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WOMEN AND RISK-TAKING BEHAVIOR 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 behavior in financial decisions, as female representation on the legislature is negatively associated with issuing municipal bonds as well as 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 behavior in an Asian developed setting characterized by considerable underrepresentation of women in politics.

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Introduction

Closing the gender gap in political representation is a priority in many countries and for the international community, as exemplified in the United Nations Sustainable Development Goals(United Nations n.d.). One potential barrier to achieving this goal is a lack of understanding regarding the effects of female representation. Large volumes of studies have examined gender differences in preferences, attitudes, and behaviors, and the impacts of such differences on employee behaviors 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 behavior in public finance. Existing studies of economics and business management suggest that women's preferences and attitudes toward risk differ from those of men. 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 with respect to risk-taking behavior in local public finance, a research gap we aim to address.

In private financial economics, existing scholarship has examined how gender affects both 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 substantial body of research, in the public sector, the gender-financial decision making connection has been largely understudied. Examining the gender effects on public finance is important from the perspective of representative bureaucracy (Meier and Nigro 1976, Meier and Melton 2014). The theory of representative bureaucracy suggests that women's life experiences and preferences differ in many ways from those of men, leading to differences in administrative decision making. For example, female legislators can produce policy outcomes that fit more closely with the interests and preferences of female citizens (Dolan 2000). Additionally, existing studies on representative bureaucracy report gender-based differences in employee behaviors and attitudes, and the impacts of gender on organizational outcomes (D' Agostino 2015, 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, Riccucci, Van Ryzin, and Li 2016, Saidel and Loscocco 2005). Likewise, political scientists have reported that female representation in legislatures affects service provision, as well as 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 of these published studies on women's political representation focus on the national level; very few address gender representation at the municipal/local level (Pini and McDonald 2011). This omission contrasts with the increasing participation of women in local politics. Although female presence at the local level is far from achieving gender parity, worldwide there has been a considerable increase in female representation in both local elected and appointed posts. This local momentum may reflect a perception that participation in local politics is more attainable for women. Despite this trend, limited attention has been devoted to identifying women's impact in local governance.

To address this research gap, this study assesses the link between gender representation and risk-taking/aversion in local public finance. Specifically, this study explores 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 the political ideology and expertise of female representatives in administrative and legislative positions affect municipal financial decisions, as politicians' ideology may also affect their preferences in financial decision making (Petry 1982). Studies report evidence for the "ideology thesis," which suggests that conservatives prefer low spending, low taxes, and less debt both at the national and state level (Alt and Lowry 1994, Kontopoulos and Perotti 1999). Furthermore, the experience (i.e. expertise) of female legislators also is expected to influence their preferences in financial decisions.

We test our propositions using a data set of 764 Japanese cities during a six-year period (2007-2012). After controlling for potential confounding factors, findings show that female representation in local councils and conservative ideology of local councils are positively correlated with risk-averse behavior in financial decision making. Specifically, female representation in city councils is negatively associated with issuing municipal bonds, as well as with local investment in public corporations. In addition, local council ideology is negatively correlated with the issuing of municipal bonds and budget allocation to reserve funds. However, female representation in executive (mayor and vice-mayor) and mid-level managerial positions does not appear to affect local financial decisions. The expertise of female councilors also does not appear to influence municipal financial decision-making.

This research contributes to the literature in several ways. First, this study adds to the understanding of the impacts of gender representation on local public finance. The idea of gender-based differences in risk-taking behavior has been well established in the economics and finance literature. Although there are several studies that examine the impacts of gender composition in managerial positions on firm performance, there is limited scholarship about how gender representation in local public office affects municipal financial behavior. Our study therefore tests if the gender-financial decision making relationship observed in private organizations holds in the context of public organizations. Second, while considerable research has

examined the role of female legislators at the national and state level, little is known about their influence in local legislatures. Our study focuses on the city level, and examines gender effects on fiscal decision-making in municipalities. Third, by testing our propositions in a Confucian male-dominant society (Fairbank, Reischauer, and Craig 1973) with relatively low levels of female representation both 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 such a male dominant context is associated with changes in financial decision making.[i] Our findings show that even in a context of male-dominant institutions, the presence of female city councilors does influence municipal financial performance.

This paper is organized into five sections. The first section introduces the concepts of gender representation and attributes of female representatives, provides the rationale for testing these factors, and derives the testable hypotheses. The second section provides background information on Japanese municipalities and their experience with gender representation in local governments. 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 both in private and public organizations. Scholars of business management and financial economics investigate how gender representation in managerial positions impacts firm performance, such as accounting returns and market performance (Post and Byron 2015). Previous studies have examined how gender affects policy priorities (Holman 2014, Park 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), socioeconomic outcomes (Ferreira and Gyourko 2014, Clots-Figuerasa 2012), and further female representation (Meier and Funk 2016).

