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**Weakening the glass ceiling: Does organizational growth reduce  
gender segregation in the upper tiers of Danish local government?**

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# **Weakening the glass ceiling: Does organizational growth reduce gender segregation in the upper tiers of Danish local government?**

## **Abstract**

The theory of representative bureaucracy highlights gender segregation in the public sector and its detrimental implications for public policy outcomes. Focusing attention on organisational responses to this protracted problem, we provide evidence on whether organizational growth improves gender integration in the upper echelons of the public sector. An evaluation of the relationship between new hires and gender representation within the management tiers of Danish local government reveals an association between the recruitment of additional employees and improved gender integration. This is particularly pronounced for public organizations that employ fewer women. Implications for theory and practice are discussed.

## **Keywords**

Gender segregation, representative bureaucracy, glass ceiling, organizational growth, new hires.

# **Weakening the glass ceiling: Does organizational growth reduce gender segregation in the upper tiers of Danish local government**

## **Introduction**

Research continues to highlight patterns of gender segregation in public organizations that take the form of a sharp and persistent differentiation in the representation of men and women. Gender segregation is complex as it occurs both across and within jobs and occupations (Acker, 2006). In the public sector, it has been observed across and within policy divisions, general management and in the very upper echelons of the public service workplace (Ricucci and Saidel 1997; Davies and Thomas, 2000; Dolan 2002; Connell 2006; Caceres-Rodriguez 2013; Smith and Monaghan, 2013; Ricucci and Van Ryzin 2016). For many the issue of gender segregation crystallizes in the concept of the glass ceiling, which is defined by Bullard and Wright in their study of women executives in the US state government as *“the actual or perceived barrier or cap beyond which few women (or other previously excluded minorities) in public and private organizational structures are able to move”* (1993, p. 189).

Following this interpretation, the glass ceiling, and other forms of gender segregation, are seen to be evident, despite worldwide efforts to enhance diversity and promote equal opportunities (Sneed, 2007).

In their efforts to explain patterns of segregation, scholars point to systems of socialization and social reproduction that have shaped organizational processes, and in some cases institutionalized discriminatory practices, over time (Kanter 1977; Guy 1993). In public administration, there has been a focus on the added value of representativeness, informed by the theory of representative bureaucracy. This theory suggests that gender segregation in public organizations inhibits a public

organization's ability to deliver an improved set of policy outcomes that flow from enhanced representativeness (Naff and Thomas, 2004; Andrews and Johnston Miller 2013; Atkins, Fertig and Wilkins 2014; Riccucci et. al. 2017). Studies in the field have highlighted an urgent need to understand the variety of mechanisms that shape representativeness and stimulate a shift from passive to active representation (Chappell and Waylen, 2013, p. 600; Meier and Nicholson-Crotty 2006; Smith and Monaghan 2013; Sabharwal 2013). A series of determinants have been identified including political representation (Smith and Monaghan, 2013), bureaucratic discretion (Keiser et al. 2002), organizational size (Author, 2015), levels of inter-agency mobility (Bullard and Wright 1993), and agency type (Connell 2006). However, the persistence of gender segregation in public organizations has prompted calls for studies of representative bureaucracy to encompass a focus on organizational, as well as policy, outcomes. Specifically, it is suggested that longitudinal studies of intra-bureaucratic effects and phenomena, such as the glass ceiling, will enhance our theoretical capacity and insight (Caceres-Rodriguez 2013; Johnston, 2017). As such, it seems timely to focus attention on structural explanations for patterns of segregation and organizational efforts to improve gender integration.

Public and private organizations have attempted to reform their internal systems, processes, practices and behaviors in response to concerns regarding gender segregation, although in the absence of quick fixes, progress has been slow (Anestaki et al. 2016; Johnston 2017). Prominent within studies of the glass ceiling and gender segregation is an advocacy for the 'deliberate' and 'purposeful' recruitment of women to agencies and departments where segregation has been identified (Connell 2006). This ties with recent evidence from the private sector, which suggests there is potential to mitigate gender segregation when an organization expands and attracts

new entrants (Baron et al. 1986). The appointment of new employees at the junior level offers a chance to disrupt reproductive tendencies and enhance the representation of women in the upper tiers (Saltzstein 1986; Kellough 1990; Baron et al. 1991; Guy, 1993; Reskin and McBrier 2000). For example, and as emphasized by the theory of representative bureaucracy, increasing numbers of women within organizations can build momentum for change, while also widening the talent pool from which future senior managers are selected (Bullard and Wright 1993; Naff and Crum 2000; Smith and Monaghan 2013), although we note that not all studies report evidence consistent with this argument (see Anestaki et al. 2016; Wilkins and Williams 2006).

Scholars of representative bureaucracy have enhanced our understanding of the determinants and policy levers that reduce and reinforce patterns of gender inequality through an impressive and growing evidence base. However, gender segregation continues to persist in public organizations. This situation has resulted in calls for additional attention to be focused on the organizational outcomes arising from gender segregation and the need to generate supplementary evidence that sheds light upon the efficacy of local responses (Anestaki et al. 2016). It is unclear, for example, what happens when public organizations have the opportunity to take action and grow their own workforce (Chappell and Waylen 2013). Organizational growth has led to improvements in gender integration in the private sector but does it present an equivalent opportunity within the public sector? In other words, are public organizations more likely to appoint women when they have the chance to recruit, cognizant of gender segregation?

Our purpose in this study is to augment the theory of representative bureaucracy and build evidence on organizational responses to gender segregation in public

organizations. In response to calls for longitudinal studies focused on intra-bureaucratic effects and outcomes, we examine whether periods of expansion offer the potential to improve gender integration. More precisely, we determine whether organizational growth, including the recruitment of new female employees, subsequently improves gender representation in the general and upper management tiers of Danish local government. To achieve this objective, we analyze register data covering all local governments in Denmark across a five-year period, as this allows us to study organizational growth and the gender distribution of management in local governments.

The manuscript is structured as follows. The next section presents a discussion of gender segregation in public organizations, with reference to the theory of representative bureaucracy, before introducing a series of hypotheses. Subsequently, we present our methods, data and findings. We then consider the theoretical and practical implications of our analysis, highlighting the circumstances in which organizational growth may potentially limit gender segregation in the upper echelons of the public sector.

### **Theory and hypotheses**

Research has identified an ongoing need for further investigation into gender segregation in public organizations, both in terms of its antecedents and potential remedies (Guy 1993; Gildengil and Vengroff 1997; Bowling et al. 2006). Much discussion has been devoted to gender segregation in the upper echelons of public organizations with repeated reference to the glass ceiling (Baron et al. 1991; Guy 1993; Storvik and Schøne, 2008). Hierarchical differences between men and women continue to prevail, irrespective of ubiquitous diversity initiatives and over-arching

improvements in representativeness (Lewis 1997; Guy and Newman, 2004; Riccucci et al. 2014; Mastracci and Bowman, 2015). The persistence of gender segregation within public organizations at upper levels continues to provoke concern, due to the societal implications that stem from low levels of representation of women in senior leadership positions in public bureaucracies (Smith and Monaghan 2013; Naff and Capers, 2014; Schroter and Von Maravic 2015; Meier and Funk, 2017).

