

**PRO-NATALIST CASH TRANSFER POLICY AND RESIDENTIAL  
MOBILITY: EVIDENCE FROM HOUSEHOLD SURVEYS IN KOREA**

By

**PARK, Jongeun**

**THESIS**

Submitted to

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For the Degree of

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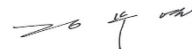
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**By**

**Jongeun Park**

**ABSTRACT**

This paper examines the impacts of pro-natal cash transfer on residential mobility with household survey data in South Korea. With the subgroup analysis, the analysis shows some groups migration decisions have been significantly affected by the cash transfer. It indicates that there are positive impacts of the cash transfer on the probability to move for the households with either the lower-income level or fewer than two children. In addition to the result of no significant impact of the cash transfer on the migration decision for permanent workers, it suggests no significant effect of the cash transfer for different age groups as well.

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## 1 INTRODUCTION

South Korea is facing a drastic decline in fertility level. Since the early 2000s, the total fertility rate (TFR) has decreased, and the figure was recorded at 0.98 in 2018. Such low birth rate trend causes many social and economic problems including an increase in a financial burden and decrease in the number of potential workers (Cho, 2010), undermining the nations competitiveness in the world economy (McDonald, 2008). In response, the central government and municipal governments have tried to tackle the lower fertility rate and The 1st Basic Plan for Low Fertility and Population Ageing was adopted in 2006. The basic plan includes the pro-natal policy measures including an extended education service and expansion of childcare facilities throughout the country. In addition to the national pro-natal policies, many municipal governments started to provide the pro-natalist cash transfer (hereinafter referred to as cash transfer), as one of the pro-natal policies in order to encourage people to have new birth (Bae, 2010; Kim, 2017)

Even though there exists a vast literature on the impact of cash transfer on fertility in South Korea, the impact of cash transfer on residential mobility is little studied (Song & Kim, 2014; Hong & Sullivan, 2016). According to Hagen-Zanker and Himmelstine (2013), social protection has influenced a migration decision, playing a role as compensation for moving cost, increasing productivity, higher income, and benefit conditionality. Also, higher cash transfer would contribute to population inflows since people might consider cash transfer as either an additional income or an indicator for good infrastructure for raising children (Song & Kim, 2014). Thus, this paper tries to scrutinize the effectiveness of the cash transfer on residential mobility using the cash transfer difference at the household level. It uses the fact that the amount of the cash transfer varies across municipalities as each municipal governments determine the amount and the conditionality of their respective cash transfer policy.

The paper finds no significant overall effects of the cash transfer on residential mobility. However, with the subgroup analysis, it turns out that the households who have either zero or one child are more likely to be affected by the cash transfer. Especially for the families with no child, the probability to move increases by around 83.2% when the cash transfer increases



by 1 million KRW. Besides, if the households income belongs to the first quartile income level, there are positive impacts of the cash transfer on their migration probability at 10% significance level. In addition, while the investigation shows no significant impacts on the migration decision for the permanent workers, there are negative impacts for non-permanent workers though marginally significant. Also, it reveals no significant effects of the cash transfer for different age groups.

The rest of the paper is organized as follows. Section 2 reviews the pro-natalist cash transfer policy and related literature. Section 3 and 4 describe the data and empirical strategy used in this study. While Section 5 gives the estimation results, Section 6 concludes.

## **2 BACKGROUND**

### 2.1 Pro-natalist Cash Transfer Policy

In response to the long-lasting low fertility rate in Korea, the central government enacted the 1st Basic Plan for Low Fertility and Population Ageing in 2006. Since then, the government has adopted a new plan every five years. Hoping that more people marry and have more kids, the plans have included not only the policies relevant to population aging but various pro-natal policies such as extended childcare and education services, and establishment of a relevant medical system (Lee, 2009).

With the adoption of the basic plan by the central government in 2006, several municipal governments started to enact pro-natal municipal laws or regulations to increase their local population on their own. Among the main policies is the provision of a certain amount of cash transfer to those who give birth. Accordingly, the cash transfer has rapidly spread nationwide. As shown in Appendix Figure 1, as of 2016, 223 out of 229 municipalities implemented the cash transfer policy.

Meanwhile, municipal governments have been given the autonomy to decide the amount and the conditionality of their cash transfer. As a result, the payment amount and eligibility condition of the benefits are different across the municipalities. Appendix Figure 2 represents

how the number of municipalities that have adopted cash transfer has changed over time. It also shows how benefit amount varies between municipalities. It can be seen that many municipalities have competitively introduced the cash transfer in the last ten years. Moreover, even within the same municipality, the amount of cash transfer may differ depending on the birth parity of a newborn; it is designed in such manner in order to encourage people to have many more kids than just one. (Hur & Lee, 2011).

