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Top management teams' demographics effect on earnings management - A Swedish perspective

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Abstract: We study whether the demographic characteristics of top management teams influence earnings management, by using a sample of Swedish listed firms from 2010-2014. Our findings suggest that the demographic characteristics (i.e. age, gender, education, financial work experience, international experience and tenure) of top management teams influence their earnings management activities. We find significance for both accruals-based and real activity-based earnings management, however, the results for accruals-based are notably weaker than for real activity-based earnings management. The upper echelons theory predictions are moderately consistent with our results. The results can nonetheless be used by people responsible for compiling and developing chief level executive teams, and additionally, by auditing firms when assessing the risk of top management conducting earnings management.

Keywords: *Top management teams, upper echelons theory, earnings management, accruals, real activity*

JEL Classifications: *M40; M41*

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1. Introduction

We investigate the demographic characteristics of top management teams (TMTs), and their effect on earnings management activities in a sample of Swedish listed firms. The upper echelons theory (UET) by Hambrick & Mason (1984) posits that the TMTs cognitions, values and behaviors have a significant impact on the firm's decisions and outcomes (Hambrick & Mason, 1984). Given the difficulty in obtaining data of the TMTs cognitions, values and behaviors, the authors posit the use of observable demographic characteristics instead, such as age, gender, work experience and education, as reasonable proxies for the underlying behavioral similarities and differences (ibid.). The UET has since 1984 been used in several research areas, with significant relationships being found between demographic characteristics of TMTs and organizational outcomes, such as influencing R&D expenditures, illegal activity and financial performance (see Carpenter, Geletkanycz & Sanders (2004) for a review). However, the application of the UET and the TMTs collective characteristics in relation to earnings management is scarce, therefore, investigating the relationship between UET and earnings management can contribute with new knowledge within this area. Earnings management can be described as the act of top managers manipulating the financial reporting for personal gains (Schipper, 1989; Healy & Wahlen, 1999). The financial reporting can be manipulated in different ways, with manipulation using accruals or operational activities being the most common (Zang, 2012). Therefore, since UET is used to investigate decision-making of top managers, there exists a linkage between the theory and earnings management.

Prior studies on the relationship between top executives and their impact on earnings management report inconclusive results. The reason for these inconclusive results could be the sole focus upon top executives as individual decision-makers, thus not being consistent with UET's focus on decision-making as a team-process, where the collective experiences, interactions and capabilities are assumed to be the foundation of decisions (Hambrick & Mason, 1984; Hambrick 2007). Consistent with this argumentation, Finkelstein (1992) and Lubatkin, Simsek, Ling & Veiga (2006) argues that the combination of a TMTs characteristics can explain organizational outcomes, and that these outcomes rarely are explained by a single top executive. With this in mind, Hambrick (2007) stresses the importance of more studies being conducted to investigate the relationship between top management team (TMT) characteristics and organizational outcomes, since these studies to a greater extent can explain organizational outcomes, than studies that are made in relation to a single top executive. With regards to Hambrick's (2007) request, this study will empirically investigate the relationship between the demographics of TMTs and earnings management, thus trying to explain the

inconclusive results of prior studies by determining which characteristics of a TMT that affects earnings management.

A majority of the studies in the area of UET and financial accounting have been done in a U.S. context (see Plöckinger, Aschauer, Hiebl & Rohatschekm, 2016 for a review). Finkelstein, Hambrick, & Cannella (2009) argues that the U.S.-focused research creates a bias in the provided results, since top executives in the U.S. have a different diversity of characteristics and institutional prerequisites than in other socio-economic contexts. However, Sun, Qi, Kent & Wang (2017) and Qi, Lin, Tian & Lewis (2018) responded to the request of more studies in a non-U.S. context, and investigated TMT characteristics and earnings management in Chinese firms. We want to further this protrusion by Sun et al. (2017) and Qi et al. (2018) through applying the research area in a Swedish context, by using a sample of Swedish listed firms. Hofstede (2001) argues that the socio-economic contexts and ownership structure differ between countries, for example in the US there tends to be more individualism in comparison to Sweden. Thus, we expect the characteristics of top executives in Sweden to differ significantly from U.S. executives.

To summarize, this study means to investigate if the use of earnings management, both real activities-based and accruals-based, have a relation with gender, age, education, international experience, financial experience and tenure of the TMT, by using a sample of 233 public Swedish firms from 2010 to 2014. Thus, our study asks the following question;

- *Are the demographic characteristics of a TMT affecting accrual-based and/or real activities-based earnings management?*

The findings of our study indicate that the demographic characteristics of TMTs are associated with earnings management. We find the effect for both accruals-based earnings management (AM) and real activity-based earnings management (RM), however, the effect for AM is considerably weaker than for RM. For RM, all our characteristics have effect, whereas only educational level and tenure was found have an effect on AM.

With these results, the study contributes to research in several ways; First, in contradiction to the inconclusive results from research on individual top executives[1] (Barua, Davidson, Rama & Thiruvadi, 2010; Ye, Zhang & Rezaee, 2010; Huang, Rose-Green & Lee, 2012), we find evidence by applying the TMT perspective that the demographic characteristics having a significant effect on earnings management. Second, as a majority of UET-based

[1] Further developed in chapter 2.2

studies have been conducted in the U.S., this study means to develop the theory by putting it in a Swedish socio-economic context, thus, responding to the request of Finkelstein et al. (2009). By doing this we provide a deeper understanding of the different complexions that UET can take in different countries and socio-economic contexts. We find support for the UET being consistent in the Swedish socio-economic context, as the TMT characteristics have an effect on earnings management for our Swedish based sample. Moreover, we further develop the research spectra for the demographic characteristic "international experience", by providing evidence of it having a significant effect on real activity-based manipulation, thus, further expanding the research of Dauth, Pronobis & Schmid (2017) of applying internationalizations effect in financial accounting. Lastly, we contribute to the earnings management literature, finding that real activity manipulation is to a much larger extent affected by demographic characteristics, in comparison to accruals-based manipulation, when applied to a Swedish context. This study also provides practical contributions, for example the results can be used in order to evaluate the best possible top management team composition, when considering minimizing the risk of earnings management being conducted in the firm. Additionally, external auditors can use the findings as a basis for their risk assessment of earnings manipulation.

The remainder of this thesis follows as: Section 2 describes the foundation of both UET and earnings management. Section 3 discusses previous research on UET and earnings management in relation to specific demographic characteristics, which are used to develop the hypotheses of the study. In section 4 we describe the sample and data collection, earnings management models, empirical model and robustness tests. Section 5 describes our descriptive statistics. Section 6 provides our study's results. Lastly, section 7 summarizes and discusses the study's findings, including its limitations and future research suggestions.

2. Literature Review

2.1 Upper Echelon Theory

The foundation of the UET is that the top executives influence organizational strategy and performance, thus making organizations 'a reflection of their top managers' (Hambrick & Mason, 1984). The TMT assess and interpret each situation they face, where the following decision is a function of their cognitions, values and behaviors (ibid.). Given the difficulty in obtaining and measuring psychometric data on TMTs behavior, the authors posits the use of observable demographic characteristics such as age, gender, work experience, financial background and education as reasonable variables for examining the underlying differences in TMTs behavior (ibid.). Furthermore, the UET describes that the characteristics of the TMT are the foundation of the decisions and outcomes a firm accomplishes (Hambrick, 2007), thus, to understand organizational behavior, there is a need to consider TMTs demographic characteristics.

UET has been used frequently in research since its origins, finding substantial support to its claims. Carpenter (2002) found evidence for top management's international education level having a positive impact on the firm's performance. In terms of international work experience, Carpenter, Sanders & Gregersen (2001) found it to have a positive effect on the total shareholder return. Regarding the TMTs educational background, Daboub, Rasheed, Priem & Gray (1995) found evidence for educational level significantly affecting a firm's illegal activities. Bertrand & Schoar (2003) and Xuan (2009) found that the variation in a firm's investment activities and capital structure can be explained by the TMTs financial work experience. Furthermore, gender diversity of TMTs has been found to increase firms' financial performance (Campbell & Minguez-Vera, 2008), often with a focus on board diversity as a contributing factor (Erhardt, Werbel & Shrader, 2003). Lastly, Tihanyi, Ellstrand, Daily & Dalton (2000) states that higher tenure and lower average age of a TMT is related to firms' international diversification.