The principle underlying these studies is that women have different perspectives and preferences from men. Therefore, involving women in government, especially in influential positions, brings a new set of concerns in decision-making and consequently affects policy outcomes (Bratton and Ray 2002). Empirical evidence supports this notion. For instance, Chattopadhyay and Duflo (2004) report that elected female leaders across 265 Indian villages tend to invest more in the provision of services that are closely associated with women's interests and concerns. Likewise, Smith (2014) documents that U.S. municipalities with empowered female leaders are likely to have more women-friendly policies.[ii]

Other studies suggest that the effects of female politicians on policy outcomes are contingent on other factors. For example, in her study of U.S. 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 that the presence of female councilors alone does not change spending on

social welfare programs when the city's mayor is not female. Only when the mayor gender is female, the percent of female councilors significantly increase welfare spending. Clots-Figuerasa (2012) also reports empirical evidence for a contingent effect, as she finds that 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, investing the link between female mayor and municipal government size, spending allocation patterns, employment, and crime rates in U.S. cities, Ferreira and Gyourko (2014) find that the gender of the mayor 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). Moreover, the variation of findings calls for further tests on the role of female representation in understudied local issues such as financial decisions.

Gender differences and financial decision-making

Although previous studies have examined relationships between gender representation and policy outcomes, scarce research has explored the gender representation-public finance connection. In the private sector, literature on gender and financial behavior has reported a strong link between gender and individual preference and behavior regarding financial decision-making (Barber and Odean 2001, Bernasek and Shwiff 2001, Charness and Gneezy 2012, Croson and Gneezy 2009, Eckel and Grossman 2002, 2008, Filippin and Crosetto 2016, Jianakoplos and Bernasek 1998, Schubert et al. 1999). Specifically, these studies find that women, when compared with men, exhibit more risk aversion in financial decision-making. For instance, using U.S. survey data, Jianakoplos and Bernasek (1998) find that single women report more risk-averse behavior in terms of household holdings of risky assets than do single men. Likewise, Eckel and Grossman (2002) find in their experimental study that women are four times more likely to take the risk-free gamble option than men. Similarly, Charness and Gneezy (2012) reassess data from 15 experimental studies concerning gender and financial risk-taking behavior and find a strong connection between gender and risk-taking preferences. Their results suggest that women tend to make smaller investments in risky financial assets than men.

Another line of studies examines how gender representation in managerial positions affects corporate performance (Chen, Crossland, and Huang 2014, Dezsö and Ross 2012, Harris 2014, 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 existing studies by Post and Byron (2015) reports only a small correlation between gender diversity on firm boards and their financial performance. By using a panel data of commercial banks in the U.S., Palvia, Vähämaa, and Vähämaa (2015) report that, after controlling for other factors, banks with female CEOs are more financially conservative and tend to have higher levels of equity capital, suggesting that female CEOs exhibit risk-averse behavior. However, based on their meta-analysis of 20 studies on female representation and firm performance, Pletzer et al. (2015)

conclude that 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 behavior in public finances. Some of the few exceptions examine the role of gender in government spending at the macro level. For example, Krogstrup and Wälti (2011) and Funk and Gathmann (2006) explore how the granting of female voting rights affects government deficits. These studies find that 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 that gender representation affects organizational outcomes such as promotion of coproduction (Riccucci, Van Ryzin, and Li 2016), social justice (D'Agostino 2015), 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 that women legislators tend to initiate proposals on social, family, and feminist issues, while male representatives place emphasis on economic and business issues (Saint-German 1989, Volden, Wiseman, and Wittmer 2013). These results have led us to propose that female representation at the local level, both in appointed and elected posts, is associated with risk-averse behavior in financial decision making. Therefore, following previous studies on gender impacts on finance, we generate the following two hypotheses:

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

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

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

Ideology of Legislators

Legislators' ideology also may affect their preferences and behavior.[iii] The "government ideology thesis" suggests that parties are not only vote seekers but also policy seekers (Petry 1982). While conservatives prefer low spending, low taxes, and less debt, liberals prefer higher spending, higher taxes, and are more likely to acquire debt (Alt and Lowry 1994, Kontopoulos and Perotti 1999). Studies report evidence for the ideology thesis both at the national and state level. A study by Erikson and his colleagues (1989) found that both public opinion and Democratic Party control explain most state policies. Likewise, Alt and Low-

ry (1994) demonstrated that party affiliation influences state spending in the United States, 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 behavior in fiscal decision-making.

We should also 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 behavior in fiscal decision-making.

Expertise of Female Legislators

The expertise level of female legislators should also matter for fiscal decision-making. According to Ericsson, Krampe, and Tesch-Römer (1993), expertise refers to the "domain-specific skills and knowledge that are 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 et al. 1993, 365). Experience on a particular task leads chief executives to accumulate (1) wisdom, (2) in-depth knowledge, (3) the 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 that experts' superior performance is acquired through long experience, and that the effect of practice on performance is large (Ericsson et al. 1993: 365–368, see also Glaser, Chi, and Farr (1988). A recent study of U.S. legislation in Congress over a 30-year period by Volden and his 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 this lack of success may be female legislators' short duration of experience, i.e. lack of expertise. This possibility leads us to suggest that at the local level, female legislators with more experience in the city council should be more familiar and comfortable with fiscal decision making. 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, which in turn allows them to have better judgement in taking more risks Therefore,

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

Case Selection: Japanese Local Governments

The setting for this study is Japanese local governments. Japan is a suitable case for the following reasons. First, as Japanese local governments face the highest debt-to-GDP ratio (226%) among Organisation for Economic Co-operation and Development countries (OECD 2015), they experience continued central government pressures to improve local public finance. Most of local overspending derives from rapid population aging and inadequate revenue collection due to both 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 , Mikanagi 2001). Although there has been a considerable increase in the number of women in politics in recent years, Japan offers an excellent setting to test the impact of limited descriptive representation of women in local government. In addition, Japan still lags behind other advanced countries regarding gender equality in general. For instance, Japan ranks very low among developed nations in indicators such as 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 culture and norm are prevalent in Japan, which potentially shapes gendered behavior 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 their 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 other developed countries.[iv] Such homogeneity helps us to control for other factors that may potentially 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, Japanese local government.

