



UNIVERSITY OF
GOTHENBURG

THE PRUDENT ENTREPRENEURS

Women and Public Sector Innovation

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WORKING PAPER SERIES 2017:11

QOG THE QUALITY OF GOVERNMENT INSTITUTE

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Box 711, SE 405 30 GÖTEBORG
October 2017
ISSN 1653-8919

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QoG Working Paper Series 2017:11

October 2017

ISSN 1653-8919

Abstract

This paper suggests a new argument to explain gender differences in public management: the “prudent entrepreneur theory.” We hypothesize that male and female public managers have three differences in their attitudes towards innovation. Firstly, female managers are more motivated to achieve results – instead of following rules – and to do something useful for society. Secondly, female public managers are open to new ideas and creativity, and more willing to challenge the status quo. Yet, thirdly, female leaders are less eager to take risks when would-be innovations may put their organizations in peril. That is, women in public sector leadership positions are both more entrepreneurial and more prudent. A multilevel analysis – based on the responses by 5,909 senior public managers from 20 countries of the COCOPS Executive Survey on Public Sector Reform and data of national public administrations from the Quality of Government Expert Survey – shows support for these hypotheses.

The research for this paper was financially supported by the research project, “Out of Control or over Controlled? Incentives, Audits and New Public Management,” and we gratefully acknowledge the financial support from Riksbankens Jubileumsfond (the Swedish Foundation for Humanities and Social Sciences).

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Introduction

Innovation in the public sector allows for “revolutionary improvements” (Maranto and Wolf 2013, 238) in normal times and solving “wicked problems” (De Vries, Bekkers, and Tummers 2015, 164) in times of crisis. Yet innovating in the public sector is more difficult than in the private sector (Laegreid, Roness, and Verhoest, 2011). This is mainly because of various differences in external environment and internal constraints for management between two sectors (Allison 1986, Rainey 2009). For instance, the potential gains for public managers who dare to innovate are relatively small, since private-sector bonuses are not available. And the potential damages if the innovation is a failure are large, given that political and media scrutiny focus more on failures than on successes.

Nevertheless, many public administrations experience constant innovations (Walker 2014). Think of the impressive achievements by urban school chancellor Michelle Rhee in improving the education of disadvantaged children in Washington, DC (Maranto and Wolf 2013, 238). Many observers had traditionally considered the task of improving inner-city schools that struggle with crime, racial divisions, and entrenched bureaucracies as an “impossible job.” Yet Rhee proved them wrong by closing down inefficient schools and introducing an effective teacher performance rating system that led to a substantial increase in students’ rates of proficiency. Or think of the seemingly impossible innovations in the Swedish educational system, from the Compis project, which aimed to introduce modern and inexpensive computers in the schools as early as 1981, when the personal computers with the required specifications were still not available in the market (Kaiserfeld 2000), to the introduction of world’s most developed school voucher system (The Economist 2007).

A growing literature tries to understand why some public bureaucracies innovate more than others (for a recent review, see De Vries et al. 2015). This paper aims to contribute to this literature by exploring the effects of gender with a multilevel analysis based, first, on the responses of 5,909 public managers from 20 countries from the COCOPS (Coordinating for Cohesion in the Public Sector of the Future) Executive Survey on Public Sector Reform in Europe (Van de Walle et al. 2016); and, second, on the characteristics of national public administrations constructed with the opinions of over 1,200 experts in the Quality of Government (QoG) Expert Survey (Dahlström et al. 2015). Controlling for a large set of national, organizational, and individual-level characteristics in a large-N data set allows us to identify more neatly the effect of a public manager’s gender over innovation.

Certainly, innovation is a long process with several stages that, in turn, may respond to different factors (Moldogaziev and Resh 2016). In this paper we focus on public managers’ attitudes towards innovation: openness to new ideas and creativity, willingness to take actions that might upset the status quo, and risk acceptance. These attitudes have been found as key for launching innovations (Damanpour 1991; Vigoda-Gadot 2009) and determine up to what extent there is an innovative-oriented culture (Brettel and Clevén 2011; Laegreid, Roness, and Verhoest 2011; Wynen et al. 2014) in a given public administration.

Theoretically, we expect that on the one hand female public managers will be more oriented than their male counterparts towards achieving results, doing something useful for society, and being open to new ideas and creative solutions to policy problems, even if they might upset the status quo. These attitudinal and behavioral differences should be positively related to the posterior implementation of innovations within public organizations – but, as mentioned above, this study is restricted to the analysis of attitudes. And, on the other hand, we expect female public managers to be more prudent than their male counterparts when the potential innovation may involve risks for organizations.

Women in managerial positions are thus more likely to act as “prudent entrepreneurs” than men. In other words, female public managers tend to push more for creative innovations that challenge the conventional operations of the administration (e.g. like the ones put in action by urban school chancellor Rhee). And at the same time, female managers are less prone to take excessive risks that put their administrations in danger.

Findings provide empirical support for our hypothesis. After controlling for country-level and individual-level factors, results of our analysis suggest there are statistically significant differences in innovation-related attitudes between female and male managers. Female senior managers are more likely to be result-oriented and willing to serve societal interests than male counterparts. Female senior managers are likely to be slightly more open to new ideas and creative solutions and have more willingness to change the current situation than male counterparts. However, female managers show slightly more risk-averse attitudes than male managers.

Theory

Do female public managers manage different than their male counterparts? Do women and men construe social reality differently and thus exhibit different management behaviors (Gilligan 1982)? Or are perceived differences due to gender stereotypes that do not hold empirical contrast (Schubert et al. 1999)?

The studies of gender differences in the public sector have traditionally focused on the political level. A higher percentage of women in parliament or in government has been associated with several outcomes, such as, lower levels of corruption (Wängnerud 2012), a or a more developed welfare state (Rosenbluth et al. 2006). It has been documented that women in parliament exhibit different attitudes than men in certain circumstances (Volden et al. 2013) or certain thematic areas, such as children/family issues (Schwindt-Bayer 2006), social policy, care for the elderly, or health care (Wängnerud 2006).

In recent years there has been an increase in the research on gender differences that goes beyond the political sphere. Numerous studies have explored gender differences in public administration and management, showing that public employees' gender affects their behavior and attitudes (Nielsen 2015, Choi 2011, Grissom, Nicholson-Crotty, and Keiser 2012) as well as the performance of public organizations (D'Agostino 2015, Meier and Nicholson-Crotty 2006). Gender is actually the most studied

factor for understanding what drives public service motivation in bureaucracies. It is explored in 16% (64 out of 400) of the studies of public service motivation (Ritz et al. 2016). Nevertheless, we still know little about the effects of gender since most results do not seem consistent (Ritz et al. 2016).

Regarding organizational performance, there is growing evidence that private sector firms led by women perform better (Desvaux et al. 2010). Yet there are few studies aimed at studying whether women improve the performance of government agencies. Using data from the Human Capital Accountability and Assessment Framework, D'Agostino (2015) finds female heads of government agencies outperform their male counterparts. However, her analysis, unlike the one presented here, does not control for a large set of potential omitted variables, such as education, prior experience, characteristics of the organization, and the like. Similarly, it has been found that organizations with more women at the street level have higher overall organizational performance, yet the study is restricted to the universe of Texas school districts and three academic years (Meier et al. 2006). Other studies have explored gender differences in particular public sector areas – such as local governments (Fox and Schuhmann 1999) or law enforcement agencies (Meier and Nicholson-Crotty 2006). In contrast, this paper proposes a multilevel cross-national analysis in which differences between female and male managers will be examined across different types of public organizations and administrative cultures.

The literature notes that women tend to manage public organizations differently than men. Female managers spend less time on internal management and networking relationships (Jacobson et al. 2010), use a more interactive style of management (Burke and Collins 2001), are more collaborative (Sorenson et al. 2008), more democratic (Bass and Avolio 1993), less hierarchical, involve more stakeholders in decision-making than their male counterparts, and offer more emotional labor to an organization (Meier, Mastracci, and Wilson 2006).

In this paper we focus on the effects of gender on three attitudes of public managers that are closely linked to innovation. Firstly, we ask whether female public managers have a more goal-oriented motivation (measured by the motivation to achieve results and doing something useful for society) than men. Secondly, we look at whether female managers possess more entrepreneurial attitudes (measured by openness to new ideas and creative solutions and willingness to challenge the status quo). And, thirdly, we examine whether female and male managers exhibit different preferences towards risk.

Regarding goal-oriented motivation, our hypothesis is that female managers will show more motivation to achieve results and do something useful for society than men. In particular, we argue that female managers, when facing a dilemma between either achieving substantive results or following the rules, will be more likely than their male counterparts to choose the latter.

This hypothesis goes against a widespread view of women in managerial positions. Leadership has largely been seen as culturally masculine both in objective terms – because most managers are men – but also in subjective terms – because a “leader should look male and pale” (DeHart et al. 2006). Women have been

more rule abiding than men in general (Gordon 1970). Some evidence from both surveys to (US municipal) employees (Portillo and DeHart-Davis 2009) as well as in experimental settings (Morrison 2006) seem to provide some support for that view. Yet, the fact that women are less likely to break the rules than men (Morrison 2006), as this empirical evidence suggests, does not imply that women are more likely to strictly and literally follow the rules.

More importantly, there are several reasons why one should expect, as this paper does, women to be more oriented towards achieving substantive policy results and, particularly, welfare-enhancing outcomes for their communities. Firstly, women generally score higher in “communal” attributes and have a higher concern for the welfare of other people (Eagly et al. 2000). Secondly, women’s leadership style is more interpersonally oriented. Consequently, women tend to be more focused on improving others’ morale and welfare (Eagly and Johannesen-Schmidt 2001). Similarly, female managers score higher than male managers on measures of task-oriented leadership (Eagly et al. 1992). In contrast, male managers may be more inclined to take a conservative approach to policy, prioritizing the implementation of the existing rules over the achievement of results.

Thirdly, there is mounting evidence indicating that women care more for the well-being of society than men. Women are overrepresented in positions that involve “emotional labor” (Guy and Newman 2004) and female public managers show more compassion than their male counterparts (DeHart et al. 2006). Historical evidence reinforces this point. For instance, research on the Progressive Era has noted that women played a key role in developing new social programs for the poor and improving the living conditions in neighborhoods (Stivers 2000).

Consequently, our hypothesis regarding gender differences in goal motivation among public managers is the following:

Hypothesis 1: Female managers will show more motivation towards achieving results and doing something useful for society than their male counterparts.

With regards to the second dimension of pro-innovation attitudes explored in this paper (i.e. entrepreneurial attitudes), the existence of evidence on gender differences is mixed. On the one hand, women tend to rate themselves lower than men on innovative attitudes, like studies in the private sector have traditionally indicated (DiTomaso and Farris 1992). Similarly, the pioneering study on gender differences in the public sector by Burns (1978), of 590 women and men from municipal administrations, found differences in terms of professional ambition. Fox and Schuhmann (1999) also noticed that female city managers were less likely than men to see themselves as policy entrepreneurs. Women saw themselves more as managers and facilitators.

On the other hand, numerous studies have uncovered that women exhibit many attitudes that seem clearly related to pro-innovative behavior. For instance, female city managers are more likely to incorporate

citizen input, to be concerned with community involvement in their decisions, and to emphasize more communication than male city managers (Fox and Schuhmann 1999). If women do not see themselves as policy entrepreneurs and exhibit the professional ambitions of their male counterparts, it could just be due to the fact that women may “prefer to be in the middle of a ‘web’ of interactions rather than to be on top of the hierarchy” (Fox and Schuhmann 1999, 240), and not so much to the fact that they are less entrepreneurial.

