315)	(0.102)	(0.0500)	(0.0303)	(0.0603)
DECLINE	-0.0149**	-0.0062			
	(0.0071)	(0.0093)			
LOSS	0.0353***	0.0146			
	(0.0106)	(0.0186)			
RND	-0.0063	0.0312	0.0081	0.0157	0.0426
	(0.0137)	(0.0444)	(0.0542)	(0.0368)	(0.0827)
ZSCORE			-0.0119*	-0.0117**	-0.0217*
			(0.0069)	(0.0056)	(0.0114)
NOA			0.0000	-0.0000	0.0000
			(0.0000)	(0.0000)	(0.0000)
CYCLE			0.0000	0.0000	0.0000
			(0.0000)	(0.0000)	(0.0000)
MTB			0.0136	0.0085	0.0289
			(0.0135)	(0.0116)	(0.0227)
ROA			0.0215	-0.0604**	-0.0421
			(0.0365)	(0.0265)	(0.0506)
GDPgrowth	-0.0006	0.0038	-0.0012	-0.0048	-0.0124
	(0.0042)	(0.0041)	(0.0110)	(0.0096)	(0.0182)
SMliq	0.0320	0.0709	0.1340	-0.1470	0.2150
	(0.0811)	(0.1170)	(0.1900)	(0.1670)	(0.2520)
Constant	-0.1770	0.2070	-0.0181	-0.3170	-0.0699
	(0.2840)	(0.5530)	(0.5590)	(0.3810)	(0.7450)
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450
Adjusted R-squared	0.376	0.384	0.719	0.804	0.808

Note: Robust standard errors in parentheses
***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Regarding real EM, it is possible to conclude that **H3** and **H4** should be rejected. Using RM_{total}_abs as proxy, none of the coefficients associated with the diversification dummies are statistically significant. Therefore, despite the coefficient associated with *ID* being positive (as predicted in **H3**), and the ones associated with *GD* and *IG* being negative (contrary to what was argued in **H4**), it is concluded that diversification does not appear to impact real EM. Focussing on discretionary production costs (*PROD_abs*), the results are consistent with these conclusions. Despite all coefficients being positive, as predicted in **H3** and **H4**, the results are not statistically significant. Finally, focussing on discretionary expenses (*DISX_abs)*, it is concluded that using a combination of both diversification strategies mitigates the manipulation of discretionary expenses by 4.8 percentage points, a result that is statistically and economically significant. The use of only industrial or only geographical diversification, however, does not seem to impact this type of EM despite the coefficients associated, *ID* and *GD* respectively, being negative (contrary to the predictions of **H3** and **H4**). These conclusions are not consistent with Farooqi *et al.* (2014), which, as stated before, conclude that geographical diversification mitigates real EM, while industrial diversification increases it.

Furthermore, note the negative and statistically significant coefficient associated with *ZSCORE*, which is contrary to what is predicted by Zang (2012). The results then suggest that targets in the EU with better financial health engage less in real EM. The coefficient of *LEV* is positive as predicted, albeit it is not statistically significant, while the coefficient associated with *SIZE* is positive but only significant when using *DISX_abs* as the dependent variable. Thus, the evidence suggests that larger targets manipulate discretionary expenses to a larger extent, as expected. It also suggests that more profitable targets manipulate discretionary expenses less, while profitability doesn't appear to impact the manipulation of production costs and of real activities overall as the coefficients associated with *ROA* are significantly negative only when using *DISX_abs* as the dependent variable.

5.4 Robustness checks

5.4.1. Alternative accruals and real EM measures

So far, the impact of diversification on discretionary working capital accruals, which exclude depreciations and amortizations as a potential EM instrument, was estimated. In this subchapter, total accruals are used (see **appendix A**), which include them as a potential

instrument. When using total accruals, there is an additional explanatory variable added to equation (4.2), gross property, plant and equipment (see **appendix B**). Two alternative models to performance-matching are used in order to estimate discretionary accruals: equation (4.1) without using performance-matching, *i.e.* using only the cross-sectional Jones model, and a linearly-adjusted version of it developed by Kothari *et al.* (2005), which consists on adding the current or lagged ROA as an explanatory variable (see **appendix C**).

Using discretionary total accruals calculated through the balance sheet (TA_{bs}_abs) in a performance-matching model produces similar results to WCA_{bs}_abs, regarding the signal of the coefficient and its statistical and economic significances, as presented in **table 8**. However, when using the cashflow approach (TA_{cf}_abs) similar results are only obtained for *ID* and *GD*. The combination of the two strategies seems to not impact the manipulation of total accruals, since statistical significance for the coefficient of *IG* disappears. This is consistent with Jiraporn *et al.* (2008), which also conclude that this combination mitigates manipulation of discretionary working capital accruals but not of discretionary total accruals.

Table 8 – Regressions of discretionary total accruals estimated through performance-matching, and total and working capital accruals estimated through Kothari *et al.* (2005)

	Kothari *et al.* (2005)				Performance-matching	
	TA_{bs}_abs	WCA_{bs}_abs	TA_{cf}_abs	WCA_{cf}_abs	TA_{bs}_abs	TA_{cf}_abs
ID	-0.0713**	-0.0717**	-0.0452**	-0.0470*	-0.0824**	-0.0523*
	(0.0358)	(0.0290)	(0.0204)	(0.0278)	(0.0327)	(0.0308)
GD	-0.0448	-0.0373	-0.0583**	-0.0627**	-0.0618**	-0.0904***
	(0.0337)	(0.0278)	(0.0241)	(0.0285)	(0.0300)	(0.0295)
IG	-0.0664**	-0.0518*	-0.0395*	-0.0390	-0.0761***	-0.0390
	(0.0316)	(0.0267)	(0.0236)	(0.0275)	(0.0258)	(0.0278)
Σ control var.						
Constant	0.4280	0.4370	0.0865	-0.2770	-0.1180	0.5020
	(0.2740)	(0.2980)	(0.3840)	(0.4470)	(0.2960)	(0.4760)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450	450
Adjusted R^2	0.258	0.394	0.204	0.368	0.255	0.218

Note: Robust standard errors in parentheses; ***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Regarding alternative estimation models, the coefficient of *ID*, and its significance, is materially the same when using the balance sheet approach, for both total or working capital accruals (**table 8**). When using the cashflow approach, the results are similar, as long as the model is adjusted for performance using current ROA, irrespective of using total or working capital accruals, and using performance-matching or Kothari *et al.* (2005)'s linearly-adjusted model. Statistical significance is lost when using lagged ROA. Regarding geographical diversification, the coefficient of *GD*, and its significance, is materially the same when using the cashflow approach. However, through the balance sheet approach, results are materially identical only when using performance-matching models, both for total and working capital accruals. Note that the apparent lack of robustness in this approach may not be concerning, as Kothari *et al.* (2005)'s model relies on the assumption that accruals and performance have a linear relationship, which often does not apply. Finally, the results regarding the coefficient of *IG* are materially the same when applying the balance sheet approach. However, when using the cashflow approach, the only models that produce significant results are the main models, whether using current or lagged ROA. Estimating total accruals through Kothari *et al.* (2005) with current ROA also produces a significance coefficient. However, it only has a 10% level of significance, and it suggests that a combination of both types of diversification only mitigates EM by 3.95 percentage points, as opposed to the mitigation of 6.02 percentage points suggested by the main analysis.

Interpretation of results originated through the cashflow approach, including the lack of robustness of the coefficient associated with *IG,* must be cautious. According to Gordon, Henry, Jorgensen and Linthicum (2017), the greater flexibility provided by the IFRS to managers can break the comparability of results based on cashflows in a European setting. More specifically, the flexibility provided to managers regarding cashflow classification may be used to manipulate the operating cashflow reported, such as classifying interest received as operating cash inflow, while classifying interest paid as a financing cash outflow.