Japan's 1947 Constitution stipulates a unitary system and guarantees autonomy of local governments. The "Local Autonomy Law" (Article 92) defines local government operations. 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 1,718 municipalities and, of these, 790 are cities, 745 are towns, and 183 are villages (MIC 2014b).

Japanese local government structure consists of the legislative branch and the executive branch. The relationship between the legislative and executive bodies found in Japanese municipalities is classified as a "strong-mayor" system in the United States. The chief executive holds exclusive power over all executive agencies (CLAIR 2013, Kawasaki 2000). Japanese local governments have adopted a presidential system, in which both the mayor and the local assembly members are directly elected by voters. The mayor appoints a vice-mayor with the consent of the local assembly. The vice-mayor supports the mayor's initiatives and planning.[v]

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. In order to provide the same standard of local government services across all municipalities, the central government makes financial adjustments among local municipalities 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. In 2012, transfers accounted for approximately 45 percent of the total revenues of all city-, town-, and village-level governments. Local tax, which is the primary local source of revenue, accounted for 32.7 percent of total revenue (MIC 2014a).

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 percent in 2016, ranking Japan 155 out of 193 surveyed countries (Inter-Parliamentary Union 2016). Female representation in local government is also low. Female mayors are very few; in 2016, there were only 21 female mayors in all 1,721 city, town, and village-level municipalities, meaning only 1.2 percent of municipalities had female mayors. In local legislatures, representation is higher but still very low: In 2016 the average share of female local councilors in municipal assemblies is 12.6 percent. However, across municipalities, there is considerable variation in female representation on local councils (Cabinet Office of Japan 2016a). Women's representation in local administration, while also remaining low, is nevertheless 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 percent across all city, town, and village-level municipalities, compared with 3.3 percent 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 the Second World War 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, in Japan, political parties, the general public, and women themselves 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' lower house elections. Men, and especially male councilors, 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 in which 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 752 cities.[vi] Towns and villages were excluded due to limited data. Likewise, we focus on this specific time period due to data availability. To obtain data on female representation, we rely on the following two data sets: (1) *Handbook of Data on Japanese Women in Political Life* (2007 and 2011 editions) (Ichikawa Fusae Kinenkai 2007, 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 Local Chief Executives* (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 2015b)* and *Settlement of Municipality Finances: 2006-2012* (MIC 2006-2012).

Although our dataset covers a six-year period, most variables do not have much within-municipality variation because variables related to local councilors and mayors do not change much year to year. The term length of the local council and mayor is four years in Japan. In addition, there are no fixed start and end years for council and mayoral terms that apply to all municipalities.[vii] 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 councilors, mayoral reelection, and mayor's vote share do not change within each term, but they change only when a new term begins. Therefore, for most municipalities, variables related to local councils and mayors are based on two data periods.[viii]

Measuring Financial Decision Making

In this study, we focus on financial decision-making in terms of risk-taking behavior in local public finance. Specifically, we operationalize financial risk-taking behavior with the following 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 settle-

ments of municipalities for a six-year period (2007-2012). 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 behavior in financial decision-making. Recent reforms largely increased local government discretion in issuing municipal bonds. Prior to 2006, local governments needed to obtain approval either from the governor or the central government in order to issue municipal bonds. However, from April 2006 to 2012, local governments were only required to consult with either the minister of the Ministry of Internal Affairs and Communications (MIC) or the prefectural governor before issuing bonds. A 2012 reform gave municipalities further freedom to issue bonds by requiring only notification of either the minister of the MIC or the prefectural governor (MIC 2015a). As our data set covers the 2007-2012 period, 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 behavior in financial decision-making is municipal investment in and contributions to either public enterprise, quasi-public corporations, or public corporations. In Japan, it is common to see municipal investments in and contributions to public hospitals or entities providing water, sewage, and transportation. In 2012, for example, 86 percent 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 that investing in and contributing local budgets to these entities is a risk-taking behavior. 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 behavior 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 councilors (H1a). The data

are obtained from the *Handbook of Data on Japanese Women in Political Life* (2007 and 2011 editions) (Ichikawa Fusae Kinenkai 2007, 2011). Female representation in administrative positions refers to the percentage of local female employees in managerial positions[ix] (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 is a dummy variable. We assign a value of "1" to those municipalities that have either a female mayor or a female vice-mayor and assign "0" to those municipalities with neither a female mayor more a female vice mayor.

Regarding local councilor ideology (H2a), we focus on conservative ideology of local legislators. In doing so, we calculate the percentage of councilors 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 centered to reduce multicollinearity. To test the expertise hypothesis (H3), for each council, we calculate the average terms of all female councilors, which serve a proxy for expertise of female councilors. In Japan, local councilors may be re-elected for an indefinite number of terms, and there is no age limit to serve as a counselor.