## 2.2 Literature Review

Many studies have been conducted to investigate the main factors of decreasing fertility rates in South Korea. Among the factors that affect fertility decision are maternal age (Kim, 2007), income (Butz & Ward, 1979), job security (Lee, 2009), age at marriage (Cho, 2010; Kim, 2005; Lee, 2009), women's higher education attainment, and active labor force participation (Choi, 2008; Mincer, 1985). Moreover, the change in values and norms for marriage and career (Cho, 2010; D'Addio & D'Ercole, 2005; Lee, 2006) are also suggested as reasons for a decline in fertility rates.

Furthermore, there is a vast literature on the effectiveness of cash transfer on childbearing in South Korea. While some advocate that cash transfer policies have positive effects on fertility behavior (Choi & Song, 2010; Hong, Kim, Lim, & Yeo, 2016; Hong & Sullivan, 2016; Hur & Lee, 2011; Lee, Kim, & Kim, 2012; Lee, 2014; Kim, 2017), the other studies point out that there are little benefits (Kim & Cheon, 2016; Suk, 2011).

Additionally, some researchers suggest that some people would move from a municipality with a low cash transfer to another one with a higher cash transfer (Hong & Sullivan, 2016; Kim & Lee, 2018; Song & Kim, 2014). This can be explained with the view that the welfare system such as family support a form of indirect wage might affect migration decision (Kurekova, 2013). To be specific, Hong and Sullivan (2016) find that cash transfer leads to an increase of female net inflow to the municipality with higher cash transfer in Korea, using difference-in-differences methodology. However, the observation sample used in the study is limited to the households with at least two children, and the treatment areas are limited to only three cities and one county.

In addition, Song and Kim (2014) suggest that a higher amount of cash transfer could reflect an appropriate local environment for raising children, increasing the expected benefits of internal migration. Then, they figure out that the cash transfer leads to more of young womens internal immigration significantly. Also, Kim and Lee (2018) find that the cash transfer increases the net inflow of women, though showing no significant impacts on fertility rate after the womens immigration.

Meanwhile, similar studies investigating the effects of cash transfer on migration behavior have been conducted in other contexts. Nakajima and Tanaka (2014) find that people are more likely to migrate to municipalities where community-based support pro-natal policy is more commonplace, using Japans 2004 Family Income and Expenditure Survey. Also, though it is not a pro-natal cash transfer, Stecklov, Winters, Stampini, and Davis (2005) find that the Mexican PROGRESA Program, which mainly consists of conditional cash transfers, reduces migration into the United States and that the PROGRESS program does not affect domestic migration significantly.

In addition, Hagen-Zanker and Himmelstine (2013) suggest that the effects of social protection policy on migration decision can be different depending on the demographic and social backgrounds such as gender and education level. Furthermore, Adhikari and Gentilini (2018) review the literature studying the effects of cash transfer policy on migration and summarize that cash transfer can affect the decision to migrate reducing liquidity constraints, though the impact size level is quite moderate.

To sum, despite that there have been numerous studies to investigate the impacts of pro-natal cash transfer on fertility, only few studies scrutinize how cash transfer policies affect residential choices at micro-level (Hong & Sullivan, 2016; Kim & Lee, 2018; Song & Kim, 2014). Thus, this paper tries to fill the gap by investigating the impact of pro-natal cash transfer on residential mobility at the household level with the cases of all municipality in South Korea.

### 3 DATA

#### 3.1 The Pro-natal Cash Transfer Policy

I use the Open Information System (OIS), which provides administrative information from municipal governments, and, in particular, data on cash transfer. The data contains information on the amount of cash transfer by birth parity, the conditionality of the cash transfer and the payment period since the year each municipal government started to implement the cash transfer policy<sup>1</sup>.

Since the eligibility or payment method of cash transfer differ across municipalities, this paper defines cash transfer as the policy measure that provides cash to women who gave (more) birth, following the one defined by Lee et al. (2012)<sup>2</sup>. Besides, in this paper, the total amount of benefits is the expected amount that families can receive for 5 years from the municipal government if they give new birth, assuming that households will consider the total cash amount they can receive for 5 years when they choose where to live, partly following the definition by Lee (2014).

#### 3.2 The Korea Housing Survey

Furthermore, I use the Korea Housing Survey (KHS), which is suited to the analysis of cash transfer and residential mobility although the main purpose of the survey is to identify people's housing situation. The KHS provides a fruitful cross-sectional data not only on residential mobility issues such as past and current residence at the municipal level<sup>3</sup>, but also household characteristics such as socioeconomic status and demographic composition. I use 2008, 2010, and 2016 waves of the KHS<sup>4</sup> obtained from the Micro Data Integrated Service (MDIS), com-

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<sup>1</sup>An alternative way to obtain the data is to utilize the Enhanced Local Laws and Regulations Information System (ELIS), which provides the relevant laws and regulations that include the detailed information about the cash transfer policy implemented by each local government. However, some local laws and regulations often do not provide information on the specific amount of cash transfer, and there is some discrepancy between the laws and actual transfer. Thus, I cannot use ELIS as the main dataset; instead, I double-checked the information from ELIS to verify the data of OIS.