It has been argued that the theory of representative bureaucracy is an especially helpful lens through which to interpret and understand gender segregation in the public sector (Caceres-Rodriguez 2013; Smith and Monaghan 2013; Johnston 2017).

The central premise of representative bureaucracy is that public organizations should mirror the populations they serve in order to ensure that government policies and their implementation match societal needs and expectations (Mosher 1968; Meier 1975).

The theory suggests that when public servants are drawn from different sections of the population, a broader set of values will inform public policy, thereby ensuring that governments are responsive to all communities (Meier and Nigro 1976; Author 2015; Meier, 2018).

Within the field of representative bureaucracy, a distinction is often drawn between passive representation which “concerns the origins of individuals and the degree to which, collectively, they mirror the whole of society” (Mosher, 1968: 15) and active representation where bureaucrats intentionally “press the interests and desires of those who they are assumed to represent, whether they be the whole people or some segment of the people” (Mosher, 1968: 14). While much attention has been devoted to drivers of active representation, recent studies have emphasized the importance of descriptive representation, arguing that cognitive effects generated by representative bureaucrats contribute to organizational legitimacy and policy outcomes (Riccucci et.



al, 2016; Anestaki et al. 2016; Andrews and Miller, 2013; Riccucci and Saidel 1997). The persistence of gender segregation in public organizations has led to calls for the scholars of representative bureaucracy to adopt a more explicit emphasis on organizational outcomes. Indeed, it has been argued that theorizing capacity would be enhanced by longitudinal studies of intra-bureaucratic effects and phenomena, such as the glass ceiling (Caceres-Rodriguez 2013; Johnston 2017). As such, and with principles of representative bureaucracy in mind, it seems timely to devote some attention to structural explanations for gender segregation and examine how variations in an organization's environment might determine organizational responses that impact on gender equality (Connell 2006; Baron et al. 1986).

Public bodies have sought to address the glass ceiling through internal organizational remedies, such as the reform of promotion processes, leadership training development programs and organizational culture change initiatives (Oakley, 2000; Davies and Thomas, 2002; Mastraaci and Bowman, 2015). However, in practice, institutionalized organizational cultures and processes have proven difficult to reform and women managers remain less likely to be promoted from within (Bullard and Wright 1993; Selden and Selden 2001). Consequently, it has been suggested that public agencies may become more representative and increase gender integration when they experience periods of expansion, as this provides an opportunity to amend entry-level procedures (Kellough 1990). Evidence from private firms indicates that improving integration over time through recruitment may be more successful in comparison to addressing embedded internal cultures and processes (Saltzstein 1986; Dwyer, Richard and Chadwick, 2003). For example, Baron et al. observe organizations improved integration when employing new entrants, as entry-level recruitment processes are uniform and more easily overhauled (1991: 1394).

To summarize, gender integration remains a key priority for public organizations and studies of representative bureaucracy suggest it produces harmful effects for public policy outcomes. It has been argued that the theory of representative bureaucracy can be further augmented through attention to personnel decisions, intra-bureaucratic effects and organizational outcomes (Johnston 2017; Anestaki et al. 2016; Caceres-Rodriguez 2013). On balance, evidence suggests that improvements in gender representation at the organizational level have the potential to reduce gender segregation at senior levels by expanding the pool from which future senior managers are selected (Bullard and Wright 1993; Naff and Crum 2000; Smith and Monaghan 2013). Studies demonstrate that the recruitment of new entrants can often be of more significance than overhauling promotion systems (Baron et al. 1986; 1991). Finally, findings point to the occurrence of ‘suggestive’ patterns of lateral movement at times of expansion (Bullard and Wright, 1993; Kellough, 1990). So, on this basis, we might expect that:

***Hypothesis 1:*** Organizational growth (in number of employees) is positively related to the proportion of women in the upper echelons.

It is important to add some further precision in terms of the composition of organizational growth. It is likely that there will be a greater effect on gender representation and patterns of segregation when new employees constitute female, rather than male, appointments. So we offer some further granularity and suggest that:

***Hypothesis 2:*** The effect of organizational growth (in number of employees) on the proportion of women in the upper echelons is stronger when women constitute a larger fraction of new hires.

Prior research suggests the need to consider how critical mass effects might influence levels of diversity and representativeness within public organizations (Thompson 1976; Goodman et. al. 2003). Most often studies indicate that organizations with a greater proportion of female employees tend to be more representative (Caceres-Rodriguez 2013). This is because pressures for improved representation build as the proportion of female employees grows and women exert more power and influence within organizations (Kanter 1977). However, addressing gender segregation could potentially be a greater priority for organizations with fewer female employees, because they are subject to greater levels of political scrutiny and have been directly challenged to improve levels of gender representation (Naff and Thomas, 2004; Naff and Capers, 2014; Selden and Selden, 2001). There is some evidence that these organizations adjust patterns of gender segregation more quickly because they are subject to normative pressure from unions and civic groups to hire more women managers (Baron et al. 1991). On this basis, we suggest that when an organization has low levels of gender integration in the managerial ranks, it will be subject to considerable coercion from government and regulators and is more likely to use a period of hiring in response. So in order to cast further light on our research question, we propose that:

***Hypothesis 3:*** The effect of organizational growth on the proportion of women in the upper echelons is stronger when the existing proportion of women managers is low

The final hypothesis synthesizes several of the arguments presented above. It takes the argument that organizations with low levels of gender integration in the

managerial ranks are more likely to use a period of hiring in response, together with the contention that there will be a greater effect on gender representation and segregation when new hires constitute female, rather than male, employees. We adopt an interactive interpretation of these arguments by proposing that:

***Hypothesis 4:*** The effect of organizational growth on the proportion of women in the upper echelons is stronger when the existing proportion of women managers is low and women constitute a larger fraction of new hires

The next section of the article provides an overview of our research approach that includes a description of the research setting and detail of the data and measures employed for the statistical analyses undertaken for the study.

## **Data and methods**

### ***The empirical setting***

Our analysis is focused on Danish local government organizations. This is an appropriate setting for a study of gender segregation in public services for a number of reasons. First, Danish local government organizations are comparable, semi-autonomous and cover an extensive range of public services so they bear a strong resemblance to other local government systems (Greve 2006; Baekgaard et al. 2015). Services delivered by local governments in Denmark include social measures, childcare, schools, leisure and care for the elderly, utility supply, civil service, libraries, and road maintenance. Second, the study context supplements the existing body of representative bureaucracy scholarship, much of which is located either in a US or UK public service setting. Third, Denmark has a long tradition for gender

equality and due to successive Governments' proactive equality policies is often perceived to be a 'best case' example (Author, 2018). Finally, Denmark has the advantage of data availability. Detailed, reliable observations of the gender distribution in management, as well as among new hires, for a number of comparable organizations across time would be difficult to acquire in many other national contexts.

