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Women and risk-taking behaviour in local public finance

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ABSTRACT


This study examines how female representation in local elected (mayor and legislature) and administrative (mid-level manager) positions influences municipal financial decision-making in 764 Japanese city-level governments. Findings show that female representation in local councils is positively correlated with risk-averse behaviour in financial decisions, as female representation on the legislature is negatively associated with issuing municipal bonds and with local investment in public corporations. Female representation in executive (mayor and vice-mayor) and mid-level administrative managerial positions has no apparent effects on local financial decisions. This study tests existing explanations of relationships between female managerial representation and fiscal behaviour in an Asian developed setting characterized by considerable underrepresentation of women in politics.

KEYWORDS Local government; financial decision-making; gender representation; Japan

Introduction

Large volumes of studies have examined gender differences in preferences, attitudes, and behaviours and impacts of differences on employee behaviours and organizational outcomes. However, the intersection of gender representation and public financial decisions is not well understood. This study examines one particularly understudied aspect of this intersection: gender and risk-taking behaviour in public finance. Existing studies of economics and business management suggest women's preferences and attitudes towards risk differ from men's. On average, women are less willing to take financial risks (Bernasek and Shwiff 2001; Charness and Gneezy 2012; Croson and Gneezy 2009; Jianakoplos and Bernasek 1998). Therefore, such gender differences in risk attitudes may or may not affect overall firm performance (Huang and Kisgen 2013; Atkinson, Baird, and Frye 2003; Berger, Kick, and Schaeck 2014; Bellucci, Borisov, and Zazzaro 2010; Palvia, Vähämaa, and Vähämaa 2015; Pletzer et al. 2015). Few studies have examined how this gender difference plays out regarding risk-taking behaviour in local public finance.

In private financial economics, scholarship has examined how gender affects firm performance and financial decision-making (Berger, Kick, and Schaeck 2014; Charness and Gneezy 2012; Jianakoplos and Bernasek 1998; Post and Byron 2015; Schubert et al. 1999). In contrast to this research, the gender–financial decision-

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making connection in the public sector has been largely understudied. Examining gender effects on public finance is important from the perspective of representative bureaucracy (Meier and Melton 2014), which suggests that women's life experiences and preferences differ significantly from those of men, leading to differences in administrative decision-making. Additionally, existing studies on representative bureaucracy report gender-based differences in employee behaviours and attitudes and the impacts of gender on organizational outcomes (Esteve et al. 2012; Grissom, Nicholson-Crotty, and Keiser 2012; Meier and Nicholson-Crotty 2006; Meier and Funk 2016; Riccucci, Van Ryzin, and Lavena 2014; Sidel and Loscocco 2005). Likewise, political scientists have reported female representation in legislatures affects service provision, content and approval of legislation, committee assignments, levels of corruption, and political trust and participation (Dollar, Fisman, and Gatti 2001; Michelle Heath, Schwindt-Bayer, and Taylor-Robinson 2005; Lawless 2004; Wängnerud 2009).

Most published studies on women's political representation focus on the national level; very few address gender representation at the local level (Pini and McDonald 2011). This omission contrasts with increasing participation of women in local politics. Although female presence at the local level is far from achieving gender parity, a considerable increase exists worldwide in female representation in both local elected and appointed posts. This momentum may reflect a perception that participation in local politics is more attainable for women. However, limited attention has been devoted to identifying women's impact in local governance.

To address this gap, this study assesses the link between gender representation and risk-taking/aversion in local public finance by exploring the role of female representation in municipal financial decision-making. Our first goal is to test how local female representation in elected (mayor, vice-mayor, and legislature) and administrative (middle-level manager) positions influences financial decision-making, in terms of issuing municipal bonds, investment in public corporations, and budget allocations to reserve funds. Our second goal is to test whether political ideology and expertise of females in administrative and legislative positions affect municipal financial decisions, as politicians' ideology also may affect their preferences in financial decision-making (Petry 1982). Studies report evidence for the 'ideology thesis,' which suggests conservatives prefer low spending, low taxes, and less debt at national and state levels (Alt and Lowry 1994; Kontopoulos and Perotti 1999). Furthermore, female legislators' experience is expected to influence their financial decisions.

We test our propositions using a data set of 764 Japanese cities from 2007 to 2012. We focus on city-level municipalities, excluding towns and villages. After controlling for potential confounding factors, findings show female representation in local councils and conservative ideology of local councils are positively correlated with risk-averse behaviour in financial decision-making. Specifically, female representation in city councils is negatively associated with issuing municipal bonds and with local investment in public corporations. In addition, local council ideology is negatively correlated with issuing municipal bonds and budget allocation to reserve funds. However, females in executive and mid-level managerial positions don't appear to affect local financial decisions. Female councillors' expertise also doesn't appear to influence municipal financial decision-making.

This research contributes to literature in several ways. The study adds to understanding the impacts of gender representation on local public finance. The idea of gender-based differences in risk-taking behaviour has been well established in economics and finance literature. Although several studies examine the impacts of gender composition in managerial positions on firm performance, limited scholarship exists about the impacts of gender representation in local public office on municipal financial behaviour. Our study tests if the gender–financial decision-making relationship in private organizations holds for public organizations. Second, our research examines female legislators’ influence in local legislatures. Our study focuses on cities and examines gender effects on fiscal decision-making. Third, by testing our propositions in a Confucian male-dominant society (Fairbank, Reischauer, and Craig 1973) with relatively low female representation in politics and society compared to other advanced democracies (Ogai 2001; Eto 2010; Bochel and Bochel 2005; Bochel et al. 2003; World Economic Forum n.d.; UNDP 2016), this study assesses whether female representation in a male-dominant context is associated with changes in financial decision-making. Japanese political and social systems are still male dominant. Therefore, political and administrative institutions are gendered towards males (Acker 1992). Our findings show even in male-dominant institutions, the presence of female city councillors does influence financial performance.

This paper is organized into five sections. The first section introduces concepts of gender representation and attributes of female representatives, provides rationale for testing these factors, and derives the testable hypotheses. The second section provides background information on Japanese municipalities and their experiences with gender representation. The third section describes the research design and variable operationalization, followed by a fourth section containing results and analysis. The fifth section presents conclusions, limitations, and suggestions for future research.

The impact of gender representation on policy outcomes

Existing scholarship has examined whether the degree of gender representation affects organizational outcomes in private, non-profit, and public organizations. Scholars investigate how gender representation in managerial positions impacts firm performance (Post and Byron 2015). Previous studies have examined how gender affects policy priorities (Holman 2014; Ferreira and Gyourko 2014; Svaleryd 2009; Chattopadhyay and Duflo 2004; Clots-Figueras 2011; Funk and Gathmann 2006; Smith 2014; Bratton and Ray 2002), budget size and balance (Krogstrup and Wälti 2011; Ferreira and Gyourko 2014; Jochimsen and Thomasius 2014; Funk and Gathmann 2006), socio-economic outcomes (Ferreira and Gyourko 2014; Clots-Figueras 2012), leadership styles (Rinehart 1991), governance style and members’ participation (AbouAssi and An 2017; Fox and Schuhmann 2000; LeRoux 2009), partnership (AbouAssi, Makhoul, and Whalen 2016), work-related behaviour (Nielsen 2015), and further female representation (Meier and Funk 2016; Bradshaw, Murray, and Wolpin 1996).