<sup>2</sup>Since February 2013, the central government enacted the childcare subsidy policy for those who have children, regardless of their income or the number of children. This central subsidy is excluded from the childcare subsidy because it is homogeneous across the municipality so that it does not affect the analysis result.

<sup>3</sup>The survey asks a) How long have you lived here and b) where did you live before move-in?

<sup>4</sup>I exclude the 2012 and 2014 waves since they do not contain residential information at the municipal level.

prising a total of 229 municipalities with approximately 80 thousand households including those who have internally migrated.

I mainly use the sample of households with married women of age between 20 and 49 to examine the impacts on residential choice. In this study, a migration case within the same municipality is excluded, and residential mobility is defined as the migration between two different municipalities. In addition, for the main part of the analysis, I rely on the dependent dummy variables constructed from the survey:  $MOVE_{hij}$  is equal to 1 if the household  $h$  moves from the municipality  $i$  to municipality  $j$ . Furthermore, I focus on the differences in cash transfer amounts between past and current municipalities (hereinafter called as cash transfer difference), which can be regarded as an additional income. Moreover, for those who do not move, cash transfer difference is recorded as zero.

Table 1 shows the descriptive summary statistics of the key variables. The full sample shows all households in the KHS data, and the main sample denotes the households with married women aged between 20 and 49 (excluding households whose past residence is missing). To be specific, the probability of moving to another municipality is around 28% in the main sample. The mean value of cash transfer difference is at around zero value for both full and main sample, though the overall standard deviations have quite higher variation in the main sample than that of the full sample.

As mentioned earlier, the amount of cash transfer could vary depending on the birth parity of a newborn. In general, when the birth parity increases, the amount increases as well. On average, for the first- and second-born child, the municipal governments provide around 0.18 million and 0.51 million KRW, respectively. It is noted that when the birth parity of a new kid increases from second to third, the amount increases at around 1.1 million KRW. So, the households who give birth their third and fourth child can obtain 1.61 and 1.90 million KRW, on average.

Moreover, people who belong to the main sample have higher income, more children, and a higher education level than the average. However, overall regional characteristics of the main sample are quite similar to the full sample. The control variables used in the analysis are mainly referred from Hong et al. (2016) and Song and Kim (2014).

Table 1: Summary Statistics (2008, 2010, 2016)

Variable	Full		Main	
	(1) Mean	(2) S. D.	(3) Mean	(4) S. D.
Probability of Moving	0.23	0.42	0.28	0.45
The Amount of Cash Transfer Difference	0.00	0.47	0.00	0.61
The Amount of Cash Transfer by Birth Parity				
First Child	0.18	0.53		
Second Child	0.51	1.02		
Third Child	1.61	2.64		
Fourth Child	1.90	3.03		
Basic Controls				
Annual Income	29.06	24.56	41.38	22.48
Moving Distance	41.47	86.87	36.53	81.33
The Number of Existing Children	0.87	0.96	1.38	0.96
Education Attainment Level				
- <i>Primary Education and Less</i>	0.21	0.41	0.02	0.13
- <i>Lower Secondary Education</i>	0.12	0.33	0.04	0.20
- <i>Higher Secondary Education</i>	0.34	0.47	0.39	0.49
- <i>Tertiary Education and Over</i>	0.33	0.47	0.56	0.50
Female's Age	51.83	15.20	39.00	6.32
Proportion of Permanent Job (%)	0.38	0.48	0.64	0.48
Further Controls				
Proportion of Women of Childbearing Age (%)	52.87	6.59	54.18	5.95
Crude Divorce Rate (per 1,000 population)	2.33	0.42	2.36	0.41
Crude Marriage Rate (per 1,000 population)	6.22	1.18	6.38	1.16
Social Welfare Expenditure (%)	30.82	13.84	30.22	13.11
Number of Childcare Facilities (per 1,000 kids)	15.15	3.99	14.99	3.84
Number of Elementary Schools	34.99	20.49	35.99	20.01
Number of Kindergartens	53.98	34.29	56.19	33.74
Financial Independence (%)	34.56	16.78	36.93	16.95
Local Tax per Capita	3.07	2.53	3.09	2.62

Notes: This table presents summary statistics for the full and the main sample. While the full sample consists of all households, the main sample refers to the households with married female aged from 20 to 49. The observations for the full and main sample are respectively 80,878 and 30,918 households. The basic- and further controls are at the individual and municipal level, respectively. The units of the amount of cash transfer difference, which is calculated by the gap between the past residences- and the current residences pro-natal cash transfer amount, annual income and local tax per capita are million KRW, unless otherwise specified. The unit of moving distance, which is the distance between the past and the current residence, is kilometer. Social welfare expenditure is the ratio of social welfare expenditure to the total expenditure. Financial independence is the proportion of local tax- and non-tax revenue to the total budget.