Similar to the literature that remarks women bring a different set of attitudes to policy making (Norris 1996) and legislation (Bratton and Haynie 1999), we argue women also bring different attitudes to policy implementation and public management. If women have been found to notably affect the agenda setting of the policy process (Tamerius 1995), we argue that women may also affect the implementation of such agendas.

Our hypothesis is that female managers may be more open to creativity and new ideas – a key pro-innovation attitude – than their male counterparts. To start with, female managers may be more open to all sorts of ideas than male managers. As research has shown, women in leadership positions tend to favor empowerment of those surrounding them (Van Engen and Willemsen 2004). Equally, female managers adopt a more democratic (or participative) style of leadership than their male counterparts, who tend to adopt a more autocratic style (Eagly et al. 1992). Similarly, other studies have offered evidence that women are more skilled at extracting information from their environment. For instance, female leaders show more emotional intelligence (Mandell and Pherwani 2003) and better abilities at operating within informal networks (Bass 1981).

We expect female managers to be more open to new ideas, but also more willing to challenge the status quo. Organizational scholars note that there are two types of leadership: transactional and transformational (Burns 1978). While transactional leaders aim to clarify their subordinates’ responsibilities, transformational leaders aim to innovate and challenge the status quo. And several studies indicate that women are more transformational leaders than men (Bass and Avolio 1993).

Additionally, numerous studies have dismantled the conventionally held view that men are more committed to policy change than women. For instance, evidence from state health and human service agencies indicates that female leaders in the public sector score higher on “attraction to policy making” than men (DeHart et al. 2006). Furthermore, women score similarly to men on “commitment to public service,” another stereotypically masculine characteristic. From a very different cultural context, a study of the Seoul Metropolitan Government found that female employees were more satisfied with their jobs – despite enjoying fewer advantages in terms of pay, autonomy, or promotions – than men (Kim 2005). Indeed, gender was the only significant predictor of job satisfaction among the demographic variables.

In sum, there are several reasons to hypothesize that women in public sector leadership positions will be more open to innovative ideas, even when they challenge the status quo. Consequently, our second hypothesis is the following:

Hypothesis 2: Female public managers will be more open to new ideas and creative solutions to policy problems, even if they might upset the status quo, than male public managers.

In relation to the third feature of pro-innovation attitudes explored in this paper (i.e. preferences towards risk), there is also a lot of debate in the literature. On the one hand, women are seen as more risk averse than men. This is obvious in popular books (e.g. John Gray's *Men are From Mars, Women are From Venus* (1993) or Simon Baron-Cohen's *The Essential Difference* (2004) but also in the abundant scholarly works in economics and finance that find fundamental differences between men and women in attitudes towards risk (Charness and Gneezy 2012). On the contrary, other scholars underline that the existing systematic reviews of the evidence indicate that "men and women tend to be much more similar in their responses to risk than the popular Mars-versus-Venus understanding would imply" (Nelson 2015, 580).

Nevertheless, there are reasons to expect that in the context of the public sector, female managers will, *ceteris paribus*, be less prone to take risks than their male counterparts. Certain risks could imperil the organizations they lead, and female managers may be more sensitive to this outcome than their male counterparts.

We take this insight from the literature on finance, where two apparently contradictory results have been found. On the one side, in experimental settings, female subjects do not make significantly less risky financial choices than male subjects (Schubert et al. 1999). On the other, there is mounting evidence indicating that female leaders are more prudent than their male counterparts, because women are more concerned with the negative externalities of their risky decisions for their organizations. Women are more risk averse when it comes to decisions with potentially damaging financial consequences for the private sector firms they lead (Barsky et al. 1997; Sundén and Surette 1998). Generally speaking, female executives take less risky financial decisions (Faccio et al. 2013; Huang and Kisgen 2013). And, specifically, female chief executive officers and board chairs assess risks more conservatively, holding higher levels of equity capital and reducing the likelihood of bank failure (Palvia et al. 2015).

Anecdotal evidence points in the same direction as those studies. For instance, it has been noted that the only Icelandic private equity fund that made it through the crisis was wholly managed by women. As the then French minister for the economy, and afterwards head of the International Monetary Fund, Christine Lagarde, put it, "if Lehman Brothers had been 'Lehman Sisters,' today's economic crisis clearly would look quite different" (2010). This more "prudent" approach to risk by female entrepreneurs seems to apply to both advanced economies as well as emerging ones: up to 97% of the 8 million micro borrowers of Muhammed Yunus in Bangladesh are women.

We hypothesize that the same gender differences in managerial prudence may be found in the public sector. Female public managers, even if they dare to challenge the status quo more than men, will be less prone to taking risky decisions that could hamper the operations of the whole organization they lead. Consequently, this is our third hypothesis:

Hypothesis 3: Female public managers will be less risk taking than male public managers.

In sum, we expect female public managers to critically diverge from their male counterparts in their attitudes towards innovation. On the one hand, female managers are more oriented towards achieving results – in contrast to following rules – and doing something useful for society than their male counterparts. Similarly, women are more innovative than their male counterparts when it comes to openness to new ideas, even if they might upset the status quo, and creativity. On the other hand, female leaders are more prudent before adopting innovations that may involve risks for the organization. Hence we refer to this as the “prudent entrepreneur theory.”

Data Collection

Despite the growing scholarly attention on various contextual factors in public management and performance (Meier, Rutherford, and Avellaneda 2017, O’Toole and Meier 2014), little comparative research has been done on public administration and bureaucracy (Dahlström, Lapuente, and Teorell 2012, Fitzpatrick et al. 2011). Furthermore, the field of public management has been said to be neglecting the national characteristics of bureaucracies, thus assuming that “all states are alike” (Milward et al. 2016, 312). One reason for the scarcity of studies comparing national bureaucracies has been the lack of systematic data on bureaucrats’ behavior. This study aims to bridge this gap in the literature utilizing the COCOPS Executive Survey on Public Sector Reform in Europe (Hammerschmid 2015), which contains the survey answers of 9,333 senior public sector executives from 21 European countries. Several articles published from academic journals demonstrate the validity and reliability of the data set.¹ Please see the appendix for further information on the COCOPS data set. All of the individual-level variables come from this COCOPS survey, and country-level variables are from the QoG Expert Survey (Dahlström et al. 2015), the QoG Standard Dataset (Teorell et al. 2017), Hofstede, Hofstede, and Minkov (2010), UNdata (United Nations Statistics Division 2017), and the Global Innovation Index (GII) database (Cornell University, INSEAD, and WIPO 2014).

Dependent Variables

This study utilizes five dependent variables from the COCOPS survey that aim to collect public managers’ pro-innovation attitudes: (1) motivation to achieve results, (2) willingness to serve societal interests, (3)

¹ See, for example, Andrews (2017), Greve, Lægneid, and Rykkja (2016), Hammerschmid, Van de Walle, and Stimac (2013), Hammerschmid et al. (2016), Kickert, Randma-Liiv, and Savi (2015), Ongaro, Ferré, and Fattore (2015), Raudla et al. (2015), Van de Walle et al. (2016).

openness to new ideas and creative solutions, (4) willingness to challenge the status quo, and (5) risk taking. All five variables come from alignment with the following statements: The first dependent variable is collected from the statement, “Public services often need to balance different priorities. Where would you place your own position?” Respondents are asked to rank their management style from 1 (following rules) to 7 (achieving results). Higher values represent being more result oriented. The second dependent variable is derived from the statement, “How important do you personally think it is in a job to have... ‘Doing something that is useful to society?’” Respondents are asked to select their responses from 1 (not important at all) to 7 (very important). Finally, the last three dependent variables are from how far the respondent agrees or disagrees with the following statements: The third dependent variable is collected from the statement, “Being creative and thinking up new ideas are important to me”; the fourth from the statement, “I avoid doing anything that might upset the status quo”; and the fifth dependent variable from the statement, “I like to take risks.” In the three questions respondents are asked to select their responses from 1 (strongly disagree) to 7 (strongly agree). These dependent variables are thus ordinal variables. We reverse scale the fourth dependent variable for interpretation. Therefore, higher values mean more willingness to challenge the status quo, while lower values mean more willingness to maintain the current condition.

Independent Variable

The main interest in our study is a senior manager’s gender. The COCOPS Executive Survey includes a question asking gender. In our analysis, we set male as the baseline, 1, and female as 2.

Control Variables

We control for individual-level factors as well as country-level factors that may affect individual attitudes towards the aforementioned dependent variables. Individual-level factors include organizational type, organizational size, respondent’s current position, age, public sector experience, educational level, job satisfaction, organizational goal clarity, job autonomy, degree of political interference, organizational social capital, and respondent’s organizational commitment. The latter four variables are included in our robustness check models. Country-level variables include professionalism of bureaucracy, bureaucratic closedness, women representation in the public sector, gender inequality, country-level innovation, and three national cultural factors from Hofstede’s dimension of cultural values, namely power distance, individualism-collectivism, and uncertainty avoidance. The first three variables are included in our main models (table 4), and the remaining variables are included in our robustness check models (table A2 in the appendix). Detailed operationalization and data source information are described in the appendix. Table 1 presents descriptive statistics of all variables in the analysis. We conducted collinearity diagnostics using variance inflation factors (VIF) based on our main models. Mean values of VIF are less than 1.65 in all

main models. The highest individual VIF score for individual variables is 3.28 (public sector experience). These results suggest that the models do not have serious multicollinearity issues.

TABLE 1, DESCRIPTIVE STATISTICS

| | Obs | Mean | Std.Dev. | Min | Max |
|--|-------|-------|----------|-------|-------|
| Dependent variables | | | | | |
| Achieving results | 5,909 | 4.20 | 1.73 | 1 | 7 |
| Doing something useful to society | 5,882 | 6.05 | 1.06 | 1 | 7 |
| Openness to new ideas and creative solutions | 5,807 | 5.73 | 1.48 | 1 | 7 |
| Willingness to challenge the status quo | 5,784 | 5.29 | 1.62 | 1 | 7 |
| Willingness to take risks | 5,794 | 4.47 | 1.52 | 1 | 7 |
| Independent variable | | | | | |
| Female executives | 5,909 | 1.38 | 0.49 | 1 | 2 |
| Individual level controls | | | | | |
| Organizational type | 5,909 | 1.14 | 1.19 | 0 | 5 |
| Organizational size | 5,909 | 1.02 | 0.70 | 0 | 2 |
| Respondent's position | 5,909 | 1.11 | 0.75 | 0 | 2 |
| Age | 5,909 | 1.03 | 0.77 | 0 | 2 |
| Public sector experience | 5,909 | 1.36 | 0.75 | 0 | 2 |
| Private sector experience | 5,909 | 0.94 | 0.68 | 0 | 2 |
| Educational level | 5,909 | 0.96 | 0.57 | 0 | 2 |
| Job satisfaction | 5,909 | 16.11 | 3.75 | 3 | 21 |
| Organizational goal clarity | 5,909 | 10.90 | 2.78 | 2 | 14 |
| Country level controls | | | | | |
| Professional bureaucracies | 5,909 | 18.82 | 3.69 | 11.67 | 24.64 |
| Closed bureaucracies | 5,909 | 15.26 | 2.52 | 10.84 | 18.82 |
| Women in the public sector | 5,909 | 54.94 | 5.43 | 46.77 | 68.00 |

List of countries included in analysis: Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, the Netherlands, Norway, Portugal, Serbia, Spain, Sweden, the United Kingdom

Methods

Our data set has a hierarchical structure, with public sector managers (level 1) nested in country-level factors (level 2), and thus multilevel analysis seems to be an appropriate method (Jones 2008). We assume that intercepts of individual-level variables can vary across countries due to the country-level factors, therefore a random intercept model is applied. Since the dependent variables in this study are ordinal variables that have a natural ordering measured on scales from 1 to 7, we employ multilevel ordered logit models. The first set of models (models 1–5 in table 3) includes only individual-level independent and control variables. The second set of models (models 1.1–5.1 in table 4) adds country-level variables. A small number of country-level samples might create a problem with multilevel analysis (Stegmueller 2013). However, we limit the number of country-level variables in a single model to three. Moreover, we do not have cross-level interactions. Therefore, we believe that our results do not suffer from a bias from country factors. Please see appendix for our robustness check strategies and results.