Even though the above mentioned UET findings show significant evidence of affecting TMT behavior, it does not imply that TMT characteristics will have a significant effect on a firm's choice to perform earnings management activities. To this date, many studies have investigated the relationship between top executives as individuals and earnings management with inconclusive results[2]. However, there are limited evidence on the relationship between the TMT and earnings management.

[2] Further discussed in chapter 2.2

2.2 Earnings Management

Schipper (1989) describes earnings management as a purposeful intervention by the management in the external financial reporting process, with the intention of obtaining some private gain. Healy & Wahlen (1999) later on developed an even more detailed definition of earnings management, describing it as management altering the financial reporting either to mislead stakeholders about the underlying economic performance of the organization or to influence their contractual outcomes that depends on the reported accounting numbers (Healy & Wahlen, 1999). Due to its broad definition, it can be performed in a number of forms (Schipper, 1989).

One form of earnings management is the manipulation of accruals. This accrual-based earnings management have been investigated in several studies (Healy & Wahlen, 1999; Zang, 2012), where generally the amount of discretionary accruals is the determinant for earnings management (Dechow, Sloan & Sweeney, 1995). AM is done by changing accounting methods or estimates used for financial items, for example a sudden change in the depreciation method for a fixed asset or a provision estimate (Zang, 2012). Real activity-based earnings management is another form of earnings management. Roychowdhury (2006) defines it as manipulation of normal operational practices, which is motivated by managers will to mislead stakeholders into believing financial reporting goals has been met by normal operational decisions. Methods to conduct real activity manipulation are for example accelerations of sales, overproducing of goods or reducing R&D expenditures (ibid.) Real activity decisions can in some situations be beneficial to the firm, however, doing it at abnormal levels can reduce the firm's value (Roychowdhury, 2006). Of the two earnings management forms, the latter can be seen as more harmful, as RM have a negative effect on future cash flows, whereas AM does not affect the actual cash flows (Cohen & Zarowin, 2010; Zang, 2012). Graham, Harvey & Rajgopal (2005) found that even though managers were aware of the long-term costs of RM, they still chose those real activity-based manipulations to reach earnings targets, due to it being harder to detect. Additionally, Zang (2012) found that AM and RM are used interchangeably, as managers trade off the costs between the two methods and choose to use the cheapest alternative to reach their desired targets. However, managers often use RM first to manipulate their financials, and AM is used to fine-tune the outcome of the real activity manipulation (Zang, 2012).

Several studies have been conducted to investigate what factors influence managers to manage (or not to manage) a firm's earnings. Analyst coverage has been found to influence managers into manage their earnings less (Yu, 2008). Bergstresser & Philippon (2006) found

evidence of earnings management being more prevalent for managers when their compensations packages are closely tied to the value of equity stock options. Additionally, high audit quality and internal audit functions was found by Jenkins & Velury (2008) and Prawitt, Smith & Wood (2009) to reduce earnings management in firms. Debt have also been found to have a decreasing effect on earnings management in firms (Rodríguez-Pérez & van Hemmen, 2010).

Studies have also been conducted on top executives' characteristics and how they influence the earnings management activities, where the focus has been on either the CEO or CFO, with the findings reporting inconclusive results of their respective effects on earnings management. For example, gender has been found to be a significant demographic characteristic on earnings management by researchers for the CFO (Barua et al., 2010), but not for the CEO (Huang et al., 2012), whereas others found no significant effect for gender whatsoever (Ye et al., 2010). Similar results were found when controlling for age, Huang et al. (2012) found significant result for CEO's, but not for the CFO's, whereas Ye et al. (2010) found no significance for age at all on earnings management. Educational level was found by Sun et al. (2017) to have a significant effect on earnings management for CFO's, in contrary Ge, Matsumoto & Zhang. (2011) found no significance effect of the CFO's level of education on earnings management. Lastly, Jiang, Zhu & Huang (2013) found that a financially work experienced CEO's will affect their level of RM but not AM, whereas Matsunaga & Yeung (2008) found evidence of CEO's with experience working as a CFO to conduct more AM.

The results from the demographic characteristics of individual CEO's and CFO's are inconclusive on their effect on earnings management. This could be due to these papers focusing on the individual executives and not examining the TMT collective characteristics, as UET suggest that the team collective characteristics govern organizations' decisions. Applying the collective characteristics of a TMT and its effect on earnings management has been done by Qi et al. (2018) in a Chinese context, where they found support for the collective demographic characteristics of TMTs having a significant impact on both AM and RM (ibid.).

3. Hypothesis development

Our study is built upon combining the previously discussed literature regarding UET and earnings management. The focus will be to investigate whether the collective demographic characteristics of TMTs are having an impact on the use of earnings management, both AM and RM. This focus is built upon three pillars; 1. Organizations' decisions are based upon the collective cognitions, values and behaviors of their TMT; 2. These collective cognitions, values and behaviors of TMTs can be measured by their observable demographic characteristics (i.e age, gender, educational level, financial work experience, international experience and tenure); 3. Thus, the decisions made by the TMT to manage their earnings can be associated with their observable demographic characteristics.

A summary of the hypotheses and their predicted coefficient signs can be found in Appendix I.

3.1 Age

Drawing on the ideas of UET literature, executives' age can be used as a proxy for risk-averseness and conservatism, where most studies have found older top executives to be more risk-averse (Hambrick & Mason, 1984; Herrmann & Datta, 2006; Plöckinger et al., 2016). Nevertheless, the relationship between age and earnings management are left with rather inconclusive results, where for example Davidson, Xie, Xu & Ning (2007) argues that top executives have a higher tendency to manage earnings two years before retirement, while Sundaram and Yermack (2007) found opposite results and argues that older executives are more ethical and conservative. Although, consistent with the horizon problem[3], the majority of studies argues that income-increasing accounting choices in the last pre-retirement years are particularly popular since pension depends to a large extent on the performance these last years (Shuto & Iwasaki, 2014). For example, both Dechow & Sloan (1991) and Baber, Fairfield & Haggard (1991) found that top executives reduce R&D expenses in order to boost earnings when they approach retirement. Based on the discussion above, managers close to retirement-age seems to manage earnings in a larger extent, which renders the following hypothesis:

H1a: The higher proportion of executives on a TMT who are near retirement age have an increasing effect on AM

H1b: The higher proportion of executives on a TMT who are near retirement age have an increasing effect on RM

[3] Managers having a short job horizon left, placing little value on future earnings and therefore has incentive to focus on short-term earnings (Dechow & Sloan, 1991).

3.2 Gender

Literature in behavioral economics has found gender to reflect differences in the behavior of executives (Schubert, 2006; Eweje & Brunton, 2010; Francis, Hasan, Park, & Wu, 2015), thus being able to explain organizational outcomes in various ways (Hambrick & Mason, 1984; Hambrick, 2007). For example, females have been found to generally being more risk averse (Schubert, 2006), having a better ethical decisions-making ability (Eweje & Brunton, 2010), or having a more conservative accounting approach (Francis et al., 2015). As earnings management is both a risky and unethical action towards the firm's stakeholder, there should be a linkage between gender diversity and decreases in earnings management. Consistent with this assumption are studies by Peni & Vähämaa (2010), Barua et al. (2010), Liu, Wei & Xie (2016) and Krishnan & Parsons (2008). Both Peni & Vähämaa (2010) and Barua et al. (2010) found evidence for female CFO's having a decreasing effect on AM. Liu, Wei & Xie (2016) complements these previous results by also finding evidence of females having a decreasing effect on RM. However, Ge et al. (2011) found limited results for CFO's impact on earnings management, in addition, Barua et al. (2010) and Peni & Vähämaa (2010) found limited evidence for gender having an effect on CEO's. Lastly, Krishnan & Parsons (2008) findings suggest gender diversity in the senior top management has a positive effect on earnings quality. It seems as if gender overall has an effect on managers and their financial accounting choices, thus, we believe it to have an effect on the TMT in a similar manner, creating the following hypotheses:

H2a: The higher proportion of female members on a TMT have a decreasing effect on AM
H2b: The higher proportion of female members on a TMT have a decreasing effect on RM

3.3 Financial Work Experience

A proposition of the UET is that top executives' values and cognitive bases can be a function of their work experience (Hambrick & Mason, 1984), where their specific financial work experience can explain accounting choices in various ways (Plöckinger et al., 2016). In the area of earnings management and financial work experience, Baik, Farber & Lee (2011), Jiang et al., (2013) and Ran, Fang, Luo & Chan (2015) found that CEOs with financial experience are associated with lower earnings management. The general agreement is that top executives with a financial background increase the earnings quality (Demerjian, Dev, Lewis & McVay, 2013). Thus, we conclude that financial work experience will reduce the amount of earnings management done in organizations, leaving us with the following hypotheses:

H3a: The higher proportion of managers on a TMT with financial work experience have a decreasing effect on AM
H3b: The higher proportion of managers on a TMT with financial work experience have a decreasing effect on RM

3.4 Educational Level

Hambrick & Mason (1984), and the UET literature, posits that educational level is a reflection of top executives' ability and skills, where the general agreement is that more education leads to an improved ability to absorb information and select ideas, and to further convert these ideas into effective strategies (Chatterjee & Hambrick, 2007; Burkert & Lueg, 2013). Chatterjee & Hambrick (2007) and Cheng, Chan & Leung (2010) found that highly educated executives are more aware of long-term business value. Furthermore, Bamber, Jiang & Wang (2010) and Ran et al. (2015) states that highly educated top executives likely uses conservative reporting methods. Lewis, Walls & Dowell found high education having an effect on more voluntary disclosures in the annual reports, thus reporting higher accounting quality. Additionally, Baik, Farber & Lee (2011) reported that executives with higher education have greater ability to understand long-term business value and earnings forecasts, thus rendering lower earnings management. Consistent with these findings we believe a higher academic degree has a decreasing effect on earnings management, creating the following hypotheses:

H4a: A higher educational level of a TMT have a decreasing effect on AM
H4b: A higher educational level of a TMT have a decreasing effect on RM

3.5 International Experience

International experience as a demographic characteristic is an increasingly evolving research area within the UET (Đerđa, 2017). Le & Kroll (2017) have found international experience to have an increasing effect on the general competence level of CEO's. Suutari & Mäkelä (2007) suggest that the general competency from international experience of executives allows them to process more complex and dynamic information. Even though studies have found that the international experience has a significant impact on managers, the utilization of it as a proxy in financial reporting and earnings management is almost non-existent. Dauth et al. (2017) filled this gap by studying the effect that internationalization has on top managers and their accounting quality. The authors found evidence of international experience having a

positive impact for CFO's accounting quality but not for CEO's (ibid.). International experience seems to have an overall positive effect on top managers general cognitive abilities, thus having an increasing effect on accounting quality. Thus, we posit the characteristic to have a decreasing effect earnings management, creating the following hypotheses:

H5a: The higher proportion of managers on a TMT with international experience have a decreasing effect on AM
H5b: The higher proportion of managers on a TMT with international experience have a decreasing effect on RM

3.6 Tenure

Hambrick & Mason (1984) argues that a TMTs tenure can be a reflection of their cognitive style and knowledge of business needs, thus, tenure being associated with various organizational outcomes (Hambrick, 2007). Regarding financial accounting, Hazarika, Karpoff & Nahata (2012) report that long-tenured CFOs are less involved in earnings management, while Schrand & Zechman (2012) states that executives that report less voluntary disclosures generally have shorter tenures. Masters-Stout, Costigan & Lovata (2008) and Ali & Zhang (2015) states that CEOs are more likely to overstate earnings in their early years of tenure, thus making long-tenured CEOs less likely to engage in earnings management. Thus, we conclude that tenure should have a reducing effect on earnings management, establishing the following hypothesis:

H6a: A higher tenure of a TMT have a decreasing effect on AM
H6b: A higher tenure of a TMT have a decreasing effect on RM

4. Research design

4.1 Sample Selection and Data collection

Our sample consists of Swedish public firms on the OMX Stockholm lists from 2010 to 2014. The final sample consists of 233 firms[4], after excluding the financial firms, as their business structure differs significantly. All of the TMT demographic data are collected from annual reports of the sample firms and from other online sources. All of the financial data are collected from Datastream terminal. The financial data are used as control variables, and in order to create the dependent earnings management variables described in chapter 4.2.

Before conducting the regression models shown in chapter 4.3 below, we consider potential problems with multicollinearity, heteroskedasticity and heterogeneity in the model. To test for multicollinearity, we conducted a VIF-test (presented in Appendix III), which shows that no variable correlate to the extent that we have to exclude them from the study (O'Brien, 2007). To control for heteroskedasticity, we generate robust standard errors and a 95 percent winsorization, which limits the effect of extreme values and outliers. Furthermore, in order to mitigate potential heterogeneity problem, we are both using valid control variables, as well as including industry and year fixed effects. More specific information about the distribution between industries and years are presented in Appendix IV.

4.2 Earnings management models

4.2.1 Accrual-based Earnings Management

Based on prior studies often using discretionary accruals as a measure for AM (Healy & Wahlen, 1999; Dechow et al., 1995), we consider this measure valid to use. The study therefore measures AM by using the modified Jones model, which was modified and credited by Dechow et al. (1995) as the most powerful model to detect accrual-based earnings management. Following Dechow et al. (1995), we estimate the discretionary accruals using the following equations:

$$TAC_{it} = (\Delta CA_{it} - \Delta CL_{it} + \Delta Cash_{it} + \Delta STD_{it} - Dep_{it})/(A_{it-1}) \quad (1)$$

$$TAC_{it}/A_{it-1} = b_0 + b_1\left(\frac{1}{A_{it-1}}\right) + b_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + b_3\frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (2)$$

[4] The final firm sample can be found in Appendix II.

where the dependent variable in equation (2), TAC_{it}/A_{it-1}, is the total accruals for firm i in year t divided by its total assets for the previous year, which is calculated as in equation (1), where ΔCA_{it} is the change in current assets from year t to $t-1$, ΔCL_{it} is the change in current liabilities from year t to $t-1$, $\Delta Cash_{it}$ is the change in cash and cash equivalents from year t to $t-1$, ΔSTD_{it} is the change in debt included in current liabilities from year t to $t-1$, and Dep_{it} is the depreciation and amortization expenses for year t. Furthermore, this dependent variable is used in the regression equation (2), where ΔREV_{it} minus ΔREC_{it} is the difference between revenues and receivables from year t to $t-1$ for firm i, and PPE_{it} is the property, plant and equipment for firm i in year t. Following Dechow et al. (1995), discretionary accruals (AM_DA) are calculated as the residual (ε_{it}) in equation (2) by year and industry. Thus, we use AM_DA as a proxy for AM.

4.2.2 Real-based Earnings Management

We measure RM by using a model created by Roychowdhury (2006), which have been used in studies before with evidence for the measure to accurately capturing real activity manipulation (Cohen, Dey & Lys, 2008; Cohen & Zarowin, 2010). According to Roychowdhury (2006), RM can be performed in several ways, however, for our main analysis we choose to investigate it using the cash flow model. The purpose behind the model is to control for sales manipulations, seeing if there have been any accelerated sales or any generation of unsustainable sales, for example through price discounts (ibid.). The model therefore expresses a function of normal cash flows and compares it to the actual cash flows, if the output shows an abnormal low cash flow from operations there is indications of RM through sales manipulations (Roychowdhury, 2006). To estimate the model, we use the following regression for each year and industry as shown below;

$$CFO_{it}/A_{it-1} = b_0 + b_1\left(\frac{1}{A_{it-1}}\right) + b_2\left(\frac{S_{it}}{A_{it-1}}\right) + b_3\frac{\Delta S_{it}}{A_{it-1}} + \varepsilon_{it} \quad (3)$$

where the dependent variable in equation (3), CFO_{it}/A_{it-1}, is the cash flow from operations for firm i in year t, divided by its total assets the previous year. S_{it} is the revenues for firm i in year t, while ΔS_{it} is the change in revenues for the same firm from year t to $t-1$. Following Roychowdhury (2006), abnormal low cash flows from operations are calculated as the residual (ε_{it}) in equation (3). For simplicity in interpretation, we multiply the residuals by -1 (RM_CFO), thus, a high positive value indicates lower abnormal cash flows from operations.