The principle underlying these studies is that women have different perspectives and preferences from men. Therefore, involving women in government brings a new set of concerns in decision-making and consequently affects policies (Bratton and Ray 2002). Empirical evidence supports this notion. For instance, Chattopadhyay and Duflo (2004) report elected female leaders across 265 Indian villages tend to invest

more in the provision of services closely associated with women's interests and concerns. Likewise, Smith (2014) documents that US municipalities with empowered female leaders are likely to have more women-friendly policies. Empirical evidence of women's different leadership styles also derives from the non-profit sector. For example, NGOs led by female managers are likely to form partnerships and have more partners than male-led NGOs and encourage more members' participation in their activities in Lebanon (AbouAssi, Makhoul, and Whalen 2016).

Other studies suggest that the effects of female politicians on policy outcomes are contingent on other factors. For example, in her study of US municipalities, Holman (2014) suggests that even at the municipal level, and despite limited fiscal autonomy, the presence of a female mayor increases social welfare spending. Holman also finds the presence of female councillors alone does not change spending on social welfare programmes when the city's mayor isn't female. Only when the mayor is female does the per cent of female councillors significantly increase welfare spending. Clots-Figuerasa (2012) also reports empirical evidence for a contingent effect, as she finds an increase in female representatives enhances an individual's probability of attaining primary education in urban areas, but not in rural areas. The effect of women on policy outcomes also seems to be contingent on the type of policy area. For instance, investigating the link between female mayor and municipal government size, spending allocation patterns, employment, and crime rates in US cities, Ferreira and Gyourko (2014) find the mayor's gender is unrelated to these outcomes. This variation of findings across policy areas can be explained on the ground that 'women hold different attitudes and priorities than do men' (Bratton and Ray 2002, 429). The variation of findings calls for further tests on females' role in understudied local issues.

Gender differences and financial decision-making

Although previous studies have examined relationships between gender representation and policy outcomes, scarce research has explored gender representation–public finance connection. In the private sector, literature has reported a strong link between gender and individual preference and behaviour regarding financial decision-making (Barber and Odean 2001; Bernasek and Shwiff 2001; Charness and Gneezy 2012; Croson and Gneezy 2009; Eckel and Grossman 2008; Filippin and Crosetto 2016; Jianakoplos and Bernasek 1998; Schubert et al. 1999). Specifically, these studies find women exhibit more risk aversion in financial decision-making than men. For instance, using US survey data, Jianakoplos and Bernasek (1998) find single women report more risk-averse behaviour in terms of household holdings of risky assets than do single men. Similarly, Charness and Gneezy (2012) reassess data from 15 experimental studies and find a strong connection between gender and risk-taking preferences. Their results suggest women tend to make smaller investments in risky financial assets than men.

Other studies examine how gender representation in managerial positions affects corporate performance (Chen, Crossland, and Huang 2014; Dezsö and Ross 2012; Palvia, Vähämaa, and Vähämaa 2015; Post and Byron 2015; Pletzer et al. 2015). The notion is that top managers' traits and preferences affect corporate financial policies (Graham, Harvey, and Puri 2013). These studies have produced mixed results. For instance, a meta-analysis of 140 studies by Post and Byron (2015) reports a small

correlation between gender diversity on firm boards and financial performance. By using a panel data of US commercial banks, Palvia, Vähämaa, and Vähämaa (2015) report, after controlling for other factors, banks with female CEOs are more financially conservative and tend to have higher levels of equity capital, suggesting female CEOs exhibit risk-averse behaviour. However, based on their meta-analysis of 20 studies on female representation and firm performance, Pletzer et al. (2015) conclude financial performance of firms is not significantly related to female representation on corporate boards.

Do gender fiscal differences found in the private sector apply to public organizations? Surprisingly, limited attention has been paid to the impact of gender on risk-taking behaviour in public finances. Some of the few exceptions examine the gender's role in government spending at the macro level. For example, Krogstrup and Wälti (2011) and Funk and Gathmann (2006) explore how granting female voting rights affects government deficits. These studies find the enfranchisement of women is related to lower levels of budget deficits (Krogstrup and Wälti 2011) and lower spending levels (Funk and Gathmann 2006).

Results of studies of representative bureaucracies suggest gender representation affects organizational outcomes, such as promotion of coproduction (Ricucci, Van Ryzin, and Li 2016), social justice (D'Agostino 2015), active female representation (Wilkins 2006), and law enforcement (Meier and Nicholson-Crotty 2006). Studies of female representation in legislatures also show a positive influence of female elected officials on women-friendly policy outputs (Chattopadhyay and Duflo 2004; Clots-Figuerasa 2012; Park 2014; Smith 2014; Svaleryd 2009). Another line of scholarship suggests women legislators tend to initiate proposals on social, family, and feminist issues, while male representatives place emphasis on economic and business issues (Saint-Germain 1989; Volden, Wiseman, and Wittmer 2013). These results have led us to propose that local female representation in appointed and elected posts is associated with risk-averse behaviour in financial decision-making. Therefore, following previous studies on gender impacts on finance, we generate these two hypotheses:

H1a: Female representation in local legislatures is negatively correlated with risk-taking behaviour in fiscal decision-making.

H1b: Female representation in local public managerial positions (executive and administrative) is negatively correlated with risk-taking behaviour in fiscal decision-making.

Public manager positions (H1b) refer to mayor, vice-mayor, and mid-level manager positions.

Ideology of legislators

Legislators' ideology may affect their preferences and behaviour. Our study focuses on ideology of legislators, not mayors. This is because most mayors aren't affiliated with any political party in the Japanese context, even though they receive support from political parties during election campaigns. For instance, 2 out of 809 mayors were affiliated with political parties in 2011 (Chihō Jichi Sōgō Kenkyūjo 2012). The 'government ideology thesis' suggests parties aren't only vote seekers but also policy

seekers (Petry 1982). While conservatives prefer low spending, low taxes, and less debt, liberals prefer higher spending and higher taxes and are more likely to acquire debt (Alt and Lowry 1994; Kontopoulos and Perotti 1999). Studies report evidence for the ideology thesis at national and state levels. A study by Erikson and colleagues (1989) found public opinion and Democratic Party control explain most state policies. Likewise, Alt and Lowry (1994) demonstrated party affiliation influences state spending in the USA, and Kontopoulos and Perotti (1999) provide cross-national evidence for the liberal and conservative policy preferences. Therefore, if ideology matters, we should see its effect in local public finances. That is, conservative legislators are expected to be more risk-averse in investing and issuing municipal bonds. Consequently,

H2a: Conservative representation in local legislatures is negatively correlated with risk-taking behaviour in fiscal decision-making.

We should expect a multiplicative risk-aversion effect in financial decision-making in conservative legislatures with greater female representation. Therefore,

H2b: The greater the number of conservative legislators and the greater the number of female legislators, the greater the risk-averse behaviour in fiscal decision-making.

Expertise of female legislators

The expertise level of female legislators should matter for fiscal decision-making. According to Ericsson, Krampe, and Tesch-Römer (1993), expertise refers to the ‘domain-specific skills and knowledge important to attainment of expert performance’ (365), and ‘is acquired slowly over a very long time as a result of practice’ (366). That is, with extensive practice, an individual can become very adept at a particular task or job, whether technical, non-technical, or both, because ‘[e]xperts are faster and more accurate ... and their memory for representative stimuli from their domain is vastly superior to that of lesser experts, especially for briefly presented stimuli’ (Ericsson, Krampe, and Clemens 1993, 365). Experience on a particular task leads chief executives to accumulate (1) wisdom, (2) in-depth knowledge, (3) ability to respond to situations, and (4) group experience, which together constitute expertise (Avellaneda 2016, see also Littlepage, Robison, and Reddington 1997).