Finally, performance-matching techniques are used to estimate real EM measures. The procedure is analogous to accrual performance-matching estimation, that is, the discretionary production costs or expenses of each target must be adjusted for the median discretionary production costs or expenses of the matched ROA-based industry portfolio. Cohen, Pandit, Wasley and Zach (2020) do not find conclusive evidence regarding the most

powerful method to estimate real EM measures, advising researchers to report results using the traditional approach and the performance-matching techniques.

The results (see **table C.2**, in **annex C**) following performance-matching techniques are largely consistent with the results reported in subchapter 5.3 regarding real EM. The only major difference is that, when using performance-matching, the coefficient associated with *IG* in the regression with *DISX_abs* as the dependent variable is not statistically significant. Therefore, the apparent lack of impact of diversification on real EM appears to be robust to different real EM estimation measures.

5.4.2. Alternative diversification measures

To assess the impact of the diversification measure on the analysis, in this subchapter alternative measures common in literature are adopted. Following Jiraporn *et al.* (2008), Farooqi *et al.* (2014) and Vasilescu and Millo (2016), I only use *INDD* (one if a firm is industrially diversified, zero otherwise) or only use *GDD* (one if a firm is geographically diversified, zero otherwise) in equations (4.6) and (4.7), instead of using three dichotomic variables in each. In equation (4.6), the coefficient associated with *INDD* is -0.0252 and significant at a 10% level, when WCA_{bs}_abs is used (see **annex D**). However, the statistical significance disappears when using WCA_{cf}_abs. The coefficients associated with *GDD* are not statistically significant. Note that using only one diversification dummy in each regression can bias the results. As explained in subchapters 2.3 and 2.4, industrially and geographically diversified firms may be intrinsically different, meaning that inconsistent results can be a result of misspecification of these models with only one dichotomic variable.

Regarding real EM, in equation (4.7) the coefficient associated with *INDD* is not statistically significant (see **annex D**), irrespective of the real EM proxy used as dependent variable, which is consistent with the main results presented before. Regarding variable *GDD*, its coefficient is only significant, at a 5% level, when using *DISX_abs* as the dependent variable and assuming an estimated value of -0.044. When combined with the analysis of subchapter 5.3, it is possible to conclude that these results are somewhat consistent, since the coefficient associated with *IG* was also significant and very similar to the one associated with *GDD*. The results may then suggest that geographical diversification mitigates the manipulation of *DISX* only when combined with industrial diversification. Since variable *GDD* does not distinguish between industrially diversified and single-segment firms, part of

the effect associated with the combination of the two types of diversification is reflected on its coefficient.

The reciprocal of the Herfindahl indexes presented in subchapter 4.3 is also used, both for industrial (**table 9**) and geographical diversifications (see **annex D**). However, the coefficients associated with them are not statistically significant in any regression estimated, both for accruals-based and real EM. These results must be interpreted carefully though, as there are limitations to the calculation of the Herfindahl indexes derived from the use of Worldscope. The database only reports up to 10 industries or geographic regions, which can bias the results for some targets if they actually have more than 10 segments, suggesting that they are less diversified than they really are. Some industry segments are also identified by an SIC code referencing to a residual sector, while some geographic segments correspond to a group of countries instead of just one country. Considering that the Herfindahl index is an entropy measure, the percentage of revenue assigned to each segment must be fairly accurate, otherwise it can bias the results once again. These issues are mitigated in the main analysis by using dummies.

Table 9 – Regressions of discretionary working capital accruals and real EM using the industrial Herfindahl index

	WCA_{bs}*_abs*	WCA_{cf}*_abs*	*PROD_abs*	*DISX_abs*	RM_{total}*_abs*
1/*HERF*	-0.0079	0.0053	0.0031	-0.0024	-0.0013
	(0.0161)	(0.0199)	(0.0227)	(0.0212)	(0.0386)
Σ control var					
Constant	-0.2150	0.1490	-0.0147	-0.3320	-0.0926
	(0.2850)	(0.5600)	(0.5590)	(0.3870)	(0.7460)
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450
Adjusted R^2	0.361	0.376	0.721	0.805	0.808

Note: Robust standard errors in parentheses; ***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

5.4.3. Non-UK countries

Since the sample is dominated by the UK, equations (4.6) and (4.7) are estimated again while removing UK targets from the sample. Variable *IG* in equation (4.6) does not have a coefficient estimate due to multicollinearity (see **table E.2**, in **annex E**). The coefficients associated with *ID* are not statistically significant, while the coefficient associated with *GD* is significant at a 10% level and assumes the value of -0.0388 when WCA_{bs}_abs is used. However, the coefficient is not significant if WCA_{cf}_abs is used, which may be a result of the potential noncomparability of cashflow statements in an international setting.

When *INDD* (see **table 10**) is used, the coefficient is significant at a 10% level with the value of 0.039 if WCA_{bs}_abs is used, while remaining not significant through the cashflow approach. The use of *GDD* leads to not significant results. The reciprocal of the industrial Herfindahl index also produces not significant results, while the reciprocal of the geographic Herfindahl index has an estimated coefficient of -0.0321 (significant at a 10% level) through the cashflow approach (see **table E.1**, in **annex E**). Overall, this robustness check suggests that the results are highly driven by UK targets, especially regarding industrial diversification. While it cannot be concluded that diversification impacts accruals-based EM by targets outside the UK, the evidence in this subchapter weakly suggests that geographical diversification, if it impacts accruals-based EM, mitigates it, while industrial diversification may increase it.

Table 10 – Regressions of discretionary working capital accruals and real EM without UK targets

Panel A: Using *INDD* as diversification dummy

	WCA_{bs}_abs	WCA_{cf}_abs	*PROD_abs*	*DISX_abs*	RM_{total}_abs
INDD	0.0390*	-0.0011	-0.0401	-0.0666	-0.0705
	(0.0222)	(0.0285)	(0.0437)	(0.0610)	(0.0715)
Σ control var					
Constant	-0.3250	0.8180	-0.7360	-1.0440	-1.0650
	(0.8260)	(1.3110)	(2.2060)	(2.0040)	(4.0530)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	156	156	156	156	156
Adjusted R^2	0.004	0.323	0.723	0.721	0.734

Note: Robust standard errors in parentheses; ***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table 10 (continuation)

Panel B: Using *GDD* as diversification dummy

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	*RMtotal_abs*
GDD	-0.0122	-0.0030	-0.0202	-0.0583**	-0.0723
	(0.0257)	(0.0205)	(0.0392)	(0.0256)	(0.0804)
Σ control var					
Constant	-0.3140	0.8200	-0.6930	-1.0100	-1.0430
	(0.8600)	(1.3050)	(2.1840)	(1.9840)	(4.0100)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	156	156	156	156	156
Adjusted R^2	-0.018	0.323	0.721	0.716	0.733

Note: Robust standard errors in parentheses; ***, ** and * denote statistical significancy at a, respectively, 1%, 5% and 10% level

Regarding real EM, the robustness check once again suggests that the UK is the main driver behind the main results. While the analysis regarding RM_{total}_*abs* and *PROD_abs* is consistent with the conclusions in subchapter 5.3, there are important differences regarding the manipulation of discretionary expenses. The coefficient of *ID* is now positive, 0.0580, statistically significant at a 5% level and economically significant (see **table E.2**, in **annex E**). However, the conclusion is not supported by the not significant coefficients of *INDD* and of 1/*HERF*, included in separate regressions as executed in subchapter 5.4.2. The coefficient of *GD* is not statistically significant, while the coefficient of *GDD* is -0.0583 and significant at a 5% level. Therefore, results weakly suggest that industrial diversification, outside the UK, may increase the manipulation of discretionary expenses, while geographical diversification appears to mitigate it.

5.4.4. Pre-IFRS period

The main regressions are now estimated using a sample spanning from 1997 to 2019, *i.e.* the entire available Zephyr coverage of M&A deals, which starts in 1997, is used. Applying the previous criteria for selecting the final sample, a sample of 379 targets is reached, 75.73% of which are from the UK. Note that the countries included are the same as before, with the exception of one Belgian target which does not impact the results.