Control Variables

This study controls for other factors expected to influence financial decision-making. We control for political, socio-economic, and structural/organizational factors. Among the political factors, we control for mayors' political ideology, re-election periods, vote share, and councilors' political ideology. Given that, in Japan, mayoral candidates typically have no party designation, mayors' political ideology is operationalized with a dummy, which is labeled "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 — that is, expertise — should influence their 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, reported as a percentage.

Demographic and socio-economic controls are (1) unemployment rate and (2) the percentage of workers in the agricultural, forestry, and fishing sector economy (to account for rural classification). We also control for one structural factor: whether the municipality has experienced a merger. Since 1999, most Japanese local governments have experienced municipal mergers. Hence, the number of municipalities, including city, town, and village level municipalities, declined from 3,232 in 1999 to 1,718 in 2014. Most mergers took place in 2004 and 2005. The main impetus for municipal 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). 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 (per capita) and accumulated reserve funds (per capita), as these factors are expected to influence future financial decisions. Finally, we also include a dummy variable for each year, leaving year 2007 as the excluded category. Table 1 provides the descriptive statistics for all the variables and Table 2 reports the panel descriptive statistics.

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	1,457.88	3,448.40	0	100,055
Reserve Funds/capita	15,195.34	66,685.53	3.89	2,976,746
Independent variable				
Female councilors (%) (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 councilors' expertise (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

TABLE 2, PANEL DESCRIPTIVE STATISTICS

Variable		Mean	Std. Dev.	Min	Max	Observations	
Dependent variables							
Municipal Bonds/capita	overall	39,349.54	48,688.39	0.00	2,954,098.00	N =	4,584
	between		26,686.97	0.00	559,548.90	n =	764
	within		40,732.56	-481,762.00	2,433,898.00	T =	6
Public Investment/capita	overall	1,457.88	3,448.40	0.00	100,054.60	N =	4,584
	between		2,599.83	0.00	18,963.94	n =	764
	within		2,267.10	-17,506.06	84,825.19	T =	6
Reserve Funds/capita	overall	15,195.34	66,685.53	3.89	2,976,746.00	N =	4,584
	between		32,245.40	52.96	582,723.10	n =	764
	within		58,380.88	-565,610.30	2,409,218.00	T =	6
Independent variables							
Female councilors (%)	overall	12.17	8.18	0.00	40.90	N =	4,580
	between		7.88	0.00	38.50	n =	764
	within		2.18	-0.23	24.70	T-bar =	6
Female mayor or vice mayor	overall	0.04	0.19	0.00	1.00	N =	4,577
	between		0.16	0.00	1.00	n =	764
	within		0.10	-0.80	0.87	T-bar =	6
Female mid-level managers (%)	overall	8.70	6.47	0.00	44.10	N =	4,578
	between		5.84	0.00	29.85	n =	764
	within		2.79	-10.35	41.69	T-bar =	6
Conservative ideology (%)	overall	16.57	14.90	0.00	79.17	N =	4,569
	between		14.65	0.00	77.78	n =	764
	within		2.75	-17.16	50.49	T-bar =	6
Female councilors' expertise	overall	2.44	1.19	0.00	9.00	N =	4,577
	between		1.04	0.00	8.33	n =	764
	within		0.58	-0.89	5.78	T-bar =	6
Controls							
Mayor's re-elections	overall	1.76	0.99	1.00	10.00	N =	4,570
	between		0.76	1.00	6.33	n =	
	within		0.64	-2.74	7.43	T-bar =	6
Mayor’s vote share (%)	overall	65.32	21.22	25.39	100.00	N =	4,576
	between		16.39	29.88	100.00	n =	
	within		13.50	21.75	125.18	T-bar =	6
Mayor’s conservative party support	overall	0.37	0.48	0.00	1.00	N =	4,579
	between		0.39	0.00	1.00	n =	
	within		0.28	-0.47	1.20	T-bar =	6
Unemployment rate (%)	overall	6.21	1.66	2.40	18.20	N =	4,584
	between		1.55	2.50	16.40	n =	
	within		0.60	3.71	8.71	T =	6
Agricultural sector economy (%)	overall	6.94	6.59	0.01	33.65	N =	4,584
	between		6.55	0.02	33.42	n =	764
	within		0.74	3.91	9.96	T =	6
Municipal merger	overall	0.50	0.50	0.00	1.00	N =	4,584
	between		0.50	0.00	1.00	n =	764
	within		0.00	0.50	0.50	T =	6

TABLE 2, PANEL DESCRIPTIVE STATISTICS (CONTINUED)

Variable		Mean	Std. Dev.	Min	Max	Observations	
Lag of accumulated debts/capita	overall	440,994.00	235,014.40	25,727.03	4,173,950.00	N =	4,583
	between		227,541.20	33,322.87	2,576,996.00	n =	764
	within		59,198.48	-1,083,253.00	2,037,948.00	T-bar =	6
Lag of accumulated reserves/capita	overall	88,973.46	84,116.29	937.11	1,536,181.00	N =	4,583
	between		80,472.94	7,223.29	1,379,497.00	n =	764
	within		24,618.73	-72,870.89	506,068.50	T-bar =	6
Year dummy	overall	3.50	1.71	1.00	6.00	N =	4,584
	between		0.00	3.50	3.50	n =	764
	within		1.71	1.00	6.00	T =	6
Region dummy	overall	3.47	1.99	0.00	7.00	N =	4,512
	between		1.99	0.00	7.00	n =	752
	within		0.00	3.47	3.47	T =	6