#### 4 EMPIRICAL STRATEGY

To estimate the effects of cash transfer on residential mobility, I use the cash transfer difference, which is the difference of the cash transfer amount between the past and the current municipalities, as a key independent variable. Using the sample of 2008, 2010, 2016 Korea Housing Survey, the baseline estimating equation is as the following:

$$Move_{hij} = \alpha + \beta CashTransferDifference_{hij} + \gamma X_{hj} + \theta_j + \phi_y + \epsilon_{hij} \quad (1)$$

where  $Move_{hij}$  is equal to 1 if household  $h$  moves from municipality  $i$  to municipality  $j$ , and 0 otherwise;  $CashTransferDifference_{hij}$  is the difference between the cash transfer amount of municipality  $i$  and  $j$ ;  $X_{hj}$  denotes a vector of control variables in municipality  $j$ ;  $\theta_j$  and  $\phi_y$  describe the controls for municipality  $j$  - and year  $y$  fixed effects, respectively; and  $\epsilon_{hij}$  is an error term.

The main regressor of interest,  $CashTransferDifference_{hij}$ , reflects the extent to which a household can obtain additional income through internal migration from one municipality to the other. The idea of cash transfer difference is partially derived from Song and Kim (2014) who use the ratio of cash transfer amount at a destination to an origin municipality at the regional level. Also, equation (1) also controls for municipal and year fixed effects, which capture unobserved municipal characteristics that do not vary over time and omitted variables that change over time but are the same across municipalities, respectively.

In the meantime, newly married couples, who do not provide any information of the past residence, are excluded in the analysis since it is not possible to calculate cash transfer difference, even though there is some possibility that they consider potential cash transfer when they choose where to live. This would lead to underestimation of the effects of the cash transfer. Also, the analysis does not examine the behavior after migration such as how long people stay after migration or whether they give birth, due to data unavailability. This may under- or overestimate the impacts of the cash transfer.

In short, the results of equation (1) will show the effectiveness of the cash transfer on residential mobility at the household level. Additionally, the paper will scrutinize the effects

in detail with heterogeneous group analysis: the number of existing children, annual income, employment type, and female's age. Accordingly, what particular household groups would be more affected by the cash transfer when they choose the future residence will be presented.

## 5 ESTIMATION RESULTS

The OLS estimation results of equation (1) are shown in Table 2. In column (1), the coefficient of the cash transfer difference reports -0.009 but insignificant. After controlling the basic and the further controls and the municipality fixed effects, column (4) shows that there is no significant relationship between cash transfer difference and the residential choice, though the value is -0.008. In addition, Table 2 describes that as the number of existing children and the age of mother increase, the possibility of moving decreases by 1.3% and 1.7%, respectively, at the 1 percent level of significance. Also, the results show that other factors including educational attainment, annual income and moving distance show no significant impacts on migration decision.

While the results of Table 2 represent the overall effects, it is also available to find how particular groups are affected the most by higher cash transfer, considering the heterogeneous characteristics such as the number of existing children, an annual income level, and job employment status. The different effects would be shown depending on the households socioeconomic background (Hagen-Zanker & Himmelstine, 2013). To begin with, Table 3 represents the estimate of cash transfer on the probability of residential mobility by the number of existing children.

Column (1) through (4) in Table 3 show that the cash transfer difference has positive effects for the households who have less than two children, especially for the families without any child. To be specific, the coefficient in column (1) reports 0.297, which implies that if the households were able to obtain additional 1 million KRW after they move and give birth, the possibility of migration increases by 29.7 percentage point. Also, given that the mean value of the probability of migration for the households with no child is 0.357, such figure implies an increase by about 83.2 percent, which is a huge magnitude.



Table 2: The Effects of the Cash Transfer Difference on Residential Mobility

VARIABLES	(1)	(2)	(3)	(4)
	No Child	One Child	Two Children	Over Three Children
Cash Transfer Difference	-0.009 (0.007)	-0.009 (0.007)	-0.009 (0.007)	-0.008 (0.007)
The Number of Existing Children		-0.013*** (0.003)	-0.014*** (0.003)	-0.013*** (0.003)
Female's Age		-0.017*** (0.000)	-0.017*** (0.000)	-0.017*** (0.000)
Education Attainment				
<i>Lower Secondary Education</i>		0.002 (0.020)	-0.004 (0.020)	-0.004 (0.020)
<i>Upper Secondary Education</i>		0.006 (0.017)	-0.010 (0.017)	-0.014 (0.017)
<i>Tertiary Education and Over</i>		0.031* (0.017)	0.012 (0.017)	0.005 (0.018)
Annual Income		0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
Permanent Job		0.007 (0.005)	0.002 (0.005)	0.002 (0.005)
Distance		0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Constant	0.304*** (0.004)	0.937*** (0.025)	0.711*** (0.041)	0.371 (0.236)
Observations	30,901	30,451	30,145	30,145
R-squared	0.004	0.072	0.079	0.101
Basic Controls	NO	YES	YES	YES
Further Controls	NO	NO	YES	YES
Regional FE	NO	NO	NO	YES

Notes: This table reports the impact of the cash transfer on the probability to move. The dependent variables are dummy variables for whether the households move or not. Basic controls include: Number of existing children, household heads education attainment level, annual income (million KRW), whether head of the household has a permanent job or not, moving distance (kilometer), and female's age. Further controls include: Proportion of women of childbearing age (%), crude divorce rate (per 10,000 population), crude marriage rate (per 10,000 population), social welfare expenditure (%), the number of childcare facilities, the number of elementary schools, the number of kindergartens, financial independence (%) and local tax per capita (in million KRW). Robust standard errors in parentheses. The regression also controls year fixed effects as well as regional fixed effects.