The results are presented in **table 11**. The models based on the cashflow approach do not produce statistically significant coefficients, which may be a result of lack of comparability between cashflow statements before the IFRS adoption in 2005. Focussing on the balance sheet approach, equation (4.6) does not produce statistically significant coefficients for the diversification dummies adopted. However, that is the only model that does not indicate a statistically significant negative coefficient associated with *ID*. If the matching portfolios used to estimate WCA_{bs}_abs are based on lagged ROA instead of current ROA, the coefficient becomes significant at a 5% level. All coefficients estimated using discretionary working capital accruals, other than performance-matching based on current ROA, are negative and significant at a 5% level, while using discretionary total accruals produces negative coefficients significant at a 1% level. It appears that IFRS did not impact the relation between industrial diversification and accruals-based EM[14].

Table 11 – Regressions of discretionary working capital accruals and real EM for 1997-2019

				Performance-matching		Kothari *et al.* (2005)	
	PROD_abs	*DISX_abs*	RM_{total}_abs	WCA_{bs}_abs	TA_{bs}_abs	WCA_{bs}_abs	TA_{bs}_abs
ID	0.0081	-0.0216	-0.0047	-0.0369**	-0.0445**	-0.0410**	-0.0516***
	(0.0314)	(0.0232)	(0.0366)	(0.0144)	(0.0176)	(0.0163)	(0.0181)
GD	0.0659**	0.0151	0.0772**	-0.0188	-0.0169	-0.0119	-0.0110
	(0.0328)	(0.0213)	(0.0386)	(0.0131)	(0.0138)	(0.0135)	(0.0159)
IG	0.0645*	0.0167	0.0914**	-0.0292**	-0.0237	-0.0182	-0.0225
	(0.0384)	(0.0283)	(0.0420)	(0.0141)	(0.0151)	(0.0152)	(0.0173)
Σ control var.							
Constant	0.0821	0.3650	0.5170	0.0791	0.2790	0.0168	0.2940
	(0.3550)	(0.2460)	(0.4920)	(0.1880)	(0.1980)	(0.1930)	(0.2030)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,137	1,137	1,137	1,137	1,137	1,137	1,137
Adjusted R^2	0.695	0.805	0.792	0.384	0.324	0.392	0.326

Note: Robust standard errors in parentheses; the performance-matching of WCA_{bs}_abs reported was based on lagged ROA, while TA_{bs}_abs was based on current ROA
***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

[14] However, in unreported breakpoint tests, it is concluded that the IFRS adoption appears to have caused a structural break in equations (4.6) and (4.7), significant at a 1% level.

However, the coefficients associated with *GD* and *IG* are, for the most part, not significant, despite their negative signs. While this may be a result of incomparability of international evidence produced under national GAAP, it may also suggest that IFRS changed the incentives for geographically diversified targets to manipulate accruals. The results under the balance sheet approach are consistent with most of extant literature, which usually studies samples prior to IFRS adoption, or that, at the very least, are largely dominated by that period. Evidence suggests that analysts' forecasts improved after the introduction of IFRS 8 due to more reliable geographical segment information (Aboud *et al.*, 2018). The changes to financial reporting resulting from IFRS 8 could explain the apparent change in behaviour of geographically diversified targets, with the new regulations making its segmental information more transparent, in particular to experienced finance professionals that participate in the due diligence process of a M&A. Note that these results are once again driven by the UK, as removing UK targets from the sample turns all coefficients associated with the diversification dummies not significant.

Regarding real EM, industrial diversification still appears to not impact it. However, the coefficients associated with *GD* and *IG* become positive and statistically and economically significant. While it appears that diversification does not impact the manipulation of discretionary expenses, the coefficients associated with *GD* and *IG* are, respectively, 0.0659 (significant at a 5% level) and 0.0645 (significant at a 10% level) when using *PROD_abs* as the dependent variable, and 0.0772 and 0.0914 (both significant at a 5% level) when using RM_{total}*_abs* as the dependent variable. These results support **H4** and once again suggest that the IFRS adoption may have changed the relation between geographical diversification and EM behaviour of targets. The apparent preference by targets' managers to increase the manipulation of production costs is also consistent with Campa and Hajbaba (2016)'s conclusion that targets prefer sales' manipulation. However, the results are driven by UK targets, as removing them from the sample turns all coefficients not significant, with the only exception being the coefficient associated with *ID* when using *PROD_abs* as the dependent variable in equation (4.7), which is negative and significant at a 10% level.

5.4.5. European peer groups

In this subchapter, the results obtained by using a different conception of industry peers are presented. Instead of estimating accruals and real EM measures using country-year-industry fixed effects, *i.e.* for each country-year-industry group, the regressions are estimated for each year-industry pair, regardless of the country. Since the EU has as its target achieving a high degree of financial, economic and trade integration, it may be too restrictive to assume that each firm only competes with other firms at a national level, instead of at a European level. In fact, evidence suggests that trade integration increased in EU countries between 1967 and 2017, partially as a result of each country progressively joining the EU (Arribas, Bensassi & Tortosa-Ausina, 2020). Nevertheless, price divergence among EU members still appears to be too high, suggesting that consumer markets haven't achieved yet a high level of integration (Ogrokhina, 2015). Therefore, the results in this subchapter must be interpreted carefully, as the conception of industry peers adopted may be inappropriate.

The models are estimated using information produced after the IFRS adoption in 2005, as financial information produced before may not be comparable at a EU level and lead to inconsistent estimates. A sample of 191 targets is reached, with 51.31% of them being from the UK. The number of countries included[15] in the final sample increases to 17, reducing the weight that UK companies have on it.

The results presented in **table 12** suggest that industrial diversification's impact on accruals-based EM, measured by discretionary working capital accruals, is robust to a different conception of industry peers, as the coefficients associated with the diversification dummies are negative and statistically significant. The coefficient associated with *ID* is significantly negative in all models estimated through the balance sheet (using discretionary working capital and total accruals), usually at a 5% level. Geographical diversification's impact on accruals-based EM is also robust when using TA_{bs}*_abs*, but not when using WCA_{bs}*_abs*. In fact, none of the regressions that include WCA_{bs}*_abs* as the EM proxy have significant coefficients associated with *GD*. Meanwhile, every regression that used TA_{bs}*_abs* as the EM proxy has a negative and significant coefficient associated with *GD* and *IG*, and of similar economic significance as well. Regarding real EM, the results are consistent with

[15] In addition to the 10 countries included in the sample used in subchapter (5.3), Austria, Belgium, Croatia, Ireland, Lithuania, Slovenia and Spain are also included.

subchapter (5.3), that is, it appears that diversification does not impact the manipulation of real activities of EU's targets.

Table 12 – Regressions of discretionary working capital accruals and real EM measures estimated using industry-year fixed-effects

	TA_{bs}_*abs*	WCA_{bs}_*abs*	TA_{cf}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
ID	-0.0639**	-0.0542**	-0.0348	-0.0524*	-0.0227	-0.0111	-0.0294
	(0.0319)	(0.0260)	(0.0260)	(0.0297)	(0.0194)	(0.0181)	(0.0257)
GD	-0.0592*	-0.0276	-0.0324	-0.0450	-0.0116	-0.0125	0.0064
	(0.0302)	(0.0229)	(0.0359)	(0.0386)	(0.0326)	(0.0225)	(0.0410)
IG	-0.0517*	-0.0384*	-0.0064	-0.0200	-0.0373	0.0032	-0.0046
	(0.0275)	(0.0224)	(0.0345)	(0.0377)	(0.0292)	(0.0196)	(0.0360)
Σ control var.							
Constant	-0.3650	-0.1090	0.3470	0.2240	-0.0173	-0.4250	0.1560
	(0.2460)	(0.2660)	(0.4440)	(0.4790)	(0.4210)	(0.2960)	(0.6580)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	573	573	573	573	573	573	573
Adjusted R^2	0.334	0.366	0.278	0.408	0.774	0.863	0.830

Note: Robust standard errors in parentheses

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

6. Conclusions

In this dissertation, industrial and geographical diversifications' impact on EM by 150 EU's targets between 2010 and 2019 is assessed. The results support **H1**, which states that industrial diversification mitigates the manipulation of accruals due to an offsetting effect. This is consistent with Jiraporn *et al.* (2008) and Vasilescu and Millo (2016). Regarding geographical diversification, the evidence suggests it mitigates accruals-based EM in targets, which is inconsistent with previous research and rejects **H2**. To the best of my knowledge, this is the first research that yields such conclusion. However, after removing UK targets from the sample, diversification does not seem to impact the remaining EU targets' EM.

