Article

How Do Municipalities Impact Parents' Attitudes towards Childcare?

Multilevel Analysis of Policy Feedback in Japanese Childcare Policy

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1. Introduction

The purpose of this paper is to explore the following two questions. First, how local governments in Japan prioritize the provision of public childcare to address different types of social risk related to the "failure of the family"? And second, how do these local political and administrative policies and their implementation affect the choices of parents for expressing childcare needs?

In Japan, there are inequalities in childcare support that new parents can receive, especially in the Tokyo region and other hub cities. Since the early 2010s, more young women have entered the work force in response to deteriorating economic circumstances,[1)] with the number of children waiting to get into publicly certified childcare facilities remaining high,[2)] recently reversing a downward trend that occurred between 2010 and 2015, in spite of decreasing birthrates.

Previous governments have made efforts to tackle this inequality. Twenty years have passed since the first policies were adopted to increase the birthrate and childcare support. In the wake of the "1.57 Birthrate Shock" of 1990, the

1) Employment rate of married young women in age of 25-44 increase around 10% in five years.

2) According to the compilation regarding childcare facilities among others, by Ministry of Health, Labor and Welfare in April 1, 2015, the number of children waiting is peak in 2010 and it gets decreasing and recently turn upper trend, however this trends caused by changing definition of estimate of waiting children by the MHLW.

government started to consider measures for developing an environment supportive of work and childcare, formulating the "Basic Direction of Measures in Support of Future Child-Rearing" plan (Angel Plan) to create infrastructure that supports working parents as well as balancing work and childcare (Cabinet Office 2014:15). Since then, both LDP and DPJ governments have focused on increasing the number of available childcare facilities. They have pursued this goal through such measures as the Act for Measures to Support the Development of the Next Generation Children in 2003, Basic Act for Measures to Cope with Society with Declining Birthrate in 2003, Outline of Measures to Cope with Society with Declining Birthrate in 2004, and a Vision for Children and Child-rearing in 2010. Especially, in 2015, the "Comprehensive Support System for Children and Child-rearing" (hereafter referred to as the "New System") was started, which was based on the issues raised in a set of bills commonly referred to as the "Three Bills Relevant to Children and Child-rearing" submitted in FY2012. The New System rapidly expanded the number of daycare facilities far beyond the planned targets (Figure 1). Moreover, the government has been deregulating childcare facilities to meet the demands of parents, such as by allowing nurseries to be staffed with non-regular employees, loosening the staff-to-child ratio, and relaxing other childcare facility standards (Sugiyama 2009). However, the wait-list for childcare remains high (See Figure 2).

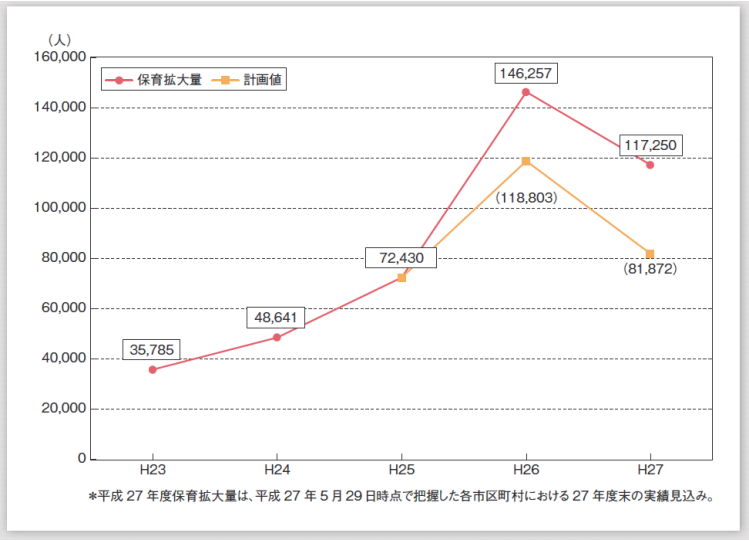

Figure 1. Actual versus planned childcare facility capacities.
Source: Cabinet Office 2016, A 2016 Declining Birthrate White Paper in Japanese, pp.57.
Note: The vertical axis represents number of the people. The dots represent the actual child enrollment capacity of currently existing childcare facilities, while the squares represent the annual target capacities planned by the government.

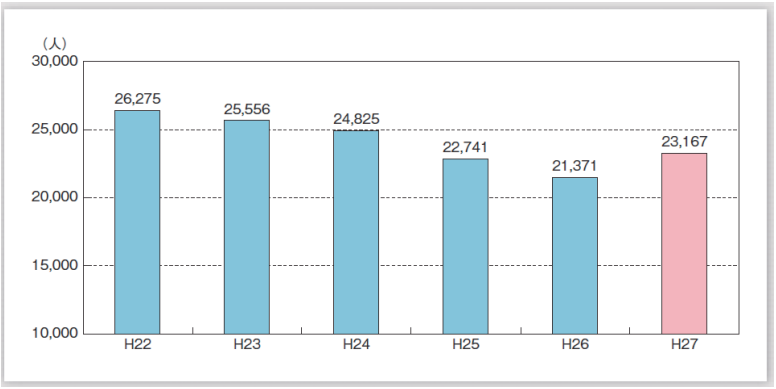

Figure 2. Number of children on waiting list for childcare enrollment.
Source: Cabinet Office 2016, A 2016 Declining Birthrate White Paper in Japanese, pp.58.
Note: The vertical axis represents the number of the people. The horizontal axis shows each year from 2010 (H22) to 2015 (H27) according to the Japanese era system.

Despite the government's various efforts, why has this challenge persisted? Several intertwining factors can be named. On the demand side, there is increasing demand for care for younger children, specifically for infants under 1 year, along with very high overall demand in urban areas experiencing recently accelerating population concentrations. On the supply side, there is a lack of financial resources, a staffing shortage,[3] strict regulatory standards, and frequent local opposition to constructing new daycare facilities. Public discourse in Japan especially focuses on increasing financial, staffing, and other resources. Compared to other western countries, family-related government expenditures in Japan have been consistently low (Shibata 2015). For example, the ratio of GDP to these expenditures in Japan in 2013 was 1.25 percent, compared to 40 percent in France and Sweden as seen Figure 3, although it is difficult to compare simply owing to differences in taxation rates across these countries. However, untangling the childcare challenge requires considering other driving factors beyond resources.

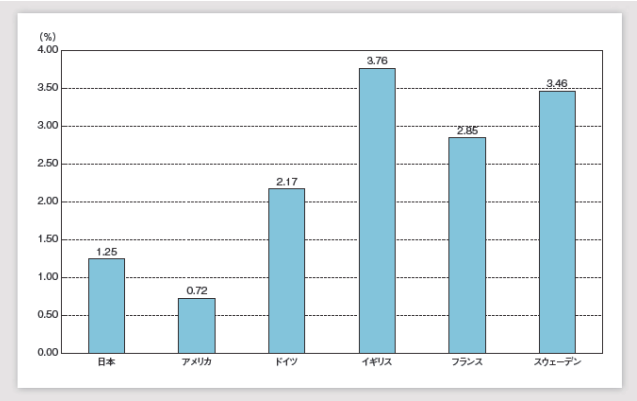

Figure 3. Comparison of ratio of GDP to family-related social expenses in each country
Source: Cabinet Office 2016, A 2016 Declining Birthrate White Paper in Japanese, pp.32
Note: The vertical axis indicates the ratio percentages. The horizontal axis shows from left to

3）　Japanese nurseries are usually staffed by low-wage workers yet their salaries are considered to be pulled up in order to increase the supply of childcare facilities. Most political parties in Japan regard improvement of their labor conditions has been a key issue discussed ahead of the upcoming House of Councillors elections this July. http://www.tokyo-np.co.jp/article/politics/list/201605/CK2016052002000125.html (Accessed June 20, 2016. Tokyo-Shinbun May 20, 2016.)

right: FY2013 for Japan, and FY2011 for United States, Germany, United Kingdom, France and Sweden.

This graph was made by combining data from various sources according to the above white paper, pp.32. The main source is the National Institute of Population and Social Security Research, "Statistics of Social Security Expense 2013". Family related social expenses include the following:

- Child allowance (child benefit): benefit expense for child fostering service etc.
- Social welfare: payment for special child dependent's allowance, child protection cost, operating cost of nursery center.
- Association-managed health insurance, Society-managed health insurance, National health insurance: various expenses of child birth and child-rearing, lump-sum money for child birth and child-rearing.
- Various mutual insurance cooperatives: various expenses for child birth and child-rearing, childcare leave benefit, family-care leave benefit.
- Unemployed insurance: childcare leave benefit, family-care leave benefit.
- Social welfare: aid in child birth and education
- School expense subsidies.
- Early childhood educational cost (public expense of early childhood educational cost, according to "Education Databese" by OECD).

For each local government, it is not easy to prioritize the allocation of resources because each government has to estimate not only the supply and demand situation for childcare services in the present, but also in the future. Though the absolute number of children in Japan is projected to decrease over the next 50 years, a rapid increase in childcare facilities could stimulate additional childcare demand by parents according to Say's Law. The likely stretching of resources to achieve this rapid increase in turn may lead to a reduction in the quality of childcare services. In fact, as Figures 1 and 4 show, after the "New System" came into effect and the childcare supply increased, the demand for childcare also increased. In this climate, local governments must budget funds generated locally and from the national government, which has shrunk disbursements in every policy area, to address current needs, and at the same time must identify the future peak of childcare demands and plan accordingly.