4.3 Empirical model

To test our research question, if the demographic characteristics of a TMT are affecting the accrual-based and/or real activities-based earnings management, we are doing regressions with the following model:

$$EM_{it} = b_0 + b_1 AGE_{it} + b_2 GENDER_{it} + b_3 FINWE_{it} + b_4 EDUC_{it} + b_5 INTEXP_{it} + b_6 BOGEND_{it} + b_7 BONUMBER_{it} + b_8 SIZE_{it} + b_9 BMR_{it} + b_{10} OPLOSS_{it} + b_{11} LEV_{it} + b_{12} SG_{it} + b_{13} TENU_{it} + b_{14} BOINDEFIRM_{it} + \varepsilon_{it} \quad (4)$$

where EM is measured by AM_DA (Discretionary accruals of accrual-based earnings management) and RM_CFO (Abnormal cash flows from operations of real-activity-based earnings management) respectively. The independent variable AGE_{it} is the percentage of TMT members close to retirement age for firm i in year t, $GENDER_{it}$ is the percentage of female members in the TMT for firm i in year t, $FINWE_{it}$ is the percentage of members in the TMT with previous financial work experience for firm i in year t, $EDUC_{it}$ is the average level of education of the TMT members for firm i in year t, $INTEXP_{it}$ is the percentage of TMT members with international work or study experience for firm i in year t, and lastly, $TENU_{it}$ is the average number of years of the TMT members within the firm in their respective position for firm i in year t. Furthermore, the control variable $BOGEND_{it}$ is the percentage of female members on the board for firm i in year t, $BONUMBER_{it}$ is the number of board members for firm i in year t, $SIZE_{it}$ is the firm's size for firm i in year t, BMR_{it} is the book to market value for firm i in year t, $OPLOSS_{it}$ is whether the firm have an operating loss or not for firm i in year t, LEV_{it} is the amount of leverage in the firm for firm i in year t, SG_{it} is whether the firm incurred a sales growth for more than +/- 10 percent for firm i in year t, $BOINDEFIRM_{it}$ is board independence to the firm for firm i in year t. Further explanations of the variables in equation (4) are described in the following chapters and in Table 1 below in the end of the Research Design chapter.

4.3.1 TMT characteristics

The definition of TMT varies, where researchers in management usually recognize the TMT as CEO, CFO and executive vice presidents (Geletkanycz & Hambrick, 1997; Keck 1997 and Tihanyi et al., 2000). However, this study is applied in a financial accounting setting, where studies conducted on the vice presidents and their effect on earnings management is non-existent. Therefore, to create solid hypotheses for the study, the composition of the TMT will

be exclusively the CEO and CFO, as several studies have been conducted on their effect on earnings management.

The TMT's demographic characteristics are collected from each sample company's annual report, where the companies usually inform stakeholders about information about the TMT members' gender, age, education, tenure and work experience. To test the relationship between these characteristics for the whole TMT, the proportion of each characteristic, for each company and year, are used in the regressions. For example, if one man and one woman make up a TMT, this observation will take the value 0.5 for the $GENDER$ variable. More specific explanations about the independent TMT variables are seen in Table 1 below.

4.3.2 Control variables

In order to remove as much noise as possible between the dependent and independent variables, control variables are included in the regressions. Among all, Dauth et al. (2017) argues that specific firm and board characteristics are having an effect on earnings quality. For example, board size and its gender composition can influence a firm's decision-making and governance processes, where Oxelheim, Gregoric, Randøy & Thomsen (2013) states that larger boards are less effective and more liberal when it comes to monitoring the work of a TMT, thus making a larger board positively correlated with earnings management. Gul, Hutchinson & Lai (2011) argues that gender diversity in a board impacts transparency, and that more diversity is correlated with higher earnings quality. Furthermore, Pincus & Rajgopal (2002) argues that larger firms experience greater pressure to report predictable earnings, thus making firm size another control variable. In order to capture the consequences of current performance for the firm, book-to-market ratio is added as a control variable (Dechow & Dichev, 2002). Additionally, operating loss is added as a control variable to proxy for "big bath" accounting practices, where firms excessively write off assets during bad periods, in order to boost performance, the next year (DeAngelo, DeAngelo & Skinner, 1994). Furthermore, since firms with high debt-ratios have incentives to manage earnings to meet specific debt agreements with the bank (DeFond & Jiambalvo, 1994; Johnson, Khurana & Reynolds, 2002), the ratio of total debt to assets is included as a control. Moreover, firms with high sales volatility tend to operate in a more volatile environment, making greater errors of accruals estimation (Dechow & Dichev, 2002), thus sales growth is an accurate proxy to use as control. Lastly, and consistent with Chen, Cheng & Wang (2015), a higher percentage of board independence reduce earnings management due to more effective monitoring, thus making this a valid control variable.

4.4 Robustness tests

To reinforce our results, both for AM and RM, we will conduct the same regression as explained in 4.3, but with a different dependent variable. For AM, the robust dependent variable will be from Kothari, Leone & Wasley's model (2005), further explained in 4.4.1. For RM, the robust dependent variable will be from Roychowdhury's (2006) overproductions model, further explained in 4.4.2.

When conducting these robustness regressions, the number of observations slightly differ from our main models, due to lack of financial data. To remedy this, and apply the exact same number of observations, the method e(sample) were used. By using this method, we found similar results, thus we found this method not necessary to implement.

4.4.1 Kothari, Leone & Wasley's model

To check the robustness of AM, we will use the modified Jones model with ROA by Kothari et al. (2005), in addition to the modified Jones model. Kothari et al. (2005) suggest that controlling for performance on the measured discretionary accruals creates a better result, as it serves to mitigate model misspecifications in the modified Jones model. However, they still suggest that the best way to measure discretionary accruals is using both the modified Jones model and their model with a performance proxy (ibid.). The authors suggest using a linear regression and simply including a performance proxy to the implemented Jones model, where ROA is used as the proxy (ibid.) Kothari et al. (2005) tested discretionary accruals using both current ROA and a lagged ROA for comparison, they found support for current ROA being the best performance proxy of the two. Thus, to calculate the discretionary accruals we use the following year and industry regression;

$$TAC_{it}/A_{it-1} = b_0 + b_1\left(\frac{1}{A_{it-1}}\right) + b_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + b_3\frac{PPE_{it}}{A_{it-1}} + b_4\left(\frac{ROA_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad (5)$$

The inputs for equation (5) are the same as equation (2), see 4.2.1 for further explanation, except for the ROA_{it}, which is the return on assets in year t for firm i.

4.4.2 Roychowdhury's overproduction model

Previous studies have found results of firms conducting RM in several ways (Cohen et al., 2008; Cohen & Zarowin, 2010). We therefore assume the firms in our sample to conduct RM in other ways as well. Thus, to make our findings concerning RM more robust, we check if our firm sample conduct RM through overproduction, by using Roychowdhury's (2006)

overproduction model. According to Roychowdhury (2006), firms can manipulate their earnings upwards by overproducing goods, leading to abnormally high production costs relative to the normal sales level. To calculate the abnormal level of production costs we use the following year and industry regression;

$$PROD_{it}/A_{it-1} = b_0 + b_1\left(\frac{1}{A_{it-1}}\right) + b_2\left(\frac{S_{it}}{A_{it-1}}\right) + b_3\frac{\Delta S_{it}}{A_{it-1}} + b_4\left(\frac{\Delta S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \quad (6)$$

The dependent variable in equation (6), $PROD_{it}/A_{it-1}$, is the sum of costs of goods sold (COGS) in a year and the change in inventory from year $t-1$ to t, divided by its total assets the previous year. S_{it} is the revenues for firm i in year t, while ΔS_{it} is the change in revenues for the same firm from year t to $t-1$. ΔS_{it-1} is the change in sales between year $t-1$ to $t-2$. A higher abnormal production cost (RM_PROD), the greater the real-activity earnings management. RM_PROD is calculated as the residual (ε_{it}) in equation (6).