Considering that the average amount of the cash transfer for the firstborn is around 0.18 million KRW, the municipality offering an additional 1 million KRW cash transfer would be regarded as a place where the leadership has a relatively higher willingness to provide additional pro-natal supports for child-caring other than the provision of the cash transfer.

Consequently, the households with no child are more likely to be attracted to that municipality, thinking that the municipality where they could obtain cash transfer five times higher than the average would be an appropriate place to raise their future child. By the same logic, I could support the idea of Song and Kim (2014) that the higher amount of cash transfer indicates the better environment for child caring to some extent.

In the meantime, the coefficient in column (2) represents 0.062, which also shows that higher cash transfer leads to higher migration probability at about 6.2 percentage point or 20.7 percent, though the magnitude of the effect is lower than that in column (1). In contrast, the analysis shows no significant effects on the possibility for households who have more than two children. The results are shown in column (3) through (4).

Briefly, it turns out that the household group with no child are more likely to respond to additional cash transfer, while there are insignificant effects on the migration decision for the families with many children. One possible explanation is that people who have many children would have considered additional factors affecting their childrens education such as transferring to another school when they decide where to live. In that viewpoint, people who have no child are relatively free to choose a place of residence, which allows them to be more influenced by the cash transfer than the other groups.

Furthermore, as argued by Adhikari and Gentilini (2018), cash transfer would be considered as an additional income alleviating the financial constraints. Table 4 shows the effects of cash transfer difference by annual income, which is separated into four quartiles. Column (1) reports the coefficient of 0.029 for the households that belong to the first quartile of annual income among the whole households, showing that higher cash transfer is associated with a 9.5 percent higher probability of migration at 10 percent significance level. In contrasts, Column (2) through (4) show that there are negative relationships between the cash transfer and the probability to move for the other income level households, though the coefficients, other than

Table 3: The Effects of the Cash Transfer Difference on Residential Mobility by the Number of Existing Children

VARIABLES	(1) No Child	(2) One Child	(3) Two Children	(4) Over Three Children
Cash Transfer Difference	0.297*** (0.094)	0.062** (0.031)	-0.002 (0.005)	-0.015 (0.010)
Female's Age	-0.017*** (0.001)	-0.014*** (0.001)	-0.016*** (0.001)	-0.013*** (0.002)
Education Attainment				
<i>Lower Secondary Education</i>	-0.017 (0.050)	-0.013 (0.048)	0.065* (0.033)	-0.177** (0.069)
<i>Upper Secondary Education</i>	0.030 (0.044)	0.008 (0.042)	0.010 (0.029)	-0.089 (0.061)
<i>Tertiary Education and Over</i>	0.049 (0.044)	0.037 (0.042)	0.024 (0.029)	-0.062 (0.062)
Annual Income	-0.000 (0.000)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)
Permanent Job	0.005 (0.012)	-0.008 (0.012)	0.010 (0.008)	0.007 (0.019)
Distance	0.000*** (0.000)	0.000* (0.000)	0.000*** (0.000)	0.000 (0.000)
Constant	0.481 (0.394)	0.571 (0.558)	-0.342 (0.396)	2.027** (0.924)
Observations	7,303	6,794	13,533	2,322
R-squared	0.287	0.104	0.086	0.155
Basic Controls	YES	YES	YES	YES
Further Controls	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES

Notes: This table reports the impact of the cash transfer on the probability of migration by the number of existing children. The dependent variables are dummy variables for whether the households move or not. Basic controls include: Household heads education attainment level, Annual income (million KRW), whether head of the household has a permanent job or not, moving distance (kilometer), and female's age. Further controls include: Proportion of women of childbearing age (%), crude divorce rate (per 10,000 population), crude marriage rate (per 10,000 population), social welfare expenditure (%), the number of childcare facilities, the number of elementary schools, the number of kindergartens, financial independence (%) and local tax per capita (in million KRW). Robust standard errors in parentheses. The regression also controls year fixed effects as well as regional fixed effects.

\*\*\* Significant at 1 percent level.

\*\* Significant at 5 percent level.

\* Significant at 10 percent level.