Analysis and Results

Table 2 shows mean comparisons of the dependent variables by gender. There are gender-based differences in the second, third, and fourth dependent variables. Mean values of motivation to do something useful for society are higher among female managers than male counterparts (p -value = 0.000). Female public managers also score higher in their willingness to challenge the status quo than male managers (p = 0.075). However, female managers' scores on willingness to take risks are 0.17 points lower than male counterparts (p = 0.000). Female managers show more motivation to achieve results (p = 0.116) and slightly more open attitudes towards new ideas than male managers. However, the differences are not statistically significant (p = 0.343).

TABLE 2. MEAN COMPARISON OF DEPENDENT VARIABLES BY GENDER

| | All samples | | Male senior executives | | Female senior executives | | Difference (Male-Female) | P-value |
|---|-------------|------|------------------------|------|--------------------------|------|--------------------------|---------|
| | N | mean | N | mean | N | mean | | |
| Achieving results ¹ | 5,909 | 4.20 | 3,659 | 4.17 | 2,250 | 4.24 | -0.07 | 0.116 |
| Doing something useful to society ² | 5,942 | 6.05 | 3,675 | 5.99 | 2,267 | 6.15 | -0.15 | 0.000 |
| Openness to new ideas and creative solutions ³ | 5,875 | 5.73 | 3,647 | 5.72 | 2,228 | 5.76 | -0.04 | 0.343 |
| Willingness to challenge the status quo ⁴ | 5,852 | 5.29 | 3,636 | 5.26 | 2,216 | 5.34 | -0.08 | 0.075 |
| Willingness to Take Risks ⁵ | 5,860 | 4.47 | 3,644 | 4.53 | 2,216 | 4.36 | 0.17 | 0.000 |

1: Samples are based on model 1.2 in table 4, 2: Samples are based on model 2.2 in table 4, 3: Samples are based on model 3.2 in table 4, 4: Samples are based on model 4.2 in table 4, 5: Samples are based on model 5.2 in table 4

Having showed a bivariate relationship between gender and the dependent variables, we move on to results of multilevel regression models. Table 3 reports results of the multilevel ordered logistic models with only individual-level variables. Gender has a statistically significant association with all of the dependent variables. Being a female manager is positively associated with motivation to achieve results (p < 0.001), motivation to serve social interests (p < 0.001), openness to new ideas and creative solutions (p < 0.01), and willingness to challenge the status quo (p < 0.01). On the other hand, gender is negatively associated with willingness to take risks (p < 0.05).

Some of the individual-level controls show statistical significance. Age (p < 0.001), doctoral degree (p < 0.01), working at an agency or subordinate governmental body at state government (p < 0.05), and organizational size (p < 0.05) are positively associated with motivation towards achieving results. On the other hand, working at an agency or subordinate governmental body at central government (p < 0.05), having a second hierarchical level position (p < 0.05), and working years in the public sector (p < 0.01 and p < 0.05) are negatively correlated to the motivation to achieve results. Age (p < 0.05), private sector experience (p < 0.05), education (p < 0.05 and p < 0.001), job satisfaction (p < 0.001), and goal clarity (p < 0.001) are positively associated with motivation to serve social interests. Age (p < 0.01), private sector experience (p < 0.001), doctoral-level education (p < 0.01), and job satisfaction (p < 0.001) are positively correlated to openness to new ideas and creative solutions. On the other hand, working at an agency or subordinate governmental body at central government (p < 0.01) and ministry at state or regional

government ($p < 0.05$) are negatively associated with openness. Organizational size ($p < 0.001$), doctoral degree ($p < 0.05$), job satisfaction ($p < 0.05$), and organizational goal clarity ($p < 0.01$) are positively related to respondents' willingness to challenge the status quo. Working at an agency or subordinate governmental body at central government ($p < 0.01$), being in a second hierarchical ($p < 0.01$) or third hierarchical ($p < 0.001$) position, and having more than 20 years of public sector experience ($p < 0.01$) are negatively associated with motivation to challenge the status quo. Finally, organizational size ($p < 0.01$) and private sector experience ($p < 0.05$ and $p < 0.001$) are positively correlated with risk taking. Working at an agency or subordinate governmental body at state government ($p < 0.05$) and being in a third hierarchical level position ($p < 0.01$) are negatively correlated to risk taking.

TABLE 3, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL LEVEL MODELS

| Independent variable | Result orientation | Societal interests | Openness to new ideas and creative solutions | Willingness to challenge the status quo | Willingness to take risks |
|---|--------------------|--------------------|--|---|---------------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| Female executives ¹ | 0.22*** (0.05) | 0.34*** (0.05) | 0.14** (0.05) | 0.15** (0.05) | -0.11* (0.05) |
| Individual level controls | | | | | |
| Org. type ² = Agency/subordinate gov. body central gov. | -0.15* (0.06) | -0.12 (0.06) | -0.17** (0.06) | -0.17** (0.06) | 0.02 (0.06) |
| = Ministry at state/regional gov.level | -0.14 (0.10) | -0.13 (0.10) | -0.22* (0.10) | -0.10 (0.10) | -0.06 (0.10) |
| = Agency/subordinate gov. body at state/gov. | 0.22* (0.10) | 0.06 (0.11) | -0.07 (0.11) | -0.01 (0.11) | -0.21* (0.11) |
| = Min. or other pub. body at sub.level | -0.11 (0.11) | 0.10 (0.12) | -0.08 (0.12) | -0.21 (0.11) | 0.21 (0.11) |
| = Other | 0.11 (0.23) | -0.24 (0.24) | -0.20 (0.24) | -0.37 (0.23) | -0.06 (0.24) |
| Organizational size ³ =100-999 | 0.14* (0.06) | -0.05 (0.06) | 0.04 (0.06) | 0.22*** (0.06) | 0.08 (0.06) |
| =over 1000 | 0.16* (0.07) | -0.14 (0.07) | 0.11 (0.07) | 0.33*** (0.07) | 0.21** (0.07) |
| Respondent's position ⁴ =Second hierarchical level in org. | -0.13* (0.06) | -0.09 (0.07) | -0.12 (0.07) | -0.19** (0.06) | -0.08 (0.06) |
| =Third hierarchical level in organisatio | -0.10 (0.07) | -0.13 (0.07) | -0.12 (0.07) | -0.28*** (0.07) | -0.20** (0.07) |
| Age ⁵ =46-55 | 0.31*** (0.07) | 0.05 (0.07) | 0.04 (0.07) | 0.10 (0.07) | 0.10 (0.07) |
| =56 or older | 0.35*** (0.08) | 0.18* (0.08) | 0.19* (0.08) | 0.14 (0.08) | 0.11 (0.08) |
| Public sector experience ⁶ =10-20years | -0.18* (0.07) | 0.09 (0.08) | -0.13 (0.08) | -0.09 (0.07) | -0.13 (0.07) |
| =More than 20 years | -0.23** (0.09) | 0.07 (0.09) | -0.10 (0.09) | -0.23** (0.09) | -0.15 (0.09) |
| Private sector experience ⁷ =Less than 5 years | -0.01 (0.06) | 0.12* (0.06) | 0.05 (0.06) | 0.01 (0.06) | 0.15* (0.06) |
| =More than 5 years | 0.04 (0.08) | 0.02 (0.08) | 0.35*** (0.08) | 0.12 (0.08) | 0.37*** (0.08) |
| Educational level ⁸ =master level | 0.06 (0.07) | 0.16* (0.07) | 0.14 (0.08) | 0.11 (0.07) | 0.04 (0.07) |
| =doctoral level | 0.25** (0.09) | 0.37*** (0.10) | 0.28** (0.10) | 0.21* (0.10) | 0.10 (0.09) |
| Job satisfaction | 0.01 (0.01) | 0.05*** (0.01) | 0.03*** (0.01) | 0.02* (0.01) | 0.01 (0.01) |
| Organizational goal clarity | -0.01 (0.01) | 0.04*** (0.01) | 0.02 (0.01) | 0.03** (0.01) | 0.01 (0.01) |
| Country level variance | 0.20** (0.07) | 0.16** (0.06) | 1.99** (0.64) | 0.61** (0.20) | 0.63** (0.21) |
| Number of individuals (level1) | 5,909 | 5,942 | 5,875 | 5,852 | 5,860 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

1: ref.=male executives, 2: ref.=Ministry at central gov't, 3: ref.<100, 4: ref.=top level in org., 5: ref.=45 or less, 6: ref.=less than 10 years,

7: ref.=none, 8: ref.=BA level

Estimation results of models with country-level variables are reported in table 4. Even after controlling for country factors, results of gender impacts do not change. Being a female manager is positively associated with motivations to achieve results and serve social interests, openness to new ideas, and willingness to change the current condition, and negatively correlated with risk taking. Most of the significant individual-level controls also hold statistical significance. As for the country-level factors, a professional bureaucracy (as opposed to a politicized one) is positively associated with motivation to achieve results ($p < 0.001$) and willingness to challenge the status quo ($p < 0.01$). Contrary to our expectation, the percent of women in the public sector is negatively associated with motivation to achieve results ($p < 0.001$).