There are 98 local governments in Denmark with an average size of 55, 200 inhabitants, each of which is governed by the same rules and regulations (Denters et al. 2014). They levy their own taxes, which creates different financial contexts for governments located in richer and poorer parts of the country. To partly alleviate this imbalance the overall terms and finances for local governments, including block grants and redistribution, are negotiated every year between the central government and Local Government Denmark (the branch organization for the Danish local governments). This means that any budgetary expansions or retractions at the national level often spillover to local governments when their annual budget is negotiated. However, as local governments differ in their income and enjoy substantial financial authority, we are able to observe both growth and austerity at the local government level in the period under study here 2008-2012. Even within the same year, some local governments grow by five percent or more, while others experience similar decreases in size.

At the administrative level, the local governments are organized into divisional functions and usually governed by a management team that consists of between three and five managers, where one is the municipal director (Author 2015). Three out of four employees in local governments are female with over-representation especially prevalent in areas such as social care and childcare and among frontline workers such

as teachers and daycare employees (Local Government Denmark 2014; Madsen et al. 2010).

Hiring for positions is merit based and regulated consistent with norms of fairness and equality in employment. Recruitment practices are covered by legislation that requires positions to be posted publicly, with applications invited from interested candidates from within or outside the organization. In principle this applies from entry-level positions to senior management posts, although in exceptional circumstances, organizations can decide not to advertise certain posts – for example, interim or short-term positions<sup>1</sup>. The public employer also has some discretion to offer an employee a new position or possibly a promotion, within the limits of their existing employment contract. Promotion into the ranks of management, however, cannot occur without open competition for the post. Public sector employees in Denmark are salaried based on pay scales where they progress through a number of steps. The steps are tied to a specific job category (e.g. teacher or nurse). Normally progression is automatic in the first years of employment and does not imply a new position or added responsibility. Once the final step has been reached, salary increases are obtained by negotiation or through promotion to a new position category (when possible).

In many ways, these employment conditions are similar to those for public sector employees elsewhere in the world. For example, there is resemblance to the GS (General Schedule) and SES (Senior Executive Schedule) for Federal Government positions in the US, particularly in terms of the qualifications required and hiring processes at GS level, especially for 9-15 positions. However, there are some slight distinctions, for example on pay at GS and on recruitment, promotion and

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<sup>1</sup> <http://pav.perst.dk/Publikation/Ansaettelse/Overenskomstansatte%20mfl/Opslag.aspx>

development at SES, the management of which in the US is organised through OPM, but in Denmark would be at the discretion of local governments, subject to legislation.

### *Data*

In order to address our proposed hypotheses we draw on the Integrated Database for Labor market research in Denmark. The Database is updated on an annual basis in November and comprises information about every individual working in Denmark. As every person in the Danish labor market has a unique social identification number, it is possible for Statistics Denmark to draw data from various registers, including the tax register. This means data are highly reliable and provide an accurate picture of the labor market situation for every individual each year. These data include (anonymized) information about an individual's employer, salary, managerial status, and hours worked and can also be linked to demographic information such as gender, age, ethnicity and education. As such, these data are well suited to the study of employment dynamics in the public sector, although they are very rarely used for that purpose (although see Authors 2015).

From this database, we identify managers and employees employed in local governments. In order to supplement the analysis with contextual variables, we have also incorporated publicly available organizational level data extracted from a database hosted by The Ministry of the Interior (Noegletal.dk), such as the socio-economic index and tax base.

The objective of this study is to examine the impact of organizational growth on gender segregation in the upper echelons in the public sector. Statistics Denmark classifies individuals as managers according to the ISCO standards from the International Labor Organization. This is a relatively broad definition capturing managers at different levels, which means that members of the top management team,

school superintendents, leaders of nurseries and kindergartens, and department managers within different areas in the administration are all classified as ‘managers’. As a result, ‘managers’ comprise around 2 percent of individuals within the dataset with the advantage that this classification provides an all-encompassing identification of those in managerial ranks of Danish local governments.

As female representation varies across different levels of management, and is at its lowest at very senior levels, we explore our hypotheses for this group in a separate analysis. Unfortunately, the data do not provide an indicator of management level so we utilize register data that contain salary information. Working on the premise that senior managers tend to be paid higher salaries for their added responsibilities, we identify senior managers as those among the top 25 percent highest paid in each local government. While salary is not a perfect measure of ‘top management’, it is an appropriate proxy (Dahl, Dezsó, and Ross, 2012). So all our analyses are conducted in two versions - one including all managers and the other focusing just on the top 25 percent best paid managers.

The period under study is a five-year timespan from the year 2008 (after a local government reorganization) to 2012 (last year of data availability). With a total population of 98 municipalities, this provides a total of 490 municipality-years as units of analysis. The population size differs in the different models presented below. In some models, we use a lagged independent variable and consequently lose a year, while the models concerning the most highly paid managers utilize salary information, which is only available for two years in the sample window. Finally, there are a few missing data points. Consequently, sample sizes vary between 195 and 490 in the estimations below.

### ***Measures***



***Dependent variable.*** We measure levels of gender diversity in the upper echelons in our analysis as described above: the proportion of women managers and the proportion of women among the 25 percent most highly paid managers. The proportion of women managers is on average 0.55 and varies from 0.29 to 0.74 across the different local governments. For the most highly paid managers, the average proportion is 0.36 and varies from 0 to .69 across the different local governments.

***Independent variable.*** Organizational growth can be measured in multiple ways. In this study, we focus on growth indicated by the number of employees. On the basis that most public services provided by local governments, such as teaching, childcare, elder care, road maintenance etc., are delivered by employees, this is a reasonable operationalization. When budgets are increased, public service organizations extend their reach by hiring more employees to design and deliver services for citizens, whereas in times of austerity, budget savings are typically obtained by reducing salary expenses.

Our precise measure of organizational growth is calculated as the number of non-managerial employees in a given year divided by the number of employees the previous year. This means that a value of 1 indicates no addition growth or decline compared to last year. Numbers lower than 1 signal a reduction in employees and numbers exceeding 1 indicate an expansion of employees. The variable has an average of 0.995 and ranges between 0.87 and 1.12.

In hypotheses 2 and 4 we speculate that the effect of growth may depend on the proportion of new hires that are female. In order to test this, we identified all new hires in each municipality in each year and, from this group, calculated the proportion of women. New entrants are non-managerial employees entering the organization for the first time, either because they have left their previous employment at a different

organization, or because they have moved out of unemployment or because they are newly educated and moving into their first employment position. Hypotheses 3 and 4 are focused on pre-existing levels of women in management. We measure this as the proportion of women in management in the preceding year.

***Control variables.*** Managerial diversity is likely to be shaped by a range of organizational characteristics so we incorporated a series of control variables. Evidence suggests that the proportion of females in an organization has an important bearing on representativeness (Baron et al. 2007; Thompson, 1976), so *proportion of female employees* was included in all analyses (the average is 0.78).

Based on publicly available data from the Ministry of the Interior we also included other local government-level control variables. Prior research suggests that organizational size may also impact on levels of representativeness (Author 2015). To control for differences across small and larger local governments, we include a measure of *population size* indicating the number of inhabitants in each local government. We also control for the *level of resource availability* by including a measure of the local tax base. Relatedly, the *socio economic index* indicates the relative size of required expenditure for caring for elderly and social welfare. A value above 1 indicates a higher need, whereas a value below 1 indicates relatively lower need.