Table 4: The Effects of the Cash Transfer Difference on Residential Mobility by the Annual Income

VARIABLES	(1) First Quartile	(2) Second Quartile	(3) Third Quartile	(4) Fourth Quartile
Cash Transfer Difference	0.029* (0.016)	-0.015 (0.019)	-0.025* (0.015)	-0.010 (0.009)
The Number of Existing Children	-0.050*** (0.006)	-0.028*** (0.008)	-0.004 (0.006)	0.022*** (0.006)
Female's Age	-0.016*** (0.001)	-0.015*** (0.001)	-0.017*** (0.001)	-0.019*** (0.001)
Education Attainment				
<i>Lower Secondary Education</i>	-0.028 (0.027)	0.021 (0.056)	-0.011 (0.051)	0.086 (0.053)
<i>Upper Secondary Education</i>	-0.001 (0.025)	-0.040 (0.048)	-0.056 (0.044)	0.100** (0.044)
<i>Tertiary Education and Over</i>	0.008 (0.027)	-0.004 (0.049)	-0.020 (0.044)	0.115*** (0.044)
Annual Income	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000* (0.000)
Permanent Job	0.016 (0.012)	-0.004 (0.015)	-0.004 (0.011)	0.017* (0.009)
Distance	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Constant	0.795 (0.602)	-0.560 (0.701)	0.952** (0.440)	0.306 (0.408)
Observations	6,920	4,802	8,259	10,164
R-squared	0.162	0.148	0.124	0.099
Basic Controls	YES	YES	YES	YES
Further Controls	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES

Notes: This table displays the effectiveness of the cash transfer on the probability of moving by annual income. The dependent variables are dummy variables for whether the households move or not. Basic controls include: The number of existing children, household heads education attainment level, whether head of the household has a permanent job or not, moving distance (kilometer), and female's age. Further controls include: Proportion of women of childbearing age (%), crude divorce rate (per 10,000 population), crude marriage rate (per 10,000 population), social welfare expenditure (%), the number of childcare facilities, the number of elementary schools, the number of kindergartens, financial independence (%) and local tax per capita (in million KRW). Robust standard errors in parentheses. The regression also controls year fixed effects as well as regional fixed effects.

\*\*\* Significant at 1 percent level.

\*\* Significant at 5 percent level.

\* Significant at 10 percent level.

that of column (3), are insignificant.

To sum up, considering the role of cash transfer as an auxiliary income, a lower-income family might be more likely to be affected by the cash transfer, which reduces the financial constraints. This result could lead to the suggestion to the municipal governments who want to attract people using the cash transfer that it would be more effective to focus on the lowest 25% income households rather than the other income level groups.

In addition, it is possible that the migration responses to the cash transfer are different depending on the employment type: whether the households have a permanent job or not. Column (1) in Table 5 represents that there are no significant impacts of the cash transfer on the probability of moving for the family whose head has a permanent job. In contrast, among the households whose jobs are non-permanent, there is a negative relationship between the cash transfer and the migration decision at 10% significance level. Admittedly, it is hard to see it as meaningful due to the marginally significant coefficient. However, one possible factor of this negative relationship can be explained by the conditionality of the cash transfer. Given that larger amounts of the cash transfer generally tend to require longer period of staying period, if job instability made people favor short-term residence when determining the next residence, due to the uncertainty of future employment, the strict conditionality with regards to minimum staying period would allow non-permanent worker to avoid migrating to other municipalities with higher cash transfer.

Furthermore, since the coefficients in Table 2 represent the negative relationship between the probability to move and the female's age, it is available to see whether the migration responses to the cash transfer are different depending on the female's age or not. The analysis provides no significant effects on the probability of moving when the groups are separated by female's age: 20s, 30s, 40s and over 50. The results are presented in Table 6.

To summarize, with the subgroup analysis, this paper discovers that the impacts of the cash transfer on residential mobility are different depending on the number of children and annual income. If municipal governments want to make use of the cash transfer as a tool for attracting more people, they should consider which specific groups are more affected by the cash transfer. In general, the amount of cash transfer has been differed especially depending on

Table 5: The Effects of the Cash Transfer Difference on Residential Mobility by the Employment Type

VARIABLES	(1) Permanent Job	(2) Non-permanent Job
Cash Transfer Difference	0.001 (0.009)	-0.020* (0.011)
Constant	0.103 (0.300)	0.701* (0.398)
Observations	19,402	10,743
R-squared	0.112	0.093
Basic Controls	YES	YES
Further Controls	YES	YES
Regional FE	YES	YES

Notes: This table reports the impact of the cash transfer on the probability to move by employment type. The dependent variables are dummy variables for whether the households move or not. Basic controls include: The number of existing children, household heads education attainment level, annual income (million KRW), moving distance (kilometer), and female's age. Further controls include: Proportion of women of childbearing age (%), crude divorce rate (per 10,000 population), crude marriage rate (per 10,000 population), social welfare expenditure (%), the number of childcare facilities, the number of elementary schools, the number of kindergartens, financial independence (%) and local tax per capita (in million KRW). Robust standard errors in parentheses. The regression also controls year fixed effects as well as regional fixed effects.

\*\*\* Significant at 1 percent level.

\*\* Significant at 5 percent level.

\* Significant at 10 percent level.

the birth parity of a newborn across the municipalities: the higher the birth parity, the higher the amount of cash transfer. Instead, it would be better if they provided higher amount of cash transfer to specific households: those who have either relatively lower-income or few children. In addition, for the households whose jobs are non-permanent, the conditionality in conjunction with staying period might become an obstacle when deciding where to live. With regard to the effect of cash transfer for different age groups, this paper fails to find statistically significant effects.

