Breaking the Glass Ceiling, but Facing a Glass Cliff? The Role of Organizational Decline in Women's Representation in Leadership Positions in Dutch Civil Service Organizations

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Breaking the glass ceiling, but facing a glass cliff? The role of organizational decline in women's representation in leadership positions in Dutch civil service organizations

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Abstract

Despite efforts to increase gender diversity and equality worldwide, women are still underrepresented in leadership positions in public bureaucracies. This article speaks to the debate on how organizational context, more specifically organizational decline, may influence gender representation in such leadership positions. Based on role congruity theory and glass cliff theory this article empirically examines whether and how excessive workforce reductions are associated with changes in the representation of women in leadership positions in Dutch civil service organizations. Panel analyses on administrative data show that women's representation in leadership positions varies over time, but is not significantly affected by excessive workforce reductions. Overall, the analyses do not provide evidence for a glass cliff for women in Dutch civil service organizations. Implications for theory and future research are discussed.

1 | INTRODUCTION

Worldwide, women are still underrepresented in leadership positions in public bureaucracies (EIGE 2018). From a public administration perspective, this is problematized as representativeness is considered to be important for government's legitimacy. Representative bureaucracy theory asserts that to the extent that bureaucrats share socio-demographic identities with citizens, they will also share values that may play a role in bureaucratic decisions (Mosher 1968). Representation may, therefore, affect the commitment of groups to public policy and perceptions of

the state as inclusive of all segments in society, thereby increasing not only the legitimacy of governments but also the effectiveness of bureaucracies.

Gender representation has been at the core of the representative bureaucracy literature from the very beginning, with increasing emphasis on the presence of women in national, state and local government (Bowling et al. 2006). The majority of studies are US based and centre on the antecedents and effects of the presence of women in bureaucracy. Only a handful of studies are targeted at women in leadership positions in government (e.g., Dolan 2000, 2004; Sabharwal 2013; Smith and Monaghan 2013; Krøtel et al. 2019). However, gender representativeness in leadership is particularly important as public officials in these positions have high levels of discretion as well as the resources to influence governmental decision-making directly. Furthermore, the symbolic effects of gender representation at higher levels of bureaucracies should not be underestimated, since the presence of women in the higher ranks of bureaucracy indicates that government is open and accessible to diverse social groups in society. Therefore, studies on gender representativeness of central government should not only measure gender representation in general, but also the distribution across hierarchical levels, a call that has been made since the 1990s (Riccucci and Saidel 1997; Greene et al. 2001; Naff 2001).

In addition to the positive effects that may stem from gender representativeness, the diversity management literature claims that gender diversity in top management teams may have a positive impact on organizational performance (e.g., Smith et al. 2006; Dezsö and Gaddis Ross 2012; Opstrup and Villadsen 2014). The line of argument in the diversity management literature boils down to the assumed productive effects of gender differences. Men and women are assumed to approach organizational leadership differently, and, hence, women may bring innovative and productive practices to the boardroom (Eagly and Carli 2003). For instance, Meier et al. (2006) and Jacobson et al. (2010) found that female and male top managers in public organizations have different management styles and performance impacts. Women are more often than men associated with communal, participatory and democratic leadership styles (Eagly and Carli 2003). As these styles seem to fit with recent calls for leadership for engagement in the public sector, it seems that the time has come for higher shares of female leaders in public organizations (OECD 2015).

Despite these calls to increase gender diversity and equality in public organizations, the organizational context may slow down or even hamper women's rise through the ranks (Goodman et al. 2003). Yet, the role of such contextual factors is still poorly understood (Smith 2015). This article, therefore, focuses on one such situational factor, organizational decline, and examines how this is associated with changes in the level of gender representation in the higher ranks of government. As to organizational growth and decline specifically, the existing literature would lead to divergent expectations regarding its influence on women's representation in management. For instance, Krøtel et al. (2019), in their analyses of women's representation in managerial positions in Danish local government, find that organizational growth is associated with increasing shares of women in managerial ranks, particularly when the existing level of female representation in those positions is low. Their study suggests that situations of growth create the opportunity for organizations to recruit new female employees which may serve as a new pool of potential managers. And vice versa, based on this reasoning, one would expect that organizational decline is associated with lower levels of gender representation in leadership positions.

This article argues, though, that when organizational decline is excessive, assuming management responsibility can be very risky. Women's progress in leadership positions in the public sector has been associated with leadership positions with higher risks of failure in previous studies (Sabharwal 2013; Smith and Monaghan 2013), referred to as women facing a glass cliff (Ryan and Haslam 2005, 2007). In such situations, women are perceived as better suited for leadership positions, which is attributed to the association between crisis leadership and stereotypical female leadership styles. More generally, the appointment of women may serve as a signal of change from the dominant stereotypically male model of leadership (Ryan and Haslam 2007). The glass cliff hypothesis has been confirmed in some studies (e.g., Mulcahy and Linehan 2014), but rejected in other studies (e.g., Bechtoldt et al. 2019), and the majority of studies are situated in private sector contexts (Ryan et al. 2016).

This article aims to add to the insights from these studies in the public administration (Sabharwal 2013; Smith and Monaghan 2013; Smith 2015) and generic management literature (Ryan et al. 2016) by examining the representation of women in leadership positions in Dutch civil service organizations over time in a period characterized by substantial cutbacks in Dutch administration. It aims to shed light on the presence of the glass cliff mechanism in a public sector context by answering the question whether and how excessive organizational decline is associated with changes in the representation of women in leadership positions within Dutch central government. We use longitudinal administrative data available from the Dutch Ministry of the Interior and Kingdom Relations on the representation of men and women in the Dutch civil service across organizational units and hierarchical levels in association with the size of workforce decline.

The article proceeds as follows. The next section reviews the literature and theorizes on the association between excessive workforce decline and the representation of women in leadership positions in government. Then a description of the Dutch context is presented, followed by an explanation of the data and methods used. We proceed with a presentation of our panel data models and an explanation of the results. We discuss the implications of our findings in the concluding section.

2 | THEORY AND HYPOTHESES

2.1 | Role congruity theory and the glass cliff

The metaphor of the glass ceiling has been used to describe the underrepresentation of women in leadership positions, in both public and private sectors, referring to invisible but persistent organizational barriers for women to rise through the ranks (Caceres-Rodriguez 2013). Institutional theory identifies sociocultural patterns that may affect the placement of women in leadership positions in organizations (Blum et al. 1994). More specifically, the existing research shows that prevalent societal norms about gender roles as well as stereotypical leadership characteristics negatively affect the advancement of women in management (Heilman 2012).

Role congruity theory explains how the perceived incongruity between female stereotypes and managerial role conceptions can foster bias against women in managerial selection (Eagly and Karau 2002). The incongruity arises when the roles of women in society conflict with what is seen as effective leadership. In Western countries, there are firmly held beliefs that link characteristics associated with effective leadership to male stereotypes which Schein (1973, 2001) strongly expressed as 'think manager – think male'. Implicit theories about what it means to be female and what it means to be a leader affect the perceived suitability of men and women for leadership roles, with men being evaluated as more qualified for a management position than women (Heilman 2012). As a consequence, men have higher odds of being appointed to leadership positions than women with equivalent skills and work experience.

Recent studies claim, though, that leadership roles have changed. Stereotypically feminine qualities such as mentoring and collaboration are increasingly perceived as important leadership qualities in contemporary organizations (Eagly et al. 2003). The perceived incongruity between leader roles and female gender roles may, therefore, have diminished, which may lead to increasing shares of women in leadership positions. Eagly and Carli (2003) even point to a 'female leadership advantage': women would increasingly be perceived as effective leaders in contemporary organizational circumstances.

This implies that the 'think manager – think male' association may not apply to all organizational circumstances but is context-dependent instead (Koenig et al. 2011; Ryan et al. 2011). Following this line of argument, glass cliff theory predicts that relatively more women will attain leadership positions if the organizational circumstances are precarious (Ryan and Haslam 2005, 2007; Sabharwal 2013; Smith and Monaghan 2013). This study therefore hypothesizes that relatively more women get into management positions within the government in times of cutbacks and downsizing.