TABLE 4, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS

| Independent variable | Result orientation | Societal interests | Openness to new ideas and creative solutions | Willingness to challenge the status quo | Willingness to take risks |
|---|--------------------|--------------------|--|---|---------------------------|
| | Model 1.1 | Model 2.1 | Model 3.1 | Model 4.1 | Model 5.1 |
| Independent variable | | | | | |
| Female executives ¹ | 0.22*** (0.05) | 0.34*** (0.05) | 0.14** (0.05) | 0.16** (0.05) | -0.11* (0.05) |
| Individual level controls | | | | | |
| Org. type ² = Agency/subordinate gov. body central gov. | -0.14* (0.06) | -0.11 (0.06) | -0.17** (0.06) | -0.18** (0.06) | 0.02 (0.06) |
| = Ministry at state/regional gov.level | -0.19 (0.10) | -0.12 (0.10) | -0.22* (0.10) | -0.10 (0.10) | -0.06 (0.10) |
| = Agency/subordinate gov. body at state/gov. | 0.22* (0.10) | 0.05 (0.11) | -0.06 (0.11) | 0.00 (0.11) | -0.21 (0.11) |
| = Min. or other pub. body at sub.level | -0.13 (0.11) | 0.10 (0.12) | -0.08 (0.12) | -0.22* (0.11) | 0.21 (0.11) |
| = Other | 0.11 (0.23) | -0.24 (0.24) | -0.20 (0.24) | -0.36 (0.23) | -0.06 (0.24) |
| Organizational size ³ =100-999 | 0.12* (0.06) | -0.04 (0.06) | 0.04 (0.06) | 0.22*** (0.06) | 0.08 (0.06) |
| =over 1000 | 0.15* (0.07) | -0.13 (0.07) | 0.11 (0.07) | 0.33*** (0.07) | 0.21** (0.07) |
| Respondent's position ⁴ =Second hierarchical level in org. | -0.12* (0.06) | -0.10 (0.07) | -0.12 (0.07) | -0.19** (0.06) | -0.08 (0.06) |
| =Third hierarchical level in organisatio | -0.10 (0.07) | -0.13 (0.07) | -0.12 (0.07) | -0.28*** (0.07) | -0.20** (0.07) |
| Age ⁵ =46-55 | 0.31*** (0.07) | 0.05 (0.07) | 0.04 (0.07) | 0.10 (0.07) | 0.10 (0.07) |
| =56 or older | 0.35*** (0.08) | 0.18* (0.08) | 0.19* (0.08) | 0.14 (0.08) | 0.10 (0.08) |
| Public sector experience ⁶ =10-20years | -0.17* (0.07) | 0.09 (0.08) | -0.13 (0.08) | -0.09 (0.07) | -0.14 (0.07) |
| =More than 20 years | -0.23** (0.08) | 0.08 (0.09) | -0.10 (0.09) | -0.23** (0.09) | -0.15 (0.09) |
| Private sector experience ⁷ =Less than 5 years | -0.01 (0.06) | 0.13* (0.06) | 0.05 (0.06) | 0.01 (0.06) | 0.15* (0.06) |
| =More than 5 years | 0.04 (0.08) | 0.03 (0.08) | 0.35*** (0.08) | 0.12 (0.08) | 0.37*** (0.08) |
| Educational level ⁸ =master level | 0.07 (0.07) | 0.16* (0.07) | 0.14 (0.08) | 0.11 (0.07) | 0.04 (0.07) |
| =doctoral level | 0.25*** (0.09) | 0.37*** (0.10) | 0.28** (0.10) | 0.22* (0.10) | 0.10 (0.09) |
| Job satisfaction | 0.01 (0.01) | 0.05*** (0.01) | 0.03*** (0.01) | 0.02* (0.01) | 0.01 (0.01) |
| Organizational goal clarity | -0.01 (0.01) | 0.04*** (0.01) | 0.02 (0.01) | 0.03** (0.01) | 0.01 (0.01) |
| Country level controls | | | | | |
| Professional bureaucracies | 0.04** (0.01) | -0.03 (0.03) | 0.13 (0.09) | 0.10* (0.04) | 0.09 (0.05) |
| Closed bureaucracies | 0.00 (0.03) | 0.02 (0.04) | 0.05 (0.14) | -0.12 (0.07) | -0.04 (0.08) |
| Women in the public sector | -0.06*** (0.01) | 0.00 (0.02) | 0.02 (0.06) | -0.03 (0.03) | -0.02 (0.03) |
| Country level variance | 0.04* (0.02) | 0.14** (0.05) | 1.77** (0.57) | 0.40** (0.13) | 0.52** (0.17) |
| Number of individuals (level1) | 5,909 | 5,942 | 5,875 | 5,852 | 5,860 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

1: ref.=male executives, 2: ref.=Ministry at central gov't, 3: ref.<100, 4: ref.=top level in org., 5: ref.=45 or less, 6: ref.=less than 10 years,

7: ref.=none, 8: ref.=BA level

Since multilevel ordered logit coefficients are difficult to directly interpret, we calculated the predicted probabilities and marginal effects of gender for each of the five values of the dependent variables. Tables 5–9 report predicted probabilities of all responses for five dependent variables. Table 5 reports predicted probabilities of seven outcomes for motivation to achieve results. Holding other factors at the mean, almost 49.2% of female senior managers say that they are willing to achieve results rather than follow rules (responses “5,” “6,” and “7”), compared to 44% of male senior managers. On the other hand, 28.4% of female managers report that they have a priority for following rules (responses “1,” “2,” and “3”), while

32.8% of male managers do so. All of these results are statistically significant. Results suggest that female senior managers are more likely to put priority on achieving results rather than following rules compared to male counterparts. Table 6 reports predicted probability of motivation to serve social interests. When all other things are equal, 93.2% of female senior managers have high motivation to serve societal interests (responses “5,” “6,” and “7”), compared to 90.6% of male managers. Thus, results suggest that a higher percentage of female managers are more likely to report that they want to do something good for society than male counterparts. Table 7 shows predicted probability of openness to new ideas and creative solutions by gender: 81.4% of senior female managers report they agree with the importance of openness to new ideas (responses “5,” “6,” and “7”) compared to 79.9% of male senior managers, holding other factors at the mean. These results are also statistically significant. Table 8 reports that 74.7% of female senior managers say that they have greater willingness to challenge the status quo (responses “5,” “6,” and “7”) compared to 72.1% of male senior managers, holding other factors constant. Results suggest that more female managers exhibit willingness to change the current situation than male counterparts. Finally, table 9 shows predicted probability of risk taking. While 52.9% of male senior managers show agreement with risk taking (responses “5,” “6,” and “7”), 50.5% of female managers say that they are willing to take risks, holding other factors at the mean.

TABLE 5, PREDICTED PROBABILITY OF PREFERENCE FOR ACHIEVING RESULTS BY GENDER

| | | Following rules | | | | | Achieving results | |
|--------|-----------------------|-----------------|-------|-------|-------|-------|-------------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.090 | 0.123 | 0.115 | 0.232 | 0.190 | 0.168 | 0.082 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.074 | 0.106 | 0.104 | 0.225 | 0.200 | 0.192 | 0.100 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 1.1 in table 4

TABLE 6, PREDICTED PROBABILITY OF PREFERENCE FOR DOING SOMETHING USEFUL TO SOCIETY BY GENDER

| | | Not important at all | | | | Very important | | |
|--------|-----------------------|----------------------|-------|-------|-------|----------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.004 | 0.009 | 0.019 | 0.061 | 0.174 | 0.369 | 0.363 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.003 | 0.006 | 0.014 | 0.045 | 0.140 | 0.351 | 0.441 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 2.1 in table 4

TABLE 7, PREDICTED PROBABILITY OF OPENNESS TO NEW IDEAS AND CREATIVE SOLUTIONS BY GENDER

| | | Strongly disagree | | | | Strongly agree | | |
|--------|-----------------------|-------------------|-------|-------|-------|----------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.021 | 0.035 | 0.046 | 0.099 | 0.184 | 0.275 | 0.340 |
| | p-value | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.019 | 0.031 | 0.042 | 0.092 | 0.176 | 0.275 | 0.363 |
| | p-value | 0.009 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 3.1 in table 4

TABLE 8, PREDICTED PROBABILITY OF WILLINGNESS TO CHALLENGE THE STATUS QUO BY GENDER

| | | Strongly disagree | | | | Strongly agree | | |
|--------|-----------------------|-------------------|-------|-------|-------|----------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.033 | 0.066 | 0.075 | 0.105 | 0.182 | 0.299 | 0.240 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.029 | 0.058 | 0.068 | 0.097 | 0.175 | 0.306 | 0.266 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 4.1 in table 4

TABLE 9, PREDICTED PROBABILITY OF WILLINGNESS TO TAKE RISKS BY GENDER

| | | Strongly disagree | | | | Strongly agree | | |
|--------|------------------------------------|-------------------|-------|-------|-------|----------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability ¹ | 0.038 | 0.086 | 0.132 | 0.215 | 0.249 | 0.200 | 0.080 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.042 | 0.093 | 0.139 | 0.220 | 0.244 | 0.188 | 0.073 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 5.1 in table 4

Tables 10–14 report average marginal effects of being a female manager on each outcome of the dependent variables. According to table 10, consistent with the earlier result, female managers are 5.2 percentage points more likely than male counterparts to think that achieving results is important. Table 11 suggests that female managers are 2.5 percentage points more likely to say that serving social interests is important compared with male managers. Table 12 shows that results of outcome “6” is not statistically significant ($p = 0.858$). However, female managers are 2.4 percentage points more likely than male managers to strongly agree with openness to new ideas and creative solutions (outcome “7”). Table 13 shows that female managers are 2.6 percentage points more likely to think that challenging the status quo is important. Finally, according to table 14, female managers are 2.2 percentage points less likely to take

risks compared to male senior managers. In summary, although the sizes of marginal effects of gender on the dependent variables are relatively small, results provide statistically significant evidence to support our hypotheses. Figures 1–5 plot the predicted probabilities of all dependent variables for a visualization purpose.

TABLE 10, MARGINAL EFFECT OF GENDER ON THE PREDICTED PROBABILITY OF PREFERENCE FOR ACHIEVING RESULTS

| | Following rules | | | | | Achieving results | |
|-----------------|-----------------|--------|--------|--------|-------|-------------------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect | -0.016 | -0.017 | -0.011 | -0.007 | 0.01 | 0.024 | 0.018 |
| p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Marginal effect is calculated based on model 1.1 in table 4

TABLE 11, MARGINAL EFFECT OF GENDER ON THE PREDICTED PROBABILITY OF PREFERENCE FOR DOING SOMETHING USEFUL TO SOCIETY

| | Not important at all | | | | | Very important | |
|-----------------|----------------------|--------|--------|--------|--------|----------------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect | -0.001 | -0.003 | -0.005 | -0.016 | -0.034 | -0.019 | 0.078 |
| p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Marginal effect is calculated based on model 2.1 in table 4

TABLE 12, MARGINAL EFFECT OF GENDER ON THE PREDICTED PROBABILITY OF OPENNESS TO NEW IDEAS AND CREATIVE SOLUTIONS

| | Strongly disagree | | | | | Strongly agree | |
|-----------------|-------------------|--------|--------|--------|--------|----------------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect | -0.003 | -0.004 | -0.004 | -0.007 | -0.007 | 0.000 | 0.024 |
| p-value | 0.040 | 0.016 | 0.011 | 0.010 | 0.022 | 0.858 | 0.008 |

1: Marginal effect is calculated based on model 3.1 in table 4

TABLE 13, MARGINAL EFFECT OF GENDER ON THE PREDICTED PROBABILITY OF CHALLENGING THE STATUS QUO

| | Strongly disagree | | | | | Strongly agree | |
|-----------------|-------------------|--------|--------|--------|--------|----------------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect | -0.005 | -0.008 | -0.007 | -0.008 | -0.007 | 0.007 | 0.026 |
| p-value | 0.005 | 0.003 | 0.002 | 0.003 | 0.009 | 0.018 | 0.002 |

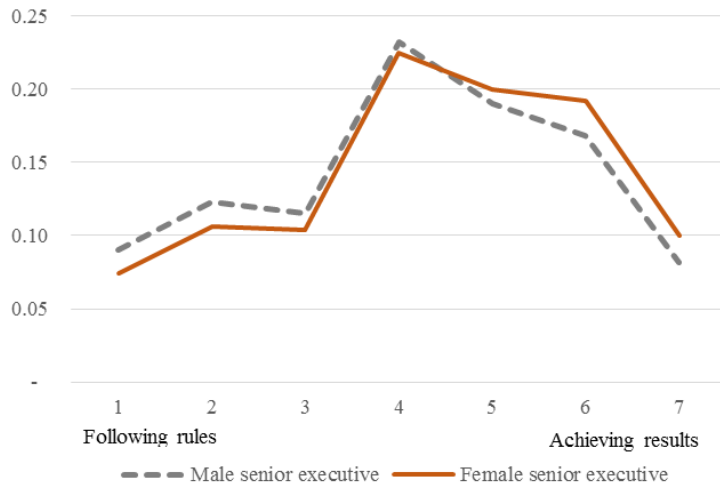
1: Marginal effect is calculated based on model 4.1 in table 4

TABLE 14, MARGINAL EFFECT OF GENDER ON THE PREDICTED PROBABILITY OF WILLINGNESS TO TAKE RISKS

| | Strongly disagree | | | | | Strongly agree | |
|------------------------------|-------------------|-------|-------|-------|--------|----------------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect ¹ | 0.004 | 0.007 | 0.007 | 0.005 | -0.004 | -0.011 | -0.007 |
| p-value | 0.048 | 0.039 | 0.037 | 0.058 | 0.081 | 0.036 | 0.040 |