Empirical Strategies

We investigate the impact of female representation in both local administrative bodies and legislatures on risk-taking behavior in public finance by using a panel dataset of Japanese municipalities covering the 2007-2012 period. In our main analysis, we report random-effects estimations with Huber–White standard errors. Standard errors are clustered at the municipal level. We 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 our main explanatory variable of interest, female councilors, change only once during our data period. This is because the term length of the local council is four-years and our data set covers a six-year period. Therefore, there is only one change in the gender composition of councilors unless there is dissolution of the local council or election to fill a vacancy. In addition, some of our explanatory and control variables – such as legislators' ideology, mayors' re-election, and municipal mergers – tend not to vary much within municipalities during the six-year period (See Table 2 for panel descriptive statistics). For instance, the within-municipality standard deviations are close to zero for most independent and control variables (with the exception of mayor's vote share and lag of accumulated debts and reserves). In other words, for those regressors, most of the variation is between units rather than within the unit. This constraint renders FE estimators inefficient because they rely on within unit variation (Cameron & Trivedi, 2010).

As a remedy for the limitations of our data set that prevent us from correcting for unit fixed effects, we conduct analysis with the following empirical strategies. First, we use clustered standard errors at the municipal level in our analysis (table 4). Second, we control for regional fixed effects by using a region dummy variable (table 5). Third, we perform a series of robustness checks to demonstrate empirical validity of findings. For example, table A1 in appendix reports the results obtained from similar specification models in which we dropt the agricultural sector economy variable, for it is correlated with female councilors (r=-0.51), conservative ideology (r=-0.47), and lag of accumulated debts/capita (r=0.49). In addition, tables A2 and A3 in appendix report population-averaged estimations as well as pooled OLS estimations of the same specification models.

Table 3 shows a correlation matrix of all variables, which shows few instances of autocorrelation. The variance inflation factors (VIF) for the regression models show that multicollinearity is not an issue (1.03 and 4.54). However, the higher value of VIF is caused by an interaction term between female councilor and conservative ideology (after centering). VIF values for other variables are below 2.0.

TABLE 3, CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Municipal Bonds/capita	1																	
Public Investment/capita	0.09	1																
Reserve Funds/capita	0.02	0.02	1															
Female councilors (%)	-0.19	-0.12	-0.06	1														
Female mayor or vice mayor	-0.02	0.02	-0.01	0.12	1													
Female mid-level managers (%)	0.02	0.08	-0.01	0.08	0.05	1												
Conservative ideology (%)	-0.14	-0.05	-0.06	0.41	0.09	0.09	1											
Female councilors' expertise	-0.09	-0.01	-0.01	0.27	0.06	-0.01	0.14	1										
Mayor's re-elections	-0.09	-0.04	-0.02	0.18	-0.05	-0.02	0.16	0.05	1									
Mayor's vote share (%)	0.01	0.02	0.02	-0.13	-0.05	0.00	-0.13	-0.06	0.20	1								
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							
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						
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					
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				
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			
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		
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	
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

Explaining Risk Taking Behaviors in Japanese Municipalities

Table 4 reports the random-effect estimates for the impact of female representation on risk-taking behavior in local public finance, which is 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 4, municipal bonds is the dependent variable. Model 1 includes independent and control variables. Model 2 adds an interaction term between female councilor and conservative ideology of local councilors to test H2b. We run the same models for other two dependent variables (public investment and reserve funds). In explaining municipal bonds (Models 1-2), the coefficient of *female councilors* is negative and statistically significant at the 0.01 level. Holding all other factors constant, as the percentage of female legislators increases by one percent, 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 councilors 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 councilors' expertise (H3) fail to reach statistical significance. Therefore, H1b and H3 receive no empirical support. Conservative ideology of local councilors (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.