We included a dummy variable indicating *whether the municipality was amalgamated* or not. It is important that we include a control for amalgamation as during that period certain managerial level posts became redundant and this might have influenced hiring policies. Lastly, research indicates that political leadership could be important (Smith and Monaghan 2013) so we included a dummy variable, which identifies whether the Mayor of the municipality is a member of one of the Liberal parties. We

have selected the Liberal parties because these tend to propose fewer women candidates for the local elections in Denmark, compared to other social democratic and left wing parties<sup>2</sup>. We also included a measure for the *number of female electives standing for local elections* in each municipality, based on evidence that the proportion of women running for political office is associated with the representation of women in public organizations, particularly at managerial levels (Bullard and Wright, 1993). We note that year fixed effects are included in all models to control for dynamics of the election cycle and other annual events common to all local governments.

### ***Estimation***

We employ a series of regression models in order to estimate the proportion of women managers. As the outcome is fractional and bound between 0 and 1, we cannot use ordinary OLS regression (Papke and Wooldridge, 1996; Author, 2018) but estimate fractional logit models that are created exactly for this type of outcome. Specifically, we estimate population-averaged panel data model with a logit link function (Papke and Wooldridge, 1996). We assume high within municipality correlation of our dependent variable (gender representation is likely to change slowly as management turnover is limited), so the population-averaged model is preferred. This means that we estimate effects for average municipalities, rather than individual ones. Finally, we conducted additional tests to identify potential multicollinearity among the variables. The resulting variance inflation factors were all below 5, suggesting that multicollinearity is not an issue within this analysis.

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<sup>2</sup> <https://www.altinget.dk/artikel/her-er-partierne-med-flest-kvindelige-kandidater>

## Results

From table 1, it is clear that Danish local government organizations have been relatively successful in appointing women to management positions. From a societal standpoint, women are slightly over represented in local government relative to the wider population but, as our general managerial category incorporates lower, middle and upper management positions, our aggregate data likely reflect greater levels of representation at lower managerial levels. Certainly, they do vary slightly from a recent study, which showed that only around 20 percent of local government top managers are women (Author 2015). Focusing on senior managers, we see the trend reverses as here only around one in three employees are women. Consequently, these data provide clear evidence of gender segregation - a glass ceiling - in Danish local governments as they indicate a much lower proportion of senior women managers and, in some cases, demonstrate that certain municipalities do not have a single female within their group of most highly paid managers.

[Insert table 1 here]

To illuminate the context and better understand patterns of gender segregation among managers in Danish local governments, in figure 1, we present descriptive statistics for local government organizations with different characteristics. The results show interesting patterns that illustrate differences between local governments.

[Insert figure 1 here]

For example, consistent with studies of representative bureaucracy, political representation and gender segregation are linked, as women tend to be better represented in general and senior management positions in local governments where

more women compete for office during elections, (figure 1, panel a). However, in contrast to prior work, there is only a slight organizational size effect. Only the very small local governments have a lower representation of women in general and senior management positions. (figure 1, panel b).

Next we move to a review of our results from the tests of our hypotheses. Table 2 presents the results of the panel data analyses where in each case the proportion of women managers is measured in terms of the proportion of women employed within the general managerial group. Model 1 contains only the control variables while Models 2 through to 6 present the results of all the hypotheses tested.

[Insert table 2 here]

Hypothesis 1 is explored in Model 2. As hypothesized, results show a positive relationship between organizational growth and the proportion of women managers.

In our fraction regression models coefficients are on the logit scale. To assist interpretation, we calculated the predicted proportion of women managers and depicted it graphically in figure 2, panel a. The figure illustrates that organizations that grow are associated with a larger proportion of female managers. The effect is substantial, with an approximate difference of 3 percentage points between organizations that scale back 10 percent and organizations that grow 10 percent.

In model 3, we present results indicating that the proportion of female new hires does not moderate the effect of organizational growth. This contradicts hypothesis 2. In contrast, Model 4 shows that there is a negative and significant interaction between organizational growth and the existing proportion of female managers. Again, we

interpret the effect based on a graphical depiction in figure 2, panel b. We have calculated three lines representing different existing levels of women managers and observe that the effect in model 2 is driven mostly by a fairly substantial increase in women managers for organizations where the pre-existing level of women managers is low and the organization grows. Interestingly, when pre-existing levels are higher, the line is flatter and when the level of pre-existing women managers is very high (75%), the line begins to decrease, indicating that, in certain circumstances, organizational growth is associated with a slightly better male representation among managers.

In the results for Model 5, we report on a three-way interaction of organizational growth, the share of women among new hires, and pre-existing levels of women managers. The interaction term is significant and we interpret it in figure 2, panel c where four lines are calculated representing four combinations of the two moderators. We highlight the line representing the combination of low levels of pre-existing women managers and a high proportion of women among new hires. This line is the only combination of variables that indicates a positive relation between organizational growth and the proportion of female managers. The increase from high organizational decline to high organizational growth is 8 percentage points from around 46 percent women managers to around 54 percent. Somewhat surprisingly, when organizations have a high pre-existing proportion of women combined with a high proportion of women among new hires, this seems to be associated with a decline in women managers. The final two combinations translate into flat lines suggesting that, under these conditions, organizational growth is not related to an increase in the proportion of women managers.

[Insert figure 2 here]

Conscious that gender segregation often manifests in the very top tiers of management and the patterns illustrated in table 2 reflect all managerial positions, we conducted some additional analyses. In this second stage, we further interrogate the relationship between organizational growth and the proportion of women in managerial positions, based on an alternative measure of our dependent variable – the top 25 percent best paid managers.

[Insert table 3 here]

Analogous to table 2, we present results from 5 models in table 3. Results are markedly different, and run contrary to those presented for the general group of managers as only hypothesis 3 is supported. The hypothesized relations tested in models 7, 8, and 10 are each statistically insignificant while the results for model 9 indicate that organizational growth is only associated with a greater proportion of women managers when organizations have low pre-existing levels of women among the best paid managers. To better understand this effect, we depict it graphically in figure 2, panel d. The graph indicates that when the existing level of top tier women managers is very low, growth seems to be related to increases in the representation of women in the upper echelons. However, in contrast, when women already constitute a proportion of 30, or even 60, percent of the best paid managers, growth seems to be linked to stagnation, or even a decline, in the presence of women among in this elite group.

Taken together these results partly support hypotheses 1, 3, and 4. Organizational growth is important in reducing gender segregation but mostly relative to the lower tiers of management. When we measure the proportion of women managers among

the most highly paid, the results indicate that women are less likely to join this group when organizations grow, unless they are poorly represented within the group to begin with. These intriguing results are discussed in more detail in the following section of the paper.