Table 1
Definition, Measurements and Sources of Variables

Variable	Definition and Measurement	Source
Dependent variables		
AM_DA	Discretionary accruals, calculated as the absolute residual from the modified Jones model by Dehow et al. (1995), as presented in equation (2)	*Datastream*
RM_CFO	Abnormal cash flows, calculated as the residual from the model by Roychowdhury (2006), as presented in equation (3)	*Datastream*
Robusttest variables		
AM_PMDA	Discretionary accruals, calculated as the absolute residual from the modified Jones model with ROA by Kothari et al. (2005), as presented in equation (5)	*Datastream*
RM_PROD	Abnormal high production costs, calculated as the residual from the model by Roychowdhury (2006), as presented in equation (6)	*Datastream*
Independent variables		
AGE	Age (dummy), the percentage of TMT members who are near retirement-age (defined as 55 years or older). For example, one TMT member aged 60, and another aged 45, creates an observation with a value of 0.5	*Annual reports*
GENDER	Gender (dummy), the percentage of female members in the TMT. For example, one male and one female, creates an observation with a value of 0.5. Two females creates an observation with a value 1	*Annual reports*
FINWE	Financial work experience (dummy), the percentage of TMT members with previous financial work experience (Controller, Accountant, CFO or Auditor). For example, if both TMT members have previous financial work experience, this creates an observation with a value of 1	*Annual reports and online*
EDUC	Educational level, the average level of education by the TMT members (High school diploma = 1, Bachelor degree = 2, Master degree = 3, Doctoral degree = 4). For example, one TMT member with a bachelor degree, and another with a master degree, creates an observation with a value of 2.5	*Annual reports and online*
INTEXP	International experience (dummy), the percentage of TMT members with international work/study experience. For example, if both members have international work/study experience, this creates an observation with a value of 1.0	*Annual reports and online*
TENU	Tenure, the average number of years of the TMT members within the firm in their respective chief level position. For example, one TMT member with a tenure of 20, and another with a tenure of 10, this creates an observation with a value of 15.0	*Annual reports and online*
Control variables		
BOGEND	Gender composition in the board, the percentage of female members in the board	*Annual reports*
BONUMBER	Board members, the number of members in the board	*Annual reports*
SIZE	Firm size, the logarithm of the firm's total assets	*Datastream*
BMR	Book-to-market value, the book value of assets divided by the firm's market value	*Datastream*
OPLOSS	Operating loss, equals 1 if a firm has a net loss, otherwize 0	*Datastream*
LEV	Financial leverage, the firm's total liabilities divided by its total assets	*Datastream*
SG	Sales growth, the firm's growth in sales from year t-1 to t, equals 1 if +/- 10%, otherwise 0	*Datastream*
BOINDEFIRM	Board independency (firm), the percentage of board members who are independent to the firm	*Annual reports*

Table 1 presents all variables, their definition and measurements, as well as the source where the variables are retrieved from.

5. Descriptive Statistics

In Table 2 below are the descriptive statistics for this thesis presented. Panel A describes the statistics of our dependent variables for both AM_DA and RM_CFO, with their respective robustness tests AM_PMDA and RM_PROD. The mean for AM_DA and AM_PMDA is 0.058 and 0.062, respectively. For RM_CFO the mean is -0.001, and for RM_PROD the mean is 0.001. When comparing the means for our earnings management measures to the descriptive statistics of Qi et al. (2018), we find similar values as them. As can be seen in Panel A there is negative residuals for the RM measures but not for the AM measures, which is due to the AM regression being executed in absolute values as their sign is not relevant, whereas the RM regressions are. Furthermore, in total we collected demographic characteristics for 1075 TMTs, as shown in Panel B. Our variable AGE shows that the average proportion of TMT members being close to retirement is 23 percent. The average proportion of TMT members in listed Swedish firms being female is 13,5 percent, therefore illuminates a possible problem for females to reach a chief-level position. The variable $EDUC$ illustrates that the average TMT member have a bachelor's degree, while the variable $FINWE$ illustrates that the average TMT member have previous financial work experience. The average proportion of TMT members having international study or work experience is 35 percent. The $TENU$ variable shows the average TMT member having around six years in their chief level position. We can see that in comparison to Qi et al. (2018), Swedish TMTs are more diversified, have more financial experience, lower educational level and younger members. This difference is most likely due to the difference in TMT composition, as they include significantly more members in their definition and the different contexts between China and Sweden. Lastly, our Panel C displays the values of our control variables used in the thesis.

Table 3 below presents the pair-wise correlation between our entire set of variables, where the bold numbers indicate significance at five percent level. As presented, all the correlations between the dependent variables and the TMT characteristics are having the same sign as hypothesized in chapter 3.

Table 2

Descriptive Statistics of Variables

Panel A: Summary Statistics of Dependent and Robust Variables

Variables	Obs.	Mean	Median	Std. Dev.	Min.	Max.
AM_DA	850	0.058	0.030	0.083	0.000	0.520
AM_PMDA	728	0.061	0.031	0.103	0.000	0.719
RM_CFO	1046	-0.001	-0.001	0.109	-0.315	0.487
RM_PROD	734	0.001	0.000	0.005	-0.021	0.031

Panel B: Summary Statistics of TMT Characteristics

Variables	Obs.	Mean	Median	Std. Dev.	Min.	Max.
AGE	1075	0.229	0.000	0.319	0.000	1.000
GENDER	1075	0.134	0.000	0.251	0.000	1.000
FINWE	1075	0.666	0.500	0.25	0.000	1.000
EDUC	1075	2.710	3.000	0.413	1.500	3.500
INTEXP	1075	0.348	0.500	0.367	0.000	1.000
TENU	1075	6.049	4.500	5.127	0.000	24.000

Panel C: Summary Statistics of Control Variables

Variables	Obs.	Mean	Median	Std. Dev.	Min.	Max.
BONUMBER	1075	6.496	6.000	1.450	4.000	11.000
BOGEND	1075	0.233	0.222	0.129	0.000	0.600
SIZE	1075	14.649	14.322	2.064	9.568	19.720
BMR	1075	0.739	0.556	0.603	0.018	3.125
OPLOSS	1075	0.231	0.000	0.422	0.000	1.000
LEV	1075	0.575	0.347	0.730	0.000	4.690
SG	1075	0.481	0.000	0.500	0.000	1.000
BOINDEFIRM	1075	0.636	0.625	0.198	0.125	1.000

Table 2 presents descriptive statistics of all variables. Panel A presents summary statistics of both dependent and robust variables. Panel B presents summary statistics of the main independent TMT variables. Panel C presents summary statistics of the control variables.