From a demand-side perspective, reasons for women facing a glass cliff are primarily found in gender stereotyping. Women are perceived as more competent in leadership skills needed in times of crises, such as 'soft

skills' to 'smooth things over' (Bruckmüller and Branscombe 2010; Bruckmüller et al. 2014). In fact, the same gender stereotypes that generally link effective leadership to men may lead to women being perceived as more suitable leaders in crisis contexts, summarized by the notion of 'think crisis – think female' (Bruckmüller and Branscombe 2010; Ryan et al. 2011). Their appointment into leadership positions can be motivated by a drive for actual change or merely used as a signal to stakeholders that change is being embraced (Eagly and Carli 2003; Bruckmüller et al. 2014).

From a supply-side perspective, Ryan et al. (2016), in their review of a decade of research into the glass cliff, hypothesize that the main driver of women being appointed more often to precarious leadership positions may actually be men being more reluctant to accept them. It can also be argued that as women get job offers for leadership positions less often than men, a woman seeking to be a manager will be inclined to accept a less desirable position to get her foot in the door (Rubery and Fagan 1995; Darouei and Pluut 2018).

Evidence for the hypothesis that women are more often than men appointed in precarious leadership positions in the public sector is limited. Sabharwal (2013), in her study of women in the senior executive service in various US federal government agencies, finds evidence for a glass cliff, based on individual-level data on management turnover. Smith and Monaghan (2013), in their study on regulatory agencies in the US, find that the percentage of women in upper-level leadership positions is higher for agencies with a higher likelihood of failure, but only when these agencies are less visible. Nutley and Mudd (2005) assert that men and women probably face glass cliffs to the same extent, but women have higher chances of falling over the edge (run higher risks) compared to men since they lack the supportive networks that will catch them.

To test the glass cliff hypothesis, we examine if and to what extent women's representation in leadership positions in government increases when organizations face substantive organizational decline due to cutbacks. As resource inflows of public organizations are usually stable and predictable (Pandey 2010), cutbacks can be seen as a disruption that may challenge organizational continuity. Since personnel costs are generally the highest operational expenses of public organizations, we assume that the extent to which an organizational unit is hit by cutbacks is reflected in workforce decline. If workforce decline is excessive, bearing management responsibility will be risky and unattractive, constituting a glass cliff situation. Based on glass cliff theory, we therefore hypothesize:

> *H1*: The share of women in management positions in an organization is associated with excessive workforce decline, such that women's share in management positions increases when the workforce declines.

2.2 | The role of existing levels of gender representation

Gender representation in the organization influences the role gender stereotyping may play in the organization (Kanter 1977). If women are only a small minority within an organizational group, as is often the case at the higher levels of the organizational hierarchy, they run the risk of being perceived as tokens, as symbols representative of their gender rather than as individuals. Conversely, the more women in the organization, the more their token status is reduced. Similarly, if the share of women in management positions increases, it can be expected that the social acceptance of female leadership increases and hence the higher the probability that women will attain these positions in the future. For example, Goodman et al. (2003) found that women are more likely to occupy top management ranks in organizations that have more lower-level management positions filled by women. We therefore hypothesize:

> *H2*: The share of women in management positions in an organization is associated with the share of women in an organization at lower levels in the hierarchy, such that women's share in management positions increases when their share at lower levels in the hierarchy increases.

We argue that existing levels of gender representation may also influence the glass cliff process, as it is based on the idea that difficult circumstances may give rise to a need to break with institutionalized patterns. Bruckmüller et al. (2014, p. 218), in their summary of the empirical evidence for the glass cliff, conclude that previous studies have been conducted in contexts in which women 'are breaking through the glass ceiling in noticeable numbers'. These authors suggest that in contexts in which female leaders are still extremely rare or in situations in which men and women are equally represented in leadership roles, the dynamics underneath the glass cliff could be absent. We would argue that in organizations with higher shares of women one could expect that there is actually a pool of women to choose from, increasing the probability of women being selected, hence reinforcing the glass cliff effect. In organizations with higher shares of women in leadership positions, though, one could expect the effect to be weaker, because leadership may already be less masculine (Koenig et al. 2011). This leads to the following hypotheses:

> *H3*: The effect of excessive workforce decline on the share of women in management positions in an organization is moderated by the share of women in an organization at lower levels in the hierarchy, such that:
>
> *H3a*: The effect of excessive workforce decline on the share of women in management positions is weaker when the existing share of women in management positions is higher.
>
> *H3b*: The effect of excessive workforce decline on the share of women in management positions is stronger when the existing share of women in the organization is higher.

3 | RESEARCH SETTING: DUTCH SENIOR CIVIL SERVICE

This study is situated within one country, the Netherlands, and as such rules out any country-based variation. The analysis focuses on Dutch civil service organizations over the years 2012–16. We believe this setting to be appropriate to test our hypotheses because we expect sufficient variance for the independent and dependent variables both across and within organizational units. Between 2012 and 2016 ministries, executive agencies, and autonomous agencies were required to cut back 4.4, 8.9 and 13.3 per cent of their operational budget, respectively. Some civil service organizations were hit more severely than others by these cutbacks. As personnel expenses are the main part of their operational expenditure, cutbacks were accompanied by workforce reductions.

Furthermore, the senior civil service system requires that senior civil servants change positions on a regular basis and, hence, it is possible for the proportion of female senior servants to change within units over time. From the mid-1990s onwards, New Public Management (NPM) reforms in the Netherlands changed the role of senior civil servants, putting the management of their organization at the core of their responsibilities, and they were given a maximum tenure of seven years in the same position (Kuperus and Rode 2008). They are required to have more general managerial skills, as they have to function in different contexts, sectors, and within different organizations.

The senior civil service system in the Netherlands can be characterized as position based. This means that competitive recruitment is typically used to fill vacancies. The Office for the Senior Civil Service (*Bureau Algemene Bestuursdienst*; *ABD*) is a separate entity within the civil service, tasked with the recruitment of senior civil servants, their training and their assignment to subsequent positions. When a position is open, the ABD prepares the description of the position in collaboration with the hiring ministry or agency. Based on the applications, the ABD proposes a long list of candidates that are deemed suitable, which is presented to the officials from the hiring organization. The ABD office interviews candidates and proposes one or more candidates for certain senior civil servant positions to the minister in charge of the civil service (usually the Minister of Interior Affairs) who then discusses the

appointment in the Council of Ministers. Ultimately, the Council of Ministers has to assent to the candidate, as well as the ministry or agency the proposed candidate will be assigned to.

Two distinct groups of managers are distinguished. Senior civil servants on level 17 and higher are part of the so-called Top Management Group, labelled top management in this study. This group includes all secretaries-general and directors-general. The other senior civil servants are employed on levels 15 and 16, labelled senior management in this study. Senior civil servants of this group have a managerial position as director within the civil service or at executive agencies. Middle managers on level 14 are not employed by the ABD, but can be considered for a training programme which prepares managers for the senior civil service. Only a very small part of those employed at levels 14 or 15 consists of senior policy advisers, for example on very specific and strategic topics.

Public organizations may be forced by political pressure to counter bias against women and to subscribe to target figures about the share of women in leadership positions (Naff 2001). The coalition agreement of the Rutte II cabinet (2012–17, covering the timespan of this study) agreed on a target of 30 per cent women in the senior civil service by 2017. This target figure may reduce the probability of finding an effect of excessive organizational decline on the percentage of women appointed to leadership positions, as there already is an incentive for appointing women in leadership positions. Another factor that may reduce a potential glass cliff effect is the degree of formalization of the recruitment processes. We therefore assume that evidence for the glass cliff hypothesis in this government setting would be strong evidence for finding similar patterns in other settings, and thus the current study to be a strong test of the glass cliff hypothesis.

4 | DATA AND METHODS

The dataset contains biannual observations for 121 organizational units from June 2012 to June 2016. The units included in the dataset and in the regression analyses are listed in the appendix. With regard to the ministries in the dataset, we analyse data aggregated at the level of a Directorate-General. In addition, each agency is treated as a separate unit of analysis. The main reason for the selection of this level of analysis is that these units have their own budgets and accompanying managerial responsibility. The inclusion of organizational units within our dataset is based on data availability in the period of study. We also include organizations that were established during these years as well as organizations that entered the register after 2012.