TABLE 4, EXPLAINING RISK TAKING BEHAVIOR 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 councilors (%) (H1a)	-144.84***	-140.60***	-31.40***	-31.63***	-137.57	-154.49
	(48.13)	(51.42)	(11.69)	(12.27)	(127.18)	(126.84)
Female mayor or vice mayor (H1b)	-158.96	-127.84	688.81	687.45	-355.84	-473.63
	(1,359.34)	(1,339.56)	(737.42)	(738.49)	(1,588.87)	(1,584.08)
Female mid-level managers (%) (H1b)	51.36	52.64	18.85*	18.80*	-319.17	-324.29
	(57.06)	(57.41)	(10.18)	(10.25)	(231.97)	(230.40)
Conservative ideology (%) (H2a)	-72.89***	-56.32	-4.57	-5.67	-171.64**	-240.68**
	(26.09)	(51.92)	(5.99)	(11.96)	(81.97)	(110.72)
Female councilors x Conservative ideology (H2b)		-1.22		0.08		5.11
		(3.08)		(0.64)		(5.99)
Female councilors' expertise (H3)	-925.23	-940.14	48.13	48.56	1,771.66	1,821.35
	(691.91)	(709.74)	(57.42)	(57.02)	(1,149.58)	(1,150.63)
Controls						
Mayor's re-elections	41.87	44.58	64.14	64.05	-1,547.80	-1,553.75
	(352.95)	(350.97)	(44.52)	(44.36)	(1,368.37)	(1,368.58)
Mayor's vote share (%)	-50.48	-50.92	-1.07	-1.05	-0.34	1.27
	(36.56)	(37.04)	(2.26)	(2.25)	(52.90)	(52.64)
Mayor's conservative party support	150.97	177.37	-138.00	-138.82	-336.18	-436.67
	(823.01)	(809.64)	(133.21)	(134.78)	(1,938.48)	(1,902.89)
Unemployment rate (%)	364.08	363.01	101.88	102.05	2,302.88***	2,307.26***
	(253.43)	(253.21)	(76.12)	(76.17)	(846.07)	(843.62)
Agricultural sector economy (%)	213.22	216.34	-3.47	-3.63	-140.49	-152.20
	(142.92)	(146.88)	(21.00)	(21.14)	(204.81)	(198.52)
Municipal merger	7,019.71***	7,013.22***	-19.86	-18.77	-6,632.08	-6,587.93
	(1,888.35)	(1,895.22)	(236.91)	(236.24)	(5,534.65)	(5,536.60)
Lag of accumulated debts/capita	0.06***	0.06***	0.00*	0.00*	0.02**	0.02**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Lag of accumulated reserves/capita	-0.00	-0.00	0.00	0.00	0.22***	0.22***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.08)	(0.08)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	No	No	No	No	No	No
Constant	5,890.83	5,931.31	-23.20	-27.10	-21,241.64**	-21,381.53**
	(5,143.57)	(5,184.69)	(847.81)	(843.85)	(9,661.87)	(9,612.97)
Observations	4,547	4,547	4,547	4,547	4,547	4,547
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 in parentheses. Standard errors are clustered at municipal level.
**** p<0.01, ** p<0.05, * p<0.1*

Two of the 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 the mergers. Lag of accumulated debts/capita is positively associated with the issuance of municipal bonds at the 0.01 level. Holding all else constant, municipalities tend to issue more bonds as in the prior year their accumulated debt increases.

Model 3-4 in table 4 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 councilor and conservative ideology of local councilors to test H2b. According to Model 3 and 4, the results show that female councilors 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 percent increase in female councilor representation reduces public investment/ capita by 31.40 JP Yen (approximately 0.28USD). The impact is not large; however, it shows a statistically significant impact of female councilors

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

Finally, Models 5-6 in table 4 explain municipal budget allocated to reserve funds. According to Table 4, 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 percent increase in the number of conservative councilors reduces municipal budget allocation to reserve funds by 171 to 240 JP Yen (1.53 to 2.15 USD). This finding gives empirical support for H2a.

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 2,302 to 2,307 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, the municipality is likely to allocate more budget to reserve funds, assuming all else is constant.

Table 5 reports results of the same models with a region dummy variable. Recall that we conduct this analysis as a robustness check and to control for any regional fixed effects. Table 5 shows that coefficients of female councilors (H1a) and conservative ideology (H2a) are negative and statistically significant at the 0.01 and 0.05 level, respectively, even after controlling for region fixed effects. 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 4), are no longer significant in models 3-4 (Table 5). In the appendix, we report the series of results of our robustness check models. In models 1-2, coefficients of female councilors are positive 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 councilors decreases, but it is still significant at the 0.1 level. Therefore, these results demonstrate robustness of negative impacts of female councilors on municipal bonds (H1a).

TABLE 5, EXPLAINING RISK TAKING BEHAVIOR 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 councilors (%) (H1a)	-150.91***	-153.55***	-25.35**	-26.01**	-71.58	-68.63
	(53.92)	(56.25)	(11.38)	(11.90)	(113.07)	(112.21)
Female mayor or vice mayor (H1b)	776.44	763.36	758.13	754.76	-2,183.63	-2,170.02
	(1,267.56)	(1,269.94)	(751.04)	(751.22)	(2,034.81)	(2,012.30)
Female mid-level managers (%) (H1b)	24.86	23.52	14.85	14.60	-257.17	-255.75
	(65.45)	(66.09)	(9.69)	(9.77)	(243.84)	(239.31)
Conservative ideology (%) (H2a)	-83.14**	-95.69	-4.03	-8.37	-146.14**	-131.77
	(32.35)	(58.57)	(7.01)	(13.78)	(70.51)	(107.39)
Female councilors x Conservative ideology (H2b)		0.92		0.34		-1.06
		(3.00)		(0.70)		(7.29)
Female councilors' expertise (H3)	-890.04	-879.48	69.43	70.68	1,519.07	1,506.95
	(710.05)	(714.11)	(50.62)	(50.51)	(1,123.26)	(1,116.93)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14,831.82	14,830.20	1,924.07*	1,916.74*	-23,758.12**	-23,742.62**
	(18,955.80)	(18,957.08)	(1,022.73)	(1,021.36)	(10,371.74)	(10,365.91)
Observations	4,481	4,481	4,481	4,481	4,481	4,481
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 in parentheses. Standard errors are clustered at municipal level.
**** p<0.01, ** p<0.05, * p<0.1*

The link between conservative ideology and municipal bonds is also 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 councilors 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 of our 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, the impacts of conservative ideology on reserve funds are still robust after testing different models.