This is also the first research that assesses diversification's impact on real activities' manipulation by targets. Diversification appears to not impact real EM by targets, with the exception of a combination of industrial with geographical diversification that appears to mitigate the manipulation of discretionary expenses. However, the latter conclusion is not robust to alternative estimation techniques such as the use of performance-matching. After removing UK targets from the sample, results weakly suggest that industrial diversification, outside the UK, may increase the manipulation of discretionary expenses, while geographical diversification appears to mitigate it.

In further robustness checks, the period from 1997 to 2019 is analysed, and the conclusions regarding industrial diversification appear to be robust to the inclusion of the period preceding the implementation of IFRS in the EU. However, conclusions regarding geographical diversification change, as it appears that it did not impact the use of accruals-based EM by targets, while it increased the manipulation of real activities (more specifically, of production costs). These results are driven by UK targets though, as results after removing UK targets are not significant. This is the first research, to the best of my knowledge, that suggests a potential change in the relation after the implementation of the IFRS, even though this hypothesis is not directly and explicitly tested.

The results also appear to support the information diversification hypothesis. In particular, the fact that industrial diversification appears to mitigate accruals-based EM, both including and excluding the period prior to IFRS adoption, supports Jiraporn *et al.* (2008)'s argument based on the information diversification hypothesis, which states that accruals from different business segments are not perfectly correlated and offset each other, mitigating accruals-based EM.

The apparent mitigating effect of IFRS on geographical diversification's impact on accruals-based and real EM also supports that diversification does not increase information asymmetries. In fact, it is consistent with Khan *et al.* (2020)'s conclusions that suggest that poor corporate governance mechanisms are the reason of potential increased information asymmetries between insiders and outsiders of diversified firms. The conclusions of this dissertation suggest that targets in the European Union do not necessarily suffer from increased information asymmetries, and that the potential exacerbating effect of geographical diversification on EM before IFRS adoption, in particular in the UK, could be a result of less appropriate financial reporting standards coupled with limited attention and cognitive capabilities of outsiders than prevent them from understanding all the relevant information in a diversified firm's earnings report (Hirshleifer & Teoh, 2003). It appears that the impact of such cognitive limitations can be mitigated by appropriate financial reporting standards, preventing diversification from increasing information asymmetries, or, at the very least, preventing it from increasing the negative effects of information asymmetries.

There are important limitations regarding the adopted methodology. Firstly, equations (4.6) and (4.7) are dependent on the EM proxies' reliability, that is, the analysis suffers from a joint hypothesis problem. Second, the financial information used may not be comparable across countries, particularly the cashflow statement. Lastly, the impact of diversification on targets' EM practices may not be specific to targets. In other words, a target may lack opportunity to manipulate earnings before receiving a bid, which means that potential EM present in this sample may have not been motivated by the M&A associated with each target, and rather be motivated by something completely different.

Finally, further research could focus on the impact of diversification on acquirers' EM. However, a sample of acquirers could be limited to acquisitions involving stock-for-stock swaps, as those operations require that target's managers estimate the acquirer's value. Diversification in the acquirer would lead to segment reporting, potentially leading to targets' managers facing more information asymmetries when analysing the financial statements of the acquirer. Analysing acquirers involved in a friendly negotiation could also be interesting, regardless of the method of payment, if it is assumed that the target would have to estimate the potential synergies arising from the deal in order to accept or reject the bid.

Appendices

Appendix A – Definition of total and working capital accruals

In accordance with Botsari and Meeks (2008), total accruals are defined, through the balance sheet, as the difference between the change in non-cash current assets (CA) and the change in current liabilities (CL), *i.e.* working capital accruals, with depreciations and amortisations (D&A) subtracted from that difference. The change in the current portion of long-term debt (interest-bearing debt) should be summed; however, Worldscope has limited coverage regarding this item. Therefore, I do not adjust for that item.

$$(\Delta CA - \Delta Cash) - \Delta CL - D\&A \quad \textbf{(A.1)}$$

As stated previously, working capital accruals are defined, through the balance sheet approach, as the difference between the change in non-cash current assets and the change in current liabilities.

$$(\Delta CA - \Delta Cash) - \Delta CL \quad \textbf{(A.2)}$$

Total accruals are defined, through the cashflow approach, as net income before extraordinary items (NI) reported in the cashflow statement (identified in Worldscope by the code WC04001) minus the cashflow from operations (CFO). The cashflow from operations is defined as the sum of funds from operations with funds from/for other operating activities.

$$NI - CFO = NI - (\text{funds from operations} + \text{funds from/for other operating activities}) \quad \textbf{(A.3)}$$

Finally, working capital accruals are defined, through the cashflow statement, as net income before extraordinary items as reported in the cashflow statement minus cashflow from operations minus depreciations and amortisations.

$$NI - CFO - D\&A \quad \textbf{(A.4)}$$

Appendix B - Cross-sectional modified-Jones model using total accruals

Following Dechow *et al.* (1995), the cross-sectional modified-Jones model is used to estimate discretionary total accruals. In comparison with equation (4.1), a variable containing the gross property, plant and equipment for firm *i* in year *t* scaled by lagged total assets is added, since total accruals also include depreciations and amortizations as a potential EM

instrument. Equation (B.1), therefore, is used to estimate the normal levels of total accruals for firm *i* in year *t*. The discretionary total accruals are then the difference between the normal (estimated) level and the actual level of total accruals. The adjustment for performance-matching is analogous to what is described in subchapter (4.1) for discretionary working capital accruals.

$$\frac{TA_{it}}{A_{it-1}} = \beta_0 + \beta_{1jt}\left(\frac{1}{A_{it-1}}\right) + \beta_{2jt}\left(\frac{\Delta REV_{it}}{A_{it-1}} - \frac{\Delta REC_{it}}{A_{it-1}}\right) + \beta_{3jt}\left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad \textbf{(B.1)}$$

Where:

TA_{it} = Total accruals for firm *i* in year *t*

A_{it-1} = Lagged assets for firm *i* in year *t*

ΔREV_{it} = change in revenues for firm *i* in year *t*

ΔREC_{it} = change in accounts receivable for firm *i* in year *t*

PPE_{it} = Gross property, plant and equipment for firm *i* in year *t*

ε_{it} = error term

Appendix C – Linearly-adjusted models

Following Kothari *et al.* (2005), Dechow *et al.* (1995)'s model is adjusted for performance by adding the current, or lagged, ROA as an explanatory variable, instead of using performance-matching techniques to control for performance.

$$\frac{WCA_{it}}{A_{it-1}} = \beta_0 + \beta_{1jt}\left(\frac{1}{A_{it-1}}\right) + \beta_{2jt}\left(\frac{\Delta REV_{it}}{A_{it-1}} - \frac{\Delta REC_{it}}{A_{it-1}}\right) + \beta_{3jt}(ROA_{it}) + \varepsilon_{it} \quad \textbf{(C.1)}$$

Where:

WCA_{it} = Working capital accruals for firm *i* in year *t*

A_{it-1} = Lagged assets for firm *i* in year *t*

ΔREV_{it} = change in revenues for firm *i* in year *t*

ΔREC_{it} = change in accounts receivable for firm *i* in year *t*

ROA_{it} = Return on assets for firm *i* in year *t* (lagged return on assets is also used)