For each organizational unit, the dataset contains data on the number of full-time equivalent (FTE) employees at each level by gender. If specific hierarchical levels are absent in an organizational unit, this leads to a missing value. We test our hypotheses using three dependent variables related to the proportion of female senior civil servants at different levels. These variables are the proportion of women in levels 17–19 (top management), the proportion of women in levels 15–19 (senior and top management) and the proportion of women in levels 14–19 (senior and top management plus middle managers).

We rely on three different types of independent variables. First, to measure a glass cliff, we use turbulence as an indicator. Boyne and Meier (2009, p. 803) define turbulence as: 'unpredictable change in the munificence and complexity of an organization's environment. Turbulence is not simply a dynamic environment, because the extent of change is unexpected. Furthermore, the larger the unpredictable change, the bigger the negative impact on organizational results.' It thus refers to both the complexity of the situation as well as the potential risk involved (Smith and Monaghan 2013). We use the measure of turbulence as developed by Boyne and Meier (2009) and Rattsø (1999) and apply it to the available human resources. We operationalize turbulence as the residuals obtained when regressing the logged number of employees at moment t on the logged number of employees at $t - 1$. We run these regressions for all organizational units seperately. Turbulence hence measures the extent to which the observed number of full-time employees at moment t deviates from the predicted number of full-time employees, whereby negative values indicate that the number of observed employees is smaller than predicted. Larger negative values thus signal the presence of a glass cliff situation.

Second, we include the proportion of women at levels beneath the levels indicated by the dependent variable. And third, we control for the total number of employees within an organization, using a logged-measure of total employment in FTE.

Because we include a lagged variable, five organizational units with less than three consecutive observations cannot be included. Besides, there are two organizational units that have no employees in any of the levels used for our dependent variables. This leaves a total of 114 organizational units with a total of 976 observations (an average of 8.56 observations per unit; note that units can be observed nine times at a maximum over the period June 2012–June 2016) that can be used in the analyses.

In order to account for the bounded nature of our dependent variables, we analyse our data using fractional logit regressions. Although this technique was initially introduced for cross-sectional data (Papke and Wooldridge 1996), scholars have more recently extended it to panel data (Papke and Wooldridge 2008), including unbalanced panels (Wooldridge 2019), by using Mundlak-type correlated random error regressions that implement 'within' estimation. We apply clustered standard errors, clustered at the level of the organizational unit. Clustered errors allow for intra-group correlation and are robust to conditional variance and serial correlation (Papke and Wooldridge 2008, p. 129).

5 | RESULTS

Table 1 shows the descriptive statistics of our panel dataset. The average share of women in management positions revolves around 30 per cent, whilst the share of women in the lower, non-managerial positions (below level 14) amounts to 56 per cent. Figure 1 shows that the representation of women in Dutch civil service organizations has risen over time, but predominantly in non-managerial ranks. Figure 2 shows that the proportion of women in management positions has slightly increased from approximately 28.5 per cent to 32.5 per cent, but this increase stalled and eventually seems to turn into a downward trend as of June 2015. The increase in female representation in management positions is mainly confined to the level of middle management. In all, the glass ceiling has become slightly thinner over time, but is still in place.

Table 2 depicts the pairwise correlation coefficients. The high correlations between the dependent variables are due to the fact that these variables are cumulative. While proportions of female senior civil servants are positively

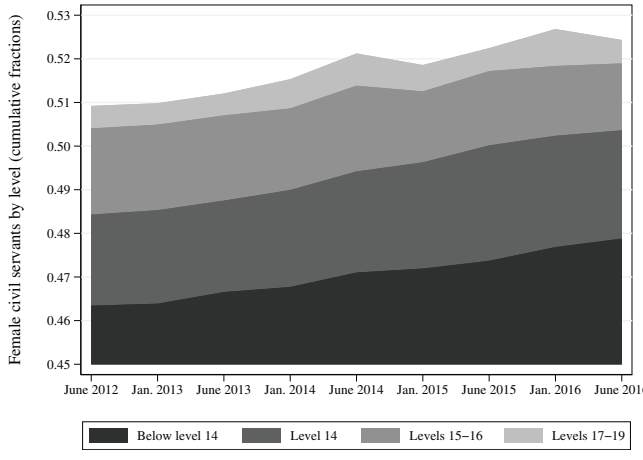

FIGURE 1 Average proportions of female civil servants (cumulative proportions of all civil servants), June 2012–June 2016

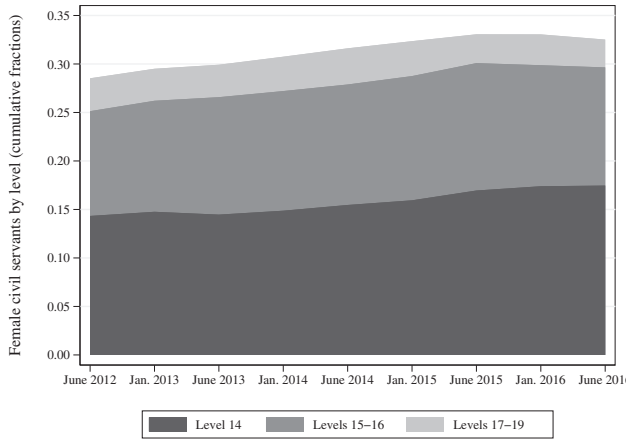

FIGURE 2 Average proportions of female senior civil servants (cumulative proportions of all senior civil servants), June 2012–June 2016

correlated with proportions of women at lower organizational levels, we find no statistically significant correlations between our dependent variables and turbulence.

Next, we analyse our data by running Mundlak-type fractional logit regressions with clustered standard errors. For each dependent variable, we estimate four models. In models 1–3 we test the main effects formulated in hypotheses 1 and 2. In model 4 we add the interaction effects to test hypothesis 3. To facilitate interpretation, we provide average partial effects (APEs) in Table S1 of the Supplementary Material (cf. Papke and Wooldrigde). Since the inclusion of interaction effects complicates the interpretation of the regression analyses, we interpret our results by graphically depicting the predicted proportion of female managers and corresponding 95 per cent confidence intervals along the range of our explanatory variables (cf. Wulff 2015; Villadsen and Wulff 2019).

Table 3 presents the results of the regression analyses and Figure 3 depicts the predicted proportions of women in top management (levels 17–19) based on the parameters of model 4 in Table 3. In panel (a) of Figure 3 we show how the predicted proportion of women in top management changes across the distribution of turbulence. Remember that negative values for turbulence are associated with organizational decline, whereby larger negative values are a stronger sign of a glass cliff situation. Panel (a) hence seems to confirm our first hypothesis. Organizational units confronted with larger negative values for turbulence (excessive workforce decline) are associated with higher proportions of women in top management. The effect is not statistically significant though.

TABLE 1 Descriptive statistics

	N	Mean	Std. dev.	Min.	Max.
Proportion of female senior civil servants in levels 17–19	772	0.276	0.315	0	1
Proportion of female senior civil servants in levels 15–19	949	0.313	0.260	0	1
Proportion of female civil servants in levels 14–19	968	0.313	0.199	0	1
Turbulence	862	0.000	0.084	−0.904	0.518
Proportion of female civil servants in levels 14–16	903	0.318	0.270	0	1
Proportion of female civil servants in level 14	884	0.313	0.238	0	1
Proportion of female civil servants below level 14	968	0.559	0.163	0	1
Total employment (ln)	976	5.068	1.670	0	9.762

Panels (b) and (c) seem to provide support for hypothesis 2. The proportion of women in top management increases as the proportion of women at lower organizational levels increases. However, these effects are also not statistically significant. In panel (d) we show how the predicted proportion of female top managers changes across the distribution of turbulence for organizational units with low (−1 *SD*) and high (+1 *SD*) proportions of women in management. Panel (d) suggests that if organizations face a glass cliff situation, organizational units with a relatively high proportion of women in the lower management positions (levels 14–16) are predicted to employ a higher proportion of women in top management than organizational units with relatively lower proportions of women in these levels. The difference is substantial (revolving around 15 percentage points) and contradicts hypothesis 3a. Whereas the overall interaction effect is statistically significant, the plot shows that the confidence intervals overlap. This means that the effects for units with low and high proportions of women in management do not significantly differ from each other.