Empirical evidence has shown experts’ superior performance is acquired through long experience, and the effect of practice on performance is large (Ericsson, Krampe, and Clemens 1993, 365–368, see also Glaser, Chi, and Farr 1988). A recent study of US legislation in Congress over 30 years by Volden and colleagues (2013) ‘reveals that most (but not all) of the classically considered women’s issues are indeed raised at an enhanced rate by congresswomen,’ yet these proposals have been less successful than those of male legislators. One reason for less success may be female legislators’ preference for advocating women’s issues, welfare, and education matters. Moreover, while female politicians have been historically less inclined to address business and economics matters (Saint-Germain 1989), a longer duration of experience in local legislatures may lead them to be more likely to become risk-takers in

public finances. Politicians with more experience are expected to learn from past decisions, allowing them to have better judgement in taking more risks. Therefore,

H3: Expertise of female legislators is positively correlated with risk-taking behaviour in fiscal decision-making.

Research setting: Japanese local governments

The setting for this study is Japanese local governments. Japan is suitable for the following reasons. First, as Japanese local governments face the highest debt-to-GDP ratio (226 per cent) among Organisation for Economic Co-operation and Development countries (OECD 2015), they experience continued central government pressures to improve local public finance. Most local overspending derives from rapid population ageing and inadequate revenue collection due to prolonged economic stagnation and population declines. Therefore, local financial decisions are primary concerns for local governments.

Second, Japan exhibits lower levels of female political representation than most other developed and developing countries (Bochel and Bochel 2005; Eto 2010; Khatwani 2006; Mikanagi 2001). Although the number of women in politics has considerably increased recently, Japan offers an excellent setting to test the impact of limited descriptive representation of women in local government. In addition, Japan lags behind other advanced countries regarding gender equality. For instance, Japan ranks very low among developed nations in maternal employment rates, gender gap in full-time earnings, and ratio of women in managerial positions. Japan's gender gap is large and persistent (Estévez-Abe 2013). Therefore, male-dominant cultures and norms are prevalent in Japan, which potentially shapes gendered behaviour of managers in the public sphere. This study examines how gender representation affects policy outcomes within a context of such male-dominant gendered institutions.

Third, Japanese local governments have consistent administrative structures regardless of geographic location and municipal size, allowing us to control for institutional factors. Furthermore, Japanese regions are less diverse with respect to culture, ethnicity, and economy than many developed countries. Such homogeneity helps to control other factors that may influence our dependent variables. Finally, few studies focus on local Japanese governments, despite Japan's status as an advanced democratic country. Consequently, this study also contributes to the recent increased interest in contextual factors in public management and performance in a cross-national setting (Meier, Rutherford, and Avellaneda 2017; O'Toole and Meier 2014) by investigating one of the understudied context in public management.

Japan adopted a unitary political and administrative system with a two-tiered local government structure: prefecture as the regional government unit and municipality as the local government unit. Municipalities, in turn, are categorized as cities, towns, or villages. As of April 2014, Japan has 47 prefectures and 1718 municipalities and, of these, 790 are cities, 745 are towns, and 183 are villages (MIC 2014b).

Japanese local government structure consists of legislative and executive branches. The relationship between legislative and executive bodies found in Japanese municipalities is classified as a 'strong-mayor' system in the USA. The chief executive holds

exclusive power over all executive agencies (CLAIR 2013; Kawasaki 2000). Japanese local governments have adopted the presidential system, in which the mayor and local assembly members are directly elected by voters. Previously, the maximum number of assembly seats was set by law and based on population size. However, in 2011, the law changed, enabling municipalities to set the number of assembly seats by ordinance (MIC 2015a). The mayor appoints a vice-mayor with the local assembly's consent. The vice-mayor supports the mayor's initiatives and planning. Local governments can determine the number of vice-mayors by ordinance (MIC n.d.-b; Osugi 2009).

The mayor and the local assembly are separate and independent entities. This Japanese structure has been adopted uniformly across municipalities (CLAIR 2013). Mayors' rights include enacting regulations, preparing budgets, proposing bills, and appointing or dismissing staff. Local assemblies have voting rights in matters including budget and ordinances and can conduct a no-confidence vote in mayors. To provide the same standard of local government services across all municipalities, the central government makes financial adjustments by distributing a certain portion of the national tax to local governments based on financial capabilities (CLAIR 2013). Most localities are largely dependent on national transfers, and all local governments derive revenues from two sources: their own revenue collection and transfers from upper-level governments. Municipalities' own revenues come from local tax, fees, rents, donations, and revenues from leasing and sales of municipal property. Although variation exists across cities, average total self-revenue in 2012 amounted to 47.03 per cent of cities' total revenue. Local tax, which is the primary local revenue source, accounted for 33.07 per cent of total revenue (MIC 2014a). The remaining 52.97 per cent of municipal revenues comes from central government and prefectural governments (MIC 2015c).

Female representation in Japanese local government

Despite considerable improvements in the past decade, Japanese women's representation in politics has been low compared with other developed and developing countries. According to a survey conducted by the Inter-Parliamentary Union, Japan's share of women in its lower house of parliament reached only 9.5 per cent in 2016, ranking Japan 155 out of 193 surveyed countries (Inter-Parliamentary Union 2016).

Female representation in local government is also low. In 2016, only 21 female mayors served in 1721 city-, town-, and village-level municipalities, a 1.2 per cent rate. In local legislatures, representation is higher but still low. In 2016, the average share of female local councillors in municipal assemblies is 12.6 per cent. However, across municipalities, considerable variation exists in female representation on local councils (Cabinet Office of Japan 2016). Women's representation in local administration, while remaining low, is considerably higher than female representation at the national administrative level. In 2015, the percentage of female local officials who held more than middle-level managerial positions was 12.6 per cent across all municipalities compared with 3.3 per cent at the national level (Cabinet Office of Japan 2015a, 2015b).

Previous studies offer several explanations for low female political representation in Japan. One explanation points to historical factors. Among industrialized nations,

Japan was a relative latecomer to universal suffrage for women. While Japanese men achieved universal suffrage for men in 1925, women's voting rights and eligibility for election were not granted until the end of World War II in 1945 (Bochel et al. 2003; Bochel and Bochel 2005). Persistent male-dominated political culture might be another explanation (Bochel et al. 2003; Eto 2010). Traditionally, Japanese political parties, general public, and women consider Japanese politics to be men's business (Eto 2010). Moreover, having support from local groups (called *koenkai*) played a pivotal role in candidates winning seats in the Diet's lower house elections. Men, and especially male councillors, have had strong local connections with *koenkais*, but women tend to have less strong local networks, as married women tend to move to residential areas where their husbands have connections (Bochel and Bochel 2005; Ogai 2001). In this male-dominant political context, cultural norms hamper closing the gender gap in political representation.