ε_{it} = error term

$$\frac{TA_{it}}{A_{it-1}} = \beta_0 + \beta_{1jt}\left(\frac{1}{A_{it-1}}\right) + \beta_{2jt}\left(\frac{\Delta REV_{it}}{A_{it-1}} - \frac{\Delta REC_{it}}{A_{it-1}}\right) + \beta_{3jt}\left(\frac{PPE_{it}}{A_{it-1}}\right) + \beta_{4jt}(ROA_{it}) + \varepsilon_{it} \quad \textbf{(C.2)}$$

Where:

TA_{it} = Total accruals for firm *i* in year *t*

A_{it-1} = Lagged assets for firm *i* in year *t*

ΔREV_{it} = change in revenues for firm *i* in year *t*

ΔREC_{it} = change in accounts receivable for firm *i* in year *t*

PPE_{it} = Gross property, plant and equipment for firm *i* in year *t*

ROA_{it} = Return on assets for firm *i* in year *t* (lagged return on assets is also used)

ε_{it} = error term

References

Aboud, A., Roberts, C., & Zalata, A. M. (2018). The impact of IFRS 8 on financial analysts' earnings forecast errors: EU evidence. *Journal of International Accounting, Auditing and Taxation*, 33, 2-17. doi: https://doi.org/10.1016/j.intaccaudtax.2018.08.001

Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59(1), 60-79. doi: https://doi.org/10.1016/j.jacceco.2014.11.004

Altman, E. (1968). Financial ratios, discriminate analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4), 589–609. doi: https://doi.org/10.1111/j.1540-6261.1968.tb00843.x

Anagnostopoulou, S. C., & Tsekrekos, A. E. (2013). Do firms that wish to be acquired manage their earnings? Evidence from major European countries. *International Review of Financial Analysis*, 30, 57-68. doi: https://doi.org/10.1016/j.irfa.2013.06.002

Anagnostopoulou, S. C., & Tsekrekos, A. E. (2015). Earnings management in firms seeking to be acquired. *British Accounting Review*, 47(4), 351-375. doi: https://doi.org/10.1016/j.bar.2014.07.001

Arribas, I., Bensassi, S., & Tortosa-Ausina, E. (2020). Trade integration in the European Union: Openness, interconnectedness, and distance. *North American Journal of Economics and Finance*, 52, Article 101167. doi: https://doi.org/10.1016/j.najef.2020.101167

Ataullah, A., Davidson, I., Le, H., & Wood, G. (2014). Corporate Diversification, Information Asymmetry and Insider Trading. *British Journal of Management*, 25(2), 228-251. doi: https://doi.org/10.1111/j.1467-8551.2012.00846.x

Badertscher, B. A. (2011). Overvaluation and the Choice of Alternative Earnings Management Mechanisms. *Accounting Review*, 86(5), 1491-1518. doi: 10.2308/accr-10092

Ben-Amar, W., & Missonier-Piera, F. (2008). Earnings management by friendly takeover targets. *International Journal of Managerial Finance*, 4(3), 232-243. doi: 10.1108/17439130810878811

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics*, 37(1), 39-65. doi: https://doi.org/10.1016/0304-405X(94)00798-6

Beuselinck, C., Cascino, S., Deloof, M., & Vanstraelen, A. (2019). Earnings Management within Multinational Corporations. *Accounting Review*, 94(4), 45-76. doi: 10.2308/accr-52274

Bollaert, H., & Delanghe, M. (2015). Securities Data Company and Zephyr, data sources for M&A research. *Journal of Corporate Finance*, 33, 85-100. doi: https://doi.org/10.1016/j.jcorpfin.2015.05.005

Botsari, A., & Meeks, G. (2008). Do acquirers manage earnings prior to a share for share bid?. *Journal of Business Finance and Accounting*, 35(5/6), 633-670. doi: 10.1111/j.1468-5957.2008.02091.x

Botsari, A., & Meeks, G. (2018). Acquirers' earnings management ahead of stock-for-stock bids in 'hot' and 'cold' markets. *Journal of Accounting and Public Policy*, 37(5), 355-375. doi: https://doi.org/10.1016/j.jaccpubpol.2018.09.007

Callao, S., Jarne, J. I., & Laínez, J. A. (2007). Adoption of IFRS in Spain: Effect on the comparability and relevance of financial reporting. *Journal of International Accounting, Auditing and Taxation*, 16(2), 148-178. doi: https://doi.org/10.1016/j.intaccaudtax.2007.06.002

Campa, D., & Hajbaba, A. (2016). Do targets grab the cash in takeovers: The role of earnings management. *International Review of Financial Analysis*, 44, 56-64. doi: https://doi.org/10.1016/j.irfa.2016.01.008

Chang, C., & Yu, X. (2004). Investment Opportunities, Liquidity Premium, and Conglomerate Mergers. *Journal of Business*, 77(1), 45-74. doi: 10.1086/379861

Chin, C.-L., Chen, Y.-J., & Hsieh, T.-J. (2009). International Diversification, Ownership Structure, Legal Origin, and Earnings Management: Evidence from Taiwan. *Journal of Accounting, Auditing & Finance*, 24(2), 233-262. doi: 10.1177/0148558x0902400205

Cohen, D., Pandit, S., Wasley, C. E., & Zach, T. (2020). Measuring Real Activity Management. *Contemporary Accounting Research*, 37(2), 1172-1198. doi: https://doi.org/10.1111/1911-3846.12553

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *Accounting Review*, 70(2), 193-225. Retrieved from http://www.jstor.org/stable/248303

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1), 1-36. doi: 10.1111/j.1911-3846.1996.tb00489.x

Degeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings Management to Exceed Thresholds. *Journal of Business*, 72(1), 1-33. doi: 10.1086/209601

Denis, D. J., Denis, D. K., & Sarin, A. (1997). Agency Problems, Equity Ownership, and Corporate Diversification. *Journal of Finance*, 52(1), 135-160. doi: 10.2307/2329559

Denis, D. J., Denis, D. K., & Yost, K. (2002). Global Diversification, Industrial Diversification, and Firm Value. *Journal of Finance*, 57(5), 1951-1979. doi: https://doi.org/10.1111/0022-1082.00485

Doukas, J. A., & Zhang, R. (2020). Corporate managerial ability, earnings smoothing, and acquisitions. *Journal of Corporate Finance*, 65, Article 101756. doi: https://doi.org/10.1016/j.jcorpfin.2020.101756

Duru, A., & Reeb, D. M. (2002). International Diversification and Analysts' Forecast Accuracy and Bias. *Accounting Review*, 77(2), 415-433. doi: 10.2308/accr.2002.77.2.415

Dye, R. A. (1988). Earnings Management in an Overlapping Generations Model. *Journal of Accounting Research,* 26(2), 195-235. doi: 10.2307/2491102

Easterwood, C. M. (1998). Takeovers And Incentives For Earnings Management: An Empirical Analysis. *Journal of Applied Business Research*, 14(1), 29-48. doi: 10.19030/jabr.v14i1.5726

Eddey, P. H., & Taylor, S. L. (1999). Directors' Recommendations on Takeover Bids and the Management of Earnings: Evidence from Australian Takeovers. *Abacus*, 35(1), 29-45. doi: https://doi.org/10.1111/1467-6281.00033

El Mehdi, I. K., & Seboui, S. (2011). Corporate diversification and earnings management. *Review of Accounting and Finance*, 10(2), 176-196. doi: 10.1108/14757701111129634

Erickson, M., & Wang, S.-W. (1999). Earnings management by acquiring firms in stock for stock mergers. *Journal of Accounting and Economics*, 27(2), 149-176. doi: https://doi.org/10.1016/S0165-4101(99)00008-7

Farooqi, J., Harris, O., & Ngo, T. (2014). Corporate diversification, real activities manipulation, and firm value. *Journal of Multinational Financial Management*, 27, 130-151. doi: https://doi.org/10.1016/j.mulfin.2014.06.010