With regard to the moderating effect of the proportion of women below level 14, panel (e) suggests that turbulence affects the share of women in top management quite similarly in organizational units with different proportions of women below level 14: stronger organizational decline is associated with higher proportions of women in top management. This positive association between organizational decline and female representation is somewhat stronger for units with a relatively high proportion of female employees below level 14, which supports hypothesis 3b, but the effect is not statistically significant.

Table 4 and Figure 4 present the results regarding the proportion of female senior civil servants (levels 15–19). Panel (a) of Figure 4 indicates that the predicted proportion of female senior civil servants remains quite stable at approximately 0.32 across the range of turbulence. This does not support, or challenge, hypothesis 1. Panel (b) suggests that the predicted proportion of women in senior civil service positions decreases as the proportion of women in middle management increases. This finding challenges hypothesis 2, but the effect is not statistically significant. In contrast, panel (c) shows that the proportion of female senior civil servants increases as the proportion of women in non-managerial levels increases. This is clearly in line with hypothesis 2. Moreover, the effect is statistically significant.

Panel (d) suggests that when faced with excessive workforce decline, organizational units with a relatively low proportion of women in middle management employ more female senior civil servants than units with a relatively high proportion of women in this level. This seems to be in line with hypothesis 3a. The effect is not statistically significant, though. Panel (e) shows that while the proportion of female senior civil servants is predicted to remain stable across the range of turbulence, organizational units with a high proportion of women in non-managerial positions are predicted to employ higher proportions of women in senior and top management than units with a low proportion of employees below level 14. We cannot accept hypothesis 3b, though, as the slopes run parallel and the interaction effect is not significant.

TABLE 2 Pairwise correlations ($N \geq 681$)

	Female 17–19	Female 15–19	Female 14–19	Turbulence	Female 14–16	Female 14	Female <14
Female 15–19	0.612***						
Female 14–19	0.570***	0.763***					
Turbulence	0.000	0.001	0.006				
Female 14–16	0.108***	0.937***	0.679***	−0.002			
Female 14	0.239***	0.133***	0.744***	0.024	0.064*		
Female <14	0.366***	0.324***	0.483***	−0.042	0.270***	0.429***	
Employment	−0.018	−0.104***	−0.068**	0.050	−0.146***	−0.072**	−0.371***

*$p < .1$; **$p < .05$; ***$p < .01$.

TABLE 3 Fractional logit regression for the proportion of female senior civil servants in levels 17–19

	Model 1	Model 2	Model 3	Model 4
Turbulence	−0.39		−0.51	2.75
	(0.53)		(0.92)	(3.15)
Proportion of female civil servants in levels 14–16		−0.80	0.18	0.22
		(0.81)	(0.86)	(0.85)
Proportion of female civil servants below level 14		2.26	2.96	1.53
		(2.78)	(4.16)	(4.06)
Turbulence × proportion of female senior civil servants in levels 14–16				−6.28*
				(3.75)
Turbulence × proportion of female senior civil servants below level 14				−1.87
				(6.77)
Total employment (ln)	0.38	0.61	0.49	0.46
	(0.48)	(0.59)	(0.73)	(0.76)
Constant	−0.86	−5.02***	−5.02***	−5.01***
	(0.68)	(1.25)	(1.25)	(1.25)
Pseudo-R^2	0.000	0.077	0.075	0.077
N	681	756	663	663

Note: Regressions include time averages of all time-varying variables for every organizational unit (not presented here); clustered standard errors in parentheses;
*p < .1; **p < .05; ***p < .01.

Lastly, Table 5 presents the analyses for the proportion of women in top, senior and middle management (levels 14–19). Panel (a) of Figure 5 suggests that the proportion of women in levels 14–19 decreases with larger negative values for turbulence. This contradicts hypothesis 1, but the effect is not statistically significant. Panel (b) further shows that the proportion of women in levels 14–19 increases as the proportion of women at lower organizational levels increases. This is in line with hypothesis 2 and the coefficient is statistically significant. In a situation of excessive workforce decline, organizations with a relatively high proportion of women below level 14 employ a higher proportion of female managers than organizational units with a relatively low proportion of women below level 14. We are, however, unable to accept hypothesis 3b because panel (c) fails to display a substantial moderating effect. Besides, the interaction effect is not significant either.

5.1 | Robustness checks

To test the robustness of our analyses, we replicate them using three alternative measurements of a glass cliff situation: (1) we replace turbulence with change in employment, which is calculated as total employment at moment *t* divided by employment in *t − 1*; (2) we use a lagged value of turbulence (*t − 1*), based on the rationale that there might be a temporal lag between the occurrence of excessive workforce decline (between *t − 2 and t − 1*) and the actual appointment of a new manager; (3) we use a lead value of turbulence (*t + 1*), testing whether the proportion of female senior civil servants increases just before workforce reductions are to be implemented. The regression tables with the full models including interaction effects and plots of the conditional means of the proportion of women in management are provided in the Supplementary Material (Tables S2–S4 and Figures S1–S3).

Overall, while in the main analyses the effect of turbulence is not significant, we obtain a statistically significant negative coefficient estimate in two models, which seems to provide support for our first hypothesis. The main effect of the proportion of female civil servants below level 14 (panels (c) for levels 17–19 and 15–19, panel (b) for

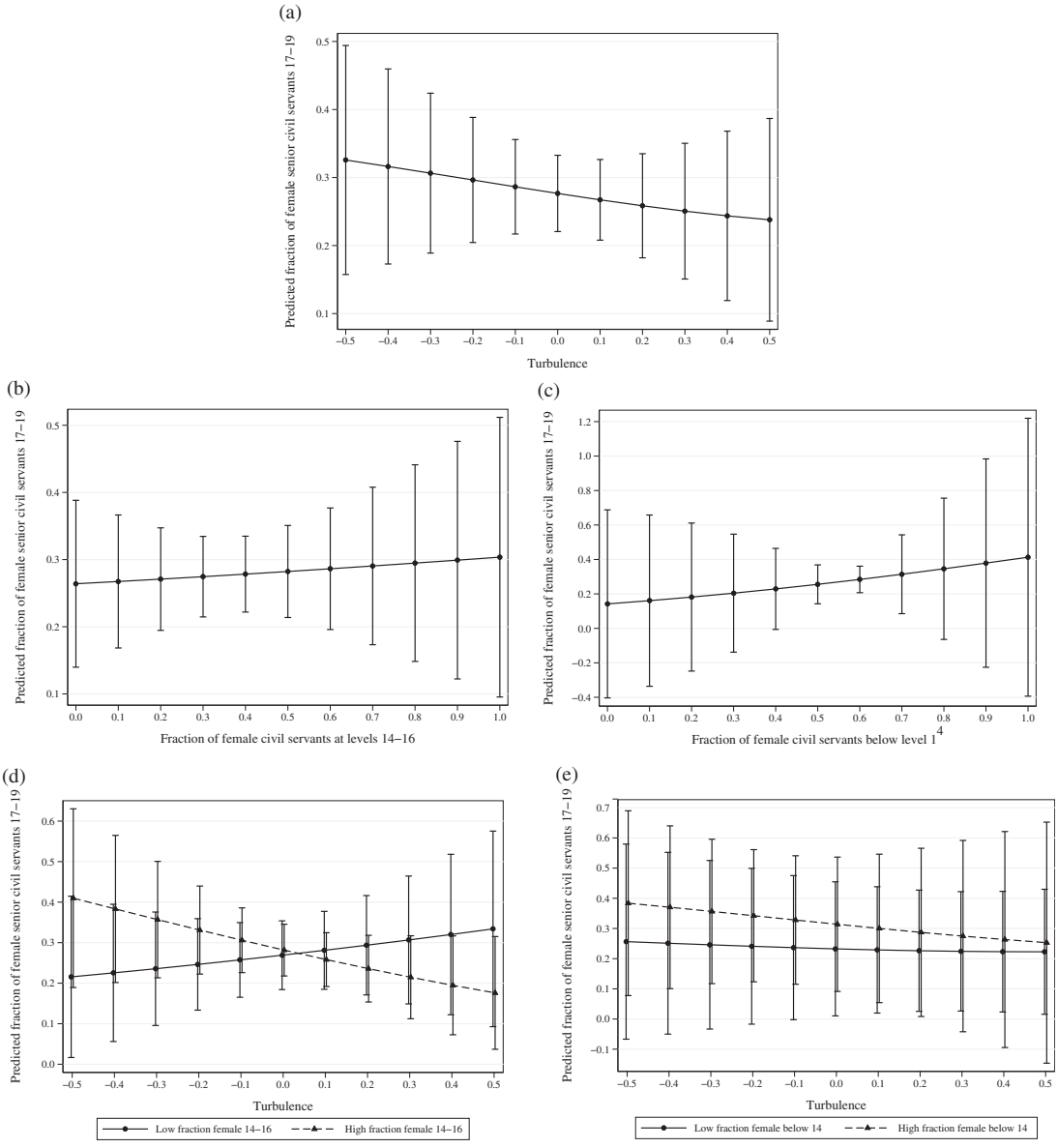

FIGURE 3 Predicted proportions of female senior civil servants in top management (levels 17–19)
(a) effect of turbulence
(b) effect of female civil servants in levels 14–16
(c) effect of female civil servants below level 14
(d) effect of turbulence for different proportions of female civil servants in levels 14–16
(e) effect of turbulence for different proportions of female civil servants below level 14