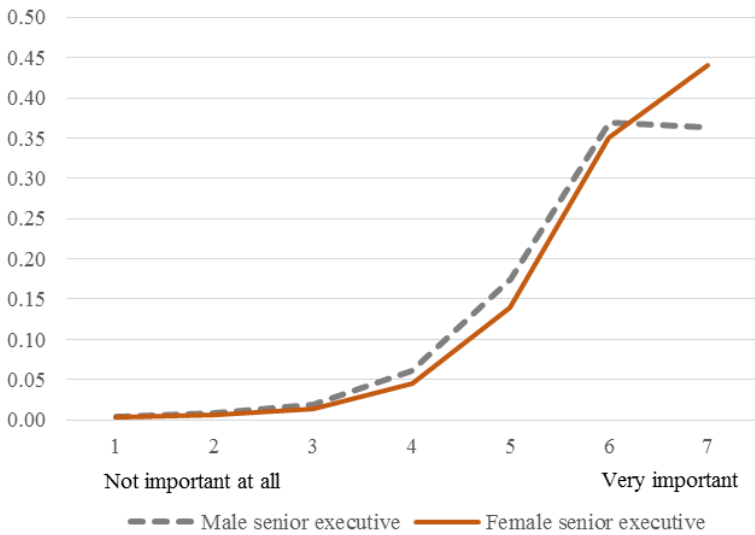
1: Marginal effect is calculated based on model 5.1 in table 4

FIGURE 1, PREDICTED PROBABILITY OF PREFERENCE FOR ACHIEVING RESULTS BY GENDER



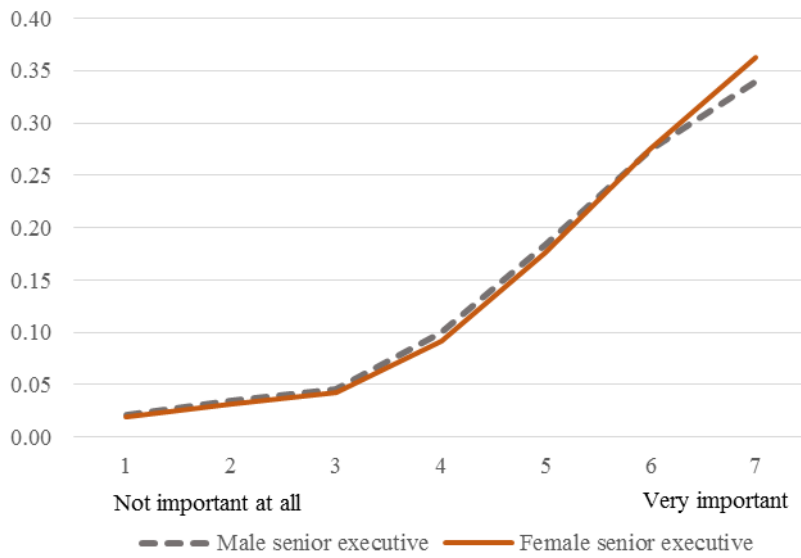
Predicted probability is calculated based on model 1.1 in table 4

FIGURE 2, PREDICTED PROBABILITY OF PREFERENCE FOR DOING SOMETHING USEFUL TO SOCIETY BY GENDER



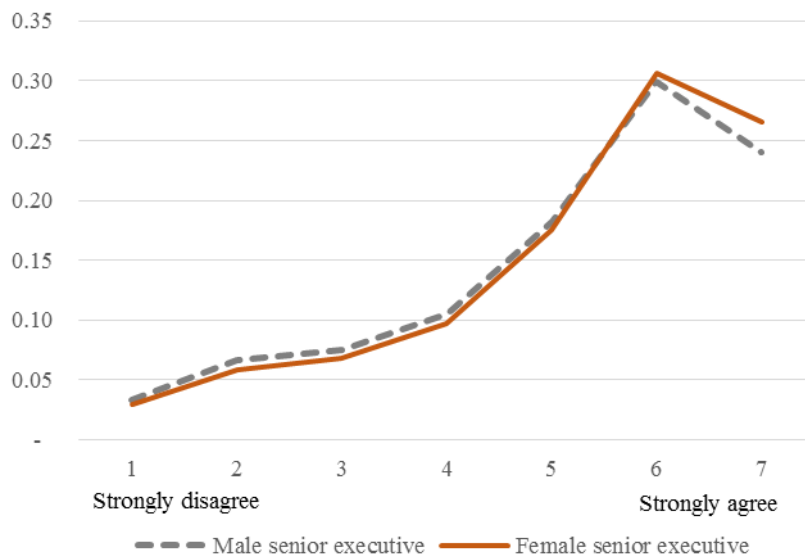
Predicted probability is calculated based on model 2.1 in table 4

FIGURE 3, PREDICTED PROBABILITY OF OPENNESS TO NEW IDEAS AND CREATIVE SOLUTIONS BY GENDER



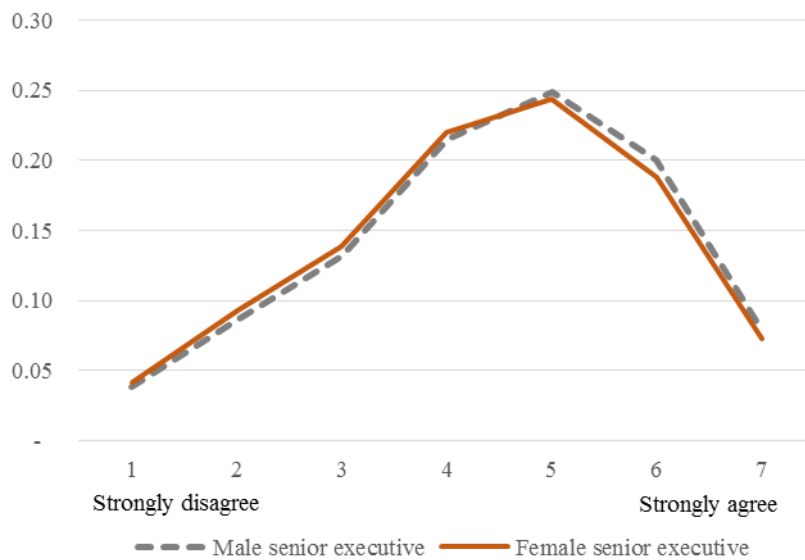
Predicted probability is calculated based on model 3.1 in table 4

FIGURE 4, PREDICTED PROBABILITY OF WILLINGNESS TO CHALLENGE THE STATUS QUO BY GENDER



Predicted probability is calculated based on model 4.1 in table 4

FIGURE 5, PREDICTED PROBABILITY OF WILLINGNESS TO TAKE RISKS BY GENDER



Predicted probability is calculated based on model 5.1 in table 4

Results of robustness check models are reported in the appendix. Overall, results of our robustness check models provide further support for our findings.

Conclusions

If research on gender differences in the public sector only explores the direct effect of gender, it may fall in to “a myriad of stereotypes and generalizations” (Jacobson et al. 2010, 478). Many studies have noted the importance of contextual factors and interactions (Sowa and Selden 2003). This paper contributes to this literature by expanding the analysis of gender with a large interorganizational, cross-country data set, in which the gender variable has been subject to a stringent set of demographic, organizational, national, and (administrative) cultural controls. The inclusion of these additional variables in a large-N sample allows for a better, more nuanced, understanding of the role of gender in public administrations and particularly for public innovation.

Like in previous encompassing studies we find the effect of gender to be more complex than conventional stereotypes (Jacobson et al. 2010), and the simple views held by the advocates of gender differences or similarities (Eagly and Johannesen-Schmidt 2001, Esteve et al. 2012) do not have empirical support.

In short, we find that gender affects the innovative-oriented culture in public organizations that, in turn, may foster the implementation of public innovation reforms, as the literature has previously shown (Brettel and Cleven 2011; Vigoda-Gadot 2009 Laegred, Roness, and Verhoest 2011; Wynen et al. 2014).

Ceteris paribus, female public managers exhibit more pro-innovation attitudes than their male counterparts, but with some caveats.

First of all, the results are consistently statistically significant all throughout the models, even after controlling for a large number of demographic, organizational, and yet the effects are not substantially very relevant. For instance, holding other factors constant, being a female leader increases 5.2 percentage points for result orientation, 2.5 percentage points for serving social interests, 2.4 percentage points for openness to new ideas and creativity, and 2.6 percentage points for challenging the current condition. On the other hand, being a female manager decreases 2.2 percentage points for risk-taking attitudes. Nevertheless, two of the three main results go against the conventional view of gender differences – i.e. that female managers are less motivated to achieve results (and more to follow rules); and that female managers may be less policy entrepreneurial, open to new ideas and creativity, and willing to challenge the status quo. We show that, even if the effects are not large, they go exactly in the opposite direction – and they are consistently significant. Female senior managers are more likely than male senior managers to exhibit motivation to achieve results (rather than follow rules), serve social interests, be open to new ideas and creativity, willing to change the status quo, and be risk averse.

Additionally, there is the question that gender may matter only in specific contexts. To rule out this possibility, we have tested various interactions with gender variables by adding interaction terms between gender and individual- and country-level variables. Such country-level variables include gender representation in the public sector, professional bureaucracy, and closed/open bureaucracy, and individual-level factors include the respondent's position, organizational size, private sector experience, job autonomy, organizational commitment, and educational background. However, we did not find any meaningful interaction effects. Thus, in light of the data analyzed here, we can conclude that gender exerts a direct, significant and robust, effect on different dependent variables linked to public sector innovation, and that this effect is not mediated by other variables.

Regarding the implications of this paper, our results seem to complement Bratton and Ray's (2002) finding that gender representation – measured by the proportion of women elected to municipal councils in Norway – had the greatest effect on policy outcomes (i.e. the coverage of child-care services) during periods of policy innovation. The reason why women have an especially strong impact when governments engage in innovation may be due, as this paper indicates and against a conventional view of women as being less entrepreneurial than men, to the fact that female leaders actually generate a more innovative-oriented culture than their male counterparts.

Our study is not without limitations. First, this study has the same limitation as other previous studies using survey data from public officials. First, this study relies on self-reported variables, which potentially cause a social desirability bias (Jakobsen and Jensen 2015, Meier and O'Toole 2012, Paulhus 1991). The

COCOPS data set implemented the cleaning procedure of dropping all respondents who answered less than 25% of all survey items to reduce respondent bias. However, we cannot exclude the possibility that respondents' self-assessment has an upward bias. In addition, common method bias can be an issue (Jakobsen and Jensen 2015). Another shortcoming is a lack of longitudinal data. Without such data, we are not able to assess socialization effects on gender-based attitudes and behavior (Quintelier 2013). In male-dominant cultures, female senior managers may face pressure to behave like male counterparts, which may suppress the expected effects of gender on attitudes. We controlled for the country level of female representation and cultural values as well as age and working years in the public sector. However, without longitudinal data, we are not able to measure socialization effects on gender differences in behavior. Being aware of these limitations, nonetheless this study contributes to the understanding of a link between gender and innovative behavior by providing evidence from analysis of 5,909 senior public managers in 20 countries. As the large-scale data collection on comparative bureaucratic behavior is still in its infancy (Van de Walle et al. 2016), future study should undertake the above tasks as data becomes available.