Data collection and variable operationalization

In this study, the unit of analysis is the municipality-year. We target all city-level municipalities from 2007 to 2012, covering 764 cities. Thirty-eight cities were dropped due to data unavailability. Likewise, we focus on this time period due to data availability. To obtain data on female representation, we rely on two data sets: (1) *Handbook of Data on Japanese Women in Political Life* (2007 and 2011 editions) (Fusae Ichikawa Center for Women and Governance 2008, 2011) and (2) the Cabinet Office's report on gender equality (Gender Equality Bureau Cabinet Office 2007-2012). Mayoral political data are obtained from the *List of Mayors* (2007-2012 editions) (Chihō Jichi Sōgō Kenkyūjo 2007-2012) and *Profiles of Governors and Mayors in Japan* (2007-2012 editions) (Chihō Gyōzaisei Chōsakai 2007-2012). Dependent variables and other control variables are collected from *Regional Statistics* (MIC 2015c) and *Settlement of Municipality Finances: 2006-2012* (MIC 2006-2012).

Although our data set covers six years, most variables don't have much within-municipality variation because variables related to local councillors and mayors don't change much year to year. The term length of the Japanese local councils and mayors is four years. In addition, no fixed start and end years for council and mayoral terms apply to all municipalities. Approximately 30 per cent of all municipalities held mayoral and local council elections in April 2011 and April 2007. However, elections were not held in those years for the remaining 70 per cent of municipalities. Therefore, our six-year data set covers at least two local council and mayoral terms per municipality. Variables, such as conservative local council percentage, average elected terms of local councillors, mayoral re-election, and mayor's vote share, do not change within each term, but only when new terms begin. Therefore, for most municipalities, variables related to local councils and mayors are based on two data periods.¹

Measuring financial decision-making

In this study, we focus on financial decision-making in terms of risk-taking behaviour in local public finance. Specifically, we operationalize financial risk-taking behaviour for three indicators: (1) municipal bonds issued per year, (2) municipal investment in public corporations, and (3) municipal budget deposited for reserve funds. These measurements are collected from annual reports of financial settlements of

municipalities from 2007 to 2012. In Japanese local governments, only the mayor has the right to submit a budget plan. However, the mayor's budget plan is considered by local councils, which may opt for approving, modifying, or denying the plan (Osugi 2008).

We assume issuing municipal bonds exemplifies risk-taking behaviour in financial decision-making. Recent reforms largely increased local government discretion in issuing municipal bonds. Prior to 2006, local governments needed to obtain approval to issue municipal bonds from the governor or the central government. However, from April 2006 to 2012, local governments were only required to consult with the minister of the Ministry of Internal Affairs and Communications (MIC) or the prefectural governor before issuing bonds. A 2012 reform gave municipalities freedom to issue bonds by requiring only notification of the MIC minister or the prefectural governor (MIC 2015b). As our data covers 2007–2012, we investigate the period in which municipalities had only to consult with the minister or governor before issuing bonds, but had not yet reached their current level of autonomy requiring only notification. Bond issuance is a continuous variable reported in Japanese yen and per capita.

The second indicator operationalizing risk-taking behaviour in financial decision-making is municipal investment in and contributions to public enterprise, quasi-public corporations, or public corporations. In Japan, it's common to see municipal investments in and contributions to public hospitals or entities providing water, sewage, and transportation. In 2012, for example, 86 per cent of Japan's total municipal investment and contribution targeted such public municipal enterprises (MIC 2014a). Since 2002, public enterprise businesses have been declining due to restructuring and municipal consolidation (MIC n.d.-a). Moreover, a 2009 law provides local governments with incentives for reducing debts and maintaining more financially sound management of these enterprises. Therefore, given the decline in local public corporations and pressure for sound financial management, we assume investing in and contributing local budgets to these entities is risk-taking behaviour. Investment in public businesses is a continuous variable reported in Japanese yen and per capita.

The third indicator operationalizing financial decision-making relates to municipal budgets allocated to reserve funds in a given year. Reserve funds are established by municipalities for the purpose of long-term financial stability and financial planning. Reserve funds allow municipal governments to legally save money in order to finance specific future projects and manage unexpected future expenditures. Therefore, saving money in reserve funds should illustrate risk-averse behaviour in public finance. Reserve fund allocation is a continuous variable reported in Japanese yen per capita.

Independent variables

In this study, we examine female representation in two local branches: legislative and executive. Gender representation in local councils is operationalized by the percentage of female councillors (H1a). As assembly seats vary across cities, for testing our H1a, we calculated the percentage of female councillors in a council, rather than the absolute number of female councillors (H1a). The data are obtained from the *Handbook of Data on Japanese Women in Political Life* (2007 and 2011 editions) (Kinenkai 2007; Kinenkai 2011). Female representation in administrative positions refers to the percentage of local female employees in managerial positions (H1b). Data are collected from the Cabinet Office's report on gender equality (Gender

Equality Bureau Cabinet Office 2007-2012). Female mayors and vice-mayors are dummy variables. We assign a value of '1' to municipalities with a female mayor or vice-mayor and assign '0' to those municipalities with neither a female mayor or vice-mayor.

Regarding local councillor ideology (H2a), we focus on conservative ideology of local legislators. In doing so, we calculate the percentage of councillors affiliated with the two major conservative parties (Liberal Democratic Party and Komei Party). To test the interactive H2b hypothesis, we created an interaction term multiplying the percentage of conservative legislators with the percentage of female legislators. Conservative ideology variable is centred to reduce multicollinearity. To test the female councillors' expertise hypothesis (H3) for each council year, we calculate the average terms of all female councillors. Here, tenure serves a proxy for female counsellors' expertise. In Japan, councillors may be re-elected indefinitely and no age limit exists.

Control variables

This study controls for factors expected to influence financial decision-making, including political, socio-economic, and structural/organizational factors. Among political factors, we control for mayors' political ideology, re-election periods, vote share, and councillors' political ideology. Given that Japanese mayoral candidates typically have no party designations, mayors' political ideology is operationalized with a dummy, labelled '1' when the elected mayor received support from any conservative party (Liberal Democratic Party or Komei Party) during his/her election campaign. Otherwise, it takes '0.' As mayors may be re-elected for an indefinite number of terms, their long-term experience in office should influence financial decision-making. Therefore, we use a continuous variable to capture the number of times a mayor has been re-elected. Mayors' vote share is a continuous variable.

Demographic and socio-economic controls are (1) unemployment rate and (2) the percentage of workers in agricultural, forestry, and fishing sector economy. We control for one structural factor: whether the municipality has experienced a merger. Since 1999, most Japanese local governments have experienced municipal mergers (Suzuki and Sakuwa 2016; Yamada 2016). Hence, the number of municipalities declined from 3232 in 1999 to 1718 in 2014. Most mergers occurred in 2004 and 2005. The main impetus for mergers was to take advantage of economies of scale, as municipalities with larger populations deliver services at lower per capita or unit costs (Dollery, Byrnes, and Crase 2007; Fox and Gurley-Calvez 2006; Suzuki 2016). Therefore, municipal consolidation is expected to reduce fixed costs and administrative duplication. If a municipality experienced a merger, we assign a value of '1'; otherwise '0.'

Finally, we control for a municipality's prior year's accumulated debt and accumulated reserve funds, as these factors are expected to influence future financial decisions. Finally, we include a dummy variable for each year, leaving year 2007 as the excluded category. Table 1 provides descriptive statistics for all variables.