## Discussion

This study responds to calls for additional theoretical insights arising from longitudinal studies of intra-bureaucratic effects and phenomena, such as the glass ceiling (Caceres-Rodriguez 2013; Smith and Monaghan 2013; Johnston 2017). Our analysis sought to determine whether organizational growth, including the recruitment of new female employees, improves gender integration in the general and upper management tiers of Danish local government. Prior to reviewing our findings relative to our hypotheses, it is worth emphasising that our data indicate that women are over-represented in general management within Danish local government organizations, relative to the wider population. This level of representation is rare within representative bureaucracy scholarship and provides some cause for optimism regarding progress on gender segregation and the wider societal benefits that flow from improved representativeness (Chappell and Waylen 2013; Riccucci and Van Ryzin 2017).

Our analysis does though indicate the presence of a glass ceiling - albeit one that manifests itself within the very upper reaches of the hierarchy when compared with other public bureaucracies (Caceres-Rodriguez 2013; Author 2015). It is surprising the local governments have relatively fewer women, and sometimes none, in senior positions, given the predominance of women in general management and the positive equality context that exists in Denmark. However, the findings suggest that, in certain



circumstances, organizational growth offers a chance to enhance gender integration through the appointment of new hires. Our results demonstrate that when new recruits are appointed, there is a subsequent increase in the proportion of women in general management. This lends some support to the argument that gender integration in managerial ranks improves when organizations are able to accelerate de-segregation processes through the recruitment of new employees (Kellough 1990; Bullard and Wright 1993; Baron et al. 1991). As such, the analysis indicates that external hiring processes can perhaps help to ameliorate what is often a protracted and ‘fraught career trajectory’ for women (Johnston 2017, p. 141).

However, these findings hold mainly when we capture a wide range of general managers in the sample and measure the proportion of women managers in terms of their occupational classification. When we focus our analysis on the very top quartile of most highly paid managers, results tend not to be consistent with our hypotheses. This might reflect the measures used within the analysis. For example, while salary is a valid proxy for senior management, in practice there may be some disparity between men and women’s pay, consistent with a structural gender pay gap.

Nevertheless, the findings demonstrate some intriguing interaction effects. Consistent with our hypothesis, organizational growth is not associated with gender integration in the upper echelons when women comprise a greater share of new hire positions, unless those organizations also have low pre-existing proportions of women managers. So the effect of making new hires on senior female representation is stronger for organizations that currently employ fewer women managers. While in line with our hypothesis, this finding does run somewhat counter to prior studies that evidence improved representativeness in organizations employing larger proportions of women (Kanter 1977; Baron et al. 1991; Bullard and Wright 1993). However,

nuanced variations in the pattern of the glass ceiling have been observed in previous work (e.g. Naff and Thomas, 1994). Plus, organizations with fewer women managers may have been identified by government and other stakeholders and placed under significant pressure. This could lead them to prioritizing external recruitment campaigns to appoint female managers (Baron et al. 1991; Naff and Crum, 2000). Future research on intra-bureaucratic outcomes might consider whether women managers appointed in organizations with lower levels of female representation feel isolated as a result. Alternatively, perhaps they become empowered and actively change public organizations, through the promotion of female-friendly cultures and organizational socialization processes. Their presence may also influence levels of representation within the wider local government workforce. Although we note that any translation from passive to active representation depends on a range of variables and therefore cannot be presumed (Wilkins and Williams 2006; Oberfield 2018). Interestingly, the findings indicate that organizational growth does not have such an impact in organizations where women are better represented. Qualitative studies may be able to determine whether this is because organizations have become somewhat complacent as they feel they have achieved gender integration, or alternatively whether a potential backlash is developing in response to improving gender integration (Moon, 2018).

Beyond organizational outcomes, studies might identify whether the presence of women managers impacts upon public policy delivery in Denmark. The aggregate statistics suggest women are employed in specific policy areas, such as education and social care, so it will be important to establish whether they advocate for particular policies and communities within those policy domains. These questions may usefully be considered in the context of the debate within representative bureaucracy on

critical mass. On the one hand, theory suggests that the connection between passive and active representation is considerably enhanced when a minority becomes a majority, but on the other, authors have highlighted the potential for diminishing returns (Dolan 2002; Meier 2018). Danish public services might prove a useful research setting in which to further explore these arguments.

Our research suffers from several limitations. One important question concerns the level of variation in representation across agency type and policy domains. The Danish Register Data do not permit the identification of the policy remit and mission orientation of different agencies for fear of identification of individual public servants, which limits our capacity to identify whether women managers dominate in certain policy areas (Sneed 2007; Smith and Monaghan 2013). Further, as mentioned earlier, our distinction between general and senior management rests upon salary data and it was not possible to offer further precision on the senior managerial roles under analysis. While pay levels are linked to hierarchical position and serve as a good proxy, we are mindful of the potential for a pay gap between men and women managers and it may be that future studies are able to offer additional precision here, in terms of specific managerial positions (Leslie, Manchester and Dahm, 2017). The analysis focuses purely on the Danish local government context, which covers a standard range of services but there is always the chance that research findings do not readily transfer to other settings. Finally, we analyse a limited time period and extended longitudinal research might capture more substantial shifts in employment, along with the longer term effects of the global financial crisis on employment growth (Kickert and Randma-Liiv 2016).

## **Conclusions**

Gender integration remains a key priority for public organizations and evidence from studies of representative bureaucracy suggests it has a detrimental effect on public policy outcomes. In response to calls for additional insight into organizational outcomes and phenomena, such as the glass ceiling, we augment the theory of representative bureaucracy by building evidence on organizational responses to gender segregation in the public sector. In doing so, we examine whether periods of expansion offer the potential to increase gender integration in the public sector. More precisely, we determine whether organizational growth, including the recruitment of new female employees, subsequently improves gender representation in the general and upper management tiers of Danish local government.

Our study identifies that women are over-represented within general managerial ranks in Danish local government which is a hopeful finding, given that improved gender diversity is likely to deliver positive impacts for society as a whole (Ricucci and Van Ryzin 2017). Indeed, the over-representation of women in general management suggests that the Danish public services context could serve as a highly appropriate research setting for future evaluations of symbolic and active representation on policy and performance outcomes (Kennedy 2013, 2014). However, a sharpened focus on the upper echelons surfaces a glass ceiling effect, with senior women in a clear minority, suggesting that gender segregation in senior management roles remains a persistent problem, even in a scenario where women hold the majority of management positions.

Our finding that organizational growth is associated with a greater representation of women, particularly when there are low pre-existing levels of women managers, indicates that the discretion to make new hires does help organizations in their efforts to limit glass ceiling effects in public bureaucracies. Indeed, for organizations with

particularly reinforced glass ceilings, it likely forms a central element of their action plan to address gender segregation. These results do though signal that there is a tipping point for organizations at which the recruitment of new employees begins to limit the representation of women in the upper echelons and enhances the proportion of male managers. This suggests that the recruitment of new employees is not necessarily a 'quick fix' for gender segregation, but rather a strategy that is appropriate for certain organizations at particular points in time (Anestaki et al. 2016). It also serves to emphasize the continual need to monitor organizational cultures and processes (Mastraaci and Bowman, 2015).

This study has contributed further evidence to the growing body of knowledge on gender segregation by demonstrating that the proportion of women managers improves when organizations recruit externally, particularly when they suffer from low levels of representation. However, our analysis prompts a series of further questions. Whether women managers in Danish local government are distributed differently across agencies or advocate for particular policy outcomes is yet to be established. Future research might also investigate subsequent career experiences and outcomes for women when they are recruited into management positions in organizations where they are less well represented.