Fogel-Yaari, H., & Ronen, J. (2020). Earnings management strategies for meeting or beating expectations. *Journal of Accounting and Public Policy*, 39(1), Article 106714. doi: https://doi.org/10.1016/j.jaccpubpol.2019.106714

Francis, B., Hasan, I., & Li, L. (2016). A cross-country study of legal-system strength and real earnings management. *Journal of Accounting and Public Policy*, 35(5), 477-512. doi: https://doi.org/10.1016/j.jaccpubpol.2016.06.004

Gande, A., Schenzler, C., & Senbet, L. W. (2009). Valuation effects of global diversification. *Journal of International Business Studies*, 40(9), 1515-1532. doi: 10.1057/jibs.2009.59

Garel, A., Martin-Flores, J. M., Petit-Romec, A., & Scott, A. (2021). Institutional investor distraction and earnings management. *Journal of Corporate Finance*, 66, Article 101801. doi: https://doi.org/10.1016/j.jcorpfin.2020.101801

Gordon, E. A., Henry, E., Jorgensen, B. N., & Linthicum, C. L. (2017). Flexibility in cash-flow classification under IFRS: determinants and consequences. *Review of Accounting Studies*, 22(2), 839-872. doi: 10.1007/s11142-017-9387-1

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1), 3-73. doi: https://doi.org/10.1016/j.jacceco.2005.01.002

Gray, S. J., Kang, T., Lin, Z., & Tang, Q. (2015). Earnings Management in Europe Post IFRS: Do Cultural Influences Persist?. *Management International Review*, 55(6), 827-856. doi: 10.1007/s11575-015-0254-7

Gunny, K. A. (2010). The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks. *Contemporary Accounting Research*, 27(3), 855-888. doi: 10.1111/j.1911-3846.2010.01029.x

Haga, J., & Sundvik, D. (2019). Long-Term Orientation and Earnings Management Strategies. *Journal of International Accounting Research*. doi: 10.2308/jiar-5250

Han, S., Kang, T., Salter, S., & Yoo, Y. K. (2010). A Cross-Country Study on the Effects of National Culture on Earnings Management. *Journal of International Business Studies*, 41(1), 123-141. doi: 10.1057/jibs.2008.78

Hartzell, J. C., Ofek, E., & Yermack, D. (2004). What's in it for me? CEOs whose firms are acquired. *Review of Financial Studies*, 17(1), 37-61. doi: 10.1093/rfs/hhg034

Hirshleifer, D., & Teoh, S. H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, 36(1-3), 337-386. doi: 10.1016/j.jacceco.2003.10.002

Hribar, P., & Collins, D. W. (2002). Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research*, 40(1), 105-134, doi: 10.1111/1475-679X.00041

Jiraporn, P., Kim, Y. S., & Mathur, I. (2008). Does corporate diversification exacerbate or mitigate earnings management?: An empirical analysis. *International Review of Financial Analysis*, 17(5), 1087-1109. doi: https://doi.org/10.1016/j.irfa.2007.10.001

Karim, M. A., Sarkar, S., & Zhang, S. (2016). Earnings management surrounding M&A: Role of economic development and investor protection. *Advances in Accounting*, 35, 207-215. doi: https://doi.org/10.1016/j.adiac.2016.10.002

Key, K. G. (1997). Political cost incentives for earnings management in the cable television industry. *Journal of Accounting and Economics*, 23(3), 309-337. doi: https://doi.org/10.1016/S0165-4101(97)00012-8

Khan, M. H., Bhatti, H. Y., Hassan, A., & Fraz, A. (2020). The diversification–performance nexus: mediating role of information asymmetry. *Journal of Management and Governance*. doi: 10.1007/s10997-020-09528-8

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163-197. doi: https://doi.org/10.1016/j.jacceco.2004.11.002

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3), 505-527. doi: https://doi.org/10.1016/S0304-405X(03)00121-1

Lewellen, W. G. (1971). A Pure Financial Rationale for the Conglomerate Merger. *Journal of Finance*, 26(2), 521-537. doi: 10.2307/2326063

Lim, C. Y., Thong, T. Y., & Ding, D. K. (2008). Firm diversification and earnings management: evidence from seasoned equity offerings. *Review of Quantitative Finance and Accounting*, 30(1), 69-92. doi: 10.1007/s11156-007-0043-x

Lin, F., Lin, S.-W., & Fang, W.-C. (2020). How CEO narcissism affects earnings management behaviour. *North American Journal of Economics and Finance*, 51, Article 101080. doi: https://doi.org/10.1016/j.najef.2019.101080

Louis, H. (2004). Earnings management and the market performance of acquiring firms. *Journal of Financial Economics*, 74(1), 121-148. doi: https://doi.org/10.1016/j.jfineco.2003.08.004

Marinovic, I., & Varas, F. (2019). CEO Horizon, Optimal Pay Duration, and the Escalation of Short-Termism. *Journal of Finance*, 74(4), 2011-2053. doi: 10.1111/jofi.12770

Marquardt, C., & Zur, E. (2015). The Role of Accounting Quality in the M&A Market. *Management Science*, 61(3), 604-623. doi: 10.1287/mnsc.2013.1873

McNichols, M. F., & Stubben, S. R. (2015). The effect of target-firm accounting quality on valuation in acquisitions. *Review of Accounting Studies*, 20(1), 110-140. doi: 10.1007/s11142-014-9283-x

Nan, L. (2008). The agency problems of hedging and earnings management. *Contemporary Accounting Research*, 25(3), 859-890. doi: 10.1506/car.25.3.8

Ogrokhina, O. (2015). Market integration and price convergence in the European Union. *Journal of International Money and Finance*, 56, 55-74. doi: https://doi.org/10.1016/j.jimonfin.2015.04.004

Peng, Q., & Yin, S. (2021). Does the executive labor market discipline? Labor market incentives and earnings management. *Journal of Empirical Finance*, 62, 62-86. doi: https://doi.org/10.1016/j.jempfin.2021.02.003

Petaibanlue, J., Walker, M., & Lee, E. (2015). When did analyst forecast accuracy benefit from increased cross-border comparability following IFRS adoption in the EU?. *International Review of Financial Analysis*, 42, 278-291. doi: https://doi.org/10.1016/j.irfa.2015.08.004

Rajan, R., Servaes, H., & Zingales, L. (2000). The cost of diversity: The diversification discount and inefficient investment. *Journal of Finance*, 55(1), 35-80. doi: 10.1111/0022-1082.00200

Raman, K., Shivakumar, L., & Tamayo, A. (2013). Target's earnings quality and bidders' takeover decisions. *Review of Accounting Studies*, 18(4), 1050-1087. doi: 10.1007/s11142-013-9224-0

Rhodes-Kropf, M., & Viswanathan, S. (2004). Market Valuation and Merger Waves. *Journal of Finance*, 59(6), 2685-2718. doi: https://doi.org/10.1111/j.1540-6261.2004.00713.x

Richardson, V. J. (2000). Information Asymmetry and Earnings Management: Some Evidence. *Review of Quantitative Finance and Accounting*, 15(4), 325-347. doi: 10.1023/A:1012098407706

Rodríguez-Pérez, G., & van Hemmen, S. (2010). Debt, diversification and earnings management. *Journal of Accounting and Public Policy*, 29(2), 138-159. doi: https://doi.org/10.1016/j.jaccpubpol.2009.10.005

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335-370. doi: https://doi.org/10.1016/j.jacceco.2006.01.002

Scharfstein, D. S., & Stein, J. C. (2000). The dark side of internal capital markets: Divisional rent-seeking and inefficient investment. *Journal of Finance*, 55(6), 2537-2564. doi: 10.1111/0022-1082.00299

Shi, G., Sun, J., & Luo, R. (2015). Geographic dispersion and earnings management. *Journal of Accounting and Public Policy*, 34(5), 490-508. doi: https://doi.org/10.1016/j.jaccpubpol.2015.05.003

Shleifer, A., & Vishny, R. W. (2003). Stock market driven acquisitions. *Journal of Financial Economics*, 70(3), 295-311. doi: 10.1016/S0304-405X(03)00211-3