Empirical strategies

We investigate the impact of female representation in local administrative bodies and legislatures on risk-taking behaviour in public finance by using a panel data set of Japanese municipalities from 2007 to 2012. We report random-effects estimations with Huber-White standard errors. Standard errors are clustered at the municipal level. We

Table 1. Descriptive statistics.

	Mean	Std. Dev.	Min	Max
Dependent variables				
Municipal bonds/capita	39,349.54	48,688.39	0	2,954,098
Public investment/capita	1457.88	3448.40	0	100,055
Reserve funds/capita	15,195.34	66,685.53	3.89	2,976,746
Independent variable				
Female councillors (%) (H1a)	12.17	8.18	0	40.9
Female mayor or vice-mayor (H1b)	0.04	0.19	0	1
Female mid-level managers (%) (H1b)	8.70	6.47	0	44.1
Conservative ideology (%) (H2a)	16.57	14.90	0	79.17
Female councillors' expertise/tenure (H3)	2.44	1.19	0	9
Controls				
Mayor's re-elections	1.76	0.99	1	10
Mayor's vote share (%)	65.32	21.22	25.39	100
Mayor's conservative party support	0.37	0.48	0	1
Unemployment rate (%)	6.21	1.66	2.4	18.20
Agricultural sector economy (%)	6.94	6.59	0.01	33.65
Municipal merger	0.50	0.50	0	1
Lag of accumulated debts/capita	440,994.00	235,014.40	25,727.03	4,173,950
Lag of accumulated reserves/capita	88,973.46	84,116.29	937.1074	1,536,181
Year dummy	3.50	1.71	1	6
Region dummy	3.47	1.99	0	7

employ the random-effects model for several reasons. First, our main interest is in exploring variations across municipalities, rather than variations within municipalities. Second, most importantly, fixed-effects (FE) models are not possible in this study since values of female councillors, our main explanatory variable of interest, changed only once during our data period. This is because the local council term length is four years and our data set covers six years. Therefore, only one change exists in gender composition of councillors, unless the local council is dissolved or an election occurs to fill a vacancy. In addition, some explanatory and control variables – such as legislators' ideology, mayors' re-election, and municipal mergers – tend not to vary much within municipalities during six years. For instance, the within-municipality standard deviations are close to zero for most independent and control variables. For those regressors, most of the variation is between units rather than within units. This constraint renders FE estimators inefficient because they rely on within-unit variation (Cameron and Trivedi 2010).

As a remedy for limitations of our data set that prevent us from correcting for unit FE, we conduct analysis with these empirical strategies. First, we use clustered standard errors at the municipal level (Table 3). Second, we control for regional FE by using a region dummy variable (Table 4). Third, we perform a series of robustness checks to demonstrate empirical validity of findings. For example, Table A1 reports results obtained from similar specification models in which we dropped the agricultural sector economy variable, for it is correlated with female councillors ($r = -0.51$), conservative ideology ($r = -0.47$), and lag of accumulated debts/capita ($r = 0.49$). In addition, Tables A2 and A3 in the appendix report population-averaged estimations, as well as pooled ordinary least squares estimations of the same specification models.

Table 2 shows a correlation matrix of all variables, which shows few instances of autocorrelation. The variance inflation factors (VIF) for the regression models show multicollinearity isn't an issue (1.03 and 4.54). However, the higher value of VIF is

Table 2. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 Municipal bonds/capita	1																		
2 Public investment/capita	0.09	1																	
3 Reserve funds/capita	0.02	0.02	1																
4 Female councillors (%)	-0.19	-0.12	-0.06	1															
5 Female mayor or vice-mayor	-0.02	0.02	-0.01	0.12	1														
6 Female mid-level managers (%)	0.02	0.08	-0.01	0.08	0.05	1													
7 Conservative ideology (%)	-0.14	-0.05	-0.06	0.41	0.09	0.09	1												
8 Female councillors' expertise/tenure	-0.09	-0.01	-0.01	0.27	0.06	-0.01	0.14	1											
9 Mayor's re-elections	-0.09	-0.04	-0.02	0.18	-0.05	-0.02	0.16	0.05	1										
10 Mayor's vote share (%)	0.01	0.02	0.02	-0.13	-0.05	0.00	-0.13	-0.06	0.20	1									
11 Mayor's conservative party support	-0.08	-0.03	-0.05	0.15	-0.01	0.06	0.23	0.09	0.24	0.10	1								
12 Unemployment rate (%)	0.02	0.06	0.04	0.00	0.03	-0.05	0.09	-0.01	0.04	0.00	-0.02	1							
13 Agricultural sector economy (%)	0.21	0.10	0.08	-0.51	-0.09	-0.10	-0.47	-0.21	-0.22	0.11	-0.22	-0.08	1						
14 Municipal merger	0.20	0.07	0.03	-0.43	-0.04	-0.04	-0.35	-0.13	-0.28	0.05	-0.16	-0.14	0.40	1					
15 Lag of accumulated debts/capita	0.34	0.21	0.08	-0.41	-0.04	0.05	-0.25	-0.15	-0.20	0.07	-0.15	0.02	0.49	0.33	1				
16 Lag of accumulated reserves/capita	0.07	0.04	0.22	-0.13	-0.03	0.07	-0.09	-0.10	-0.01	0.07	-0.05	-0.14	0.23	0.20	0.13	1			
17 Year dummy	0.08	0.02	0.09	0.04	0.01	0.12	0.01	-0.08	0.08	0.02	-0.14	0.20	-0.07	0.00	-0.02	0.13	1		
18 Region dummy	0.06	-0.12	-0.03	-0.21	-0.02	0.00	-0.15	-0.05	-0.09	0.00	-0.13	0.15	0.23	0.18	0.15	0.17	0.00	1	

caused by an interaction term between female councillors and conservative ideology (after centring). VIF values for other variables are below 2.0.

Explaining risk-taking behaviours in Japanese municipalities

Table 3 reports random-effect estimates for the impact of female representation on risk-taking behaviour in local public finance, operationalized with three indicators: municipal bonds/capita, investment in public corporations/capita, and municipal budget allocated to reserve funds/capita. In Models 1 and 2 in Table 3, municipal bond is the dependent variable. Model 1 includes independent and control variables. Model 2 adds an interaction term between female councillor and conservative ideology of local councillors to test H2b. We run the same models for two dependent variables (public investment and reserve funds). In explaining municipal bonds (Models 1–2), the coefficient of *female councillors* is negative and statistically significant at the 0.01 level. Holding all other factors constant, as the percentage of female legislators increases by 1 per cent, issuing of municipal bonds/capita will decrease by 144.84 Japanese Yen (around 1.3 USD). Therefore, our hypothesis (H1a) receives empirical support, as an increase in female councillors reduces municipal bonds, holding all else constant. However, the coefficients of female mayor or vice-mayor (H1b), female representation in middle-level managerial positions (H1b), and female councillors' expertise (H3) fail to reach statistical significance. Therefore, H1b and H3 receive no empirical support. Conservative ideology of local councillors (H2) is negatively and statistically significantly associated with municipal bonds. Holding other factors constant, the stronger the conservative ideology in the local legislature, the less likely the municipal government is to issue bonds. This finding confirms H2a. However, the interaction term is not significant. Thus, H2b fails to receive empirical support.

Two control variables show statistical significance. The coefficient of *municipal merger* is positive and statistically significant at the 0.01 level. This finding makes sense as the central government of Japan allowed local governments to issue more bonds following municipal mergers to prepare for city planning after mergers. Lag of accumulated debts/capita is positively associated with issuing municipal bonds at the 0.01 level. Holding all else constant, municipalities tend to issue more bonds in the prior year their debt increases.