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Appendix: Data Sets, Independent Variables, and Control Variables (not for publication)

The COCOPS Executive Survey took place between 2012 and 2015 as part of the COCOPS project. The goal of the project was to conduct cross-national and quantitative assessment of the impact of New Public Management-style reforms in European countries (Hammerschmid, Oprisor, and Štimac 2015). In particular, the survey aimed at capturing experiences and perceptions of public sector executives regarding the current status of management, coordination, and administrative reforms, the effects of NPM-style reforms on performance, and the impact of the financial crisis. The survey was jointly designed and developed by a cross-national team of public administration researchers. One of the notable features of the survey is that it represents a full census of all central government ministries and agencies and relevant regional and state government ministries in the target countries in order to avoid random sampling and response bias issues. The survey was sent to all defined high-level public sector senior executives.² The survey targeted 36,892 senior-level managers from 21 countries (Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Serbia, Spain, Sweden, and the United Kingdom). Poland is dropped from our sample due to missing data, which results in 20 countries in our sample. The final valid response after the data cleaning procedure was 9,333 and the response rate was 25.3%. The response rate is satisfactory compared with other executive surveys in public administration.

We control for individual-level factors that may affect individual attitudes toward innovation: organizational type, organizational size, respondent's current position, age, public sector experience, educational level, job satisfaction, organizational goal clarity, job autonomy, degree of political interference, organizational social capital, and respondent's organizational commitment. The latter four variables are included in our robustness check models. The job satisfaction index is composed as an additive index from the question, "[w]hen thinking about my work and the organization I work for," where respondents are asked to select one from 1 (strongly disagree) to 7 (strongly agree) for the following items: "I get a sense of satisfaction from my work," "I feel valued for the work I do," and "I would recommend it as a good place to work." The resulting index shows one's level of job satisfaction ranging from 3 to 21. Higher values mean more job satisfaction. We expect that a person with higher level of job satisfaction is more likely to be innovative than those with low job satisfaction. Organizational goal clarity is composed as an additive index from the question, "[t]o what extent do the following statements apply to your organization?" Likewise, respondents are asked to select from

² Within the central government ministries, public officials in two top-administrative levels are included in the target. Within central government agencies, the first two executive levels are targeted. State-owned enterprises and audit courts are excluded. Appropriate regional and state government ministries and agencies are included in order to maximize the number of senior executives reached. However, local government bodies and local service delivery organizations are not included (Hammerschmid, Oprisor, and Štimac 2015).

1 (strongly disagree) to 7 (strongly agree) regarding the following items: “[o]ur goals are clearly stated” and “[o]ur goals are communicated to all staff.” Higher values indicate that the organization that a respondent works for has a higher level of organizational goal clarity. We use this variable because we expect that the goal clarity/ambiguity of an organization may affect one’s level of innovativeness. Job autonomy is an additive index composed from the survey question, which asks, “[i]n my opinion, I have the following degree of decision autonomy with regard to.” Respondents are asked to select one from a scale of 1 (very low autonomy) to 7 (very high autonomy) for the following eight items: budget allocation, contracting out services, promoting staff, hiring staff, dismissing or removing staff, changes in the structure of my organization, policy choice and design, and policy implementation. We constructed an additive index for job autonomy, which ranges from 8 to 56. Cronbach’s alpha is 0.84, which shows a high degree of internal consistency. We expect that someone with higher levels of job autonomy is likely to be more innovative than those with low levels of job autonomy. We used the following survey item for the political interference variable: “In my organisation politicians interfere in routine activities”. Respondents are asked to select one from 1 (strongly disagree) to 7 (strongly agree). We expect that higher level of political interference in administration deters managers from being innovative. Organizational social capital is an additive index composed from nine survey items concerning communication style and teamwork in respondent’s organization. The variable ranges from 9 to 63. Cronbach’s alpha is 0.94. We expect that higher levels of organizational social capital encourages innovative attitudes. Finally, the organizational commitment variable is mean values of eight survey items with respect to respondent’s organizational commitment. The variable ranges from 1 to 7. Cronbach’s alpha is 0.72.

We also control for country-level variables that may affect respondent’s level of innovative attitudes. They include bureaucratic structures (professionalism of bureaucracy and bureaucratic closedness), women representation in the public sector, gender inequality, country level innovation, and three national cultural factors from Hofstede’s dimension of cultural values (Hofstede, Hofstede, and Minkov 2010), namely power distance, individualism-collectivism, and uncertainty avoidance. Due to the small sample size at the country level, we do not include all these factors in a single model (Stegmueller 2013). Thus, each of the latter five variables is included separately in our robustness check models. We include professionalism of bureaucracy and bureaucratic closedness as we expect that these are significant variables that may affect public sector managers’ attitudes toward innovation. These two variables are constructed from the QoG Expert Survey. The QoG Expert Survey provides a quantitative assessment of Weberian bureaucracy, which has been empirically overlooked (Dahlström, Lapuente, and Teorell 2010). The survey was designed based on pioneering work on mapping the bureaucratic structure in 35 less-developed countries by Peter Evans and James Rauch (Rauch and Evans 2000, Evans and Rauch 1999). The Expert Survey II data was collected from survey responses from 1,294 country experts covering 159 countries. The survey asks for expert perceptions of the

current status and characteristics of a country's public bureaucracy. Bureaucratic professionalism is composed from the following four questions: (1) "When recruiting public sector employees, the skills and merits of the applicants decide who gets the job"; (2) "When recruiting public sector employees, the political connections of the applicants decide who gets the job"; (3) "The top political leadership hires and fires senior public officials"; and (4) "Senior public officials are recruited from within the ranks of the public sector." Respondents are asked to select a scale from 1 (hardly ever) to 7 (almost always). The data set reverses the scale of the second and third questions, therefore higher values mean more professionalism. The professional bureaucracy index is constructed as an additive index by running principal component analysis. Cronbach's alpha is 0.91, which shows a high level of internal consistency (reliability) among selected items. The professional bureaucracy index ranges from 11.67 to 24.64. Higher values of the bureaucratic professionalism index indicate more professional-oriented bureaucrats rather than politicized ones. Conversely, lower values of the index mean bureaucratic structures where hiring and promotions are made based on political connections. The indicator of bureaucratic closedness/openness is based on the following three questions: (1) "Public sector employees are hired via a formal examination system"; (2) "Once one is recruited as a public sector employee, one remains a public sector employee for the rest of one's career"; and (3) "The terms of employment for public sector employees are regulated by special laws that do not apply to private sector employees." Survey respondents were asked to select from 1 (hardly ever) to 7 (almost always). Thus, higher values indicate more closed bureaucracy in terms of recruitment and promotion of the public sector employees. In the closed bureaucratic system, as opposed to the open one, the recruitment tool for the public sector is mainly restricted to a formal meritocratic examination system. Promotion is done mainly internally and bureaucrats enjoy lifetime tenure protection. The additive index for bureaucratic closedness is based on the above three questions by running principal component analysis. Cronbach's alpha is 0.75, which passes acceptable criteria. We expect that a competitive job market for public managers (i.e. with low politicization and openness) provides the extrinsic motivation for innovation. We also control for levels of gender representation at the national level using two different variables, percent of women in the public sector and gender inequality index. We expect that country levels of female representation as well as gender equality affects individual level gender-based attitudes. Percent of women in the public sector is from the QoG Expert Survey and gender inequality index is from UNdata. We also include national level of innovation as it may also affect individual-level attitudes pertaining to innovation. The variable is measured by average values of two innovation outputs indicators: knowledge and technology output and creative output. This variable is from the database GII. Finally, we also control for cultural factors as previous studies suggest a link between cultural factors and levels of innovation at country level (Rinne, Steel, and Fairweather 2012, Shane 1993, Waarts and Van Everdingen 2005). We control for power distance (low: small distance - high: large distance) individualism-collectivism (low: collectivism- high: individualism), and uncertainty avoidance (low: uncertainty tolerant – high: uncertainty avoidance).

-Robustness check strategies and results

We check the robustness of the findings through the following. First, we add different control variables to our main models (models 1.1–5.1 in table 4). These additional variables include job autonomy, political interference, organizational social capital, and respondent’s organizational commitment (models 1.2–5.5 in table A1 in the appendix). Second, we also rerun the same models but use different country-level controls (gender inequality, country level of innovation, and three national cultural dimensions) (models 1.6–5.10 in table A2). Third, we divide our sample into two groups depending on the respondent’s position: (1) top hierarchical level managers and (2) second and third hierarchical level managers and rerun the same models (tables A3 and A4 in the appendix). Even though the survey targets top executives, not street-level bureaucrats, gender-based attitudes towards innovation might differ depending on the respondent’s position. Finally, we use two alternative dependent variables for the first and second dependent variables (achieving results and doing something useful for society). The COCOPS survey includes the following survey item for result orientation and societal interest: “I mainly understand my role as public sector executive as... ‘achieving results’ and ‘providing a voice for societal interests’.” Respondents are asked to select one from 1 (strongly disagree) to 7 (strongly agree) for each item. We rerun the same models using these two alternative dependent variables for the first two dependent variables (table A5 in the appendix).

Table A1 reports results of models with additional individual-level controls (job autonomy, political interference, organizational social capital, and organizational commitment) on our main models (models 1.1–5.1). The gender variable lost statistical significance for risk taking when we added job autonomy and political interference variables. However, coefficients of the gender variable in other models do not significantly change and provide consistent results with the findings in our main models. When we test models with additional country-level variables (gender inequality, country-level innovation, and cultural factors: power distance, individualism, and uncertainty avoidance), the coefficients of the gender variable on all dependent variables do not change significantly, showing robustness of our results. Table A5 reports models with alternative dependent variables for the motivation to achieve results and serve social interests. Results also confirm that being a female manager is positively associated with result orientation and social interests regardless of slight changes in the wording of survey items. We also test robustness of our results by dividing our sample to two groups: (1) top hierarchical level managers and (2) second and third hierarchical level managers. We do this to see if the gender-innovative attitudes’ link appears regardless of positions in an organization. Estimation results only with the top level sample show similar effects of gender except risk taking. Coefficients of gender on motivation for results achievement, serve social interests, openness to new ideas, and willingness to challenge the status quo are higher among top level female officials compared to models with the entire sample (table A3). Table A4 reports results using only second and third hierarchical level senior managers. Openness to new ideas and willingness to challenge the status

quo are no longer significant in this limited sample. However, coefficients of gender on result orientation, societal interests, and risk taking are statistically significant. Magnitudes of gender coefficients are slightly reduced for result orientation and societal interests and are increased in risk taking among the second and third level manager sample. It is premature to conclude how a respondent's position also mediates a link between gender and our dependent variables with this analysis. In addition, small sample size may have affected our findings. However, results suggest that gender is associated with innovative attitudes even when we limit our sample based on position.