There are a number of theoretical implications to reflect upon. It will be important to continue to engage in longitudinal research in order to establish whether we are identifying improvements in gender integration, rather than mere reconfigurations of segregation (Acker, 2006). In addition, we need to establish whether additional intra-bureaucratic effects and organizational outcomes flow from the patterns of representation we observe, such as reduced gender pay gaps (Andrews and Johnston Miller, 2013; Reskin and McBrier, 2000). Finally, future studies of active

representation might be situated within the Danish public service context so we can better understand whether active representation diminishes or is enhanced when women hold the majority of management positions (Meier 2018). In the meantime, it is hoped that this study stimulates further debate on organizational responses to gender segregation. It also serves to highlight the potential threat that any contraction of public service employment could pose to efforts to improve gender equality within public organizations.

## References

- Acker, J. 2006. "Inequality regimes: Gender, class, and race in organizations", *Gender and Society*, 20 (4) 441-464.
- Author. 2013. "Determinants of representation: An empirical assessment of the UK civil service", *Policy and Politics*, 41 (3) 429-228.
- Andrews, R. and K. Johnston Miller. 2013. "Representative bureaucracy, gender and policing: The case of domestic violence arrests in England", *Public Administration*, 91 (4) 998-1014.
- Anestaki, A., Sabharwal, M., Connelly, K. and Cayer, N.J., 2016. "Race and Gender Representation in Presidential Appointments, SES, and GS Levels, During Clinton, Bush, and Obama Administrations". *Administration & Society*, 0095399716655376.
- Author. 2014. "Representative Bureaucracy and Fire Service Performance" *International Public Management Journal*, 17 (1) 1-24.
- Author. 2015. "Representation and inclusion in public organizations: Evidence from the UK civil service", *Public Administration Review*, 75 (2) 279-288.
- Atkins, D.N., Fertig, A.R. and Wilkins, V.M., 2014. "Connectedness and expectations: How minority teachers can improve educational outcomes for minority students". *Public Management Review*, 16 (4) 503-526.
- Baekgaard, M., J. Blom-Hansen, and S. Serritzlew. 2015. "When politics matters: the impact of politicians and bureaucrats' preferences on salient and non-salient policy areas", *Governance*, 28 (4) 459-474.
- Baron, J. N., A. Davis-Blake and W. T. Bielby. 1986. "The structure of opportunity: How promotion ladders vary within and among organizations", *Administrative Science Quarterly*, 31 (2) 248-273.

Baron, J. N., B. S. Mitman and A. E. Newman. 1991. "Targets of opportunity: Organizational and environmental determinants of gender integration within the Californian civil service", 1975-1985, *American Journal of Sociology*, 96, 1362-1401.

Baron, J.N., Hannan, M.T., Hsu, G. and Koçak, Ö., 2007. In the company of women: Gender inequality and the logic of bureaucracy in start-up firms *Work and Occupations*, 34 (1) 35-66.

Bowling, C. J., C. A. Kelleher, J. Jones and D. S. Wright. 2006. "Cracked ceilings, firmer floors and weakening walls: Trends and patterns in gender representation among executives leading American state agencies 1970-2000", *Public Administration Review*, 66 (6) 823: 836.

Bullard, A. M. and D. S. Wright. 1993. "Circumventing the 'glass ceiling': Women executives in American state governments, *Public Administration Review*, 53 (5) 189-202.

Caceres-Rodriguez, R. 2013. "The 'glass ceiling' revisited: Beyond discrimination in the study of gender in public organizations", *Administration and Society*, 45 (6) 674-709.

Chappell, L. and G. Waylen. 2013. "Gender and the hidden life of institutions", *Public Administration*, 91 (3) 599-615.

Connell, R. 2006. "'Glass ceilings or gendered institutions? Mapping the gender regimes of public sector worksites", *Public Administration Review* 66 (6): 837-849.

Dahl, Michael S., Cristian L. Dezső, and David Gaddis Ross. 2012. "Fatherhood and managerial style: How a male CEO's children affect the wages of his employees." *Administrative Science Quarterly* 57(4): 669-693.



Davies, Annette, and Robyn Thomas. 2000. "Researching Public Sector Change: The argument for a gender-inclusive framework" *Public Management an International Journal of Research and Theory* 2 (4) 547-554.

Davies, A. and Thomas, R., 2002. "Gendering and gender in public service organizations: Changing professional identities under new public management" *Public Management Review*, 4 (4) 461-484

Denters, B., M. Goldsmith, A. Ladner, P. E. Mouritzen and L. E. Rose. 2014. "Size and local democracy", Edward Elgar Publishing.

Dolan, J. 2002. "Representative bureaucracy in the federal executive: Gender and spending priorities", *Journal of Public Administration Research and Theory* 12 (3) 353-375.

Dwyer, S., Richard, O. C. and K. Chadwick. 2003. "Gender diversity in management and firm performance: The influence of growth orientation and organizational culture". *Journal of Business Research*, 56 (12), 1009-1019.

Gildengil, E. and R.Vengroff. 1997. "Representative bureaucracy, tokenism and the 'glass ceiling': The case of women in Quebec municipal administration", *Canadian Public Administration*, 40 (3) 457-480.

Goodman, J.S., Fields, D.L. and Blum, T.C., 2003. "Cracks in the glass ceiling: In what kinds of organizations do women make it to the top?" *Group & Organization Management*, 28 (4) 475-501

Greve, C. 2006. "Public Management Reform in Denmark", *Public Management Review*, 8 (1) 161-169.

Guy, M. 1993. "Three steps forward, two steps backward: the status of women's integration into public management", *Public Administration Review*, 53 (4) 285-292.

- Guy, M.E. and Newman, M.A., 2004. Women's jobs, men's jobs: Sex segregation and emotional labor. *Public Administration Review* 64 (3) 289-298.
- Johnston, K. 2017. "A gender analysis of women in public-private-voluntary sector 'partnerships'", *Public Administration*, 95 (1) 140-159.
- Kanter, R. M. 1977. *Men and Women of the Corporation*, New York: Basic Books.
- Keiser, L.R., Wilkins, V.M., Meier, K.J. and Holland, C.A. 2002. "Lipstick and logarithms: Gender, institutional context, and representative bureaucracy", *American Political Science Review*, 96 (3) 553-564.
- Kellough, J. E. 1990. "Integration in the workplace: Determinants of minority and female employment in federal agencies", *Public Administration Review*, 50 (5) 557-566.
- Kennedy, B. 2013. "Sorting through: The role of representation in bureaucracy", *Journal of Public Administration Research and Theory*, 23 (4) 791-816.
- Kennedy, B. 2014. "Unraveling Representative Bureaucracy A Systematic Analysis of the Literature", *Administration and Society*, 46, (4) 395-421.
- Kickert, W. and T. Randma-Liiv. 2016. "The politics of cutback management in thirteen European countries: statistical evidence on cause and effects", *Public Management Review*, 19 (2) 175-193.
- Author. 2015. "Employee turnover in hybrid organizations: The role of public sector socialization and organizational privateness", *Public Administration*, 94 (1) 167-184.
- Leslie, L.M., Manchester, C.F., and P.C. Dahm. 2017. "Why and when does the gender pay gap reverse? Diversity goals and the pay premium for high potential women", *Academy of Management Journal*, 60, (2), 402-432.
- Lewis, G. B. 1997. "Race, sex and performance ratings in the federal service", *Public Administration Review*, 54 (6) 271-276.