In sum, our robustness check results demonstrate that results from our main models (tables 4-5) survive through analysis with three robustness check models. As we expected, gender representation in local councils is negatively correlated with risk-taking behavior measures represented by the issuance of municipal bonds and budget allocation to public investment, holding all other factors constant (H1a). Conservative ideology is also negatively associated with these two dependent variables (H2a). However, we do not

find empirical support for the impact of female representation in the administrative body (H1b), multiplicative effects of female councilors and conservative ideology (H2b), or female councilors' 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 goal are to test whether the 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 behavior 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 752 Japanese city-level governments from the 2007-2012 period, covering at least two local administrative/legislative terms in each municipality. After controlling for potential confounding factors, findings show that neither expertise of female councilors nor female representation in executive (mayor and vice-mayor) 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 that female representation in local councils is positively correlated with risk-averse behavior in financial decisions. Specifically, female representation in city councils is negatively associated with both issuing municipal bonds and local investment in public corporations. Likewise, there is a strong negative link between conservative ideology and issuing municipal bonds and contributing to reserve funds.

Although the number of female legislators is small, our results do suggest that they tend to be risk averse in financial decision-making. This finding is in line with studies that examine the gender-financial behavior relationship in private organizations (Barua et al. 2010, Charness and Gneezy 2012, Eckel and Grossman 2002, Jianakoplos and Bernasek 1998). The small effect may be due, in part, to the relatively low female representation in Japanese local legislatures and/or male-dominant gendered institutions in Japanese society. Moreover, it can be said that Japanese local legislators' role in proposing new legislation tends to be passive, as they are primarily dedicated to either passing or modifying mayors' propositions. For instance, in 2011, only 10.7 percent of the city-level local councils issued any vote against a mayor's proposition and only 8 percent of councils submitted a proposal for municipal ordinances (Hirose and Local Council Reform Forum 2012). Such contextual factors may restrict the potential influence of female representation in local governments. However, conversely, we can also argue that our evidence suggests that gender representation in local councils has an impact, even in a context of low gender equality.

Our study is not without limitations. First, our data set covers only a six-year period (2007-2012) that corresponds in most municipalities to only two administrative/legislative terms. The fact that Japanese municipalities did not gain full autonomy in financial decision making until after this study period also imposes a limitation. Second, data unavailability impedes us from assessing the role of women's committee as-

signments in local assemblies, as well as the role of female councilors' career and educational backgrounds. Third, our study assesses the 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. Future studies should undertake this task as data becomes available.

Conclusions

This study examines the understudied association between female representation and public finance. We examine both elected (mayor and legislators) and administrative (mid-level managers) positions in an understudied developed setting: Japanese local governments. Japan is a relevant case to study, as among both developed and developing countries, it ranks very low in terms of gender representation in politics. Moreover, although a considerable number of studies have addressed gender representation and financial risk-taking behavior in the private sector, scarce attention has been given to local public finances. Our study seeks to address this research gap.

This study contributes to the understanding of the association between gender representation and local public finance. The findings of this study suggest a significant link between the presence of female councilors and outputs in public finance. The findings also suggest that 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 that female representation in local councils and conservative ideology are positively correlated with risk-averse behavior in financial decisions. Specifically, female representation in city councils is negatively associated with issuing municipal bonds, as well as with 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 effect may be due the small numbers of female mayors and vice-mayors in Japan. For instance, only 3.5 percent of city-level municipalities had either a female mayor or a female 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 levels of government, such as state and national legislatures. Moreover, survey studies of female legislators and female managers in the executive branch should be employed to shed light on female preferences in financial decision-making.

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APPENDIX A: TABLES

TABLE A1, EXPLAINING RISK TAKING BEHAVIOR IN PUBLIC FINANCE IN JAPANESE MUNICIPALITIES: RANDOM-EFFECTS MODEL WITHOUT AGRICULTURAL SECTOR ECONOMY VARIABLE

	Municipal Bonds		Public Investment		Reserve Funds	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable						
Female councilors (%) (H1a)	-188.59***	-193.22***	-25.96**	-26.58**	-25.47	-20.55
	(62.41)	(64.24)	(11.57)	(12.05)	(110.58)	(113.45)
Female mayor or vice mayor (H1b)	525.71	503.71	755.67	752.43	-1,909.73	-1,887.08
	(1,242.53)	(1,245.77)	(750.23)	(750.35)	(1,939.68)	(1,921.31)
Female mid-level managers (%) (H1b)	15.30	12.83	14.76	14.51	-246.53	-243.97
	(66.95)	(67.79)	(9.64)	(9.72)	(238.26)	(233.51)
Conservative ideology (%) (H2a)	-110.00***	-133.97**	-4.56	-8.97	-112.52*	-86.04
	(41.06)	(65.32)	(7.06)	(13.72)	(60.12)	(116.42)
Female councilors x Conservative ideology (H2b)		1.79		0.35		-1.98
		(2.99)		(0.70)		(7.66)
Female councilors' expertise (H3)	-946.57	-925.33	68.98	70.30	1,571.31	1,549.11
	(738.99)	(737.97)	(50.83)	(50.70)	(1,124.61)	(1,115.46)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	17,307.25	17,270.88	1,975.72*	1,963.42*	-26,719.01**	-26,661.78**
	(20,482.46)	(20,473.12)	(1,051.98)	(1,049.17)	(11,103.58)	(11,049.00)
Observations	4,481	4,481	4,481	4,481	4,481	4,481
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 in parentheses. Standard errors are clustered at municipal level.