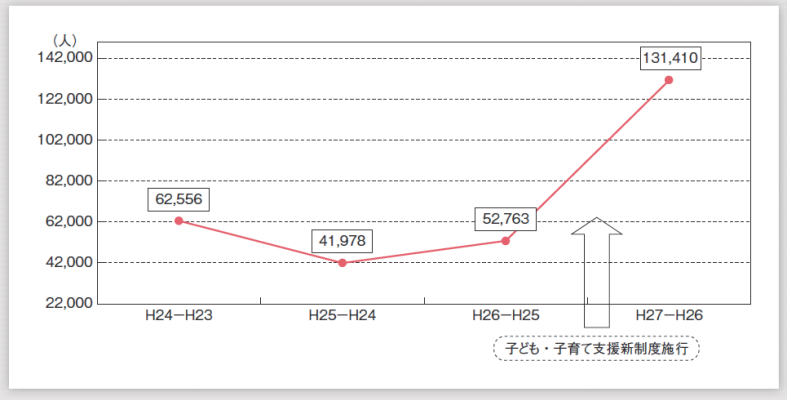

Figure 4. Number of childcare applications from FY2011 to FY2014.
Source: Cabinet Office 2016, A 2016 Declining Birthrate White Paper in Japanese, pp. 58.
Note: The vertical axis shows number of the people. The horizontal axis shows each year from 2011-12 (H24-H23), to 2014-15 (H27-H26) according to the Japanese era system. As indicated by the arrow, between 2014-2015 the New System was started.

Therefore, I would like to focus on local government childcare policy and its effects. Japan's "familialistic" welfare state has attracted much interest and research, with a particular focus on welfare regime comparative analysis, gender consciousness, political process, and institutional settings of family policy, primarily studied through the lens of Japan's national government (e.g. Estevez-Abe and Kim 2014). Yet An and Peng (2016:3) point out that familialization and defamilialization are not necessarily opposites. In practice the two are not necessarily completely distinguished from one another.

For example, under the Abe Administration in Japan, there is a policy debate regarding whether conventional childcare leave should be extended from one to three years or not. This policy can be seen to advance both familialization and defamilialization; the latter through government intervention in securing future employee return to the job and partial paid leave, and the former through the typically gendered exercise of this policy in which mothers principally take

childcare leave and parents continue division of labor by gender role.[4)]

Additionally, whether policies like these function as familialization or defamilialization for each parent depends on the parents' environment, such as access to nearby childcare facilities or number of hours worked by the parents. Local governments make and implement policies by considering policy demand, environmental factors, and norms of their area. Policy demands are understood to be constituent "needs" that the government identifies and partially meets given limited resources (Nishio 1990), with attention to identifying "target populations" to best meet those needs.

Social services such as childcare or elderly care cannot be fully understood without considering the contribution of local government. However, little attention has been given to the role and influence of local political and administrative processes in the implementation of childcare services, and to the strategies of frontline workers used to cope with the perpetual stress inherent in the delivery of these services (Tummers et al. 2015). The effect on parents' attitudes or choices when they personally and directly encounter local public policy is another topic that merits further examination (Schneider and Ingram 1993;2006).

In this paper, I focus on municipal government strategies exercised in Japan in 2013 and 2014 just before the "New System" began to be rolled out, and the effects municipal policies had on parent choices. By using data collected from local municipalities, I analyze what factors may influence differences in how municipal governments address childcare needs and how these differences affect parents' choices.

4） An and Peng (2016:15) also point out that Japan's childcare policy intentions are unclear. They doubt whether Japanese policies are designed to make it easier for equal gender division of labor or whether they simply blur the line between degendering and gendering paid and unpaid work.

2. Childcare policy and politics of choice

2.1 Overview of childcare system in Japan

Childcare systems vary widely across welfare states. A universal high-quality childcare system is seen as important in equalizing opportunity structures (Esping-Andersen 2015), including for women and children's development. Compared to other developed countries such as France, Germany and United States, Japan faces an especially rapidly aging population and the associated economic challenges of having fewer workers and higher costs for supporting elderly people. As mentioned in section 1, family-related government expenditures in Japan have been consistently low. Japan's governmental policies still often assume family structures with the father as the breadwinner and the mother providing intensive childcare at home. In this social and political environment, it is difficult for mothers to retain continuous full-time jobs (Boling 2015:2).

What factors may be undergirding the perpetuation of these features of the Japanese childcare system? Some scholars identify gender inequalities underlying welfare policies and manifested in the labor market as key factors, which are features of "Coordinated Market Economies (CMEs)" found in countries such as France, Germany and Japan. CMEs often exhibit occupational segregation and gender gaps related to skill regimes. Given that women are more likely quit work to raise children, firms are more likely to view resources that would be spent on women to train them in firm-specific skills to be a suboptimal investment, and thus are less likely to hire women in the first place (Boling 2015:14-15).

Others focus on social-cultural norms. Japan is among a number of familialistic welfare states with gender and family norms based on religious values, particularly Confucianism in Japan and Catholicism in Europe. These countries have been less willing to adopt policies that may supplant traditional familial welfare duties even as women become more educated and seek economic independence through working outside the home. As their career options and earning potential increase, women face the choice of either remaining home to take care of children and elderly parents or pursuing a career (Esping-Andersen 1997; 2015).

Although in the mid-1990s the Japanese government has started to tackle

childcare policy directly in the wake of the low fertility problem, scholars identify various obstacles to these efforts. In addition to the cultural values described above, Boling (2015:142-145) invokes conflict between political leaders and bureaucrats, the typical challenge of raising taxes to expand and support new programs. Developing new state supported work-family policies also fundamentally challenges long-standing patterns of depending on private employer-provided benefits. Employers have been the social safety net in Japan, a framework in which when unemployment climbs, social welfare falls (Steinmo 2010:134). But Japan's intensely firm-loyal labor market ranks firm specific skills very highly, and imparting these skills to workers depends on a considerable upfront investment from employers. These conditions, coupled with the likelihood that female workers will quit upon marriage or childbirth, consequently discourages employers from hiring women for permanent career-track jobs (Estevez-Abe 2007). Yet while it critiques the reigning corporate centered welfare system, the state is largely reluctant to alter the prevailing gender structure (Peng 2002:50-51). Instead, at a fundamental level, the Japanese state considers gender equality itself as a problem, as a vehicle exacerbating low fertility and thus the aging of society. Peng criticizes the state's motivation for expanding public childcare as fundamentally misguided: "Using childcare as a protanalist tool has a limited effect at a time when the main reason for a decline in the fertility rate is a lack of gender equality." (Peng 2002:50-51). These broader nation-level social and political explanations identify important influences on childcare policy, however they overlook the role of municipal government in Japan.[5)]

2.2 Role of municipalities in Japanese childcare system[6)]

In Japan, since the enactment of the 1947 Child Welfare Law, municipal governments must provide childcare services for children who "lack care" (*hoiku ni kakeru kodomo*). Municipal governments are mainly responsible for childcare

5） Yamamoto (2015) provides a descriptive study of childcare in Sendai City, but does not performing a statistical comparative analysis across different cities or areas.
6） Details in English in Lambert (2007).

enrollment decisions. This system, called the "placement system" (*sochi seido*),[7] continued until 1997, then changed to the "contract system" (*keiyaku seido*) with the amendment of the Child Welfare Law in 1997. In the contract system, the rights of parents are affirmed and the childcare preferences of parents indicated on their applications are taken into account by municipal governments when making enrollment decisions. This shift in delegating responsibility to the local level occurred as the result of broader decentralization trends that advanced beginning in the 1990's, based on the premise that the diverse needs of childcare support could be better met at the community level. As the New System launched in 2015, the responsibility and authority of municipal governments were further reinforced.

In the New System, the municipal government also has the responsibility of balancing demand and supply. The municipal governments have the authority to license childcare facilities partly financially supported by the national government. On the other hand, when parents apply to use the childcare services, the municipal governments assess whether the child needs childcare and the kind of childcare needed. The parents choose and contract with a facility/service provider under the guidance of the municipal governments. Municipal governments are empowered to exercise a range of options to meet current and future childcare needs including presenting available facilities and service providers to parents, making enrollment requests to facilities, and making other "facility use adjustments," (*nyusho chousei*), which refers to prioritizing childcare access according to needs and available services (Cabinet office 2014:19).

Thus it is important to examine how municipalities conduct the enrollment process and perform use adjustment, how such processes affect the family and produces inequalities in supporting childcare needs. An example of the enrollment process in licensed nursery schools and other nursery facilities are as follows from the guide of Minato City 2016. Parents who want childcare and want to visit and observe nursery schools can submit an application to the municipal government to have their need for nursery services formally approved. Municipal staff may call or visit the parents for investigation, and an Approval Certificate is, in principle,

7）Section 24 in the old Child Welfare Law set "Placement system".

issued. When the number of applicants exceeds the number of vacancies available at nursery schools, assigned municipal staff holds an adjustment meeting to make a preliminary determination regarding which children will be given permission to enroll at a specific nursery school based on the level of need for nursery services (from the total of index points, see Appendix) in accordance with the municipality's acceptance criteria. Finally, after the preliminary decision is announced, the children become enrolled or are placed on the waiting list. Excepting the Approval Certificate step introduced by the New System in 2015, the adjustment process is the same as was before the reform.