Stein, J. C. (1997). Internal Capital Markets and the Competition for Corporate Resources. *Journal of Finance*, 52(1), 111-133. doi: 10.2307/2329558

Thomas, S. (2002). Firm diversification and asymmetric information: evidence from analysts' forecasts and earnings announcements. *Journal of Financial Economics*, 64(3), 373-396. doi: https://doi.org/10.1016/S0304-405X(02)00129-0

Trueman, B., & Titman, S. (1988). An Explanation for Accounting Income Smoothing. *Journal of Accounting Research*, 26, 127-139. doi: 10.2307/2491184

Vasilescu, C., & Millo, Y. (2016). Do industrial and geographic diversifications have different effects on earnings management? Evidence from UK mergers and acquisitions. *International Review of Financial Analysis*, 46, 33-45. doi: https://doi.org/10.1016/j.irfa.2016.04.009

Yamada, A., Sakurai, Y., & Ishida, R. (2020). Influence of geographic distribution on real activities manipulation within consolidated companies: Evidence from Japan. *Research in International Business and Finance*, 54, Article 101306. doi: https://doi.org/10.1016/j.ribaf.2020.101306

Yung, K., & Root, A. (2019). Policy uncertainty and earnings management: International evidence. *Journal of Business Research*, 100, 255-267. doi: https://doi.org/10.1016/j.jbusres.2019.03.058

Zang, A. Y. (2012). Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management. *Accounting Review*, 87(2), 675-703. doi: 10.2308/accr-10196

Zhang, Y., Uchida, K., & Dong, L. (2020). External financing and earnings management: Evidence from international data. *Research in International Business and Finance*, 54, Article 101275. doi: https://doi.org/10.1016/j.ribaf.2020.101275

Annexes

Annex A – Sample selection criteria

Table A.1 – Sample selection criteria in Zephyr and Worldscope

Search criteria	Number of targets
1. **Include** deal types: Acquisition, Merger	791,614
2. **Exclude**: Distressed sales/companies	774,679
3. **Include**: deals where the initial stake of the acquirer was less than 50%, and the final stake was more than 50%	634,619
4. **Include**: completed deals	530,740
5. **Include**: listed and delisted targets according to Zephyr	29,462
6. **Include**: deals announced and completed between 1 January 2010 and 31 december 2019	14,581
7. **Include**: target is from a EU member	2,910
8. **Exclude**: financial acquisitions	1,558
9. - **Exclude**: targets from financial and utility sectors (ICBIC codes 30 and 65 in Worldscope) - **Include**: only one target as identified by its ISIN number; if there any duplicates, retain only oldest deal - **Cross-check** public status data with Worldscope; retain only public targets at the time of the announcement - **Exclude**: targets without estimated discretionary (total and working capital) accruals through the balance sheet approach for the three years preceding M&A announcement - **Exclude**: targets without estimated discretionary (total and working capital) accruals through the cashflow approach for the three years preceding M&A announcement - **Exclude**: targets without estimated discretionary production costs for the three years preceding M&A announcement	

Table A.1 (continuation)

Search criteria	Number of targets
- **Exclude**: targets without estimated discretionary expenses for the three years preceding M&A announcement	
- **Exclude**: targets with missing sales, total assets, cash and short-term investments, cost of goods sold, market cap	
- **Exclude**: targets with negative or zero sales, cash and short-term investments, cost of goods sold, total assets	
- **Exclude**: targets with negative selling, general and administrative expenses, R&D expenses, gross property, plant and equipment, current liabilities, current assets, receivables, inventories, total debt, accounts payable, market cap, total liabilities	
- **Exclude**: targets without necessary industry and geographic segmental information	
- **Exclude**: targets with difference between the sum of segment sales (either industrial or geographic segments) and total reported sales exceeding 1%	
- **Exclude:** targets with Herfindahl indexes, both industrial and geographical, exceeding 1	150
Total number of targets included in final sample	150

Annex B – Variables' definition

Table B.1 – Variables' definition

Variable	Definition	Worldscope item code
Sales	Income statement item; represents total gross sales	WC01001
Total assets	Balance sheet item; the sum of current assets, cash and short-term investments and net property, plant and equipment	WC02999
Market cap	Total market capitalization of firm *i* at the end of the fiscal period	WC08002
Net income before extraordinary items	Income statement item; represents the net income of firm *i* in year *t*, before extraordinary items and dividends	WC01551
Total debt	Balance sheet item; represents the total long-term, or interest-bearing, debt of firm *i* in year *t*	WC03255
Current assets	Balance sheet item; represents assets that are expected to be converted in cash or consumed within one year	WC02201
Cash and short-term investments	Balance sheet item; sum of cash and marketable securities	WC02001
Current liabilities	Balance sheet item; non-interest-bearing liabilities; due to unavailability of information, it also includes current portion of long-term debt	WC03101
Depreciation and amortization	Cashflow statement item; following Botsari and Meeks (2008), D&A used is as reported in the cashflow statement	WC04051
Net income (cashflow statement)	Cashflow statement item; net income used to compute total and working capital accruals, following Botsari and Meeks (2008)	WC04001

Table B.1 (continuation)

Variable	Definition	Worldscope item code
Funds from operations	Cashflow statement item; used to compute cashflow from operations, it is the sum of net income and all non-cash charges or credits, excluding changes in working capital	WC04201
Funds from/for other operating activities	Cashflow statement item; used to compute cashflow from operations, it is the change in non-cash working capital, excluding short-term debt	WC04831
Receivables	Balance sheet item; represents the credit granted to customers	WC02051
Inventories	Balance sheet item; it is the sum of raw materials, work in process goods and finished goods ready for sale	WC02101
Property, plant and equipment	Balance sheet item; represents the total of gross fixed assets subject to depreciation	WC02301
Payables	Balance sheet item; represents the credit granted to the firm by its suppliers	WC03040
Cost of goods sold	Cashflow statement item; the total cost incurred to generate revenues through the operating activities	WC01051
SG&A Expenses	Income statement item; expenses not directly attributed to the production process, but necessary for the firm's activities, including marketing and advertising expenses and R&D expenses; therefore, this variable corresponds to the definition of *DISX*	WC01101
R&D expenses	Income statement item; expenses related to the research and creation of new goods or production processes; missing values are set to zero	WC01201

Table B.1 (continuation)

Variable	Definition	Worldscope item code
Retained earnings	Balance sheet item; accumulated net income which has not been distributed to the shareholders under dividends and that has not been allocated to reserve accounts	WC03495
Total shareholders' equity	Balance sheet item; it is the sum of common equity and preferred stock	WC03995
EBIT	Income statement item; it is net income less taxes due and interest expense	WC18191
Return on assets	Computed as EBIT divided by total assets	
Market to book	Computed as market cap divided by total shareholders' equity, since total shareholders' equity is also the difference between total assets and total liabilities	
Days receivable	Computed as receivables divided by total sales times 365	
Days inventory	Computed as total inventories divided by cost of goods sold times 365	
Days payable	Computed as payables divided by purchases times 365	
Purchases	Computed as change in inventories plus cost of goods sold	
GDPgrowth	It is the percentage change in *per capita* gross domestic product in current US dollars, retrieved from World Bank	
SMliq	It is the ratio of the stock market's total market capitalization to the GDP, in current US dollars, of the home country; GDP is retrieved from World Bank, while the total stock market's market cap is retrieved from Worldscope	

Annex C – Results with alternative estimation models

Table C.1 – Regressions of discretionary total and working capital accruals estimated through alternative estimation models