Model 3–4 in Table 3 explain our second dependent variable – municipal investment in public enterprise, quasi-public corporations, and public interest corporations. Model 3 includes independent and control variables, and Model 4 adds an interaction term between female councillor and conservative ideology of local councillors to test H2b. According to Models 3 and 4, results show female councillors are negatively associated with the dependent variable at the 0.01 confidence level. Holding other factors constant, female representation in local councils reduces risky investment in public enterprises. A 1 per cent increase in female councillor representation reduces public investment/capita by 31.40 JP Yen (approximately 0.28 USD). The impact is not large; however, it shows a statistically significant impact of female councillors on public investment, supporting H1a. Female mid-level managers (H1b) are positively associated with the dependent variable, contrary to our expectation. However, the result is significant only at the 0.1 level. Coefficients of female mayor or vice-mayor (H1b), conservative ideology (H2a), and female councillors'

Table 3. Explaining risk-taking behaviour in public finance in Japanese municipalities: random-effects model.

	Municipal bonds		Public investment		Reserve funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable						
Female councillors (%) (H1a)	-144.84*** (48.13)	-140.60*** (51.42)	-31.40*** (11.69)	-31.63*** (12.27)	-137.57 (127.18)	-154.49 (126.84)
Female mayor or vice-mayor (H1b)	-158.96 (1359.34)	-127.84 (1339.56)	688.81 (737.42)	687.45 (738.49)	-355.84 (1588.87)	-473.63 (1584.08)
Female mid-level managers (%) (H1b)	51.36 (57.06)	52.64 (57.41)	18.85* (10.18)	18.80* (10.25)	-319.17 (231.97)	-324.29 (230.40)
Conservative ideology (%) (H2a)	-72.89*** (26.09)	-56.32 (51.92)	-4.57 (5.99)	-5.67 (11.96)	-171.64** (81.97)	-240.68** (110.72)
Female councillors x conservative ideology (H2b)		-1.22 (3.08)		0.08 (0.64)		5.11 (5.99)
Female councillors' expertise/tenure (H3)	-925.23 (691.91)	-940.14 (709.74)	48.13 (57.42)	48.56 (57.02)	1771.66 (1149.58)	1821.35 (1150.63)
Controls						
Mayor's re-elections	41.87 (352.95)	44.58 (350.97)	64.14 (44.52)	64.05 (44.36)	-1547.80 (1368.37)	-1553.75 (1368.58)
Mayor's vote share (%)	-50.48 (36.56)	-50.92 (37.04)	-1.07 (2.26)	-1.05 (2.25)	-0.34 (52.90)	1.27 (52.64)
Mayor's conservative party support	150.97 (823.01)	177.37 (809.64)	-138.00 (133.21)	-138.82 (134.78)	-336.18 (1938.48)	-436.67 (1902.89)
Unemployment rate (%)	364.08 (253.43)	363.01 (253.21)	101.88 (76.12)	102.05 (76.17)	2302.88*** (846.07)	2307.26*** (843.62)
Agricultural sector economy (%)	213.22 (142.92)	216.34 (146.88)	-3.47 (21.00)	-3.63 (21.14)	-140.49 (204.81)	-152.20 (198.52)
Municipal merger	7019.71*** (1888.35)	7013.22*** (1895.22)	-19.86 (236.91)	-18.77 (236.24)	-6632.08 (5534.65)	-6587.93 (5536.60)
Lag of accumulated debts/capita	0.06*** (0.00)	0.06*** (0.00)	0.00* (0.00)	0.00* (0.00)	0.02** (0.01)	0.02** (0.01)
Lag of accumulated reserves/capita	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.22*** (0.08)	0.22*** (0.08)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	No	No	No	No	No	No
Constant	5890.83 (5143.57)	5931.31 (5184.69)	-23.20 (847.81)	-27.10 (843.85)	-21,241.64** (9661.87)	-21,381.53** (9612.97)
Observations	4547	4547	4547	4547	4547	4547
Number of municipality	764	764	764	764	764	764
R-sq within	0.02	0.02	0.00	0.00	0.12	0.12
R-sq between	0.62	0.62	0.09	0.09	0.08	0.08
R-sq overall	0.14	0.14	0.05	0.05	0.06	0.06

Robust standard errors are in parentheses. Standard errors are clustered at municipal level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

expertise (H3) are not statistically significant. Furthermore, the interaction term between female councillors and conservative ideology (H2b) does not reach a statistically significant level of confidence. Therefore, H1b, H2a, H2b, and H3 receive no empirical support. Regarding control variables, the coefficient of the lag of accumulated debts/capita is positively associated with public investment at the 0.1 level.

Finally, Models 5–6 in Table 3 explain municipal budget allocated to reserve funds. According to Table 3, in Model 6, none of the gender-related variables show statistical significance. That is, neither female representation in local legislatures nor female representation in municipal administration seems to influence financial decision-making in terms of allocating budget to reserve funds. Therefore, H1a, H1b, H2b, and H3 fail to receive empirical support. However, the conservative ideology variable (H2a) is negatively associated with reserve funds at the 0.05 confident level. Holding all other factors constant, a 1 per cent increase in the number of conservative councillors reduces municipal budget allocation to reserve funds by 171 to 240 JP Yen (1.53 to 2.15 USD). Although this coefficient is statistically significant, this finding fails to support H2a, for its sign has opposite direction.

Three of our control variables gain statistical significance. The coefficient of unemployment rate is positive and statistically significant at the 0.01 level. This result suggests that after holding all else constant, for each 1-percentage point increase in the unemployment rate, the municipal budget allocated to reserve funds/capita tends to increase by 2302 to 2307 JP Yen (approximately 21 USD). Likewise, the coefficients of lag of accumulated debts/capita and lag of accumulated reserves/capita are positive and statistically significant at the 0.05 level and 0.01 level, respectively; however, their impacts are very small (0.02–0.22). If a municipality has more accumulated debts or financial reserves in prior years, it is likely to allocate more money to reserve funds.

Table 4 reports results of the same models with a region dummy variable. We conduct this analysis as a robustness check and to control for regional FE. Table 4 shows that coefficients of female councillors (H1a) and conservative ideology (H2a) are negative and statistically significant at 0.01 and 0.05 levels, respectively, even after controlling for region FE. These findings demonstrate the robustness of our results.

Coefficients of female mid-level manager, which were positive and significant only at the 0.1 level in the main model (Table 3), are no longer significant in Models 3–4 (Table 4). In the appendix, we report the series of results of our robustness check models. In Models 1–2, coefficients of female councillors are negative and statistically significant at the 0.01 level in two of our robustness check models (Tables A1 and A3). In the population-averaged model (Table A2), the significance level for female councillors decreases, but it is still significant at the 0.1 level. Therefore, these results demonstrate robustness of negative impacts of female councillors on municipal bonds (H1a).

The link between conservative ideology and municipal bonds is statistically significant at the 0.05 level across our robustness check models, giving empirical support to H2a. Regarding the public investment models (Models 3–4), the female councillor variable is negative and statistically significant at the 0.05 level across two of our three robustness check models, demonstrating robustness of the results for H1a. The female mid-level manager variable is not significant across two robustness check models. Thus, results suggest that H1b receives no empirical support. In Models 5–6, conservative ideology is negative and significant at the 0.05 level across two models (Tables A2 and A3) and at the 0.1 level (Table A1). Thus, impacts of conservative ideology on reserve funds remain robust after testing different models.