2.3 Policy feedback and citizens' attitudes towards childcare

Different values often compete more fiercely in family policy than in other policy fields. Views on how childcare should be provided and by whom vary across gender constructs, social classes, economic status, ethnicities, and regions (Lewis 2008) because childcare or family issues traditionally belong to the private sphere. Thus in childcare policy "the choices that policy makers make about childcare interventions may thus reflect established patterns of behavior and attitudes, or, as in this case, may seek to change behavior in accordance with new policy goals" (Lewis 2008:500). In other words, childcare policy "not only changes parents' access to care resources, it may also bring about changes in the way parents think about care" (Ellingsaeter et al. 2016).

There is growing interest in the social policy literature on how policy design influences political behaviors and attitudes of not only the political elite but also the general public, which in turn has consequences on subsequent policy outcomes (Campbell 2012). Paul Pierson (1993) has described the mechanisms of these mass feedback effects from public policy as having "resource effects" and "interpretive effects." The size of benefits, visibility and traceability of benefits, proximity and concentration or diffusion of beneficiaries, duration of benefits, and program administration are factors that can impact the degree and kind of feedback effect (Campbell 2012). Governments distinguish between policy needs from policy demands (Nishio 1990) under various constraints. To do so, governments engage in the "social construction of target populations" when

designing policies (Schneider and Ingram 1993) which in turn "sends messages about what the government is supposed to do, the groups people belong to, what they deserve from government and what is expected of them."[8] Such messages transmitted through public policies and other institutions is then reflected in how people perform their role as citizens (Ingram and Schneider 2005:23).

There is no research on policy feedback and childcare except Ellingsaeter et al. (2016), which studied childcare reform in Norway, though in Japanese childcare policy these discussions have even greater relevance. Japanese parents in urban areas engage in *hokatsu*, the strategic efforts they make to get a good score on the adjustment index to get their children enrolled in childcare facilities (Kukimoto and Koizumi 2013). These efforts may include moving between municipalities, changing their labor conditions, living separately or even getting divorced. The literature that does examine Japanese childcare policy usually focuses on the national welfare state system, the labor market or political economy, and familialistic norms, all premised on the idea that political elites supported by ordinary citizens make childcare policy reflect their constituencies as much as they can. It may also be true, however, that the causal relationship can be reversed when seen through the analytical lens of policy feedback.

A number of skeptics question the existence of such a reversal citing the difficulties in excluding the standard causal direction in analysis. Policies don't change without citizens demanding change. For example, the political elite has no interest in increasing public spending on social welfare program unless there is a strong movement for reform. However, Levistsky (2014) asks why is it ever the case that there is no movement nor strong demands for policies to meet unsatisfied needs. She contends that before individuals can become politicized, they must able to view their private needs as public problems requiring a government solution, imagine such solutions to remedy those problems, and finally take action pushing the state to adopt those remedies (Levistsky 2014). She argues that a main barrier to realizing these conditions for politicization is the lack of existing

8）Schneider and Ingram (1993; 1997; 2005) have discussed how positive and negative construction interact with political power to produce several different type of target populations.

policies that would furnish the cultural and material resources needed for caregivers to consider the possibility of increased government support. Although Levistsky's work focuses on long-term care, this logic could also apply to childcare policy. Parents cannot express their needs for childcare, nor recognize the possibilities to change, nor feel they are entitled to receiving the childcare services as deserving citizens because existing policy does not offer the prerequisite cultural and material resources.

Therefore, in my analysis, I examine the relationship between how local governments in Japan prioritize the provision of public childcare through the enrollment adjustment system and how these local political and administrative policies and their implementation affect the choices of parents in expressing childcare needs, in order to explore the factors that cause inequalities in supporting childcare needs. The literature on parents' choice of preschool facilities has generally focused on the parents' individual resources available, socioeconomic status, educational aspirations for their children, and choice of life course, because this research is mainly conducted in sociology or educational sociology.[9] To my knowledge there is no research on parents' choice of preschool facilities that looks at the impact of the political and policy environment. Thus I aim to shed light on the interactions between childcare policy and parents' choice of preschool facilities.

2.4 The effect of municipal level variations on parents' choice

How do local political and administrative environments affect ordinary citizens' attitudes? Some scholars highlight the interpretive effect or resource change effect through the amount of benefit or encounters between local officials and citizens. Keiser and Soss (1998) explored how partisanship influences the discretion of local officials in implementing childcare services. Soss and Keiser (2006) also pointed out not only how individual needs but also policy generosity or ideology of local officials affect the claim benefits of citizens against the government. Other scholars have discussed how dominant norms in a political and administrative environment affects citizens' perceptions. Fridkin and Kennedy

9） These studies have had views the effect of choosing preschool facilities on children such as academic achievement as a problem.

(2014) described how the increased presence of female U.S. Senators has strengthened women's understanding and engagement in politics. Nielsen (2015) found that the gender of public employees working in a variety of sectors not only affected bureaucratic behavior towards other citizens based on differences in interests but also on differences in attributes and abilities, demonstrating that gender matters both in "gendered areas" and "not gendered areas." These analyses provide key insights on the interface between government bodies and citizens; however, investigating additional influencing factors can help provide us a more complete picture.

Another way to approach these issues is through "representative bureaucracy" theory, which asserts in part if the bureaucracy resembles those it serves, bureaucrats will implement policies in ways that benefit the demographic groups they represent (Smith 2014:477). This theory implies that, for example, that the leadership style of many women which focuses on consensus building, is more ethically consciousness, and welcomes different perspectives to the informal decision-making process consequently changes the governance of an organization and organizational performance.

Considering the discussion so far, I examine how municipal governments weigh selected demographic and socio-economic traits of parents when prioritizing the provision of childcare. I generated the following five hypotheses regarding municipal level variations in assessing childcare enrollment applications (*H1*) and the effect of local political processes on parents' childcare choices (*H2, H3-1, H3-2, H3-3*).

H1: Urban municipal governments differ in what kind of target groups they prioritize when they adjust applicant needs during adjustment meetings.
H2: How parents express their needs for childcare significantly varies according to locality.
H3-1: The more supportive the political environment of a local area is, the more easily and vocally parents express their need for childcare assistance.
H3-2: The less support there is for traditional gender norms in division of labor, the more easily parents express their need for childcare assistance.

H3-3: The more actively a municipal government promotes childcare support policies, the more easily parents express their need for childcare assistance.

3. Variation of targets of enrollment adjustment process in urban area of Japan

Hypothesis 1 was tested using a dataset collected on 60 urban municipalities[10] in Japan for FY2014, with the applicant adjustment criteria published by each municipality subsequently combined, and using a data book on childcare services compiled by the civic group, Parents Concerned with Nursery Schools.[11]

3.1 Methods and descriptive results

I examined all the applicant adjustment criteria in 60 cities and combined them into one table. I made the dummy variable whether the municipalities include each of indexes or not. The results are showed in Table 1, with the "Mean" column values, which are equal to the ratio of 60 municipalities, showing the prevalence of criteria used across municipalities. It may be surprising to see that less than 40% of the municipalities include "parents living apart" as a criteria to assessing need. Also interesting how few municipalities include "parent attending school" as a criteria at all to prioritize need, and how those municipalities who do include it, actually *deduct* points for parental pursuit of education. In addition, while many local governments may be awarding few points for job seekers on the premise that such efforts may not be in earnest, this stance also has the effect of discouraging unemployed mothers from becoming employed, thus furthering familial norms.

10） Details for each municipality are as follows: 23 special wards, 21 of 26 cities in the Tama-area of Tokyo Metropolis (the excluded cities being Akiruno, Hamura, Fukuo, Musashi-murayama and Higashi-Yamato), and 16 of 20 ordinance-designated and thus major cities of Japan (the excluded cities being Hamamatsu, Hiroshima, Kumamoto, and Chiba City).

11） http://www.eqg.org/oyanokai/ (Accessed June 27, 2016)

Table 1. The summary of combined tables.

Variables	N	Mean	Std.dev	Min	Max
Basic Index points					
Points of both father and mother included (instead of just one parent)	60	0.8	0.40	0	1
No distinction made between parents who work at home versus outside the home	60	0.50	0.50	0	1
Pregnant or recently experienced birth > parent(s) having Grade 4 disability	60	0.55	0.50	0	1
Whether parent currently taking childcare leave	60	0.23	0.43	0	1
One or both parents unemployed but seeking work, or unemployed with job offer extended (few points typically added)	60	0.75	0.44	0	1
Adjustment index points					
Parent currently using unlicensed nursery or on childcare waiting list (added)	60	0.75	0.44	0	1
Parents live apart (added)	60	0.38	0.49	0	1
Parent has work experience (added)	60	0.15	0.36	0	1
More than 3 preschool children (added)	60	0.133	0.34	0	1
Child readmitted to facility due to parent concluding child care leave (added)	60	0.733	0.45	0	1
Child has sibling (added)	60	0.833	0.38	0	1
Parent given job offer (subtracted)	60	0.150	0.36	0	1
Parent attending school (subtracted)	60	0.117	0.32	0	1
Parent engaged in nursery or long-term care within or next to house	60	0.3	0.46	0	1
No work experience (subtracted)	60	0.417	0.50	0	1
Order of Priority					
Low-income priority (added)	60	0.417	0.50	0	1

3.2 Factor Analysis

I then conducted analysis of the combined table by first performing Factor Analysis with maximum likelihood estimation based on Promax Rotation. The number of factors, three, was decided by using the Gutman criteria and scree criteria jointly. The results are shown in Table 2. The factor rotation matrix is presented in Table 3. Based on the results, I categorized the factors by what kind of criteria each municipality particularly prioritized for assessing childcare need. The 60 municipalities are distinguished three factors or types, “Individual mother’s needs,” “Holistic household needs,” and “Non self-reliance” respectively, according to when the factor loading is over |0.3|. The first factor relates to municipalities that apparently prioritize criteria related to the individual mother’s needs (specifically mothers who have additional children, live apart from the father, and/or have already resorted to an unlicensed nursery or still have a child on a facility waiting list). The second factor appears to relate to municipalities that consider the needs of the whole household (by considering points for both parents, and exhibiting a number of pro-work positions). The third factor seems to be very unsupportive of working outside the home or pursuing education, while supportive

of larger families. Thus as stated in hypothesis 1, there are municipal level differences in what kind of target groups local governments prioritize when they adjust applicant needs during adjustment meetings.