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

TABLE A2, EXPLAINING RISK TAKING BEHAVIOR 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 councilors (%) (H1a)	-106.98*	-108.70*	-25.30**	-25.97**	-59.43	-63.72
	(55.34)	(58.47)	(11.33)	(11.86)	(106.04)	(106.81)
Female mayor or vice mayor (H1b)	461.98	453.59	757.66	754.48	-2,298.76	-2,320.29
	(1,310.09)	(1,310.94)	(748.54)	(748.76)	(2,040.44)	(2,021.88)
Female mid-level managers (%) (H1b)	11.61	10.75	15.01	14.71	-260.11	-262.29
	(71.19)	(71.45)	(9.67)	(9.75)	(230.87)	(227.45)
Conservative ideology (%) (H2a)	-89.21***	-97.11*	-3.96	-8.25	-135.32**	-156.04
	(33.47)	(53.65)	(6.96)	(13.69)	(62.66)	(98.36)
Female councilors x Conservative ideology (H2b)		0.58		0.33		1.53
		(2.83)		(0.70)		(6.24)
Female councilors' expertise (H3)	-829.67	-822.58	69.66	70.82	1,208.08	1,224.03
	(667.79)	(674.10)	(50.47)	(50.36)	(970.16)	(967.17)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	8,968.93	8,969.80	1,916.12*	1,911.31*	-21,386.34**	-21,383.95**
	(14,247.64)	(14,248.49)	(1,020.18)	(1,018.62)	(9,810.61)	(9,807.02)
Observations	4,481	4,481	4,481	4,481	4,481	4,481
Number of municipality	752	752	752	752	752	752

Control variables are not reported.

Robust standard errors in parentheses.

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

TABLE A3, EXPLAINING RISK TAKING BEHAVIOR 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 councilors (%) (H1a)	-150.91***	-153.55***	-18.62	-16.23	-53.37	-61.35
	(53.92)	(56.25)	(12.33)	(12.58)	(103.08)	(104.62)
Female mayor or vice mayor (H1b)	776.44	763.36	560.61	572.40	-2,346.90	-2,386.37
	(1,267.56)	(1,269.94)	(684.02)	(684.01)	(2,057.62)	(2,040.19)
Female mid-level managers (%) (H1b)	24.86	23.52	43.44***	44.65***	-259.69	-263.73
	(65.45)	(66.09)	(15.12)	(15.47)	(224.53)	(221.78)
Conservative ideology (%) (H2a)	-83.14**	-95.69	1.78	13.10	-129.67**	-167.53*
	(32.35)	(58.57)	(7.24)	(14.48)	(59.16)	(94.80)
Female councilors x Conservative ideology (H2b)		0.92		-0.83		2.78
		(3.00)		(0.73)		(5.78)
Female councilors' expertise (H3)	-890.04	-879.48	128.79*	119.27	1,057.10	1,088.94
	(710.05)	(714.11)	(75.77)	(76.95)	(903.19)	(901.64)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Region dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14,831.82	14,830.20	779.34	780.80	-20,250.26**	-20,255.15**
	(18,955.80)	(18,957.08)	(1,089.88)	(1,092.11)	(9,577.12)	(9,576.79)
Observations	4,481	4,481	4,481	4,481	4,481	4,481
R-squared	0.14	0.14	0.13	0.13	0.08	0.08

Control variables are not reported.

Robust standard errors in parentheses. Standard errors are clustered at municipal level.
**** p<0.01, ** p<0.05, * p<0.1*

[i] Political and social system of Japan is still men-dominant and is interpreted from the perspective of men in leading positions. Therefore, political and administrative institutions are gendered along lines of men's' standpoint (Acker 1992).
[ii] Park (2014) also examines the impacts of female representation both at the state level and county level on welfare spending in California. Specifically, Park (2014) relies on ten years' spending data of 58 counties in California and finds that female representation on county boards has no significant effect on local welfare spending. However, at the state level, Park (2014) does find that female representation in the legislature is positively associated with increases in welfare spending.
[iii] Our study focuses on ideology of legislators not ideology of mayors. This is because most mayors are not affiliated with any political party in the Japanese context even though they receive support from political parties during election campaign. For instance, only 2 mayors out of 809 mayors were affiliated with political party in 2011(Chihō Jichi Sōgō Kenkyūjo 2012).
[iv] For instance, regional disparities in unemployment rate were the lowest, and regional differences in GDP per capita were the fifth lowest among OECD countries (OECD 2014).
[v] Local governments can determine the number of vice-mayors by ordinance (MIC n.d.-b, Osugi 2009).
[vi] 38 cities are dropped due to data unavailability.
[vii] Approximately 30% 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% of municipalities.
[viii] In addition, *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 councilor's term. Local council term data is collected from the *List of Local Chief Executives* (2007-2012 editions) (Chihō Jichi Sōgō Kenkyūjo 2007-2012). Regarding two socioeconomic control variables (unemployment rate and agricultural sector economy), we use the value in 2005 for the year of 2007, 2008, and 2009, and the value in 2010 for the year of 2010, 2011, and 2012, because these variables are available only in the years of 2005 and 2010.
[ix] To be more specific, the managerial position refers to positions that are higher than section chief in the Japanese local government (Cabinet Office of Japan 2016b).