We conducted an additional robustness check. Since our study may need to control for whether there is a local unified versus divided government, we created a dummy variable labelled ‘unified government.’ We gave it a value of ‘1’ if more than 50 per cent of local councillors in a municipal council supported the elected mayor during his/her

Table 4. Explaining risk-taking behaviour in public finance in Japanese municipalities: random-effects model with region dummy.

	Municipal bonds		Public investment		Reserve funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable						
Female councillors (%) (H1a)	-150.91*** (53.92)	-153.55*** (56.25)	-25.35** (11.38)	-26.01** (11.90)	-71.58 (113.07)	-68.63 (112.21)
Female mayor or vice-mayor (H1b)	776.44 (1267.56)	763.36 (1269.94)	758.13 (751.04)	754.76 (751.22)	-2183.63 (2034.81)	-2170.02 (2012.30)
Female mid-level managers (%) (H1b)	24.86 (65.45)	23.52 (66.09)	14.85 (9.69)	14.60 (9.77)	-257.17 (243.84)	-255.75 (239.31)
Conservative ideology (%) (H2a)	-83.14** (32.35)	-95.69 (58.57)	-4.03 (7.01)	-8.37 (13.78)	-146.14** (70.51)	-131.77 (107.39)
Female councillors x conservative ideology (H2b)		0.92 (3.00)		0.34 (0.70)		-1.06 (7.29)
Female councillors' expertise/tenure (H3)	-890.04 (710.05)	-879.48 (714.11)	69.43 (50.62)	70.68 (50.51)	1519.07 (1123.26)	1506.95 (1116.93)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14,831.82 (18,955.80)	14,830.20 (18,957.08)	1924.07* (1022.73)	1916.74* (1021.36)	-23,758.12** (10,371.74)	-23,742.62** (10,365.91)
Observations	4481	4481	4481	4481	4481	4481
Number of municipality	752	752	752	752	752	752
R-sq within	0.01	0.01	0.01	0.01	0.11	0.11
R-sq between	0.61	0.61	0.17	0.17	0.14	0.14
R-sq overall	0.14	0.14	0.12	0.12	0.08	0.08

Control variables are not reported.

Robust standard errors are in parentheses. Standard errors are clustered at municipal level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

election; otherwise, it received a value of '0.' In other words, a value of '1' means the mayor works under a unified government. We reran the same models reported in Table 4, after including the 'unified government' variable. However, results did not change significantly.² In sum, our robustness check results demonstrate findings from our main models (Table 3) survive through analysis with three robustness check models. As expected, gender representation in local councils is negatively correlated with risk-taking behaviour measures represented by issuing municipal bonds and budget allocation to public investment, holding all other factors constant (H1a). Conservative ideology is negatively associated with municipal bonds, one of the risk-taking behavior measures. However, we do not find empirical support for the impact of female representation in the administrative body (H1b), multiplicative effects of female councillors and conservative ideology (H2b), or female councillors' expertise (H3).

Discussions and limitations

In this study, our first goal is to test how female representation in local legislatures, mayoral and vice-mayoral positions, and municipal mid-level managerial positions affects financial decision-making. Our second and third goals are to test whether political ideology of local councils and expertise of female elected officials affect

municipal financial decisions. Financial decision-making is assessed in terms of municipal risk-taking behaviour through three indicators: issuing municipal bonds/capita, investing in public enterprises/capita, and allocating budget to reserve funds/capita. To test our propositions, we rely on a data set derived from 764 Japanese city-level governments from 2007 to 2012. After controlling for potential confounding factors, findings show neither expertise of female councillors nor female representation in executive and mid-level managerial positions seem to influence municipal financial decision-making. Likewise, we do not find any multiplicative effect of female council representation and conservative ideology. However, results show female representation in local councils is positively correlated with risk-averse behaviour in financial decisions. Specifically, female representation in city councils is negatively associated with both issuing municipal bonds and local investment in public corporations. Likewise, a strong negative link exists between conservative ideology and issuing municipal bonds and contributing to reserve funds.

Although the number of female legislators is small, results suggest they tend to be risk averse in financial decision-making. This finding agrees with studies examining gender–financial behaviour relationship in private organizations (Barua et al. 2010; Charness and Gneezy 2012; Eckel and Grossman 2002; Jianakoplos and Bernasek 1998). The relatively low female representation in Japanese local legislatures and/or male-dominant gendered institutions might explain the small effect of female legislators and the lack of an effect of female representation in executive and managerial positions on cities' financial behaviour. Moreover, results might suggest in the Japanese context, credentials and performance of women in leadership positions may not be fairly evaluated or may be disadvantaged by organizational members compared to male counterparts (Eagly, Makhijani, and Klonsky 1992; Kathlene 1994).

Furthermore, the small or non-existent effect of female representation may be due to socialization effects characteristic of male-dominant cultures (Quintelier 2013). In general, Japanese women tend not to hold prominent leadership positions with strong influence in organizational decision-making, and they may develop attitudes and behaviours similar to those of male leaders. These attitudes are expected to influence female behaviours in elected posts or any other settings with decision-making roles. Prouteau and Tabariés (2010) illustrate women's socialization effects in French voluntary organizations. In sum, in a patriarchal society like Japan's, female councillors and managers may encounter more obstacles, which suppresses the expected effects of gender representation on financial decision-making. Without more detailed data of internal decision-making process, we are not able to examine how the above factors may moderate gender–decision-making relationship.

Another explanation for the small or non-existent effect of women local representation on financial decision-making points to the relatively low performance in terms of proposing new legislation. Japanese local legislators tend to pass or modify mayors' propositions. For instance, only 10.7 per cent of city-level local councils issued any vote against a mayor's proposition and only 8 per cent of councils submitted a proposal for municipal ordinances in 2011 (Hirose and Local Council Reform Forum 2012). However, some municipalities are more proactive. For instance, local councils in Shibuya and Osaka submitted 20 and 17 ordinance proposals, respectively, in 2011, and Kochi city's local council submitted 36 revisions to mayoral legislation in 2009 (Hirose and Local Council Reform Forum 2009–2014).

Such contextual factors may restrict the expected negative influence of female representation in local governments' financial decision-making. However, conversely, our evidence suggests that even in a context characterized by local passive legislatures with low gender equality, gender representation in local councils has a negative impact on local financial decision-making.

Our study has limitations. Our data set covers only six years, typically corresponding to only two municipal terms. The fact that Japanese municipalities did not gain autonomy in financial decision-making until after this study also imposes a limitation. Second, data unavailability impedes us from assessing the role of women's committee assignments in local assemblies and the role of female councillors' career and educational backgrounds. Third, our study assessed relationships between female representation and risk-taking/averse outcomes of public finance, not a causal mechanism between them, due to the nature of our data set. One needs time-series or experimental data to make causal arguments. Even so, this study contributes to the literature by examining the understudied link between female representation and local public finance.

Conclusions

In studying this link, we examine elected and administrative positions in an understudied developed setting: Japanese local governments. Japan is a relevant case to study, as it ranks very low in gender representation in politics among developed and developing countries. Although studies have addressed gender representation and financial risk-taking behaviour in the private sector, scarce attention has been given to local public finances.