levels 14–19) is replicated, although the corresponding coefficient is no longer significant in the four models. Likewise, the main effect of the proportion of female senior civil servants in the levels directly below the level being studied (levels 14–16 and level 14; panels (b) for levels 17–19 and 15–19) is also replicated in five out of six cases (83 per cent). Lastly, while the significant coefficient of the interaction effect of turbulence with the proportion of women in senior management on the proportion of women in top management is replicated for the lagged

TABLE 4 Fractional logit regression for the proportion of female senior civil servants in levels 15–19

	Model 1	Model 2	Model 3	Model 4
Turbulence	−0.05		−0.04	−0.27
	(0.51)		(0.66)	(2.85)
Proportion of female civil servants in level 14		−0.57	−0.65	−0.63
		(0.61)	(0.67)	(0.67)
Proportion of female civil servants below level 14		2.10*	4.42**	4.63**
		(1.18)	(2.08)	(2.18)
Turbulence × proportion of female civil servants in level 14				1.50
				(2.29)
Turbulence × proportion of female civil servants below level 14				−0.42
				(5.21)
Total employment (ln)	0.05	0.04	−0.26	−0.27
	(0.57)	(0.33)	(0.60)	(0.60)
Constant	−0.35	−2.07**	−1.93**	−1.93**
	(0.46)	(0.83)	(0.85)	(0.85)
Pseudo-R^2	0.004	0.026	0.028	0.028
N	839	867	761	761

Note: Regressions include time averages of all time-varying variables for every organizational unit (not presented here); clustered standard errors in parentheses;
*p < .1; **p < .05; ***p < .01.

turbulence measure, it falls just short of reaching statistical significance in the models with the lead turbulence measure and change in employment.

Interestingly, we obtain statistically significant coefficients for three additional interaction effects. In situations of substantial workforce decline (measured by a lead turbulence variable), the predicted proportion of women in top management in organizations with a high proportion of women in non-managerial positions is substantially (around 30 percentage points) higher than in organizations with low proportions of women in non-managerial positions. We do not observe a consistent negative effect of turbulence though, so this does not provide support for hypothesis 3a. Also, under similar circumstances, the predicted proportion of female senior servants in levels 15–19 in organizations with a low proportion of women in middle management is substantially (around 25 percentage points) higher than in organizations with low proportions of women in middle management. This supports hypothesis 3a, but again we do not observe a consistent negative effect of turbulence. Finally, in situations of substantial workforce growth (measured by a lagged turbulence variable) the predicted proportion of female senior servants in levels 15–19 in organizations with a high proportion of women in non-managerial positions is substantially (around 45 percentage points) higher than in organizations with low proportions of women in non-managerial positions.

6 | DISCUSSION AND CONCLUSION

This study has shown that women's representation in leadership positions in Dutch civil service organizations varies over time, but is not affected by excessive workforce reductions in the 2012–16 period. Although we observe a higher proportion of women in senior and top management for organizational units going through excessive decline, overall the effect is not statistically significant. Hence, the analyses do not provide evidence of a glass cliff for women, with the exception of higher proportions of women appointed to top management positions during excessive decline in organizations with an already high proportion of women in senior management. This runs counter to

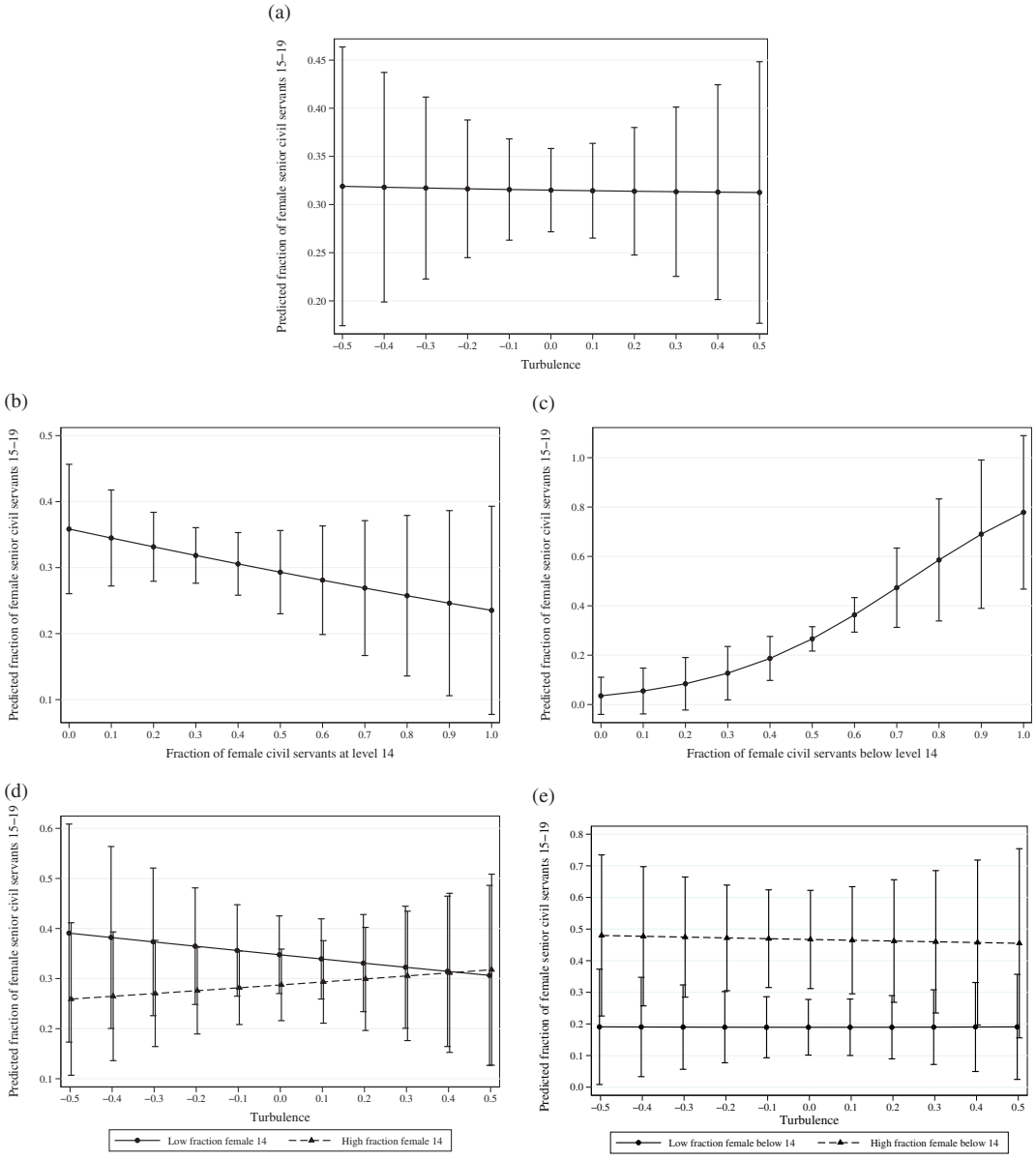

FIGURE 4 Predicted proportions of female senior civil servants (levels 15–19)
(a) effect of turbulence
(b) effect of female civil servants in level 14
(c) effect of female civil servants below level 14
(d) effect of turbulence for different proportions of female civil servants in level 14
(e) effect of turbulence for different proportions of female civil servants below level 14

the idea underlying the glass cliff hypothesis that women are appointed in risky management positions as a signal of change.