TABLE A1, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ADDITIONAL INDIVIDUAL LEVEL CONTROLS

| | Result orientation | | | | Societal interests | | | Openness to new ideas and creative solutions | | | | |
|---|--------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|--|-------------------|------------------|------------------|------------------|
| | Model 1.2 | Model 1.3 | Model 1.4 | Model 1.5 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 | Model 3.2 | Model 3.3 | Model 3.4 | Model 3.5 |
| Independent variable | | | | | | | | | | | | |
| Female executives (ref.=male executives) | 0.27*** (0.05) | 0.24*** (0.05) | 0.22*** (0.05) | 0.21*** (0.05) | 0.36*** (0.05) | 0.35*** (0.05) | 0.36*** (0.05) | 0.36*** (0.05) | 0.17** (0.05) | 0.13* (0.05) | 0.14** (0.05) | 0.14** (0.05) |
| Additional individual level controls | | | | | | | | | | | | |
| Job autonomy | 0.01*** (0.00) | | | | 0.00 (0.00) | | | | 0.02*** (0.00) | | | |
| political interference | | 0.03* (0.01) | | | | -0.01 (0.01) | | | | 0.02 (0.01) | | |
| Organizational social capital | | | -0.00 (0.00) | | | | 0.01*** (0.00) | | | | 0.00 (0.00) | |
| Organizational commitment | | | | -0.08* (0.03) | | | | 0.19*** (0.03) | | | | -0.03 (0.03) |
| Individual level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level variance | 0.05* (0.02) | 0.04* (0.02) | 0.04* (0.02) | 0.04* (0.02) | 0.14** (0.05) | 0.15** (0.05) | 0.14** (0.05) | 0.14** (0.05) | 1.76** (0.57) | 1.79** (0.58) | 1.80** (0.58) | 1.77** (0.57) |
| Number of individuals (level1) | 5,503 | 5,519 | 5,730 | 5,909 | 5,534 | 5,552 | 5,763 | 5,942 | 5,477 | 5,498 | 5,700 | 5,875 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

TABLE A1, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ADDITIONAL INDIVIDUAL LEVEL CONTROLS (CONTINUED)

| | Willingness to challenge the status quo | | | | Willingness to take risks | | | |
|---|---|-------------------|-------------------|--------------------|---------------------------|-------------------|------------------|-------------------|
| | Model 4.2 | Model 4.3 | Model 4.4 | Model 4.5 | Model 5.2 | Model 5.3 | Model 5.4 | Model 5.5 |
| Independent variable | | | | | | | | |
| Female executives (ref.=male executives) | 0.14** (0.05) | 0.17*** (0.05) | 0.17*** (0.05) | 0.12* (0.05) | -0.05 (0.05) | -0.08 (0.05) | -0.11* (0.05) | -0.12* (0.05) |
| Additional individual level controls | | | | | | | | |
| Job autonomy | 0.01* (0.00) | | | | 0.02*** (0.00) | | | |
| political interference | | -0.02 (0.01) | | | | 0.05*** (0.01) | | |
| Organizational social capital | | | -0.00 (0.00) | | | | -0.00 (0.00) | |
| Organizational commitment | | | | -0.28*** (0.03) | | | | -0.11** (0.03) |
| Individual level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level variance | 0.39** (0.13) | 0.39** (0.13) | 0.38** (0.13) | 0.39** (0.13) | 0.58** (0.19) | 0.51** (0.17) | 0.52** (0.17) | 0.53** (0.17) |
| Number of individuals (level1) | 5,455 | 5,484 | 5,676 | 5,852 | 5,461 | 5,490 | 5,685 | 5,860 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

TABLE A2, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ADDITIONAL COUNTRY LEVEL CONTROLS

| | Result orientation | | | | | Societal interests | | | | |
|--|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------------|-------------------|
| | Model 1.6 | Model 1.7 | Model 1.8 | Model 1.9 | Model 1.10 | Model 2.6 | Model 2.7 | Model 2.8 | Model 2.9 | Model 2.10 |
| Independent variable | | | | | | | | | | |
| Female executives (ref.=male executives) | 0.22*** (0.05) | 0.22*** (0.05) | 0.23*** (0.05) | 0.23*** (0.05) | 0.23*** (0.05) | 0.34*** (0.05) | 0.34*** (0.05) | 0.34*** (0.05) | 0.34*** (0.05) | 0.34*** (0.05) |
| Additional country level controls | | | | | | | | | | |
| Gender inequality | 0.14 (2.44) | | | | | 0.20 (2.44) | | | | |
| Country level innovation | | 0.03 (0.02) | | | | | -0.02 (0.02) | | | |
| Culture: power distance | | | -0.01 (0.01) | | | | | 0.02** (0.01) | | |
| Culture: individualism | | | | 0.01 (0.01) | | | | | -0.01 (0.01) | |
| Culture: uncertainty avoidance | | | | | -0.01 (0.01) | | | | | 0.02* (0.01) |
| Individual level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level variance | 0.15** (0.06) | 0.13** (0.05) | 0.13* (0.05) | 0.14** (0.05) | 0.13** (0.05) | 0.14** (0.05) | 0.13** (0.05) | 0.09** (0.04) | 0.14** (0.05) | 0.12** (0.04) |
| Number of individuals (level1) | 5,909 | 5,909 | 5,758 | 5,758 | 5,758 | 5,942 | 5,942 | 5,789 | 5,789 | 5,789 |
| Number of countries (level2) | 20 | 20 | 19 | 19 | 19 | 20 | 20 | 19 | 19 | 19 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

TABLE A2, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ADDITIONAL COUNTRY LEVEL CONTROLS (CONTINUED)

| | Openness to new ideas and creative solutions | | | | | Willingness to challenge the status quo | | | | |
|--|--|------------------|------------------|--------------------|------------------|---|------------------|-------------------|--------------------|-------------------|
| | Model 3.6 | Model 3.7 | Model 3.8 | Model 3.9 | Model 3.10 | Model 4.6 | Model 4.7 | Model 4.8 | Model 4.9 | Model 4.10 |
| Independent variable | | | | | | | | | | |
| Female executives (ref.=male executives) | 0.14** (0.05) | 0.14** (0.05) | 0.15** (0.05) | 0.15** (0.05) | 0.15** (0.05) | 0.16** (0.05) | 0.15** (0.05) | 0.17*** (0.05) | 0.17** (0.05) | 0.17*** (0.05) |
| Additional country level controls | | | | | | | | | | |
| Gender inequality | 0.16 (7.90) | | | | | -0.83 (3.95) | | | | |
| Country level innovation | | -0.05 (0.07) | | | | | -0.01 (0.03) | | | |
| Culture: power distance | | | 0.03 (0.02) | | | | | 0.02 (0.01) | | |
| Culture: individualism | | | | -0.06*** (0.02) | | | | | -0.03*** (0.01) | |
| Culture: uncertainty avoidance | | | | | 0.04 (0.03) | | | | | 0.00 (0.01) |
| Individual level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country level variance | 1.78** (0.57) | 1.74** (0.56) | 1.61** (0.53) | 0.92** (0.31) | 1.58** (0.52) | 0.43** (0.14) | 0.42** (0.14) | 0.35** (0.12) | 0.24** (0.09) | 0.40** (0.14) |
| Number of individuals (level1) | 5,875 | 5,875 | 5,725 | 5,725 | 5,725 | 5,852 | 5,852 | 5,700 | 5,700 | 5,700 |
| Number of countries (level2) | 20 | 20 | 19 | 19 | 19 | 20 | 20 | 19 | 19 | 19 |

Standard errors in parentheses
 *** p<0.001, ** p<0.01, * p<0.05

TABLE A2, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ADDITIONAL COUNTRY LEVEL CONTROLS (CONTINUED)

| | Willingness to take risks | | | | |
|--|---------------------------|-----------|-----------|-----------|------------|
| | Model 5.6 | Model 5.7 | Model 5.8 | Model 5.9 | Model 5.10 |
| Independent variable | | | | | |
| Female executives (ref.=male executives) | -0.11* | -0.11* | -0.11* | -0.11* | -0.11* |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) |
| Additional country level controls | | | | | |
| Gender inequality | 3.56 | | | | |
| | (4.29) | | | | |
| Country level innovation | | -0.02 | | | |
| | | (0.04) | | | |
| Culture: power distance | | | 0.01 | | |
| | | | (0.01) | | |
| Culture: individualism | | | | -0.02* | |
| | | | | (0.01) | |
| Culture: uncertainty avoidance | | | | | 0.04** |
| | | | | | (0.01) |
| Individual level controls | Yes | Yes | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | Yes |
| Country level variance | 0.51** | 0.52** | 0.53** | 0.44** | 0.37** |
| | (0.17) | (0.17) | (0.18) | (0.15) | (0.13) |
| Number of individuals (level1) | 5,860 | 5,860 | 5,710 | 5,710 | 5,710 |
| Number of countries (level2) | 20 | 20 | 19 | 19 | 19 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

TABLE A3, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES (ONLY TOP HIERARCHICAL LEVEL MANAGERS IN SAMPLE)

| | Result orientation | Societal interests | Openness to new ideas and creative solutions | Willingness to challenge the status quo | Willingness to take risks |
|--|--------------------|--------------------|--|---|---------------------------|
| | Model 1.11 | Model 2.11 | Model 3.11 | Model 4.11 | Model 5.11 |
| Independent variable | | | | | |
| Female executives ¹ | 0.43*** (0.11) | 0.43*** (0.12) | 0.27* (0.12) | 0.36** (0.12) | 0.13 (0.11) |
| Individual level controls | | | | | |
| Org. type ² = Agency/subordinate gov. body central gov. | 0.07 (0.14) | -0.24 (0.15) | -0.04 (0.15) | -0.08 (0.15) | 0.16 (0.14) |
| = Ministry at state/regional gov.level | -0.32 (0.21) | -0.06 (0.19) | -0.23 (0.20) | -0.20 (0.19) | -0.32 (0.19) |
| = Agency/subordinate gov. body at state/gov. | 0.48* (0.21) | -0.25 (0.23) | 0.01 (0.24) | -0.27 (0.23) | -0.03 (0.23) |
| = Min. or other pub. body at sub.level | -0.03 (0.22) | -0.15 (0.24) | 0.16 (0.25) | -0.14 (0.23) | 0.34 (0.23) |
| = Other | -0.04 (0.44) | -0.56 (0.45) | 0.23 (0.46) | -0.33 (0.45) | -0.16 (0.44) |
| Organizational size ³ =100-999 | 0.17 (0.12) | -0.04 (0.13) | -0.10 (0.14) | 0.24 (0.13) | -0.05 (0.13) |
| =over 1000 | 0.25 (0.15) | -0.18 (0.16) | -0.04 (0.16) | 0.30 (0.16) | 0.17 (0.16) |
| Age ⁴ =46-55 | 0.48** (0.16) | 0.03 (0.17) | 0.15 (0.17) | -0.02 (0.17) | 0.31 (0.16) |
| =56 or older | 0.32 (0.17) | 0.07 (0.19) | 0.39* (0.19) | 0.01 (0.18) | 0.43* (0.18) |
| Public sector experience ⁵ =10-20years | -0.05 (0.17) | -0.29 (0.19) | -0.00 (0.19) | -0.17 (0.18) | -0.07 (0.18) |
| =More than 20 years | -0.29 (0.18) | -0.18 (0.21) | -0.11 (0.21) | -0.39 (0.20) | -0.22 (0.19) |
| Private sector experience ⁶ =Less than 5 years | 0.04 (0.12) | 0.29* (0.13) | 0.12 (0.13) | 0.05 (0.12) | 0.08 (0.12) |
| =More than 5 years | 0.31 (0.16) | 0.14 (0.17) | 0.56** (0.18) | 0.30 (0.17) | 0.23 (0.17) |
| Educational level ⁷ =master level | -0.09 (0.15) | 0.17 (0.17) | 0.08 (0.18) | 0.36* (0.18) | 0.22 (0.18) |
| =doctoral level | 0.14 (0.18) | 0.31 (0.20) | 0.35 (0.21) | 0.47* (0.20) | 0.24 (0.20) |
| Job satisfaction | 0.02 (0.02) | 0.06*** (0.02) | 0.03 (0.02) | 0.02 (0.02) | 0.03* (0.02) |
| Organizational goal clarity | -0.01 (0.02) | 0.07** (0.02) | 0.05* (0.02) | 0.07** (0.02) | 0.03 (0.02) |
| Country level controls | | | | | |
| Professional bureaucracies | 0.06*** (0.02) | 0.00 (0.03) | 0.17 (0.11) | 0.12* (0.05) | 0.13 (0.07) |
| Closed bureaucracies | 0.00 (0.03) | 0.01 (0.06) | 0.21 (0.18) | -0.18* (0.09) | -0.04 (0.12) |
| Women in the public sector | -0.07*** (0.01) | 0.02 (0.02) | 0.06 (0.07) | -0.06 (0.03) | -0.03 (0.05) |
| Country level variance | 0.00 (0.02) | 0.20* (0.09) | 2.56** (0.90) | 0.50** (0.20) | 1.01** (0.36) |
| Number of individuals (level1) | 1,391 | 1,393 | 1,378 | 1,382 | 1,376 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