Table 2. The result of Factor Analysis

Variable	Individual mother's needs	Holistic household needs	Non self-reliance
Points of both father and mother included (instead of just one parent)	0.2209	0.4403	0.1944
No distinction made between parents who work at home versus outside the home	0.0297	−0.0189	−0.232
Pregnant or recently experienced birth > parent(s) having Grade 4 disability	−0.2194	0.0372	−0.2466
Whether parent currently taking childcare leave	0.135	−0.0998	0.0244
One or both parents unemployed but seeking work, or unemployed with job offer extended (few points typically added)	−0.0539	0.3188	0.0495
Parent currently using unlicensed nursery or on childcare waiting list (added)	0.954	0.0969	0.0566
Parents live apart (added)	0.307	−0.3538	0.1293
Parent has work experience (added)	0.2492	0.2235	−0.0468
More than 3 preschool children (added)	−0.1257	−0.0574	0.3339
Child readmitted to facility due to parent concluding child care leave (added)	0.0751	−0.4823	−0.0364
Child has sibling (added)	0.5916	−0.3375	−0.1447
Parent given job offer (subtracted)	0.0219	0.0602	0.7488
Parent attending school (subtracted)	0.0735	−0.1817	0.3674
Parent engaged in nursery or long-term care within or next to house while looking after child (substracted)	0.1534	0.0041	−0.1803
No work experience (subtracted)	0.2106	0.4481	−0.1389
Low-income priority (added)	0.0515	0.4696	0.0178

Table 3. Factor rotation matrix

	Individual mother's needs	Holistic household needs	Non self-reliance
Individual mother's needs	0.9987	−0.1047	0.0166
Holistic household needs	−0.0087	−0.7639	0.8105
Non self-reliance	−0.051	0.6367	0.5855

4. The effect of local political processes on parents' childcare facilities choice

In this section, hypotheses 2, 3-1, 3-2, and 3-3 are tested against the merged survey data of parents in 14 urban municipalities in Japan.[12] These surveys were conducted in the latter half of FY2013 by each municipality in order to inform

12） More specifically, the municipalities included in the data set are as follows: 2 cities (A, B) in Tohoku region, 3 cities (C, D, G) and 1 special ward (*tokubetsu-ku*) of Tokyo (E) in the Kanto region, 4 cities (H, I, J, L) and 2 towns (K, M) in the Chubu region, 1 city (N) in the Kinki region, and 1 city (R) in the Kyushu region. This data was made available to scholars who participated in a secondary analysis workshop organized by the Institute of Social Science of the University of Tokyo in FY2015.

their Municipal Plans for Children and Child-Rearing Support.[13)]

4.1 Data and Methods

The dataset consists of the merged survey results collected from 14 municipalities (N=16,563). The survey was distributed to parents or households that have preschool children. Each municipality either chose to distribute the survey to all parents or distributed it according to a randomized sample. Most municipalities distributed the survey via post mail. The majority of the respondents are residents who live in the medium-size municipalities in the Kanto and the Chubu regions. Each effective response rate varies from 45.6% to 76.8%, with most between around 50% to 60%. Basic information is shown in Table 4. Most municipalities distributed and collected their surveys by mail.

Table 4. Summary of survey conducted in each municipalities

	Respondent Type	Number of Responses	Response Rate	Distribution Method	Distribution Approach	Period of Survey
A city in the Tohoku region	Households who have children aged from 0 to 5	850	56.7%	Both distributed and collected by postal mail	Systematic sampling from resident registration book stratified by age.	November 2013
B city in the Tohoku region	Households who have children aged from 0 to 5	1058	52.9%	Both distributed and collected by postal mail	Systematic sampling from resident registration book stratified by age and area.	November 2013
C city in the Kanto region	Households who have preschool-age children	674	67.4%	Both distributed and collected by postal mail	Sampling from resident registration book	From Feb to Mar 2014
D city in the Kanto region	Parents who have preschool-age children	801	53.5%	Distributed partly through childcare facilities and partly via postal mail. Collected by postal mail or through boxes located in the municipalities.	Sampling stratified by area, age, and current childcare facilities use.	From Dec 2013 to Jan 2014
E special district in the Kanto region	Parents who have preschool-age children	1212	60.6%	Both distributed and collected by postal mail	Random sampling from children who are born between April 2, 2007 and Nov 1, 2013 in the resident registration book	From Nov to Dec 2013
G city in the Kanto region	Parents who have preschool-age children	2737	45.6%	Both distributed and collected by postal mail	Random sampling from resident registration book	From Oct to Nov 2013
H city in the Chubu region	Households who have preschool-age children	1081	72.1%	Both distributed and collected by postal mail or through facilites	Random sampling	From Dec 2013 to Jan 2014
I city in the Chubu region	Parents who have preschool-age children	1935	48.4%	Both distributed and collected by postal mail	Random sampling	From Dec 2013 to Jan 2014
J city in the Chubu region	Households who have preschool-age children	1027	51.4%	Both distributed and collected by postal mail	Random sampling	From Oct to Nov 2013
K town in the Chubu region	Parents who have children aged from 0 to 5	465	51.6%	Both distributed and collected by postal mail	All surveys analyzed	December 2013
L city in the Chubu region	Parents who have preschool-age children	1471	49.0%	Both distributed and collected by postal mail	Random sampling	November 2013
M town in the Chubu region	Parents who have children aged from 0 to 5	814	76.8%	Both distributed and collected by postal mail or through facilites	Random sampling	From Nov to Dec 2013
N city in the Kinki region	Parents who have preschool-age children	913	60.9%	Both distributed and collected by postal mail	Random sampling from resident registration book	December in 2013
R city in the Kyushu region	Parents who have preschool-age (0-6) children	1525	61.0%	Both distributed and collected by postal mail	Random sampling from resident registration book	From Oct to Nov 2013

13) *kodomo kosodate shien jigyo keikaku* in Japanese.

To make the data set consistent with all the other municipalities, which sent separate surveys to address childcare needs for school-aged children, I eliminated the results for city D that were filled in regarding children who would be school-aged during the next fiscal year (7 years old and up).

The structure of the merged dataset is nested, thus I consider it as clustered by municipalities, which have intraclass correlations. This strategy is valid due to two factors. As discussed in section 2, I consider how parental expression for childcare needs may significantly vary by locality. In addition, the data was collected by each municipality. Thus we cannot analyze the data by OLS regression due to the challenges that arise from these factors, such as the data as a whole violating the assumption of observations being a random sample, which consequently increases the risk of underestimating the standard error and mixing the effect of area and the effect of individual respondent when we interpret the coefficient. To avoid such problems, I conducted analysis using Hierarchical Linear Model (HLM), more specifically, Multilevel Logistic Regression (Heck et al., 2012), which can manage a dichotomous or binary outcome as the dependent variable.

The hierarchical form for Multilevel Logistic Modeling is indicated as follows:

Level-1：　$\Pr(y_{ij}=1)=\text{logit}^{-1}(\beta_{0j}+\beta_{1j}X+r_{ij})$

Level-2：　$\beta_0=\gamma_{00}+\gamma_{01}X+u_0$

$\beta_1=\gamma_{10}+\gamma_{11}X+u_1$

Based on this approach, I formulate five models and test each model. Model-0 is a random intercept model assigned to level-1. Model-1 adds a fix effect to the coefficient of level-1. Model-2 is a random coefficient model assigned to level-1 in addition to model-1. Model-3 adds a fix effect to level-2 of model-1 with a random intercept and finally, model-4 adds a fix effect to level-2 of model-2 with a random coefficient. Using this final model-4, we can estimate the cross-level interaction effect between individual and locality/municipality area.

Note also that intraclass correlation is calculated after model-0. Although there is a lot of discussion about what value of intraclass correlation is appropriate for a hierarchical structure,[14] I adopted ICC > 0.1 (sometimes 0.05) (Bliese 2000) for

14）Hiroshi, Shimizu, "Multilevel Modeling Seminar: Theory Session" Slide (@Tokyo University, Japan, August 23, 2014) page.77. http://www.slideshare.net/simizu706/ss-

significance and design effect[15] >2 as the criteria. In addition, we centered the grand-mean of level-2 variables in model 3 and 4. Model evaluations were conducted by maximum-likelihood estimation.[16] Finally, even though this dataset is cross-sectional, the independent variables collected precede the dependent variables from the survey in 2013, and covariates of level-1 satisfy the Back-Door Criterion. Thus the results of analysis should be valid.