Conversely, our findings indicate that in a situation of excessive growth more women are appointed to top management positions in organizations with a lower proportion of women in senior management. In our robustness checks, we also find some support for the proportion of women in senior and top management increasing in

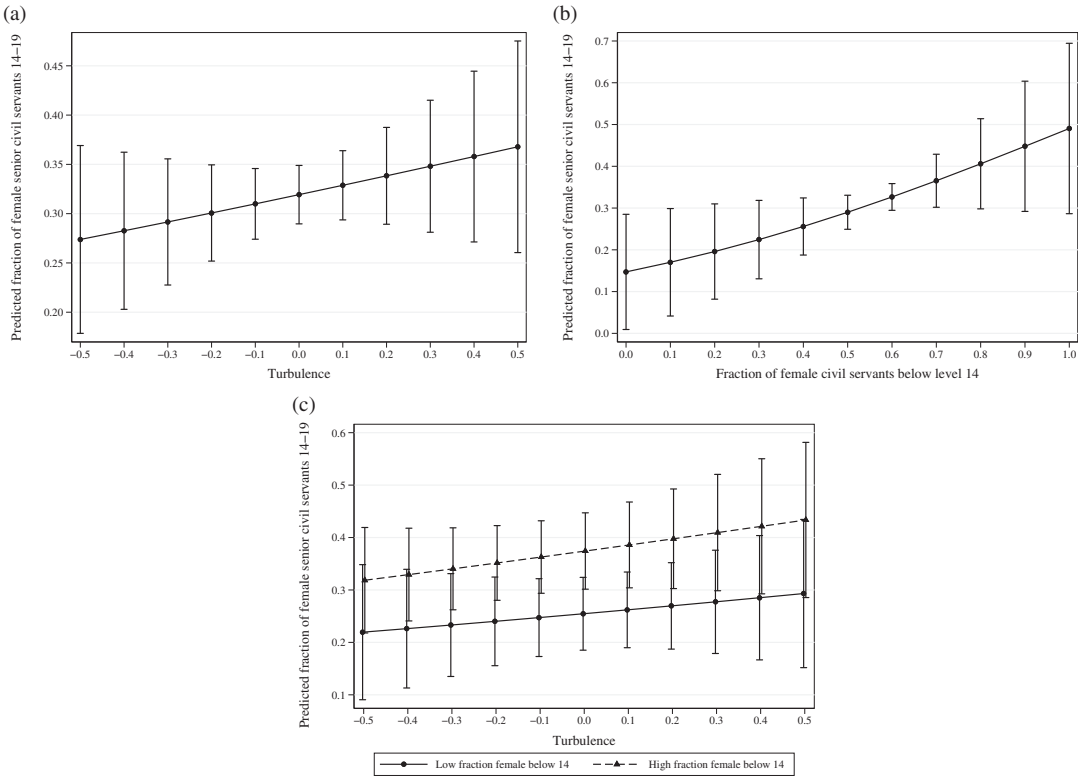

FIGURE 5 Predicted proportions of female senior civil servants and female middle managers (levels 14–19)
(a) effect of turbulence
(b) effect of female civil servants below level 14
(c) effect of turbulence for different proportions of female civil servants below level 14

organizations with a high fraction of women in non-managerial positions and going through excessive growth. This concurs with Krøtel et al. (2019) who, in their study on women's representation in management in Danish local government, find that organizational growth is associated with increasing proportions of female managers, particularly so in organizations where the pre-existing level of female managers is low.

This study has several theoretical implications. First, as our study was situated in a setting with strong diversity policies, the pressure to appoint women to leadership positions was high. In such a setting the glass cliff mechanism may be absent, because the general 'think manager – think male' adagio has lost its significance, which may explain our null findings. In contrast, one could argue that in circumstances with high political pressure for gender equality and strong diversity policies, turbulence may have a positive, rather than a negative, effect. Our study finds some support for this expectation, specifically for organizations with low proportions of women in management. These findings may also be influenced by a ceiling effect of the target figures set, which might have become visible in women's representation in management to be stalling at the target level of 30 per cent. Overall, though, we did not find much evidence for either excessive growth or decline being associated with changes in the representation of women in management in Dutch central government.

This leads us to review the assumptions underlying theories of gender and leadership, more specifically role congruity theory and the glass cliff hypothesis, and to explore whether the government context may require public management scholars to scrutinize and specify those assumptions. Our hypotheses were based on the assumption that gender is salient to the selection into leadership positions because of stereotypical characteristics attributed to both

TABLE 5 Fractional logit regression for the proportion of female civil servants in levels 14–19

	Model 1	Model 2	Model 3	Model 4
Turbulence	0.35		0.46	0.26
	(0.41)		(0.48)	(1.12)
Proportion of female civil servants below level 14		1.33**	1.72*	1.74*
		(0.53)	(0.95)	(0.96)
Turbulence × proportion of female civil servants below level 14				0.33
				(1.45)
Total employment (ln)	−0.29	0.06	−0.28	−0.28
	(0.40)	(0.15)	(0.41)	(0.41)
Constant	−0.55	−3.26***	−3.22***	−3.22***
	(0.40)	(0.51)	(0.52)	(0.52)
Pseudo-R^2	0.002	0.039	0.040	0.040
N	855	968	848	848

Note: Regressions include time averages of all time-varying variables for every organizational unit (not presented here); clustered standard errors in parentheses;
*p < .1; **p < .05; ***p < .01.

women and leaders. Although communal characteristics are increasingly seen as important to leadership, and to date these characteristics have primarily been associated with women (Eagly et al. 2019), the association between leadership and masculinity is persistently strong (Koenig et al. 2011). As gender stereotypes may change in association with changing social roles, though, one could argue that in organizational contexts with higher proportions of women leaders, perceived role incongruity for female leaders may be weaker.

Turning to our study's setting, this echoes our third hypothesis that in contexts where a critical mass of women in management has been reached, gendered norms may have become less salient to the selection of leaders. Although within our sample of civil service organizations female leaders are still a minority and are underrepresented compared to the proportion of women at lower levels, the proportion of women in management revolves around 30 per cent in two-thirds of the organizations, which has been perceived as a sufficient critical mass for gendered patterns to diminish in previous studies (Kanter 1977). Lower gender saliency to the selection of leaders resonates with the finding of increasing levels of women's representation in management that are uncorrelated with organizational growth and decline.

Second, with the representation of women in top management being lowest compared to the other ranks, the saliency of gender may be stronger for these positions compared to the lower managerial ranks. We may also expect perceived role incongruity to be strongest for women in top management, based on the stronger masculine stereotype of higher status leadership positions suggested in previous studies (Koenig et al. 2011). Moreover, these positions, in particular, can turn into a glass cliff because top managers are eventually held accountable for organizational failure. This may explain why we find some support for the glass cliff hypothesis, particularly for these top positions. Furthermore, whereas the proportion of women in management generally increases along with increasing gender representation in non-managerial positions, which is in agreement with hypothesis 2, changes in the proportion of women in top management specifically do not correlate. This supports the idea that numerical representation alone does not change gender stereotypes.

Third, while the above considerations refer to the government context in general, further theorizing could also draw from differences between organizational units within government. For instance, organizations may react differently to external pressures, implying that some organizations will ultimately be more prone to processes underlying the glass cliff hypothesis, whereas others may develop a conservative climate (Levine 1984) in which managers

regress to 'the safety of traditional values and old behavior' (Raudla et al. 2013, p. 34). In such a climate, the notion of 'think manager – think male' may become stronger rather than weaker, the more so if job openings at the management level are scarce due to decreasing intra-organizational mobility. Of course, in light of the above discussion, this may be dependent on the gender typing of the organization and its leadership positions.

All the above considerations raise questions about the salience and meaning of gender in public management (Mastracci and Bowman 2015). We need more insight into gendered norms in public organizations in order to be able to understand perceptions of gender roles and leadership roles within this context and how salient their congruity is in the selection and evaluation of public leaders.