Local Government Denmark. 2014. De kommunalt ansatte.

<http://www.kl.dk/Arbejdsgiver--og-lonforhold/Faktaark-De-kommunalt-ansatte-id93186/>

Madsen, M.B., Holt, H., Jonassen, A.B. and Schademan, H.K., 2010. “Kvinder og mænd i den offentlige sektor: Karrieremønstre, lederønsker og ledermuligheder”r [Women and Men in the Public Sector: Career patterns, wishes and opportunities to pursue a career in management]. SFI-Det Nationale Forskningscenter for Velfærd.

Meier, K. J. 1975. “Representative bureaucracy: An empirical analysis”, *American Political Science Review*, 69 (2) 526-542.

Meier, K. J. and L. Nigro. 1976. “Representative bureaucracy and policy preferences: A study in the attitudes of federal executives”, *Public Administration Review*, 36 (4) 458-470.

Meier, K. J. and J. Nicholson-Crotty. 2006. “Gender, representative bureaucracy and law enforcement: The case of sexual assault”, *Public Administration Review*, 66 (6) 850-860.

Meier, K.J. and K. D. Funk. 2017 “Women and public administration in a comparative perspective: The case of representation in Brazilian local governments”, *Administration and Society*, 49 (1) 121-142.

Meier, K. J., D. Fay, V. Wilkins, and A. Hicklin Fryar. 2017. “Representation, Equity and Intersectionality: The Case of Higher Education”, unpublished paper, Department of Political Science, Texas A&M University.

Meier, K. J. 2018. “Theoretical frontiers in representative bureaucracy: New directions for research”, *Perspectives on Public Management and Governance*, forthcoming.

Moon, K-K. 2018. How does a diversity climate shape the relationship between demographic diversity and organizational social capital in the US federal government? *Public Management Review* doi.org/10.1080/14719037.2017.1400582

Mosher, F. C. 1968. *Democracy and the Public Service*, New York: OUP.

Naff, K.C. and Thomas, S., 1994. "The glass ceiling revisited: Determinants of federal job advancement" *Review of Policy Research* 13 (3-4) 249-272

Naff, K. C. and J. Crum. 2000. "The president and representative bureaucracy: Rhetoric and reality", *Public Administration Review*, 60 (2) 98-100.

Naff, K. C. and K. J. Capers. 2014. "The complexity of descriptive representation and bureaucracy: The case of South Africa", *International Public Management Journal*, 17 (4) 515-539.

Oakley, J.G., 2000. "Gender-based barriers to senior management positions: Understanding the scarcity of female CEOs". *Journal of business ethics*, 27 (4) 321-334.

Oberfield, Z.W. 2018. "Why are some agencies perceived as more committed to diversity than others? An analysis of public-sector diversity climates", *Public Management Review*, 18 (5) 763-790, DOI: [10.1080/14719037.2015.1045017](https://doi.org/10.1080/14719037.2015.1045017)

Author. 2015. "The Right mix? Gender diversity in top management teams and financial performance", *Public Administration Review*, 75 (2) 291-301.

Papke, L. E., & Wooldridge, J. M. 1996. "Econometric Methods for Fractional Response Variables With an Application to 401 (K) Plan Participation Rates". *Journal of Applied Econometrics*, 11: 619-632.

Reskin, B .F. and D. B. McBrier. 2000. "Why not ascription? Organizations employment of male and female managers", *American Sociological Review*, 65 (2) 201:233.

- Riccucci, N. M. and J. R. Saidel. 1997. "The representativeness of state-level bureaucratic leaders: A missing piece of the representative bureaucracy puzzle", *Public Administration Review*, 57 (5) 423-430.
- Riccucci, N.M., G. G. Van Ryzin and C.F. Lavena. 2014. "Representative bureaucracy in policing: Does it increased perceived legitimacy?" *Journal of Public Administration Research and Theory*, 24 (3) 537-551.
- Riccucci, N. M. and G. G. Van Ryzin. 2016. "Representative Bureaucracy: A Lever to Enhance Social Equity, Coproduction, and Democracy", *Public Administration Review*, 77 (1) 21-30.
- Riccucci, N. M., G. G. van Ryzin and H. Li. 2017. "Representative bureaucracy and the willingness to Coproduce: An experimental study", *Public Administration Review*, 76 (1) 21-30.
- Sabharwal, M., 2013. "From glass ceiling to glass cliff: Women in senior executive service". *Journal of Public Administration Research and Theory*, 25 (2) 399-426.
- Saltzstein, G. H. 1986. "Female mayors and women in municipal jobs", *American Journal of Political Science*, 30 (1) 140-164.
- Schroter, E. and P. Von Maravic. 2015. 'The Performance Claim' of Representative Bureaucracy: Can it deliver? Peters, B.G., Von Maravic, P. and Schroter, E. (eds), *The Politics of Representative Bureaucracy: Power, Legitimacy, Performance*, Edward Elgar: Cheltenham.
- Selden, S. C. and F. Selden. 2001. "Rethinking diversity in public organizations for the 21<sup>st</sup> century: Moving toward a multicultural model", *Administration and Society* 33 (3): 303-329.
- Statistics Denmark. 2015. *Indvandrere i Danmark 2015*. Statistics Denmark, Copenhagen.

Smith, A. and K. R. Monaghan. "Some ceilings have more cracks: Representative bureaucracy in federal agencies", *The American Review of Public Administration*, 43 (1) 50-71.

Sneed, B.G., 2007. "Glass walls in state bureaucracies: Examining the difference departmental function can make". *Public Administration Review* 67 (5) 880-891.

Storvik, A.E. and Schøne, P., 2008. "In search of the glass ceiling: gender and recruitment to management in Norway's state bureaucracy". *The British Journal of Sociology*, 59 (4) 729-755.

Thompson, F. J. 1976. "Minority Groups in Public Bureaucracies: Are Passive and Active Representation Linked?" *Administration and Society*, 8, 201-26.

Van Ryzin, G.G., N. M. Riccucci and H. Li. 2017. "Representative bureaucracy and its symbolic effect on citizens: A conceptual replication", *Public Management Review* 19 (9) doi.org/10.1080/14719037.2016.1195009.

Wilkins, V.M. and Williams, B.N., 2008. "Black or blue: Racial profiling and representative bureaucracy", *Public Administration Review*, 68 (4), 654-664.

Wulff, J. 2018. "Generalized two-part fractional regression with CMP", *Working paper*.