Table 6: The Effects of the Cash Transfer Difference on Residential Mobility by the Female's Age

VARIABLES	(1) 20 - 29	(2) 30 - 39	(3) 40 - 49	(4) Over 50
Cash Transfer Difference	-0.006 (0.050)	-0.008 (0.010)	-0.009 (0.010)	-0.001 (0.012)
Constant	-1.824 (1.317)	-0.357 (0.382)	-0.177 (0.302)	-0.478*** (0.182)
Observations	2,330	13,200	14,615	26,361
R-squared	0.172	0.066	0.037	0.056
Basic Controls	YES	YES	YES	YES
Further Controls	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES

Notes: This table reports the impact of the cash transfer on the probability to move by female's age group. Column (4) uses the full sample instead of the main sample. The dependent variables are dummy variables for whether the households move or not. Basic controls include: The number of existing children, household heads education attainment level, annual income (million KRW), whether head of the household has a permanent job or not, moving distance (kilometer), and female's age. Further controls include: Proportion of women of childbearing age (%), crude divorce rate (per 10,000 population), crude marriage rate (per 10,000 population), social welfare expenditure (%), the number of childcare facilities, the number of elementary schools, the number of kindergartens, financial independence (%) and local tax per capita (in million KRW). Robust standard errors in parentheses. The regression also controls year fixed effects as well as regional fixed effects.

\*\*\* Significant at 1 percent level.

\*\* Significant at 5 percent level.

\* Significant at 10 percent level.

## 6 CONCLUSION

To deal with rapid fertility rates decline in South Korea, not only the central government but also municipal governments have tried to solve this problem with various pro-natal policies including the cash transfer. The cash transfer might play a role as an additional income for households, and people would respond to this cash transfer when they decide where to live. Thus, this paper investigates the effects of cash transfer on residential mobility at the household level.

According to the results, while there is no significant overall impact of cash transfer difference on the probability to move, the cash transfer has been shown to be effective for some heterogeneous groups. First, the families having less than two children are more likely to be

affected by the cash transfer. Also, when households incomes belong to the least 25% income level, there are positive impacts of the cash transfer on their probability to move. Thus, it turns out that the households who either have fewer children or belong to lower-income level are more likely to be affected by the cash transfer when they choose where to move.

Furthermore, the analysis indicates that those who have non-permanent jobs are less likely to move when they could receive a higher amount of cash transfer. The paper suggests the possibility that the conditionality of the cash transfer might play a role as an obstacle due to their employment uncertainty. Moreover, it turns out that there are no significant impacts of the cash transfer for various age groups of females.