4.2 Measures

4.2.1 Dependent variables

First, I manipulated the dependent variable. "Parents' expression of need for childcare assistance", which was measured using the following question that was included all the surveys: "Regardless of your current usage of childcare services, what childcare facilities or services for weekday assistance do you want to use regularly?" Though the choices for facilities or services vary by municipality, common choices included kindergarten (normal hours), kindergarten for normal hours plus extended childcare at the kindergarten, certified daycare center (capacity in excess of 20 children), center for early childhood education and care (a facility with a combination of kindergarten and nursery school functions that provides education and nursery services to children aged 0 to 5), small scale licensed nursery school/certified daycare center (capacity 6-19), family-style daycare services, home-visit childcare services, and family support center. The response options for each childcare service are binary ("yes" or "no").

A summary of parent-identified childcare needs by municipality are shown in Table 5-1, 5-2. Trends in childcare needs are all significantly different at 0.1% between municipalities. For 9 of the 14 municipalities, certified daycare center was the most frequently chosen option, and for other 5 municipalities,

38292230 (Accessed June 29, 2016.)

15) Design effect is 1+(k-1)*ICC where k is the average number of observations within groups.

16) When estimating second level variables by using maximum likelihood estimation, it is known that the estimation results are biased by 10-15% for samples with less than 15 observations. This bias is can be compounded when estimating cross-level interaction (Stegmuller 2013). While various alternative ways to use restricted maximum likelihood estimation have been proposed, I do not apply them since the dependent variables are binary.

kindergarten was the most frequently chosen.

Apart from those options, parent childcare preferences vary from area to area. In this paper I focus on analyzing the results related to the certified daycare center option, which was the most often chosen option in this dataset.

Table 5-1, 5-2. Responses to survey question regarding childcare wants

	1.Kindergarten (normal hours)		2.Kindergarten for normal hours plus extended childcare		3.Certified daycare center		4. Center for early childhood education and care	
Municipalities	No	Yes	No	Yes	No	Yes	No	Yes
A city in the Tohoku (N=839)	58.6	41.4	73.2	26.8	44.6	55.4	71.4	*28.61
B city in the Tohoku (N=1043)	77.5	22.5	82.6	17.5	27.1	*72.87	84.3	15.7
C city in the Kanto (N=621)	46.9	53.1	82.8	17.2	56.4	43.6	94.7	5.3
D city in the Kanto (N=784)	33.0	*66.96	68.1	31.9	61.6	38.4	82.3	17.7
E special ward in the Kanto (N=1212)	50.5	49.5	75.3	24.8	42.9	57.1	76.8	23.2
G city in the Kanto (N=2507)	41.7	58.3	79.0	21.0	59.2	40.9	93.0	7.0
H city in the Chubu (N=1053)	36.1	63.9	69.4	30.6	52.9	47.1	83.0	17.0
I city in the Chubu (N=1848)	41.0	59.0	77.1	22.9	52.8	47.2	76.7	23.3
J city in the Chubu (N=999)	69.8	30.2	83.6	16.4	28.3	71.7	84.5	15.5
K town in the Chubu (N=444)	64.2	35.8	56.5	*43.47	51.6	48.4	86.9	13.1
L city in the Chubu (N=1385)	46.4	53.6	62.3	37.7	55.7	44.3	78.7	21.3
M town in the Chubu (N=784)	58.9	41.1	65.4	34.6	46.7	53.3	85.2	14.8
N city in the Kinki (N=913)	55.4	44.6	70.4	29.6	53.0	47.0	93.0	7.0
R city in the (N=1480)	55.1	44.9	77.7	22.3	41.9	58.1	87.7	12.3
Total (N=15912)	50.6	49.4	74.3	25.7	48.9	51.1	84.2	15.8

	5. Small-scale certified daycare center		6. Family-style daycare services		10. Home-visit childcare services		11. Family support center(%)	
Municipalities	No	Yes	No	Yes	No	Yes	No	Yes
A city in the Tohoku (N=839)	96.7	3.3	97.5	2.5	98.5	1.6	94.3	5.7
B city in the Tohoku (N=1043)	95.0	5.0	96.5	3.6	96.2	3.8	84.3	*15.72
C city in the Kanto (N=621)	97.9	2.1	97.4	2.6	96.0	4.0	94.7	5.3
D city in the Kanto (N=784)	94.6	5.4	98.2	1.8	96.8	3.2	87.6	12.4
E special ward in the Kanto (N=1212)	91.6	8.4	94.4	*5.61	88.9	*11.14	98.0	2.0
G city in the Kanto (N=2507)	94.5	5.5	97.5	2.5	97.6	2.4	95.5	4.5
H city in the Chubu (N=1053)	96.4	3.6	98.3	1.7	98.7	1.3	95.4	4.7
I city in the Chubu (N=1848)	95.0	5.0	97.7	2.3	98.1	2.0	93.7	6.3
J city in the Chubu (N=999)	97.5	2.5	98.0	2.0	97.3	2.7	92.9	7.1
K town in the Chubu (N=444)	87.2	*12.84	94.6	5.4	96.4	3.6	89.9	10.1
L city in the Chubu (N=1385)	89.6	10.4	95.5	4.6	94.4	5.6	92.4	7.6
M town in the Chubu (N=784)	92.7	7.3	95.4	4.6	95.0	5.0	90.7	9.3
N city in the Kinki (N=913)	94.3	5.7	98.5	1.5	98.8	1.2	93.5	6.5
R city in the (N=1480)	95.7	4.3	97.8	2.2	97.3	2.7	92.3	7.7
Total (N=15912)	94.3	5.7	97.1	2.9	96.5	3.5	93.0	7.0

Note: 1. Unit of numbers is %

2. Chi-squared tests indicate that the shares of childcare wants are significantly different for each municipality at 0.1%.

3. The underlined numbers indicate the most wanted childcare service within each municipality.

4. Starred numbers indicate the municipality where parents expressed the highest demand for that particular childcare service.

4.2.2 Independent variables at the individual level

Independent variables were divided into two levels, namely individual level and municipality level. In order to include the greatest number of municipalities for analysis, I used the question found on all of the municipalities' questionnaires. The individual level variables are as follows:

Respondent of questionnaire: First, the respondent of the survey was identified using the question, "Who is filling out this questionnaire? Please select the relationship between you and the child to whom this survey is addressed." I created a dummy variable of two categories. The dummy variable equals 1 for "Mother" and 0 for "otherwise".

Current usage of childcare facilities or services: Second, the current family usage of childcare facilities or services, was determined through the question, "For the child to whom this survey was addressed, does your family now use 'the regular education and daycare services, such as kindergartens or daycare facilities?'". I also created a dummy variable that equals 1 for "we use" and 0 for "otherwise".

Social support: Previous research provides evidence that expression of a need for childcare services is closely related to whether parents get social support for child-rearing or not. The less social support parents get, the more easily and vocally parents express their need for childcare assistance. This social support is measured by the question, "Do you have relatives or acquaintances who are often available to take care of the child to whom this survey is addressed?". There are 5 options for answering this question: "1. Relatives such as grandparents who routinely take care of the child", "2. Relatives such as grandparents who take care of the child under pressing circumstances", "3. Friends and acquaintances who routinely take care of the child", "4. Friends and acquaintances who take care of children under pressing circumstances", and "5. Nobody". As respondents could Yes (=1) or No (=0) for more than one response, I summed up the "Yes" options for choices 1 to 4 and assigned 0 points to "5. Nobody", making the variable "Social Support (support)" continuous.

Work Hours: We can predict that the more hours parents work, the more easily and vocally parents express their need for childcare assistance. The working hours of each parent are calculated by subtracting the time that the parent returns home after work from the time the parent leaves home to go to work.

To analyze the 3 continuous variables, i.e. social support, fathers' working hours, and mothers' working hours, I used group-mean centering.

4.2.3 Independent variables at the municipal level

Next I examined the political and policy environmental variables of main interest, which are as follows:

Supportive childrearing political environment: This variable is measured by using the ratio of the number of local assembly members in the New Komeito or Japan Communist parties to total number of assembly members in each municipality, because both parties are strongly committed to supportive childrearing policies in both national and local elections.

Gender consciousness/norms of municipality office: The level of gender consciousness and gendered norms of local executives (such as mayors) and other local officials influences the child affairs bureau in each municipality. This relationship align with the theory of representative bureaucracy outlined in section 2.4. The variable is measured by the ratio of women managers to all staff in a municipality.[17)]

Supportive childrearing policy for preschool children: This variable is measured for each municipality by a ratio of the number of facilities for preschool children (i.e. number of kindergartens[18)] and daycare facilities[19)]), to population less than aged 15.

In order to further explore these 3 key variables, three additional social economic environment variables were included in the analysis, that is *financial resource, population change due to migration to and out of municipality and parental preference for kindergarten*. While beliefs are starting to shift, in the Japanese cultural context, parental preference for kindergarten is typically predicated upon the mother not working, as an adult needs to be home to receive the children who return from kindergarten in the early afternoon, a circumstance not available to working mothers. Such stay-at-home moms have traditionally received greater social approval, while working mothers of young children risk

17） This data was drawn from the 2012 Progress of Formulating Gender Equal Society or Women in Municipalities statistical report issued by Gender Equality Bureau Cabinet Office.

18） 2012 School Basic Survey by the Ministry of Education, Culture, Sports, Science and Technology.