Our study also has some methodological implications. With regard to the measurement of glass cliff situations, existing studies that were situated in a public sector context use a variety of indicators of the glass cliff or the related concept of risk. For instance, Sabharwal (2013), in her study of the antecedents of glass cliff situations, uses intention to leave the workplace within a year as an indicator of a glass cliff, a measurement at the individual level that may be considered an indirect measure of glass cliff situations. Smith and Monaghan (2013), in their study on women's representation in federal government regulatory agency leadership, conceptualize risk as a function of the consequences of failure (with visibility as an indicator thereof) and the likelihood of failure (with complexity as an indicator thereof). In this study, we drew from this conceptualization by using turbulence as an indicator of a glass cliff situation. However, due to limited data availability, our measurement was restricted to organizational decline, which is only one of many dimensions of the organizational environment, and it can be questioned whether this one dimension sufficiently captures managerial risk.

In addition to questions about the operationalization of glass cliff situations, how one should model a glass cliff effect should be considered. We initially chose to include workforce reductions in the previous semester assuming that the managerial challenge primarily lies in running the organizational unit with fewer resources than before (Schmidt et al. 2017). However, one could argue that the implementation of the workforce reduction itself is the actual challenge, which would lead us to hypothesize that women are more often appointed in management positions just before a workforce reduction is being implemented. Overall, though, our robustness analyses including these considerations confirmed the findings.

A final remark with regard to the methodology refers to the use of fractional logit analysis when the dependent variable is bounded. Recent reviews of existing studies have shown that fractional logit regression is rarely applied by management scholars (Villadsen and Wulff 2019). This is somewhat surprising given that this technique had already been introduced in 1996 (Papke and Wooldridge 1996) and has since then been the subject of several methodological debates (e.g., Ramalho et al. 2011) and innovations with regard to its applicability (Papke and Wooldridge 2008; Woolridge 2019). Although scholars have only recently started to investigate the extent to which such model misspecification leads to incorrect or biased coefficient estimates, significance levels, and partial effects (Ramalho et al. 2011; Villadsen and Wulff 2019), their examples show that different specifications tend to entail different statistical inferences. With our study, we hence strive to make a methodological contribution by adhering to the best practices and most recent methodological advances with regard to studying fractional outcomes.

Our study has several limitations that we believe should be addressed in future research. The majority of studies testing the glass cliff hypothesis, including our own, have taken a demand-side perspective. Moreover, as our current dataset consists of aggregate data, individual-level drivers on the supply side could not be examined. From a supply-side perspective one could argue, for instance, that due to workforce reductions competition for leadership positions becomes more severe. This may lead to a situation in which not only women, but also men, are more inclined to accept a management position in such circumstances, which may be one possible explanation for our null-findings too. Individual-level panel data would be needed to examine those processes.

More importantly perhaps, the data do not allow us to empirically examine the different mechanisms through which gender and leadership may be linked in different organizational settings. Comparative research on perceptions of gender and leader roles in different ranks and policy domains and in-depth qualitative case studies on the role of gendered processes in the selection of leaders in organizations could shed more light on the organizational

circumstances under which women attain leadership positions in government. We hope our study stimulates further research into these and other questions on the appreciation of female leadership in a public sector context.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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APPENDIX: ORGANIZATIONAL UNITS IN THE DATASET AND IN THE ANALYSES

The Dutch central public administration consists of several types of civil service organizations: in addition to the ministries including their directorates-general, these are advisory boards and councils, autonomous administrative authorities (quangos), executive agencies, and high councils of state. The dataset contains information on all ministries, with the exception of the Ministry of Defence, the largest ministry since it employs all soldiers, marines and air force units. There are separate collective bargaining agreements for its employees and the work is very different from that of other ministries. Since there are no separate data on the number of employees working in the Ministry of Defence in The Hague and excluding the army was not possible, we decided not to include data on this ministry in the dataset.

The Dutch civil service consists of a large number of permanent and temporary advisory boards and councils (over 250), and a large number of autonomous administrative authorities (N = 138). Only a small number of these particular organizations are included in the dataset, for a number of reasons. First of all, not all quangos and advisory boards have outsourced their personnel administration to the shared personnel service center, hence data were not available. Second, most quangos are subject to different collective labour agreements and therefore, cannot be compared to the organizational units within the dataset. Lastly, there are many quangos and advisory boards with a very low number of employees, for example because the only employee in an organization is a secretary for a commission that works on provision-basis. Such organizations would cause noise in the analysis, as they do not form meaningful units of analysis, and therefore, we did not include data on these organizations.

The table below shows the different types of organizational units, including how many of these are included in the dataset. We used the names of the ministries as they were between 2012 and 2017 (during the Rutte-II coalition government). Some organizations have been established later or have been added to the shared personnel administration at a later stage, and thus have less time points/observations. During the time period of our study, the Directorate-General for Foreign Economic Relations transferred from Economic Affairs to Foreign Affairs between June 2013 and January 2014, the Repatriation and Departure Service (DT&V) transferred from Interior Affairs to Safety and Justice between

June 2012 and January 2013, and the Immigration and Naturalization Service (IND) transferred from Interior Affairs to Safety and Justice between June 2012 and January 2013. Yet, they are treated as continuous units.

TABLE A1 Organizations included in the dataset

	Within the Netherlands (*N*)	Within the dataset (*N* (% of total *N* in NL))
Ministries	11	10 (91%)
Executive Agencies	30	22 (73%)
Inspectorates	10	8 (80%)
High Councils of State	7	5 (71%)
Quangos	138	6 (4%)
Other	-	14

Note: The Office of the King is counted as a High Council of State in Table 1, but is listed under the Ministry of General Affairs in Table 2. Budget-wise, the Office of the King is regarded as a High Council of State, but administratively it is part of the Ministry of General Affairs falling under the responsibility of the Prime Minister.
The category 'Other' consists of temporary and permanent advisory boards and councils. Their size and number vary considerably. In 2019, there are over 250 of these organizational units (https://www.rijksoverheid.nl/onderwerpen/rijksoverheid/adviescolleges, accessed on 20 August 2019).

TABLE A2 Organizational units included in the analysis, by ministry

Ministry of General Affairs		First observation		Levels 17–19	Levels 15–19	Levels 14–19
1	Review Committee on the Intelligence and Security Services (CTIVD)	June	2012	X	X	X
2	Concern Control	June	2012		X	X
3	Directorate-General for the Government Information Service (DG RVD)	June	2012	X	X	X
4	Public Information and Communications Service (DPC)	June	2012		X	X
5	Executive Office	June	2012		X	X
6	Office of the Prime Minister (KMP)	June	2012	X	X	X
7	Office of the King	June	2012	X	X	X
8	Project Pool	June	2012		X	X
9	Office of the Scientific Council for Government Policy (WRR)	June	2012	X	X	X
Ministry of Foreign Affairs						
10	Directorate-General for European Cooperation (DG ES)	January	2014	X	X	X
11	Directorate-General for International Cooperation (DG IS)	January	2014	X	X	X
12	Directorate-General for Political Affairs (DG PZ)	January	2014	X	X	X
13	Dutch missions abroad	January	2014			X
14	Deputy Secretary-General's Office (pSG)	January	2014	X	X	X
15	Secretary-General's Office (SG)	January	2014	X	X	X

(Continues)

TABLE A2 (Continued)