Table 3

Correlation Matrices

Variables	AM_DA	AM_PMDA	RM_CFO	RM_PROD	AGE	GENDER	FINWE	EDUC	INTEXP	TENU	BOGEND	BONUMBER	SIZE	BMR	OPLOSS	LEV	SG	BOINDEFIRM
AM_DA	1.000																	
AM_PMDA	**0.917**	1.000																
RM_CFO	**-0.239**	**-0.279**	1.000															
RN_PROD	0.023	0.006	-0.065	1.000														
AGE	**0.124**	**0.119**	**-0.073**	**0.110**	1.000													
GENDER	-0.030	-0.029	**0.085**	**-0.096**	**-0.112**	1.000												
FINWE	**-0.144**	**-0.142**	**0.069**	-0.069	0.004	**0.125**	1.000											
EDUC	**-0.080**	**-0.092**	**0.063**	**-0.099**	**-0.081**	0.022	0.036	1.000										
INTEXP	-0.024	-0.038	0.036	**-0.080**	**-0.124**	**-0.074**	-0.032	**0.130**	1.000									
TENU	-0.044	-0.028	**0.077**	-0.032	**0.364**	-0.048	**0.123**	-0.059	**-0.188**	1.000								
BOGEND	**-0.081**	**-0.098**	0.051	0.003	**-0.101**	0.047	**-0.060**	**0.098**	0.032	0.025	1.000							
BONUMBER	**-0.182**	**-0.143**	0.032	0.040	0.018	-0.059	0.002	**0.123**	0.017	0.032	**0.119**	1.000						
SIZE	**-0.287**	**-0.235**	0.051	0.041	-0.002	**-0.066**	**0.078**	**0.094**	-0.031	0.024	**0.174**	**0.652**	1.000					
BMR	-0.059	-0.045	**-0.079**	0.024	-0.007	-0.004	0.031	**-0.105**	-0.043	**-0.134**	**-0.200**	**-0.135**	-0.015	1.000				
OPLOSS	**0.212**	**0.220**	**-0.377**	0.043	0.039	-0.039	-0.034	-0.007	**0.121**	**-0.165**	**-0.185**	**-0.220**	**-0.324**	**0.293**	1.000			
LEV	**-0.086**	-0.067	**-0.091**	0.055	-0.002	**-0.066**	0.054	-0.023	-0.041	-0.052	0.005	**0.092**	**0.316**	**0.117**	0.034	1.000		
SG	**0.165**	**0.159**	-0.038	0.019	-0.008	-0.038	0.001	0.024	0.044	0.012	**-0.121**	**-0.135**	**-0.194**	-0.024	**0.088**	-0.050	1.000	
BOINDEFIRM	**0.097**	**0.101**	**0.109**	-0.003	-0.047	0.000	**-0.063**	-0.033	0.057	-0.050	**0.205**	**-0.133**	**-0.071**	-0.019	-0.010	-0.052	**0.066**	1.000

Tabel 3 presents Pearson correlation for our sample. The numbers in bold indicate significance at the five percent level.

6. Empirical results and analysis

6.1 TMT Characteristics and AM

Column (1) and (2) in Table 4 below presents the results of the relationship between the TMT demographic characteristics and AM. Column (1) consists of the results from the modified Jones model (Dechow et al., 1995), our main model. Column (2) consists of the results from Kothari et al.'s (2005) discretionary accruals model, our robustness model. We include industry and year fixed effects when computing the regressions. As presented in column (1), the independent variables explain AM_DA to 33.1 percent, which can be compared to the robust regression (2), where the independent variables explain AM_PMDA to 43.6 percent. This increase is due to the added ROA-variable in the robust regression.

As presented in column (1) and (2), the coefficients for AGE is positive but not significant at ten percent level for both models, (coefficient = 0.017 and 0.015; t = 1.64 and 1,07, respectively), indicating that top executives close to retirement do not have a significant association in engaging in AM, and therefore not supporting H1a.

As presented in column (1) and (2), the coefficients for $GENDER$ are negative and insignificant for both models (coefficients = -0.013 and -0.008; t = -1.39 and -0.73, respectively), indicating that TMTs with high gender diversity do not have a significant relationship with the amount of AM conducted in firms, therefore forcing us to reject H2a.

The coefficients for $FINWE$ (financial work experience) are negative and not significant for both models, as can be seen in column (1) and (2) (coefficients = -0.017 and -0.018; t = -1.60 and -1.44, respectively). Thus, the results do not support our predicted hypothesis H3a, which suggested that more financial work experience would decrease the amount of AM performed in firms.

The coefficients for $EDUC$ (education level) are negative and significant at five percent and one percent, respectively, for models AM_DA and AM_PMDA in column (1) and (2) (coefficients = -0.020 and -0.033; t = -2.23 and -2.73, respectively). These results indicate that a TMT with high education engage in less earnings management, than those with low education. This is consistent with H4a, suggesting TMTs with highly educated top executives are more aware of long-term business value, as found by Chatterjee & Hambrick (2007) and Cheng et al. (2010), and choose not to engage in value destroying earnings management. In addition, they are better at forecasting earnings (Baik et al., 2011), thus rendering better accruals and lessens the need to manage earnings, and lastly as suggested by Lewis et al. (2014)

they are more conservative in accounting choices and chose to disclose more voluntary information, increasing the earnings quality.

As presented in column (1), the coefficient for $INTEXP$ (international experience) is negative and insignificant at ten percent level (coefficient = -0.006; t = -0.88). Consistent with our main model, the coefficient in column (2) is negative and not significant at ten percent level (coefficient = -0.137; t = -1.64). Thus, the findings force us to reject our hypothesis H5a, and constituting that international experience on a TMT not influencing AM.

As presented in column (1), the coefficient for $TENU$ (tenure) is negative and significant at five percent level (coefficient = -0.001; t = -2.09), which is consistent with H6a, and indicates that TMTs are more likely to overstate earnings in their early years of tenure, thus making long-tenured TMTs less likely to engage in earnings management. Hence, the results strengthen the findings of Hazarika et al (2012), Schrand & Zechman (2012), Masters-Stout et al. (2008) and Ali & Zhang (2015). However, as can be seen in column (2), the robust models have a coefficient of -0.001 and t-value of -1.00, which decreases the power of our significance for H6a.

To sum up, all of the independent variables' coefficients are having the same sign as in the hypothesis, although not statistically significance. We find significance for hypothesis H3a in both our main model and robust model, meaning that a higher educational level in a TMT reduces the amount of earnings management performed in Swedish listed firms. For hypothesis H6a regarding tenure we can find significance at five percent level for our main model, however no significance for our robust model. The remaining hypotheses does not have a significant relationship with AM, thus forcing us to reject them. The results reflect a weak relationship between the TMT demographic characteristics and AM for Swedish listed firms.

Table 4

Regression results for accruals-based and real activity-based earnings management

	AM		RM	
Variables	**(1) AM_DA**	**(2) AM_PMDA**	**(3) RM_CFO**	**(4) RM_PROD**
AGE	0.017	0.015	0.019	0.001*
	(1.64)	(1.07)	(1.49)	(1.71)
GENDER	-0.013	-0.008	-0.019	-0.002**
	(-1.39)	(-0.73)	(-1.63)	(-2.18)
FINWE	-0.017	-0.018	-0.018	-0.002**
	(-1.60)	(-1.44)	(-1.40)	(-2.29)
EDUC	-0.020**	-0.033***	-0.018**	-0.001**
	(-2.23)	(-2.73)	(-2.02)	(-2.17)
INTEXP	-0.006	-0.137	-0.018**	-0.001**
	(-0.88)	(-1.64)	(-1.96)	(-2.33)
TENU	-0.001**	-0.001	-0.001**	-0.001**
	(-2.09)	(-1.00)	(-2.16)	(-2.07)
BOGEND	-0.001	-0.001	0.001	0.001
	(-0.28)	(-0.32)	(1.13)	(0.20)
BONUMBER	0.001	0.002	0.001	0.001
	(0.39)	(0.87)	(0.20)	(0.22)
SIZE	-0.005**	-0.004	0.002	0.001
	(-2.32)	(-1.51)	(0.88)	(0.16)
BMR	-0.014***	-0.165***	0.109*	0.001
	(-2.98)	(-2.65)	(-1.95)	(0.60)
OPLOSS	0.024***	0.040***	0.006***	-0.001
	(2.77)	(3.43)	(9.09)	(-0.29)
LEV	-0.001	-0.003	0.006	0.001
	(-0.23)	(-0.68)	(1.47)	(0.26)
SG	0.013***	0.016***	0.005	0.001
	(2.62)	(2.71)	(0.86)	(0.82)
BOINDEFIRM	0.001	0.001	-0.001***	-0.001
	(0.86)	(0.96)	(-3.52)	(-0.41)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R2	0.331	0.436	0.210	0.139
Number of obs	850	728	1046	734

Table 4 presents regression results for both accruals-based and real activity-based earnings management. The top number is the coefficient for each respective variable, where ***, **, * indicate significance at the 0.01, 0.05, 0.1. respectively. The parantheses display their respective t-value.