19） Survey of Social Welfare Institutions by the Ministry of Health, Welfare and Labor in 2011.

being looked down upon. I prepared three auxiliary hypotheses as follows:

AH3-1: The more financial resources that a municipal government has, the more easily parents express their need for childcare assistance.
AH3-2: The less the population of a municipality changes due to migration, the more easily parents express their need for childcare assistance.
AH3-3: The less that parents prefer kindergarten to daycare facilities, the more easily parents express their need for childcare assistance.

Financial resources is measured by financial capability index,[20] municipal population change due to migration is measured by ratio of population increase.[21] In accordance with Tiebout's theory of voting with their feet and Hirshman's "Exit, Voice, and Loyalty" theory, people may prefer moving over expressing their need for childcare assistance when moving/migration is more common in a given area. Preference of kindergarten to daycare center is measured by the quotient of children's enrollment in kindergartens[22] divided by enrollment in daycare centers.[23] In areas where parents prefer kindergartens to daycare facilities, it may be more difficult to express a need for childcare assistance due to the local area influences. These continuous variables are centered by grand-means.

Descriptive of variables are shown in Table 6.

20）2012 annual report on municipality financial statements published by the Ministry of Internal Affairs and Communications.
21）These numbers were drawn from 2010 national census data published by the Ministry of Internal Affairs and Communications Bureau of Statistics.
22）2012 School Basic Survey by the Ministry of Education, Culture, Sports, Science and Technology.
23）2011 Survey of Social Welfare Institutions by the Ministry of Health, Welfare and Labor.

Table 6. Descriptive statistics

	N	%	Mean	Std.dev	Min	Max
Independent variables at the individual level						
Q4 Respondent of questionnaire(N=16499)						
Otherwise(=0)	1,533	9.3				
Mother(=1)	14,966	90.7				
Q15 Current usage of childcare facilities or services(N=16487)						
Otherwise(=0)	5,535	33.57				
we use(=1)	10,952	66.43				
Q9 Social support score(N=16149)						
0 point	1,740	10.77				
1 point	12,032	74.51				
2 point	2,253	13.95				
3 point	79	0.49				
4 point	45	0.28				
SQ12m2ab Work Hours of Mothers						
	8474		9.23	2.42	0	21
SQ12d2ab Work Hours of Fathers						
	13932		12.52	2.37	0	23
	N	%	Mean	Std.dev	Min	Max
Independent variables at the municipal level						
Ratio of women managers to all staff in municipal office	16563		8.80	6.09	0.00	18.40
Ratio of New Komeito/Japan Communist party to total number of assembly members in each municipality	16563		0.21	0.11	0.08	0.43
Ratio of preschool children facilities to population under age 15	16563		0.00	0.00	0.00	0.00
kindergarten enrollment divided by daycare center enrollment	16563		0.94	0.46	0.08	1.57
Financial capability index	16563		0.75	0.25	0.33	1.00
Ratio of population increase	16563		0.56	4.57	−5.75	16.35

4.3 Results

4.3.1 Comparing models

After conducting multilevel analysis on model-0, intraclass correlation of parent's need for certified childcare facilities is shown in Table 7. The results are shown in Table 8. While ICC is less than 0.1, it is significant ($p<0.01$) and the design effect, which equals (1453-1)*ICC+1, is more than 2. The group size average of respondents within municipalities is 1453. I consider "parents' need for childcare assistance" as clustered by municipalities. Thus hypothesis 2, *how parents express their needs for childcare significantly varies according to locality*, is empirically supported.

Table 7. Intraclass correlation

Municipality-level	ICC	Std. Err.	[95% Conf.	Interval]	Z-value	DE
Certified day care center	0.0507	0.0187	0.0244	0.1025	2.7169	74.6269

The results of multilevel analysis are shown in Table 8. Looking at individual effects, for every model social support index is negative and strongly significant and work hours of mothers is positive and strongly significant. This implies that the less social support parents get, the more easily and vocally parents express their need for childcare assistance, and the more hours mothers work, the more easily and vocally parents express their need for childcare assistance. This is understandable. On the other hand, current usage of childcare facilities or services and the work hours of fathers have no effect on parents' expression of their need for childcare assistance. This indicates that mothers still face a tradeoff between working hours and using childcare.

Next, I examined each model. Table 8 shows the results for model-3, which adds a fixed effect to level-2 to model-1 with a random intercept, and model-4, which adds a fixed effect of level-2 to model-2 with random coefficient including estimating the cross-level interaction effect between mothers working hours and municipality area factors. Considering the results of the log-likelihood test, AIC, and BIC from models 3a to 4f, model-4 generates better fits for the data than model-3. Indeed, we can understand this fact from the evidence that the value of the random intercept in Table 8 decreases from model-3 to model-4 and at the same time, the random variance of random coefficients also decreases drastically. This decrease implies that variance at the municipality level, which indicates interclass correlation, is explained by the municipalities' characteristics.

Thus what characteristics emerge at the municipal level? Table 8 shows that all three variables are not significant when they are analyzed separately, however two of the three main hypotheses, gender consciousness/norms of municipality office (H3-2) and supportive childrearing policy for preschool children (H3-3), are partly supported. Crosslevel interactions between work hours of mothers and gender consciousness is positively but mildly significant, and crosslevel interactions between work hours of mothers and supportive childrearing policy for preschool children are negative and strongly significant. While not reaching significance at the threshold chosen for the present study, the coefficient regarding supportive political environment (H3-1) was positive.

In addition, the three auxiliary hypotheses are also partly supported. The

weakest correlations were found for the financial capability index (AH3-1) and ratio of population increase (AH3-2), which show no significance, though were negative and thus aligned with my hypothesis. Areas where parents prefer kindergarten to daycare facilities has strongly negative effects on expressing their need for childcare assistance (AH3-3) when this preference is analyzed separately. Interestingly, when work hours of mothers are analyzed with financial capability index, ratio of population increase, and parental preference for kindergarten respectively, all three crosslevel interactions have strongly positive effects on expressing their need for childcare assistance.

Table 8. Results of multilevel analysis

Responses to survey question regarding childcare wants	m1	m2	m3_a	m4_a	m3_b	m4_b	m3_c	m4_c	m3_d	m4_d	m3_e	m4_e	m3_f	m4_f
Q4 Respondent of questionnaire	0.108	0.116	0.117	0.116	0.116	0.116	0.116	0.113	0.113	0.116	0.116	0.117	0.117	0.115
	(0.0931)	(0.0942)	(0.0942)	(0.0942)	(0.0942)	(0.0942)	(0.0942)	(0.0942)	(0.0943)	(0.0943)	(0.0942)	(0.0941)	(0.0943)	(0.0943)
Q15 Current usage of childcare facilities or services	0.0884	0.121	0.123	0.122	0.121	0.121	0.123	0.128	0.110	0.119	0.123	0.125	0.122	0.122
	(0.0763)	(0.0770)	(0.0769)	(0.0770)	(0.0770)	(0.0770)	(0.0771)	(0.0771)	(0.0771)	(0.0770)	(0.0770)	(0.0770)	(0.0770)	(0.0769)
Q9 Social support score	−0.331***	−0.299***	−0.298***	−0.299***	−0.299***	−0.299***	−0.299***	−0.298***	−0.303***	−0.299***	−0.299***	−0.303***	−0.300***	−0.298***
	(0.0557)	(0.0566)	(0.0566)	(0.0566)	(0.0566)	(0.0567)	(0.0566)	(0.0566)	(0.0565)	(0.0566)	(0.0566)	(0.0566)	(0.0566)	(0.0566)
SQ12m2ab Work hours of mothers	0.233***	0.218***	0.218***	0.228***	0.219***	0.219***	0.219***	0.238***	0.220***	0.241***	0.218***	0.234***	0.219***	0.220***
	(0.0120)	(0.0388)	(0.0389)	(0.0355)	(0.0388)	(0.0377)	(0.0388)	(0.0190)	(0.0374)	(0.0148)	(0.0387)	(0.0167)	(0.0389)	(0.0279)
SQ12d2ab Work hours of fathers	−0.0207	−0.0195	−0.0195	−0.0196	−0.0195	−0.0195	−0.0196	−0.0191	−0.0191	−0.0192	−0.0196	−0.0196	−0.0197	−0.0199
	(0.0129)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0132)	(0.0131)	(0.0131)	(0.0131)
Ratio of women managers to all staff in municipal office			0.0224	0.0121										
			(0.0151)	(0.0147)										
Ratio of women managers to all staff in municipal office × work hours of mothers				0.0112+										
				(0.00620)										
Supportive childrearing political environment					0.482	0.293								
					(0.800)	(0.809)								
Supportive childrearing political environment × work hours of mothers						0.317								
						(0.360)								
Supportive childrearing policy for preschool children							−160.5	64.77						
							(271.5)	(142.6)						
Supportive childrearing policy for preschool children × work hours of mothers								−208.6***						
								(31.14)						
Parental preference for kindergarten									−1.228***	−0.359*				
									(0.307)	(0.183)				
Parental preference for kindergarten × work hours of mothers										0.289***				
										(0.0330)				
Financial capability index											0.478	−0.182		
											(0.735)	(0.344)		
Financial capability index × work hours of mothers												0.523***		
												(0.0677)		
Ratio of population increase													−0.0332	−0.0273
													(0.0205)	(0.0147)
Ratio of population increase × work hours of mothers														0.0200***
														(0.00549)
Intercept(γ 00)	0.774***	0.741***	0.758***	0.750***	0.742***	0.743***	0.752***	0.741***	0.672***	0.718***	0.756***	0.734***	0.742***	0.743***
	(0.140)	(0.137)	(0.137)	(0.136)	(0.137)	(0.137)	(0.142)	(0.137)	(0.167)	(0.135)	(0.145)	(0.137)	(0.132)	(0.132)
Random Intercept(u0)	0.101*	0.0877*	0.0868*	0.0835*	0.0877*	0.0875*	0.104	0.0873*	0.209	0.0755***	0.110	0.0848*	0.0700*	0.0688*
	(0.0437)	(0.0388)	(0.0396)	(0.0371)	(0.0388)	(0.0386)	(0.0622)	(0.0388)	(0.131)	(0.0000801)	(0.0726)	(0.0377)	(0.0324)	(0.0312)
Rondom Coefficient(work hours of mothers) (u1)		0.0185*	0.0186*	0.0147*	0.0185*	0.0174*	0.0185*	0.00245	0.0172*	0.000828***	0.0185*	0.00157	0.0186*	0.00834*
		(0.00792)	(0.00795)	(0.00644)	(0.00791)	(0.00750)	(0.00790)	(0.00207)	(0.00741)	(0.00000122)	(0.00790)	(0.00167)	(0.00794)	(0.00404)
Covariance(u0, u1)		−0.0121	−0.0202	−0.0164	−0.0138	−0.0131	−0.0240	−0.00808	0.0572*	0.00790***	−0.0271	−0.00819	0.00567	0.00191
		(0.0127)	(0.0144)	(0.0117)	(0.0131)	(0.0125)	(0.0250)	(0.00661)	(0.0279)	(0.0000411)	(0.0278)	(0.00593)	(0.0156)	(0.00810)
N	6848	6848	6848	6848	6848	6848	6848	6848	6848	6848	6848	6848	6848	6848
ll	−3857.9	−3810.0	−3809.0	−3807.5	−3809.8	−3809.5	−3809.8	−3800.7	−3804.9	−3792.3	−3809.8	−3799.3	−3808.8	−3804.1
chi2	429.0	65.54	67.56	78.68	65.91	68.56	65.92	222.1	83.66	425.9	66.04	286.3	67.93	113.3
aic	7729.8	7638.0	7638.0	7637.0	7639.7	7640.9	7639.7	7623.4	7629.7	7606.5	7639.6	7620.6	7637.6	7630.2
bic	7777.6	7699.5	7706.3	7712.2	7708.0	7716.1	7708.0	7698.5	7698.0	7681.7	7707.9	7695.8	7705.9	7705.3