Ministry of General Affairs		First observation		Levels 17–19	Levels 15–19	Levels 14–19
Ministry of the Interior and Kingdom Relations						
16	Office to the Senior Public Service (ABD)	June	2012	X	X	X
17	Directorate-General for Constitutional Affairs and Kingdom Relations (DG BK)	June	2012	X	X	X
18	Directorate-General for Management and Personnel Policy (DG OBR)	June	2012	X	X	X
19	Directorate-General for Central Government Real Estate Agency (DG VBR)	June	2012	X	X	X
20	Directorate-General for Housing (DG WB)	June	2012	X	X	X
21	Boards of financial supervision Netherlands Antilles (CFTNA)	June	2012			X
22	Concern Staff and Internal Affairs (DCB)	June	2012	X	X	X
23	Repatriation and Departure Service (DT&V)	June	2012	X	X	X
24	Rent Tribunal (DHC)	June	2012		X	X
25	Immigration and Naturalization Service (IND)	June	2012	X	X	X
26	National Commissioner Digital Government	January	2015	X	X	X
27	Secretariat of the Electoral Council	June	2012		X	X
Ministry of Economic Affairs						
28	Radiocommunications Agency (AT)	June	2012	X	X	X
29	Netherlands Authority for Consumers and Markets (ACM)	January	2013	X	X	X
30	Executive Office	June	2012		X	X
31	Netherlands Bureau for Economic Policy Analysis (CPB)	June	2012	X	X	X
32	Directorate-General for Agro and Nature	June	2012	X	X	X
33	Directorate-General for Enterprise and Innovation	June	2012	X	X	X
34	Directorate-General for Foreign Economic Relations (DG BEB)	June	2012	X	X	X
35	Directorate-General for Energy, Telecommunication and Competition	June	2012	X	X	X
36	ICT Implementation Services (DICTU)	June	2012	X	X	X
37	Rural Area Agency (DLG)	June	2012	X	X	X
38	Executive Office	June	2012	X	X	X
39	Communication Department	June	2012		X	X
40	Department of Financial and Economic Affairs	June	2012	X	X	X
41	Department of Legislation and Legal Affairs	June	2012	X	X	X
42	Netherlands Food and Consumer Product Safety Authority (NVWA)	June	2012	X	X	X
43	Dutch Public Procurement Expertise Centre (PIANOo)	June	2012	X	X	X
44	Netherlands Enterprise Agency (RVO)	January	2014	X	X	X
45	Secretary-General's Office (SG)	June	2012			X
46	State Supervision of Mines (SodM)	June	2012	X	X	X

(Continues)

TABLE A2 (Continued)

Ministry of General Affairs		First observation		Levels 17–19	Levels 15–19	Levels 14–19
Ministry of Finance						
47	Directorate-General of the Budget	June	2012	X	X	X
48	Directorate-General for Tax, Customs Policy and Legislation	June	2012	X	X	X
49	Directorate Treasury	June	2012	X	X	X
50	Secretary-General's Office (SG)	June	2012	X	X	X
High Councils of State						
51	Dutch Court of Audit	June	2012	X	X	X
52	Cabinets of the Governors of Curacao, Aruba and Saint Martin	June	2012		X	X
53	Chancellery of the Netherlands Orders	June	2012		X	X
54	National Ombudsman	June	2012	X	X	X
Ministry of Infrastructure and the Environment						
55	Authority for Nuclear Safety and Radiation Protection (ANVS)	January	2015	X	X	X
56	Executive Office	June	2012	X	X	X
57	Directorate-General for Mobility	June	2012	X	X	X
58	Directorate-General for the Environment and International Affairs	June	2012	X	X	X
59	Directorate-General Rijkswaterstaat	June	2012	X	X	X
60	Directorate-General for Spatial Development and Water Affairs	June	2012	X	X	X
61	Finance and Control	June	2012	X	X	X
62	Human Environment and Transport Inspectorate (ILT)	June	2012	X	X	X
63	Royal Dutch Meteorological Institute (KNMI)	June	2012	X	X	X
64	Dutch Emissions Authority (NEa)	June	2012	X	X	X
65	Netherlands Environmental Assessment Agency (PBL)	June	2012	X	X	X
Ministry of Education, Culture and Science						
66	Advisory Council for Science, Technology and Innovation (AWTI)	June	2012		X	X
67	Board of Tests and Examinations (CvTE)	June	2012		X	X
68	Directorate-General of Culture and Media (DG CM)	June	2012	X	X	X
69	Directorate-General of Higher and Vocational Education, Science and Emancipation (DG HBWE)	June	2012	X	X	X
70	Directorate-General of Primary and Secondary Education (DG PV)	June	2012	X	X	X
71	Directorate-General of the Education Implementation Service (DUO)	June	2012	X	X	X
72	Heritage Inspectorate	June	2012	X		X
73	National Archives (NA)	June	2012	X	X	X

(Continues)

TABLE A2 (Continued)

Ministry of General Affairs		First observation		Levels 17–19	Levels 15–19	Levels 14–19
74	Inspectorate of Education	June	2012	X	X	X
75	Education Council (OR)	June	2012			X
76	Deputy Secretary-General's Office (pSG)	June	2012	X	X	X
77	Council for Culture (RvC)	June	2012	X	X	X
78	Cultural Heritage Agency (RCE)	June	2012	X	X	X
79	Secretary-General's Office (SG)	June	2012	X	X	X
Ministry of Social Affairs and Employment						
80	Directorate-General for Participation and Income Security (DG SZI)	June	2012	X	X	X
81	Directorate-General for Employment	June	2012	X	X	X
82	Inspectorate General SZW	June	2012	X	X	X
83	Deputy Secretary-General's Office (pSG)	June	2012	X	X	X
84	Secretary-General's Office (SG)	June	2012	X	X	X
Ministry of Security and Justice						
85	Secretary-General's Office (SG)	January	2015	X	X	X
86	Central Fine Collection Agency (CJIB)	June	2012	X	X	X
87	Dutch Data Protection Authority	June	2012	X	X	X
88	Human Rights Council	June	2012	X	X	X
89	Judicial Agency for Testing, Integrity and Screening (Justis)	June	2012	X	X	X
90	Custodial Institutions Agency (DJI)	June	2012	X	X	X
91	Judiciary Service Centre (Justid)	June	2012		X	X
92	National Service Centre for the System of Justice (LDCR)	June	2012	X	X	X
93	Netherlands Forensic Institute (NFI)	June	2012	X	X	X
94	Netherlands Register of Court Experts (NRGD)	June	2012			X
95	Child Protection Board	June	2012	X	X	X
96	Violent Offences Compensation Fund	June	2012		X	X
97	SPIR-IT	June	2012	X	X	X
Ministry of Health, Welfare and Sport						
98	Medicines Evaluations Board Agency (CBG)	June	2012	X	X	X
99	External Services of the Secretary General	January	2015		X	X
100	Central Committee on Research Involving Human Subjects (CCMO)	June	2012		X	X
101	Central Information Unit on Health Care Professions (CIBG)	June	2012	X	X	X
102	Directorate-General of Curative Care	June	2012	X	X	X
103	Directorate-General of Long-term Care	June	2012	X	X	X
104	Directorate-General of Public Health	June	2012	X	X	X
105	Health Council of the Netherlands	June	2012	X	X	X

(Continues)

TABLE A2 (Continued)

Ministry of General Affairs		First observation		Levels 17–19	Levels 15–19	Levels 14–19
106	Health Care Inspectorate (IGZ)	June	2012	X	X	X
107	Youth Care Inspectorate (IJZ)	June	2012	X		X
108	Miscellaneous Services of Core Departments	June	2012	X	X	X
109	Project Office Antonie van Leeuwenhoek terrain (PD-ALT)	January	2013	X	X	X
110	Deputy Secretary-General's Office (pSG)	June	2012	X	X	X
111	Council for Public Health and Care (RVZ)	June	2012		X	X
112	National Institute of Public Health and the Environment (RIVM)	June	2012	X	X	X
113	Secretary-General's Office (SG)	June	2012	X	X	X
114	Netherlands Institute for Social Research (SCP)	June	2012	X	X	X
				80.70%	93.86%	100.00%

TABLE A2 Organizational units included in the dataset, but not included in the analysis due to …

… a lack of sufficient consecutive observations			First observation		Levels 17–19	Levels 15–19	Levels 14–19
115	BAAS	Foreign Affairs	January	2015			
116	Oranjestad	Foreign Affairs	January	2014			
117	External (permanents) representatives	Foreign Affairs	January	2016			
118	National Coordinator Groningen	Economic Affairs	January	2016			
119	Executive Agency Subsidies to Institutions (DUS-I)	Health, Welfare and Sport	January	2016			
… the absence of employees in levels 14–19							
120	Bureau of the Dutch State Representative for the public bodies Bonaire, Saint Eustatius and Saba	Interior and Kingdom Relations	June	2012			
121	Appeals Tribunal for Higher Education	Education, Science and Culture	June	2012			
					76.03%	88.43%	94.21%