6.2 TMT Characteristics and RM

Column (3) and (4) in Table 4 above presents the results of the relationship between the TMT demographic characteristics and RM. Column (3) (dependent variable: RM_CFO) consists of the results from the sales manipulation model (Roychowdhury, 2006), our main model. Column (4) (dependent variable: RM_PROD) consists of the results from the overproduction model (Roychowdhury, 2006), our robustness model. We include industry and year fixed effects when computing the regressions. As presented in column (3), the independent variables explain RM_CFO to 21.0 percent, which can be compared to the robust regression in column (4), where the independent variables explain RM_PROD to 13.9 percent.

As presented in column (3), the coefficient for AGE is positive and insignificant at ten percent level (coefficient: 0.190; t = 1.49). Although, the coefficient in column (4) is positive and significant in ten percent level (coefficient = 0.001, t = 1.71). These results indicate that we cannot see a statistically significant relationship between sales manipulation and AGE, but that the relationship between overproduction and AGE indicates that older TMTs are more likely to engage in RM on ten percent significance level. These results support H1b to a certain extent and are consistent with the findings of Shuto & Iwasaki (2014), which suggests that older TMTs have more incentives to manage earnings due to the important wage performance the last pre-retirement years.

As presented in column (3), the coefficient for $GENDER$ is negative and insignificant at ten percent level (coefficient -0.019, t = -1.63). However, the coefficient in column (4) is negative and significant at five percent level (coefficient -0.002, t = -2,18). These results are partially consistent with our hypothesis H2b, illustrating that females have a decreasing effect on the RM (in terms of overproduction manipulation) conducted in TMTs, thus, further strengthening the findings by Liu et al. (2016), which could be due to them choosing not to take the risk of conducting RM (Schubert, 2006), being more ethical (Eweje & Brunton, 2010) or being more conservative in their accounting approach (Francis et al., 2015).

As presented in column (3), the coefficient for $FINWE$ (financial work experience) is negative and insignificant at ten percent level (coefficient = -0.019; t = -1.40). Although, the coefficient in column (4) is negative and significant at five percent level (coefficient = -0.002; t = -2.29). These results indicate that we cannot see a statistically significant relationship between sales manipulation and $FINWE$, but that the relationship between overproduction and $FINWE$ indicates that TMTs with less financial work experience are likely to engage in overproduction manipulation. These results confirm our hypothesis H3b, supporting the findings of Baik et al. (2011), Jiang et al. (2011), Ran et al. (2015) and Demerjian et al. (2013) that top executives with higher financial work experience are better at reporting earnings with high quality and understands the possible downsides to manage earnings.

Consistent with the predictions in H4b, $EDUC$ (educational level) is significant in both models at five percent level, as can be seen in column (3) and (4) (coefficient: -0.018 and -0.001; t = -2.02 and -2.17, respectively). These results suggest, as discussed earlier in regard to AM, that highly educated executives are more aware of long-term business value (Chatterjee & Hambrick, 2007; Cheng et al. 2010), thus, not choosing to use methods of sales manipulation and overproduction to the extent that low educated TMTs do.

As presented in column (3) and (4), our variable $INTEXP$ (international experience), generates results consistent with the predictions. $INTEXP$ is significant in both models at five percent level (coefficient: 0.019 and -0.001; t = 1.97 and -2.33). These results are in line with the predictions of H5b, showing that TMTs with a higher proportion of managers with international experience have a decreasing effect on RM activities. This relationship could occur due to the findings of Le & Kroll (2017) and Suutari & Mäkelä (2007), which suggest that international experience increase the competence level of executives, hence, these top managers could be more understanding of the possible repercussions of conducting RM previously discussed by (Cohen & Zarowin, 2010; Zang, 2012).

The last independent variable, $TENU$ (tenure), is also significant at 5 percent level in both models (coefficient: -0.001 and -0.001; t = -2.16 and -2.07). These results are consistent with the predictions in H6b and suggest that TMTs that have been appointed in their chief level position for a long time, are more aware of their company's well-being, thus not using activities such as sales manipulation and overproduction. Thus, further reinforces the findings of Hazarika et al. (2012), Schrand & Zechman (2012), Masters-Stout et al. (2008) and Ali & Zhang (2015), as with the case in AM.

To summarize, all the independent variables' coefficients have the hypothesized sign, where educational level, international experience and tenure are those characteristics with most significance in our main model, meaning that high educated, internationally experienced and high tenured TMTs have a decreasing effect on sales manipulation activities. Notable is that all our six independent demographic variables are significant for the overproduction model, where five of our hypotheses are significant at the five percent level, showing that TMTs with members close to retirement age increase the amount of RM being done through overproducing good. Additionally, it indicates that high gender diversity, a great deal of financial and international experience, high education level and high tenure have a decreasing effect on the RM being done through overproduction. By observing the results, we can see a relatively big difference between the RM_CFO and the RM_PROD models, in terms of significance. This could be explained by the models simply being different from each other, and that TMTs that manage earnings through overproduction not necessarily have to manipulate sales as well, as assumed. Nonetheless, these findings provide new evidence on how RM-methods are used and associated with the different characteristics of the TMT members.

7. Conclusion

In this study we have examined the demographic characteristics of top management teams (TMTs), and their relationship with both accruals-based earnings management (AM) and real activity-based earnings management (RM), for a sample of Swedish firms between 2010 and 2014. Top management executives as individuals and their earnings management activities have been recognized for a long time in financial accounting research, however, the upper echelons theory (UET) of Hambrick & Mason (1984) have been used in a limited amount within this field, where top managements' decision-making instead are viewed as a team-process, and their collective experiences, interactions and capabilities are assumed to be the foundation of decisions, which can be measured using their observable demographic characteristics. Our study attempts to fill this gap by investigating if demographic characteristics (i.e. age, gender, education, financial work experience, international experience and tenure) of TMTs influence their earnings management activities.

The findings from our study illustrates that the demographic characteristics of TMTs in Swedish listed firms influence earnings management. The effect is found for both AM and RM. However, the relationship between AM and the TMTs' characteristics was found to be weak. Specifically, for our six hypothesis we only found significant results for two of our demographic characteristics; educational level and tenure, suggesting that highly educated and high tenured TMTs are more likely to decrease AM in their firms. Our findings differ substantially from Qi et al. (2018), where significance was found for all of their applied demographic characteristics in relation to AM, which may be due to the different socio-economic context.

However, the relationship between RM and demographic characteristics were considerably stronger in our study, where three hypotheses were significant for sales manipulations (RM_CFO) and all hypotheses were significant for overproduction (RM_PROD). The results therefore indicate that highly educated, internationally experienced and high tenured TMTs are likely to dampen the RM being conducted through sales manipulation. Additionally, the overproduction model seemed to not only strengthen these three characteristics, but further suggest that TMTs with previous financial experience and/or high gender diversity have a decreasing effect on overproduction manipulation and that TMTs with members close to retirement have an increasing effect on the RM being conducted through overproduction. Comparing these results to Qi et al. (2018), we find similar results for RM_PROD and all its independent variables. Although, in comparison to Qi et al. (2018), not

equally strong results were found for RM_CFO and its relationship to demographic variables, which once again could be due to differences in socio-economic contexts, and that RM activities are mostly done through overproduction manipulation in the Swedish context. These results moderately support the UET's predictions concerning the TMTs influence on organizational outcomes, such as earnings management.

As discussed in the introduction, our study contributes in several ways. By using the top management team (TMT) approach, advocated by the UET, this study contributes by reconciling the prior inconclusive results, thus, providing evidence on the relationship between a TMTs cognitions, values and behaviors and their earnings management activities. Furthermore, UET and earnings management is put in a new geographical context, the Swedish, thus developing the spectrum in which UET is used within. Moreover, we contribute to the UET literature by establishing a significant relationship between the demographic characteristic international experience and earnings management. Lastly, the study contributes to the earnings management literature, providing evidence of the prominent relationship between RM and demographic characteristics for Swedish listed firms. Additionally, this study can help various stakeholders, such as external auditors and how they should assess the risk of financial statements and reporting quality. The study can also help Board of Directors in their efforts to increase female representation in TMTs, in order to reduce RM.