Standard errors in parentheses= + p<0.1 * p<0.05 ** p<0.01 *** p<0.001

Table 9. Results of log likelihood test

	Difference of DF	LR chi2	Prob > chi2
m1	–	–	–
m2	2	95.75	0
m3_a	1	2.05	0.1518
m4_a	1	2.96	0.0853
m3_b	1	0.36	0.5482
m4_b	1	0.75	0.3864
m3_c	1	0.35	0.5544
m4_c	1	18.29	0
m3_d	1	10.31	0.0013
m4_d	1	25.21	0
m3_e	1	0.43	0.5141
m4_e	1	20.98	0
m3_f	1	2.42	0.1198
m4_f	1	9.44	0.0021

These results imply that when households with mothers who work longer are located in municipalities with more financial resources, or experience greater population change due to migration, or have more parents indicating a preference kindergarten to daycare facilities, the more amplified is the expression for needing childcare assistance by these households. Thus area effect-related social economic environment variables appear to promote personal needs expression.

4.3.2 Local area effect on the parent's expression of their childcare assistance

Finally, we look closely at the results related to the main hypotheses. Figure 5-1 and 5-2 show a plot of odds ratio and 99%, 95%, 90% confidence intervals for two key models. Figures 6-1 and 6-2 show that the random coefficients and intercepts for the municipalities in models 4a and 4c differ by area. Figure 7-1 also shows that at each level in the model marginal probability of choosing to express need for childcare assistance (yes/no) increases according to a decrease in support for traditional gender labor norms in municipal offices when conditioned by work hours of mothers. For example, for areas with the lowest ratios of woman officials, the average increasing rate of expressing needs (choosing y=1) with regard to increasing work hours of mother is 2.8%, while for areas with the highest ratios of woman officials, the average increasing rate of expressing needs (choosing y=1) with regard to increasing work hours of mothers is 5.5%. In other words, municipal gender norms alone do not appear to affect expression of need,

but do manifest an effect when coupled with mother working hours. Figure 7-2 also shows that the marginal probability of choosing to express need for childcare (yes/no) decreases as the degree of municipal government promotion of childcare policies for preschool children decreases when conditioned by work hours of mothers. For example, areas with the lowest ratios of government promotion of childcare policies for preschool children has an average increasing rate of expressing needs (choosing y=1) with regard to increasing work hours of mother of 6.7%, while areas with the highest ratios of government promotion of childcare policies for preschool children has an average increasing rate of expressing needs (choosing y=1) with regard to increasing work hours of mother of 0.1%.

The results of model 4a imply that the longer a mother works, the more likely parents express their need for childcare assistance in areas where municipal government is more supportive of gender equality compared to areas where municipal government are less supportive of gender equality. In addition, the results of model 4c imply that the longer a mother works, the more likely parents express their need for childcare assistance in areas where there are fewer existing preschool children facilities compared to areas where there are more facilities. This could be because parents' need for childcare assistance due to mothers' work hours are already addressed to some extent in areas where the municipal government more actively promotes childcare support policies.

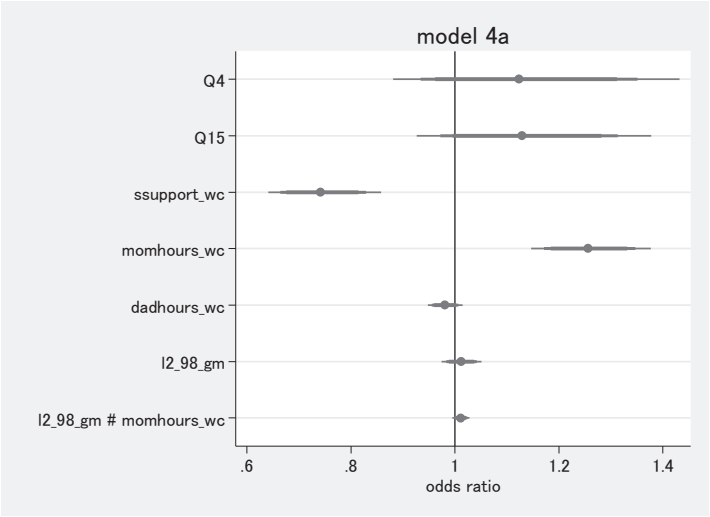

Figure 5-1. A plot of odds ratio and 99%, 95%, 90% confidence intervals for model 4_a

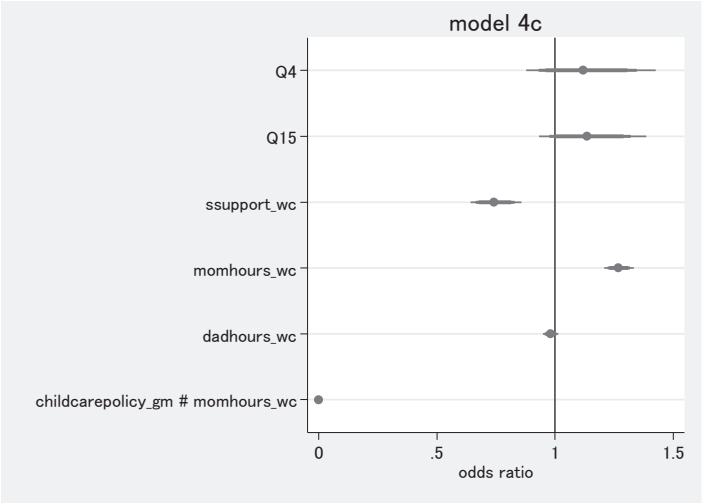

Figure 5-2. A plot of odds ratio and 99%, 95%, 90% confidence intervals for model 4_c
Note: The odds ratio of variable "childcarepolicy_gm" is excluded as odds ratio and confidence interval are huge ranged in spite of showing insignificant.