1: ref.=male executives, 2: ref.=Ministry at central gov't, 3: ref.<100, 4: ref.=45 or less, 5: ref.=less than 10 years, 6: ref.=none, 7: ref.=BA level

TABLE A4, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES
(ONLY SECOND AND THIRD HIERARCHICAL LEVEL MANAGERS IN SAMPLE)

| Independent variable | Result orientation | Societal interests | Openness to new ideas and creative solutions | Willingness to challenge the status quo | Willingness to take risks |
|--|--------------------|--------------------|--|---|---------------------------|
| | Model 1.12 | Model 2.12 | Model 3.12 | Model 4.12 | Model 5.12 |
| Female executives ¹ | 0.17** (0.05) | 0.32*** (0.06) | 0.11 (0.06) | 0.10 (0.06) | -0.16** (0.06) |
| Individual level controls | | | | | |
| Org. type ² = Agency/subordinate gov. body central gov. | -0.20** (0.07) | -0.10 (0.07) | -0.21** (0.07) | -0.17* (0.07) | 0.02 (0.07) |
| = Ministry at state/regional gov.level | -0.10 (0.12) | -0.16 (0.13) | -0.15 (0.13) | 0.05 (0.12) | 0.04 (0.12) |
| = Agency/subordinate gov. body at state/gov. | 0.15 (0.12) | 0.15 (0.13) | -0.07 (0.13) | 0.12 (0.12) | -0.22 (0.12) |
| = Min. or other pub. body at sub.level | -0.16 (0.13) | 0.21 (0.14) | -0.11 (0.13) | -0.23 (0.13) | 0.27* (0.13) |
| = Other | 0.22 (0.27) | -0.19 (0.29) | -0.42 (0.29) | -0.36 (0.27) | -0.01 (0.29) |
| Organizational size ³ =100-999 | 0.12 (0.07) | -0.03 (0.08) | 0.11 (0.08) | 0.27*** (0.07) | 0.14 (0.07) |
| =over 1000 | 0.14 (0.08) | -0.09 (0.09) | 0.18* (0.09) | 0.39*** (0.08) | 0.25*** (0.08) |
| Age ⁴ =46-55 | 0.26*** (0.08) | 0.04 (0.08) | 0.03 (0.08) | 0.14 (0.08) | 0.07 (0.08) |
| =56 or older | 0.38*** (0.09) | 0.22* (0.10) | 0.16 (0.09) | 0.19* (0.09) | 0.03 (0.09) |
| Public sector experience ⁵ =10-20years | -0.20* (0.08) | 0.15 (0.09) | -0.17 (0.09) | -0.09 (0.08) | -0.16* (0.08) |
| =More than 20 years | -0.23* (0.10) | 0.10 (0.10) | -0.10 (0.10) | -0.21* (0.10) | -0.14 (0.10) |
| Private sector experience ⁶ =Less than 5 years | -0.04 (0.07) | 0.08 (0.07) | 0.02 (0.07) | -0.02 (0.07) | 0.16* (0.07) |
| =More than 5 years | -0.05 (0.09) | -0.02 (0.09) | 0.27** (0.09) | 0.03 (0.09) | 0.40*** (0.09) |
| Educational level ⁷ =master level | 0.09 (0.07) | 0.13 (0.08) | 0.13 (0.08) | 0.06 (0.08) | -0.01 (0.08) |
| =doctoral level | 0.28** (0.10) | 0.38*** (0.11) | 0.25* (0.11) | 0.16 (0.11) | 0.10 (0.11) |
| Job satisfaction | 0.01 (0.01) | 0.05*** (0.01) | 0.03*** (0.01) | 0.02* (0.01) | 0.01 (0.01) |
| Organizational goal clarity | -0.00 (0.01) | 0.03** (0.01) | 0.01 (0.01) | 0.02 (0.01) | 0.01 (0.01) |
| Country level controls | | | | | |
| Professional bureaucracies | 0.04* (0.02) | -0.04 (0.03) | 0.12 (0.08) | 0.09* (0.04) | 0.08 (0.04) |
| Closed bureaucracies | 0.01 (0.03) | 0.01 (0.04) | 0.04 (0.14) | -0.11 (0.07) | -0.04 (0.07) |
| Women in the public sector | -0.06*** (0.01) | -0.00 (0.02) | 0.01 (0.06) | -0.02 (0.03) | -0.01 (0.03) |
| Country level variance | 0.04* (0.02) | 0.14** (0.05) | 1.69** (0.54) | 0.36** (0.12) | 0.45** (0.15) |
| Number of individuals (level1) | 4,518 | 4,549 | 4,497 | 4,470 | 4,484 |
| Number of countries (level2) | 20 | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

1: ref.=male executives, 2: ref.=Ministry at central gov't, 3: ref.<100, 4: ref.=45 or less, 5: ref.=less than 10 years, 6: ref.=none, 7: ref.=BA level

TABLE A5, RESULTS FROM MULTILEVEL ORDERED LOGISTIC ESTIMATES: INDIVIDUAL AND COUNTRY LEVEL MODELS USING ALTERNATIVE DEPENDENT VARIABLES

| Independent variable | Result orientation | | Societal interests | |
|---|--------------------|--------------------|--------------------|--------------------|
| | Model 1.13 | Model 1.14 | Model 2.13 | Model 2.14 |
| Female executives¹ | 0.28*** (0.06) | 0.28*** (0.06) | 0.18*** (0.05) | 0.17*** (0.05) |
| Individual level controls | | | | |
| Org. type ² = Agency/subordinate gov. body central gov. | -0.06 (0.07) | -0.06 (0.07) | -0.18** (0.06) | -0.18** (0.06) |
| = Ministry at state/regional gov.level | -0.19 (0.11) | -0.18 (0.11) | -0.03 (0.09) | -0.02 (0.09) |
| = Agency/subordinate gov. body at state/gov. | -0.14 (0.12) | -0.14 (0.12) | -0.11 (0.10) | -0.12 (0.10) |
| = Min. or other pub. body at sub.level | -0.19 (0.12) | -0.18 (0.12) | -0.15 (0.11) | -0.14 (0.11) |
| = Other | -0.08 (0.28) | -0.07 (0.28) | -0.59* (0.25) | -0.59* (0.25) |
| Organizational size ³ =100-999 | 0.04 (0.07) | 0.04 (0.07) | -0.08 (0.06) | -0.07 (0.06) |
| =over 1000 | 0.21* (0.08) | 0.21** (0.08) | -0.15* (0.07) | -0.14 (0.07) |
| Respondent's position ⁴ =Second hierarchical level in org. | -0.24*** (0.07) | -0.24*** (0.07) | -0.15* (0.06) | -0.15* (0.06) |
| =Third hierarchical level in org. | -0.24** (0.08) | -0.25** (0.08) | -0.04 (0.07) | -0.04 (0.07) |
| Age ⁵ =46-55 | 0.01 (0.08) | 0.01 (0.08) | 0.10 (0.07) | 0.10 (0.07) |
| =56 or older | -0.14 (0.09) | -0.14 (0.09) | 0.07 (0.08) | 0.07 (0.08) |
| Public sector experience ⁶ =10-20years | -0.02 (0.08) | -0.02 (0.08) | -0.09 (0.07) | -0.08 (0.07) |
| =More than 20 years | -0.02 (0.10) | -0.02 (0.10) | -0.17* (0.09) | -0.17* (0.09) |
| Private sector experience ⁷ =Less than 5 years | -0.02 (0.07) | -0.02 (0.07) | 0.08 (0.06) | 0.08 (0.06) |
| =More than 5 years | 0.20* (0.09) | 0.20* (0.09) | 0.04 (0.08) | 0.04 (0.08) |
| Educational level ⁸ =master level | -0.08 (0.08) | -0.08 (0.08) | 0.18* (0.07) | 0.18* (0.07) |
| =doctoral level | -0.12 (0.10) | -0.11 (0.10) | 0.30** (0.09) | 0.30** (0.09) |
| Job satisfaction | 0.07*** (0.01) | 0.07*** (0.01) | 0.05*** (0.01) | 0.05*** (0.01) |
| Organizational goal clarity | 0.13*** (0.01) | 0.13*** (0.01) | 0.05*** (0.01) | 0.05*** (0.01) |
| Country level controls | | | | |
| Professional bureaucracies | | -0.02 (0.02) | | -0.12*** (0.03) |
| Closed bureaucracies | | -0.01 (0.04) | | 0.04 (0.06) |
| Women in the public sector | | 0.01 (0.02) | | 0.04 (0.02) |
| Country level variance | 0.12** (0.04) | 0.11** (0.04) | 0.50** (0.16) | 0.27** (0.09) |
| Number of individuals (level1) | 6,003 | 6,003 | 5,899 | 5,899 |
| Number of countries (level2) | 20 | 20 | 20 | 20 |

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

1: ref.=male executives, 2: ref.=Ministry at central gov't, 3: ref.<100, 4: ref.=top level in org., 5: ref.=45 or less, 6: ref.=less than 10 years, 7: ref.=none, 8: ref.=BA level

TABLE A6. PREDICTED PROBABILITY OF PREFERENCE FOR ACHIEVING RESULTS BY GENDER USING ALTERNATIVE DEPENDENT VARIABLE

| | | Strongly disagree | | | | | Strongly agree | |
|--------|-----------------------|-------------------|-------|-------|-------|-------|----------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.008 | 0.007 | 0.014 | 0.036 | 0.095 | 0.261 | 0.580 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.006 | 0.005 | 0.011 | 0.028 | 0.077 | 0.232 | 0.640 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 1.2 in table A1 in appendix

Table A7. Predicted Probability of Preference for Doing Something Useful to Society by Gender Using Alternative Dependent Variable

| | | Strongly disagree | | | | | Strongly agree | |
|--------|-----------------------|-------------------|-------|-------|-------|-------|----------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Male | Predicted probability | 0.057 | 0.096 | 0.120 | 0.191 | 0.202 | 0.171 | 0.164 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Female | Predicted probability | 0.048 | 0.085 | 0.110 | 0.183 | 0.204 | 0.184 | 0.187 |
| | p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Predicted probability is calculated based on model 2.2 in table A1 in appendix

Table A8. Marginal Effect of Gender on the Predicted Probability of Preference for Achieving Results Using Alternative Dependent Variable

| | | Strongly disagree | | | | | Strongly agree | |
|------------------------------|--|-------------------|--------|--------|--------|--------|----------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect ¹ | | -0.002 | -0.002 | -0.003 | -0.008 | -0.018 | -0.028 | 0.060 |
| p-value | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

1: Marginal effect is calculated based on model 1.2 in table A1 in appendix

Table A9. Marginal Effect of Gender on the Predicted Probability Using Alternative Dependent Variable

| | | Strongly disagree | | | | | Strongly agree | |
|------------------------------|--|-------------------|--------|--------|--------|-------|----------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Marginal effect ¹ | | -0.008 | -0.012 | -0.010 | -0.008 | 0.003 | 0.012 | 0.023 |
| p-value | | 0.001 | 0.001 | 0.001 | 0.003 | 0.099 | 0.001 | 0.001 |

1: Marginal effect is calculated based on model 2.2 in table A1 in appendix

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