## Tables and figures

TABLE 1 *Descriptive statistics*

	<b>N</b>	<b>Median</b>	<b>Mean</b>	<b>Std.dev.</b>	<b>Min</b>	<b>Max</b>
Proportion of women managers	490	.555	.551	.072	.273	.737
Proportion of women managers among highest paid (25 %)	294	.347	.359	.117	0	.688
Population size (ln)	490	10.7	10.6	.783	7.55	13.2
Change in organization size (ratio)	392	.992	0.995	0.04	0.87	1.12
Proportion of females employed in the organization	490	.785	.781	.028	.697	.846
Number of females electives standing for local elections	490	31.3	31.09	9.41	6.7	57.9
Tax base (per capita)	490	148,136	156,530	28,364	119,112	288,553
Number of citizens receiving social benefits (per 100 capita)	489	1.7	1.82	.846	.1	4.9
Number of citizens from non-Western countries (per 10,000 capita)	490	207	277	188	15	1309
Proportion of inhabitants with college degree	490	20.35	22.98	8.3	13	50.5
Socio economic index	490	.935	.95	.243	.46	1.81
Liberal Mayor	490	0	.46	.499	0	1
Amalgamation	490	1	.663	.473	0	1
Proportion of female managers previous year	392	.547	.548	.072	.272	.737
Proportion of women managers among highest paid (25 %) previous year	294	.348	.359	.117	0	.688
Proportion of women among new hires	490	.732	.73	.04	.54	.918

**Table 2: Results of fractional regression analysis with robust standard errors and year dummies**

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>	<u>Model 5</u>
	Proportion of women managers	Proportion of women managers	Proportion of women managers	Proportion of women managers	Proportion of women managers
Number of inhabitants (ln)	0.101 (2.75)**	0.087 (2.51)*	0.089 (2.54)*	0.026 (1.99)*	0.026 (2.48)*
Proportion of females in the organization	1.672 (1.32)	0.717 (0.83)	1.170 (1.46)	1.145 (2.39)*	1.556 (3.20)**
Number of females electives set for local elections	-0.000 (-0.08)	-0.003 (-1.04)	-0.003 (-1.04)	-0.001 (-0.58)	-0.001 (-0.88)
Tax base (per capita)	0.000 (3.13)**	0.000 (3.26)**	0.000 (3.29)**	0.000 (2.19)*	0.000 (2.57)*
Number of citizens receiving social benefits (per 100 capita)	0.059 (1.72)	0.086 (3.08)**	0.086 (3.08)**	0.052 (3.19)**	0.047 (3.40)**
Socio economic index	-0.059 (-0.44)	-0.224 (-1.88)	-0.219 (-1.82)	-0.138 (-2.47)*	-0.106 (-2.31)*
Liberal Mayer	0.030 (1.11)	0.031 (1.30)	0.031 (1.32)	0.003 (0.18)	0.009 (0.58)
Amalgamation	-0.082 (-1.22)	-0.067 (-1.03)	-0.075 (-1.22)	-0.0297 (-1.37)	-0.019 (-0.91)
Change in organization size (ratio)		0.565 (2.31)*	-2.174 (-0.68)	5.856 (2.40)*	-68.93 (-3.85)***
Proportion of women among new hires			-4.121 (-0.89)		-95.87 (-3.81)***
Change in organization size (ratio)*Proportion of women among new hires			3.899 (0.84)		101.4 (3.98)***
Proportion of female managers previous year				13.25 (3.25)**	-109.7 (-3.48)***
Proportion of women among new hires* Proportion of female managers previous year					166.9 (3.70)***
Change in organization size* Proportion of female managers previous year				-10.11 (-2.40)*	121.2 (3.79)***
Change in organization size * Proportion of women among new hires* Proportion of female managers previous year					-178.1 (-3.92)***
Constant	-2.975 (-2.33)*	-2.284 (-2.61)**	0.213 (0.07)	-8.592 (-3.51)***	61.67 (3.52)***
R <sup>2</sup>	.297	.334	.341	.737	.751
N	489	391	391	391	391

*t*-statistics in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Results of 2-sided test. Year dummies included in the model but results not reported.



*Table 3. Results of fractional regression analysis with robust standard errors and year dummies*

	<u>Model 6</u>	<u>Model 7</u>	<u>Model 8</u>	<u>Model 9</u>	<u>Model 10</u>
	Proportion of women among 25 % best paid managers	Proportion of women among 25 % best paid managers	Proportion of women among 25 % best paid managers	Proportion of women among 25 % best paid managers	Proportion of women among 25 % best paid managers
Number of inhabitants (ln)	-0.06 (-1.05)	-0.076 (-1.90)	-0.07 (-0.95)	-0.055 (-0.79)	-0.073 (-1.08)
Proportion of females in the organization	1.213 (0.50)	2.516 (0.94)	3.727 (1.18)	1.767 (0.80)	2.167 (0.80)
Number of females electives set for local elections	0.006 (1.73)	0.003 (0.85)	0.003 (0.74)	0.001 (0.25)	0.001 (0.19)
Tax base (per capita)	-0.000 (0.09)	-0.000 (-0.18)	-0.000 (-0.28)	-0.000 (-0.31)	-0.000 (-0.51)
Number of citizens from non-Western countries (per 10,000 capita)	0.001 (3.85)***	0.000 (2.87)**	0.001 (3.01)**	0.000 (1.79)	0.000 (1.80)
Number of citizens receiving social benefits (per 100 capita)	0.149 (2.11)*	0.175 (2.16)*	0.178 (2.20)*	0.112 (1.52)	0.1 (1.39)
Proportion of inhabitants with college degree	0.013 (1.74)	0.016 (1.96)*	0.019 (2.12)*	0.014 (1.60)	0.016 (1.91)
Socio economic index	-0.754 (-2.92)**	-0.643 (-2.27)*	-0.676 (-2.43)*	-0.361 (-1.45)	-0.327 (-1.35)
Liberal Mayer	0.066 (1.22)	0.096 (1.50)	0.084 (1.31)	0.092 (1.54)	0.1 (1.64)
Amalgamation of municipality	0.064 (0.79)	0.035 (0.41)	0.026 (0.32)	0.009 (0.11)	0.019 (0.24)
Change in organization size (ratio)		0.045 (0.04)	-30.65 (-1.86)	6.285 (2.85)**	-18.11 (-0.44)
Proportion of women among new hires			-44.71 (-1.89)		-29.04 (-0.49)
Change in organization size (ratio)*Proportion of women among new hires			43.38 (1.87)		31.61 (0.55)
Prop. of women among 25 % best paid managers previous year				18.34 (3.28)**	-24.30 (-0.25)
Change in organization size* Prop. of women among 25 % best paid managers previous year				-16.62 (-3.07)**	32.95 (0.35)
Proportion of women among new hires* Prop. of women among 25 % best paid managers previous year					52.94 (0.39)
Change in organization size * Proportion of women among new hires * Prop. of women among 25 % best paid managers previous year					-62.55 (-0.47)
_cons	-1.34 (-0.59)	-1.95 (0.66)	28.69 (1.72)	-8.285 (-2.37)*	14.12 (0.33)
<i>N</i>	293	195	195	195	195
<i>R</i> <sup>2</sup>	.28	.35	.37	.44	.45

*t* statistics in parentheses. †  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Results of 2-sided test. Year dummies included in the model but results not reported.