This study contributes to the understanding of the association between gender representation and local public finance. Findings suggest a significant link between female councillors and outputs in public finance. Findings also suggest the gender-financial decision-making relationship observed in private organizations holds in the context of public organizations. After controlling for potential confounding factors, findings show female representation on local councils and conservative ideology are positively correlated with risk-averse behaviour in financial decisions. Specifically, female representation in city councils is negatively associated with issuing municipal bonds and local investment in public corporations. Likewise, conservative ideology is negatively correlated to issuing municipal bonds and budget allocation to reserve funds. We do not find financial decision-making effects of female representation among executives and mid-level managers. This lack of impact may be due to the small numbers of Japanese female mayors and vice-mayors. For instance, only 3.5 per cent of city-level municipalities had a female mayor or vice-mayor in 2012. Such low levels of female representation in executive positions may impede gender effects on financial decision-making. Future research should explore whether these findings hold when investigating the effects of female representation at other governmental levels. Moreover, survey studies of female legislators and managers in the executive branch should be conducted to shed light on female preferences in financial decision-making.

Notes

1. *The Handbook of Data on Japanese Women in Political Life* is issued every four years and contains data regarding female representation in the local council only in the year of publication (2007, 2011). In other words, in our data set (2007–2012), the handbook does not provide data in 2008–2010 or 2012. In filling this gap, we use data from 2007 and 2011 for these years, depending on the starting year of each local councillor's term. Local council term data are collected from the *List of Local Chief Executives* (2007–2012 editions) (Chihō Jichi Sōgō Kenkyūjo, 2007–2012). Regarding two socio-economic control variables (unemployment rate and agricultural sector economy), we use the value in 2005 for the years of 2007, 2008, and 2009 and the value in 2010 for the years of 2010, 2011, and 2012, because these variables are available only in the years of 2005 and 2010.
2. Additionally, we rerun the same models with the 'disaster' dummy variable to include the effects of the 2011 earthquake in our analysis. However, except for one variable – conservative ideology – in general results and statistical significances do not change drastically.

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Appendix

Table A1. Explaining risk-taking behaviour in public finance in Japanese municipalities: random-effects model without agricultural sector economy variable.

Independent variable	Municipal bonds		Public investment		Reserve funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Female councillors (%) (H1a)	-188.59*** (62.41)	-193.22*** (64.24)	-25.96** (11.57)	-26.58** (12.05)	-25.47 (110.58)	-20.55 (113.45)
Female mayor or vice-mayor (H1b)	525.71 (1242.53)	503.71 (1245.77)	755.67 (750.23)	752.43 (750.35)	-1909.73 (1939.68)	-1887.08 (1921.31)
Female mid-level managers (%) (H1b)	15.30 (66.95)	12.83 (67.79)	14.76 (9.64)	14.51 (9.72)	-246.53 (238.26)	-243.97 (233.51)
Conservative ideology (%) (H2a)	-110.00*** (41.06)	-133.97** (65.32)	-4.56 (7.06)	-8.97 (13.72)	-112.52* (60.12)	-86.04 (116.42)
Female councillors x conservative ideology (H2b)		1.79 (2.99)		0.35 (0.70)		-1.98 (7.66)
Female councillors' expertise/tenure (H3)	-946.57 (738.99)	-925.33 (737.97)	68.98 (50.83)	70.30 (50.70)	1571.31 (1124.61)	1549.11 (1115.46)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	17,307.25 (20,482.46)	17,270.88 (20,473.12)	1975.72* (1051.98)	1963.42* (1049.17)	-26,719.01** (11,103.58)	-26,661.78** (11,049.00)
Observations	4481	4481	4481	4481	4481	4481
Number of municipality	752	752	752	752	752	752
R-sq within	0.01	0.01	0.01	0.01	0.11	0.11
R-sq between	0.62	0.62	0.17	0.17	0.15	0.15
R-sq overall	0.14	0.14	0.12	0.12	0.08	0.08

Control variables are not reported.

Robust standard errors are in parentheses. Standard errors are clustered at municipal level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2. Explaining risk-taking behaviour in public finance in Japanese municipalities: population-averaged model.

	Municipal bonds		Public investment		Reserve funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable						
Female councillors (%) (H1a)	-106.98* (55.34)	-108.70* (58.47)	-25.30** (11.33)	-25.97** (11.86)	-59.43 (106.04)	-63.72 (106.81)
Female mayor or vice- mayor (H1b)	461.98 (1310.09)	453.59 (1310.94)	757.66 (748.54)	754.48 (748.76)	-2298.76 (2040.44)	-2320.29 (2021.88)
Female mid-level managers (%) (H1b)	11.61 (71.19)	10.75 (71.45)	15.01 (9.67)	14.71 (9.75)	-260.11 (230.87)	-262.29 (227.45)
Conservative ideology (%) (H2a)	-89.21*** (33.47)	-97.11* (53.65)	-3.96 (6.96)	-8.25 (13.69)	-135.32** (62.66)	-156.04 (98.36)
Female councillors x conservative ideology (H2b)		0.58 (2.83)		0.33 (0.70)		1.53 (6.24)
Female councillors' expertise/tenure (H3)	-829.67 (667.79)	-822.58 (674.10)	69.66 (50.47)	70.82 (50.36)	1208.08 (970.16)	1224.03 (967.17)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	8968.93 (14,247.64)	8969.80 (14,248.49)	1916.12* (1020.18)	1911.31* (1018.62)	-21,386.34** (9810.61)	-21,383.95** (9807.02)
Observations	4481	4481	4481	4481	4481	4481
Number of municipality	752	752	752	752	752	752

Control variables are not reported.

Robust standard errors are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3. Explaining risk-taking behaviour in public finance in Japanese municipalities: pooled OLS model.

	Municipal bonds		Public investment		Reserve funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable						
Female councillors (%) (H1a)	-150.91*** (53.92)	-153.55*** (56.25)	-18.62 (12.33)	-16.23 (12.58)	-53.37 (103.08)	-61.35 (104.62)
Female mayor or vice- mayor (H1b)	776.44 (1267.56)	763.36 (1269.94)	560.61 (684.02)	572.40 (684.01)	-2346.90 (2057.62)	-2386.37 (2040.19)
Female mid-level managers (%) (H1b)	24.86 (65.45)	23.52 (66.09)	43.44*** (15.12)	44.65*** (15.47)	-259.69 (224.53)	-263.73 (221.78)
Conservative ideology (%) (H2a)	-83.14** (32.35)	-95.69 (58.57)	1.78 (7.24)	13.10 (14.48)	-129.67** (59.16)	-167.53* (94.80)
Female councillors x conservative ideology (H2b)		0.92 (3.00)		-0.83 (0.73)		2.78 (5.78)
Female councillors' expertise/tenure (H3)	-890.04 (710.05)	-879.48 (714.11)	128.79* (75.77)	119.27 (76.95)	1057.10 (903.19)	1088.94 (901.64)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14,831.82 (18,955.80)	14,830.20 (18,957.08)	779.34 (1089.88)	780.80 (1092.11)	-20,250.26** (9577.12)	-20,255.15** (9576.79)
Observations	4481	4481	4481	4481	4481	4481
R-squared	0.14	0.14	0.13	0.13	0.08	0.08

Control variables are not reported.

Robust standard errors are in parentheses. Standard errors are clustered at municipal level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.