Panel A: Using discretionary total accruals

	Dechow *et al.* (1995)		Kothari *et al* (2005)		Performance-matching	
	TA_{bs}_abs	TA_{cf}_abs	TA_{bs}_abs	TA_{cf}_abs	TA_{bs}_abs	TA_{cf}_abs
ID	-0.0668*	-0.0388	-0.0592	-0.0278	-0.0721**	-0.0401
	(0.0345)	(0.0301)	(0.0387)	(0.0374)	(0.0291)	(0.0369)
GD	-0.0553	-0.0755***	-0.0474	-0.0408	-0.0504*	-0.0709**
	(0.0340)	(0.0277)	(0.0370)	(0.0281)	(0.0275)	(0.0284)
IG	-0.0525*	-0.0173	-0.0525	-0.0103	-0.0654***	-0.0252
	(0.0289)	(0.0248)	(0.0331)	(0.0266)	(0.0234)	(0.0258)
Σ control var.						
Constant	0.0865	0.6860	0.1250	0.7960*	0.1880	0.9620**
	(0.2660)	(0.5690)	(0.2910)	(0.4610)	(0.2610)	(0.4780)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450	450
Adjusted R^2	0.343	0.323	0.293	0.265	0.291	0.300

Note: Robust standard errors in parentheses; performance-matching was based on lagged ROA, while Kothari *et al.* (2005) included lagged ROA instead of current ROA

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table C.1 (continuation)

Panel B: Using discretionary working capital accruals

	Dechow *et al.* (1995)		Kothari *et al.* (2005)		Performance-matching	
	WCA_{bs}_abs	WCA_{cf}_abs	WCA_{bs}_abs	WCA_{cf}_abs	WCA_{bs}_abs	WCA_{cf}_abs
ID	-0.0713**	-0.0528*	-0.0580*	-0.0361	-0.0808***	-0.0645*
	(0.0297)	(0.0311)	(0.0298)	(0.0396)	(0.0304)	(0.0358)
GD	-0.0417	-0.0731***	-0.0175	-0.0488*	-0.0446	-0.0941***
	(0.0276)	(0.0266)	(0.0299)	(0.0289)	(0.0287)	(0.0265)
IG	-0.0551**	-0.0312	-0.0410	-0.0109	-0.0545*	-0.0547**
	(0.0261)	(0.0230)	(0.0280)	(0.0266)	(0.0278)	(0.0248)
Σ control var.						
Constant	0.2860	0.4250	0.2790	0.4000	-0.0072	0.6820
	(0.2960)	(0.5690)	(0.3360)	(0.6540)	(0.2960)	(0.5120)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450	450
Adjusted R^2	0.391	0.391	0.383	0.333	0.383	0.400

Note: Robust standard errors in parentheses; performance-matching was based on lagged ROA, while Kothari *et al.* (2005) included lagged ROA instead of current ROA

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table C.2 – Regressions of real EM measures using performance-matching estimation methods

Panel A: Using current ROA

	PROD_abs	*DISX_abs*	RM_{total}*_abs*
ID	-0.00185	0.0170	0.0229
	(0.0290)	(0.0173)	(0.0395)
GD	-0.0409	-0.0183	-0.0398
	(0.0507)	(0.0369)	(0.0667)
IG	-0.0111	-0.00281	0.0224
	(0.0410)	(0.0310)	(0.0538)
Σ control var.			
Constant	-0.0831	-0.5470	-0.1180
	(0.5980)	(0.3620)	(0.7570)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	450	450	450
Adjusted R^2	0.644	0.731	0.761

Panel B: using lagged ROA

	PROD_abs	*DISX_abs*	RM_{total}*_abs*
ID	-0.0687	-0.00672	-0.0627
	(0.0440)	(0.0238)	(0.0426)
GD	0.000358	-0.0194	0.0160
	(0.0563)	(0.0350)	(0.0609)
IG	-0.00115	-0.0185	0.00860
	(0.0565)	(0.0283)	(0.0562)
Σ control var.			
Constant	-0.0124	-0.1830	0.4580
	(0.5620)	(0.4910)	(0.9030)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	450	450	450
Adjusted R^2	0.635	0.712	0.733

Note: In both panels, robust standard errors in parentheses; ***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Annex D – Results with alternative diversification measures

Table D.1 – Regressions of discretionary working capital accruals and real EM measures using alternative diversification proxies

Panel A: using the geographical Herfindahl index

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
1/*HERF_GEO*	-0.0125	-0.0224	-0.0139	-0.0053	0.0157
	(0.0148)	(0.0165)	(0.0282)	(0.0096)	(0.0186)
Σ control var.					
Constant	-0.2510	0.0976	-0.0571	-0.3490	-0.0439
	(0.2810)	(0.5380)	(0.6060)	(0.3970)	(0.7670)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450
Adjusted R^2	0.604	0.615	0.828	0.879	0.882

Note: Robust standard errors in parentheses
***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Panel B: Using *INDD* as diversification proxy

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
INDD	-0.0252*	-0.0014	0.0073	-0.0039	0.0282
	(0.0151)	(0.0157)	(0.0238)	(0.0260)	(0.0395)
Σ control var.					
Constant	-0.2120	0.1550	-0.0119	-0.3340	-0.0861
	(0.2860)	(0.5570)	(0.5590)	(0.3860)	(0.7460)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450
Adjusted R^2	0.367	0.376	0.721	0.805	0.809

Note: Robust standard errors in parentheses
***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table D.1 (continuation)

Panel C: Using *GDD* as diversification proxy

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
GDD	-0.0146	-0.0296	0.0134	-0.0440**	-0.0236
	(0.0131)	(0.0195)	(0.0275)	(0.0208)	(0.0441)
Σ control var.					
Constant	-0.2170	0.1650	-0.0175	-0.3200	-0.0863
	(0.2850)	(0.5520)	(0.5590)	(0.3860)	(0.7450)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	450	450	450	450	450
R-squared	0.361	0.378	0.721	0.806	0.809

Note: Robust standard errors in parentheses

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Annex E – Results without UK targets

Table E.1 – Regressions of discretionary working capital accruals and real EM measures using Herfindahl indexes as diversification proxy, without UK targets

Panel A: Using the industrial Herfindahl index

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
1/*HERF*	-0.0093	-0.0103	0.0005	0.0120	-0.0027
	(0.0407)	(0.0292)	(0.0563)	(0.0383)	(0.0932)
Σ control var.					
Constant	-0.2950	0.8440	-0.6640	-0.9200	-0.9380
	(0.8530)	(1.3000)	(2.1820)	(1.9720)	(4.0050)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	156	156	156	156	156
Adjusted R^2	-0.018	0.324	0.721	0.714	0.732

Note: Robust standard errors in parentheses

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table E.1 (continuation)

Panel B: Using the geographical Herfindahl index

	WCA_{bs}_*abs*	WCA_{cf}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
1/*HERF_GEO*	-0.0314	-0.0321*	0.0274	-0.0074	0.0209
	(0.0198)	(0.0184)	(0.0371)	(0.0266)	(0.0606)
Σ control var.					
Constant	-0.3460	0.7670	-0.5000	-0.9680	-0.8120
	(0.7920)	(1.2400)	(2.3090)	(2.1060)	(4.2820)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	156	156	156	156	156
Adjusted R^2	0.002	0.335	0.722	0.714	0.733

Note: Robust standard errors in parentheses

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level

Table E.2 - Regressions of discretionary working capital accruals and real EM measures with three diversification dummies, without UK targets

	WCA_{bs}_*abs*	WCA_{bs}_*abs*	*PROD_abs*	*DISX_abs*	RM_{total}_*abs*
ID	0.0105	0.00296	0.0200	0.0580**	0.0720
	(0.0280)	(0.0205)	(0.0409)	(0.0288)	(0.0842)
GD	-0.0388*	0.00110	0.0401	0.0665	0.0704
	(0.0224)	(0.0286)	(0.0439)	(0.0613)	(0.0718)
IG	-	-	-	-	-
Σ control var.					
Constant	-0.2920	0.8140	-0.8230	-1.2470	-1.3050
	(0.8320)	(1.3260)	(2.2410)	(2.0400)	(4.1240)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	156	156	156	156	156

Note: Robust standard errors in parentheses; coefficients associated with *IG* are omitted due to multicollinearity

***, ** and * denote statistical significance at a, respectively, 1%, 5% and 10% level