During our study we encountered a couple of hurdles, therefore creating limitations to the thesis. Firstly, a limitation concerning our TMT definition, which could be challenged as to whether only the CEO and CFO should be considered the members of the TMT. Previous studies applying the UET, often included a larger part of the management, for example positions such as vice presidents, chief operating officers and chairmen of the board. However, we chose to exclude these positions as there exists limited amount of studies on their respective effect on earnings management, thus, to amplify the strength of our hypotheses we choose to solely include CEO and CFO as our TMT members, as there is an ample amount of studies on their respective effect on earnings management. Therefore, to be able to include these additional positions in the TMT definition and their effect on earnings management, more studies need to be conducted on their respective effect. This would allow for a deeper analysis on the TMT effect on earnings management, as these positions most likely have input on the decision being made by the CEO and CFO.

Secondly, concerning our AM models, critique have been given towards the modified Jones model. McNichols (2002) suggest that the model is flawed due to the assumption of

accruals reacting to the current change in sales, rather than lagged and future changes of sales, which has been found by Bernard & Stober (1989) and Dechow, Kothari & Watts (1998) to have significant effect on accruals. McNichols (2002) therefore suggest using a combination of the modified Jones model and the model based by Dechow & Dichev (2002), which focuses on cash flows, to subdue the possible problems with the modified Jones model. Therefore, applying the model suggested by McNichols (2002) in a similar study could be a useful complement to the modified Jones model to assess AM.

Thirdly, when gathering the observable demographic characteristics there is room for subjectivity or error, as it is both done manually and not in standardized procedure. Thus, if the study was to be replicated, a significant amount of more time would be needed to create a more thorough retrieval process, preferably having direct contact with top managers in cases where the demographic data is ambiguous. Additionally, our measurement of the TMT variable $TENU$ could potentially be refined. For example, two TMT members with a respective tenure of 1 and 39 generates the same value as a TMT with tenures of 20 and 20, hence, one could argue that there exists a different dynamic between the members in the respective TMTs.

Lastly, scholars have found results of existing power relations between CEOs and CFOs, and that these relationships affect earnings management (Friedman, 2014; Baker, Lopez, Reitenga & Ruch, 2019). It could therefore be assumed for these types of relationships to affect TMTs and our results. Hence, in future research it could be included to possibly generate a more fundamentally correct result when conducting research on TMTs.

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Appendix

Appendix I

Summary of Hypotheses

Predicted Coefficient Signs

Variables	AM	RM
AGE	+	+
GENDER	-	-
FINWE	-	-
EDUC	-	-
INTEXP	-	-
TENU	-	-

+ equals an increasing effect on earnings management
- equals a decreasing effect on earnings management

Appendix II

Firms included in the study

AAK	Björn Borg	Eniro	Jeeves	Nolato	Scania AB
AcadeMedia	Boliden	Ericsson	JM	Nordic Mines	Seamless Distribution
Acando	Bong	eWork Scandinavia	KABE	Nordic Service Partn. Holdings	Seco Tools
ACAP Invest AB	Boule Diagnostics	Fabege	KappAhl	Nordnet	SECTRA
A-Com	Brinova	Fagerhult	Karo Bio	NOTE	Securitas
Active Biotech	BTS Group	Fast Partner	Karolinska Development	Novestra	Semcon
Addnode Group	Bure Equity	Feelgood Svenska	Kinnevik	NOVOTEK	Sensys Traffic
Addtech	Byggmax Group	Fenix Outdoor AB	Klövern	Oasmia Pharmaceutical	SinterCast
Aerocrine	Cardo	Fingerprint Cards	Knowit	Odd Molly International	Skanska
Alfa Laval	Castellum	FinnvedenBulten	Kungsleden	OEM International	SKF
Allenex	Catena	FormPipe Software	Lagercrantz Group	Opcon	SkiStar
AllTele	CDON	Getinge	Lammhults Design Group	Orc Group	Softronic
Anoto Group	CellaVision	Geveko	Latour	Orexo	SSAB
Arise	Cision AB	Global Health Partner	Lindab International	Ortivus	StjärnaFyrkant
Artimplant	Clas Ohlson	Gunnebo	Loomis	PA Resources	Studsvik
Aspiro	Cloetta	Haldex	Lundbergföretagen	PartnerTech	SWECO
ASSA ABLOY	Concentric	Havsfrun Investment	Lundin Petroleum	Peab	Svedbergs
Atlas Copco	Concordia Maritime	HEBA	Malmbergs Elektriska	Poolia	Swedish Match
Atrium Ljungberg	Connecta AB	Hemtex	Meda	Precise Biometrics	Swedish Orphan Biovitrum
Availo	Consilium	Hennes & Mauritz	Medivir	Prevas	Swedol
Avanza Bank Holding	Corem Property Group	Hexagon	Mekonomen	Pricer	Svolder
Avega Group	CTT Systems	HEXPOL	Micro Systemation	Proact IT Group	Systemair
Axfood	Cybercom Group	Höganäs	Midsona	Probi	Tele2
Axis	Dagon	HiQ International	Midway	Proffice	TeliaSonera
B&B TOOLS	Dedicare	HL Display	Moberg Pharma	Profilgruppen	Tethys Oil
Balder	DGC One	HMS Networks	Morphic	Ratos	TradeDoubler
BE Group	Diamyd Medical	Holmen	MQ Holding	RaySearch Laboratories	Transmode
Beijer Alma	Diös Fastigheter	HQ	MSC Konsult	Readsoft AB	Trelleborg
Beijer Electronics	DORO	Hufvudstaden	MTG	Rederi AB Transatlantic	Uniflex
Beijer Ref	Duni	Husqvarna	MultiQ International	Rejlers	Wallenstam
Bergs Timber	Duroc	I.A.R Systems Group	NAXS Nordic Access	Rezidor Hotel Group	VBG GROUP
Betsson	East Capital Explorer	ICA Gruppen	NCC	RNB RETAIL AND BRANDS	Venue Retail Group
Bilia	Elanders	IFS	Nederman Holding	Rottneros	Wihlborgs Fastigheter
BillerudKorsnäs	Electra Gruppen	Image Systems	Net Entertainment NE	Rörvik Timber AB	Vitec Software Group
BioGaia	Electrolux	Industrivärden	Net Insight	SAAB	Vitrolife
BioInvent International	Elekta	Indutrade	NetOnNet	Sagax	Volvo
Biolin Scientific	Elektronikgruppen	Intellecta	New Wave	Sandvik	XANO Industri
BioPhausia	Elos	Intrum Justitia	NIBE Industrier	SAS	ÅF
Biotage	Enea	Investor	Nobia	SCA	

Appendix III

Test for multicollinearity

Independent variables	VIF-test
AGE	1.210
GENDER	1.060
FINWE	1.060
EDUC	1.060
INTEXP	1.100
TENU	1.270
BOGEND	1.180
BONUMBER	1.890
SIZE	2.280
BMR	1.210
OPLOSS	1.330
LEV	1.180
SG	1.070
BOINDEFIRM	1.090
MEAN	1.290

Appendix III presents test for multicollinearity for all independent variables

Appendix IV

Panel A: Industry distribution

Industry	Obs.	Firms
Oil/Gas	12	3
Material	53	12
Industrial goods and services	303	64
Durable goods and services	101	20
Health care	137	32
Consumables	117	26
Telecom operators	20	4
Power supply	5	1
Real estate	170	37
Information technology	157	34
Total (All industries)	**1075**	**233**

Panel B: Yearly distribution

Year	Obs.	Firms
2010	218	218
2011	217	217
2012	220	220
2013	213	213
2014	207	207
Total (2010-2014)	**1075**	**233**

Appendix IV displays the sample distribution. Panel A displays the industry distribution for all observations. Panel B displays the yearly distribution for all observations.