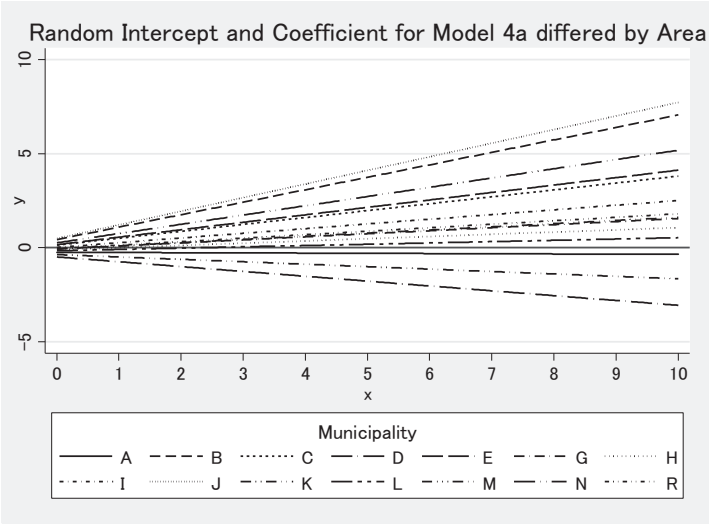

Figure 6-1. Random coefficient and intercept over municipalities in model 4a

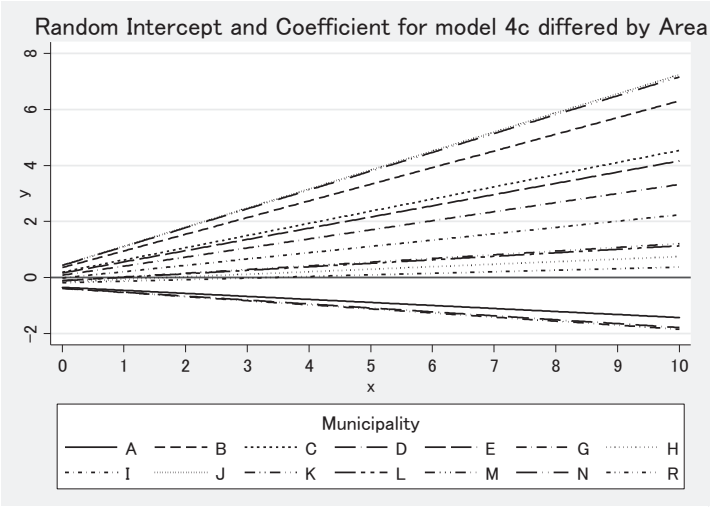

Figure 6-2. Random coefficient and intercept over municipalities in model 4c

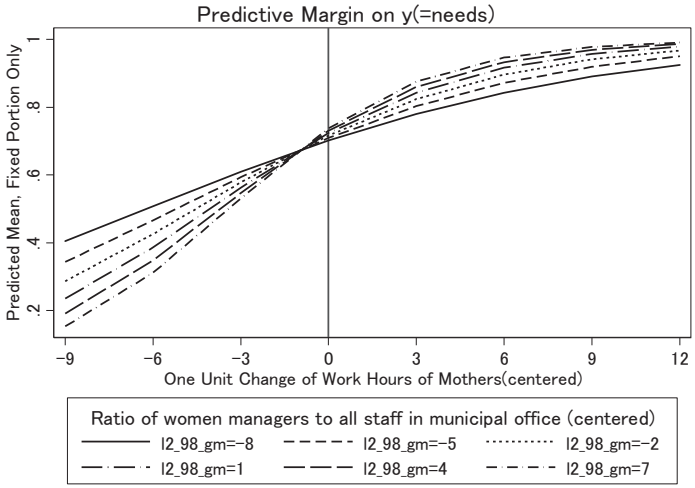

Figure 7-1. Marginal effects in model 4a

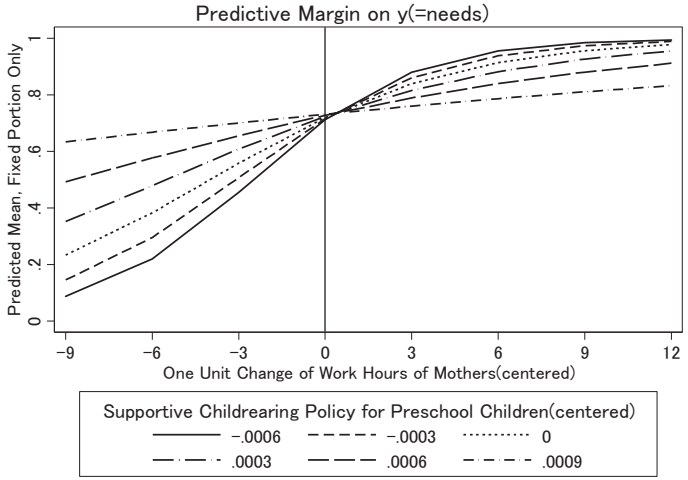

Figure 7-2. Marginal effects in model 4c

5. Conclusion

The goal of this research was to examine two key questions. One is how do local governments in Japan prioritize the provision of public childcare. The other is how do local political and administrative policies and their implementation affect the choices of parents in expressing childcare needs. From the above analysis of variations in target groups in the enrollment adjustment process of 60 municipalities in Japan, municipalities set adjustment criteria in order to decide the target groups they consider as first priority. Municipalities appear to prioritize according to either individual mother's needs, the needs of the household as a whole, or lack of self-reliance. As stated in Hypothesis 1, there are municipal level variations in the kind of target groups municipal governments prioritize when they adjust applicant needs during adjustment meetings.

On the other hand, the multilevel analysis reveals that parents' needs expression for childcare assistance due to mothers' work hours are affected by the administrative characteristics of the municipal area. More specifically, parents' expression of need for childcare assistance due to mothers' work hours is heightened where municipal governments are more gender equal, and is softened where childcare support policies are further promoted. Needs expression at the micro level sometimes varies according to the municipal administrative environments via the degree of cultural and material resources provided.

There are several limitations to this multi-level analysis. Except the final limitation, these limitations are due to the use of secondary data. First, given the initial small number of total municipalities for which relevant data is available, I could not randomly select from them to yield generalizable conclusions. In turn, municipal-level variables are not controlled in my analysis. However, if data for more municipalities is made available, these problems can be remedied. Second, it is difficult to assess interactions between the parents' economic backgrounds and the area effects, as the original surveys did not include questions on household income and parents' educational backgrounds. However, the relationship between the area effect and other social factors, such as social support and working hours of mothers, can be seen. Third, in order to examine causal inference between area

effects and individual factors, it would be better to use multilevel panel data than cross-sectional data. Finally, I examined day-care facilities as dependent variables, while including and further examining other kinds of childcare facilities and services would provide further clarity on the area effect. Despite these limitations, research in childcare policy typically does not focus on the impact of political and administrative processes nor draws upon municipal data for analysis, a gap that the present study seeks to address. This study begins to shed light on the policy feedback effect and how the characteristics of a municipality can affect parents' expression of childcare needs and contributes to our understanding of childcare policy and related matters.

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Appendix: Example of childcare service user adjustment criteria excerpted from “Guide to Nursery School Enrollment, 2016 Edition in Minato City”

9 Minato City childcare service user adjustment criteria ※ The criteria have been revised.

These new criteria apply to applications for admission in and after April 2016. For application for admission up to and including March 2016, please refer to the criteria specified in the former edition of the guide.
Applicants with a higher total of index points will be given preliminary permission. When there are other applicants having the same number of points, the order of priority shown on page 14 will be applied to determine the order.

<Method of calculating the index points of each household>

Father's basic index points	+	Mother's basic index points	+	Adjustment index points	=	Total index points of the household

Note: For a single-parent household, 20 points are added to the father's or mother's basic index points before adding the adjustment index points.

◎ Basic index points

No.	Circumstances of parents/guardian				Basic index points
	Reason for the need for nursery services		Description		
	Employment		Working at least 5 days a week	Those who can prove that they are working regularly for at least 8 hours a day	20
				Those who can prove that they are working regularly for at least 6 hours but less than 8 hours a day	17
				Those who can prove that they are working regularly for at least 4 hours but less than 6 hours a day	14
			Working at least 4 days a week	Those who can prove that they are working regularly for at least 8 hours a day	17
				Those who can prove that they are working regularly for at least 6 hours but less than 8 hours a day	14
				Those who can prove that they are working regularly for at least 4 hours but less than 6 hours a day	11
			Working at least 3 days a week	Those who can prove that they are working regularly for at least 8 hours a day	14
				Those who can prove that they are working regularly for at least 6 hours but less than 8 hours a day	11
				Those who can prove that they are working regularly for at least 4 hours but less than 6 hours a day	8

◎ Adjustment index points

No.	Conditions	Adjustment index points
1	A household on welfare	+8
2	A household in which there are no parents	+8
3	A household in which the primary earner is out of work, and either has received an informal job offer or goes out regularly to look for a job (excluding single-parent households)	+3
4	A single-parent household applying for first-time admission to a nursery school	+2
5	A case in which the child for whom the application is being made or another child living together is disabled (applicable only to first-time admission)	+2
6	A household in which a sibling of the child is already enrolled at a licensed nursery school, Minato City nursery room, etc. in Minato City (excluding siblings who will soon graduate from or leave the nursery school, Minato City nursery room, etc.) (applicable only to first-time admission)	+1
7	A household that has twins or a larger number of multiple-birth siblings and is applying for enrollment of these children at the same time (applicable only to first-time admission)	+1
8	A household for which it can be proven as of the date of the applicable deadline for enrollment application that the parents/guardian are working and regularly using a Tokyo-certified nursery school (ninsho hoikusho), Minato Hoiku Support, non-licensed nursery school, babysitter, nursery facility within a hospital or company, etc. (excluding chiiki-gata hoiku-shisetsu [community-based childcare service facilities]) for the child (not including children other than the child for whom the application is being made) for which they are paying on a monthly contract basis	+1

◎ Order of priority

If two or more applicants have the same total of basic index points and adjustment index points, they will be placed in the order of priority specified below.

No.	Conditions
1	Households that have registered their residence in Minato City and are basing their life in Minato City (excluding cases in which registration cannot be made for an unavoidable reason)
2	Single-parent households
3	Households in which there is an ill person
4	Households in which there is a person with a physical/mental disability
5	Households in which the parents/guardian are working
6	Households in which the parents/guardian are working and that have been using a Tokyo-certified nursery school (ninsho hoikusho) or other non-licensed nursery facility for at least 6 months (households that have been on the waiting list for a Minato City licensed nursery school for at least 6 months)
7	Households in which another child living in the same house is already enrolled at the nursery school for which the application has been made

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