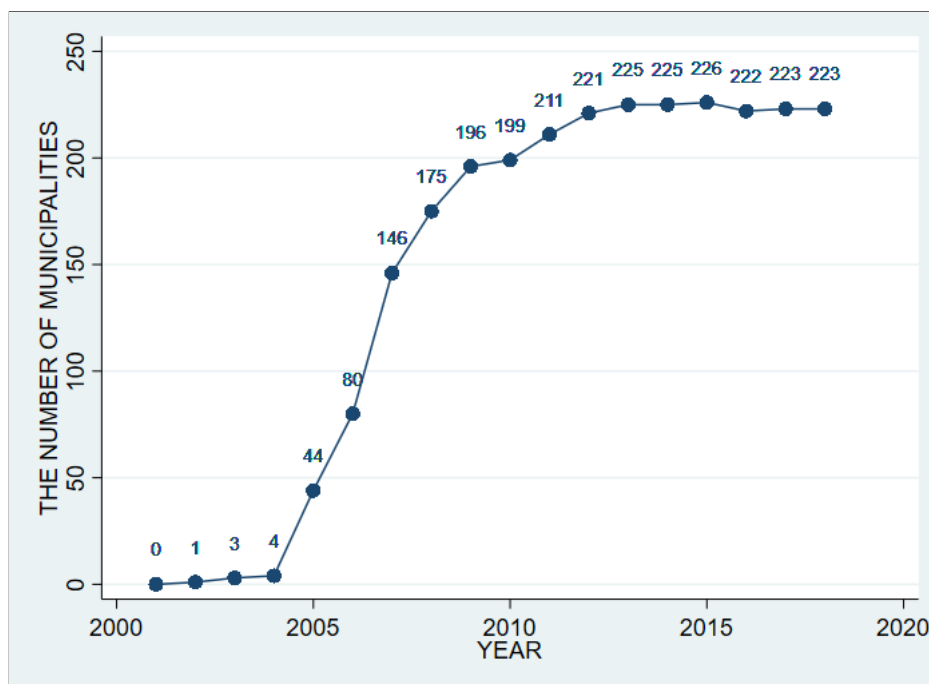
## REFERENCES

- Adhikari, S. & Gentilini, U. (2018). Should I Stay or Should I Go: Do Cash Transfers Affect Migration? *World Bank Policy Research Working Paper No. 8525*.
- Bae, S. (2010). An Empirical Test on the Policy Diffusion of Childbirth Grant Adoption: Focused on Local Governments in the Capital Region. *Korean Policy Studies Review*, 19(4), 273–541.
- Butz, W. & Ward, M. (1979). The Emergence of Countercyclical U.S. Fertility. *The American Economic Review*, 69(3), 318–328.
- Cho, M. (2010). A Study on the Determinants and Economic Effects of the Low Fertility and Aging Society. *Korean Social Security Studies*, 26(1), 1–31.
- Choi, G. (2008). Empirical Analysis on the Causes of Korea's Fertility Drop. *KDI Policy Study*, 14.
- Choi, J. & Song, H. (2010). *Effectiveness and Redistributive Effects of Policies to Raise Fertility in Korea*. Seoul: Korea Institute of Public Finance.
- D'Addio, A. & D'Ercole, M. (2005). Policies, Institutions and Fertility Rates: A Panel Data Analysis for OECD Countries. *OECD Economic Studies*, 41, 7–43.
- Hagen-Zanker, J. & Himmelstine, C. (2013). What Do We Know About the Impact of Social Protection Programmes on the Decision to Migrate? *Migration and Development*, 2(1), 117–131.
- Hong, S. & Sullivan, R. (2016). The Effects of Subsidies for Childbearing on Migration and Fertility: Evidence from Korea. *The Singapore Economic Review*, 61(4), 1–16.
- Hong, S., Kim, Y., Lim, J., & Yeo, M. (2016). Pro-natalist Cash Grants and Fertility: A panel Analysis. *Korean Economic Review*, 32(2), 331–354.
- Hur, M. & Lee, J. (2011). Policy Impact of Local Governments' Fertility Encouragement Allowances on Fertility: A Comparative Analysis between Before and After Trends of Program Implementation. *The Journal of Korean Policy Studies*, 11(3), 387–409.
- Kim, C. (2007). Parity Specific Approach to the Plan of Having an Additional Child. *Korea Journal of Population Studies*, 30(2), 97–116.
- Kim, D. (2005). Theoretical Explanations of Rapid Fertility Decline in Korea. *The Japanese Journal of Population*, 3(1), 1–32.

- Kim, M. & Cheon, J. (2016). The Study of Policy Effectiveness about Childbirth Grant as Policies in Response to Low Birthrate: Focused on 25 Districts(Gu) in Seoul. *Chung-Ang Public Administration Review*, 30(2), 163–190.
- Kim, W. (2017). Does Pro-Natalist Cash Transfer Work? Evidence from Local Programs in South Korea. *California Center for Population Research On-Line Working Paper Series*.
- Kim, W. & Lee, J. (2018). The Effects of Baby Bonus on Birth Rates: The Case of Chungcheong Provinces. *Quarterly Journal of Labor Policy*, 18(2), 61–98.
- Kurekova, L. (2013). The Role of Welfare Systems in Affecting Out-Migration: The Case of Central and Eastern Europe. *Journal of Common Market Studies*, 51(4), 721–739.
- Lee, M., Kim, K., & Kim, D. (2012). A Study on the Effect of Maternity Benefits of Korea Local Governments. *The Korean Journal of Public Administration*, 21(3), 149–174.
- Lee, S. (2006). A Study on Impact of the Change in Values on Marriage and Fertility Behaviors. *Health and Social Welfare Review*, 26(2), 95–140.
- Lee, S. (2009). Low Fertility and Policy Responses in Korea. *The Japanese Journal of Population*, 7(1), 57–70.
- Lee, S. (2014). An Effect Evaluation of Pro-natalist Policies of Local Governments in Korea. *Journal of Korean Association for Local Government Studies*, 26(1), 23–51.
- Mcdonald, P. (2008). Very Low Fertility: Consequences, Causes and Policy Approaches. *The Japanese Journal of Population*, 6(1), 19–23.
- Mincer, J. (1985). Intercountry Comparisons of Labor Force Trends and of Related Developments: An Overview. *Journal of Labor Economics*, 3(1), 1–32.
- Nakajima, R. & Tanaka, R. (2014). Estimating the Effects of Pronatal Policies on Residential Choice and Fertility. *Journal of the Japanese and International Economies*, 34, 179–200.
- Song, H. & Kim, H. (2014). The Effect of Child Birth Grants on Local Migration: An Analysis by Ages for Fertile Women. *Korea Review of Applied Economics*, 16(3), 165–199.
- Stecklov, G., Winters, P., Stampini, M., & Davis, B. (2005). Do Conditional Cash Transfers Influence Migration? A Study Using Experimental Data from the Mexican PROGRESA Program. *Demography*, 42(4), 769–790.
- Suk, H. (2011). Study on the Impact of Maternity Subsidies Policy: Focusing on Local Governments in Seoul Metropolis. *The Korea Local Administration Review*, 25(2), 143–180.

# **Appendices**

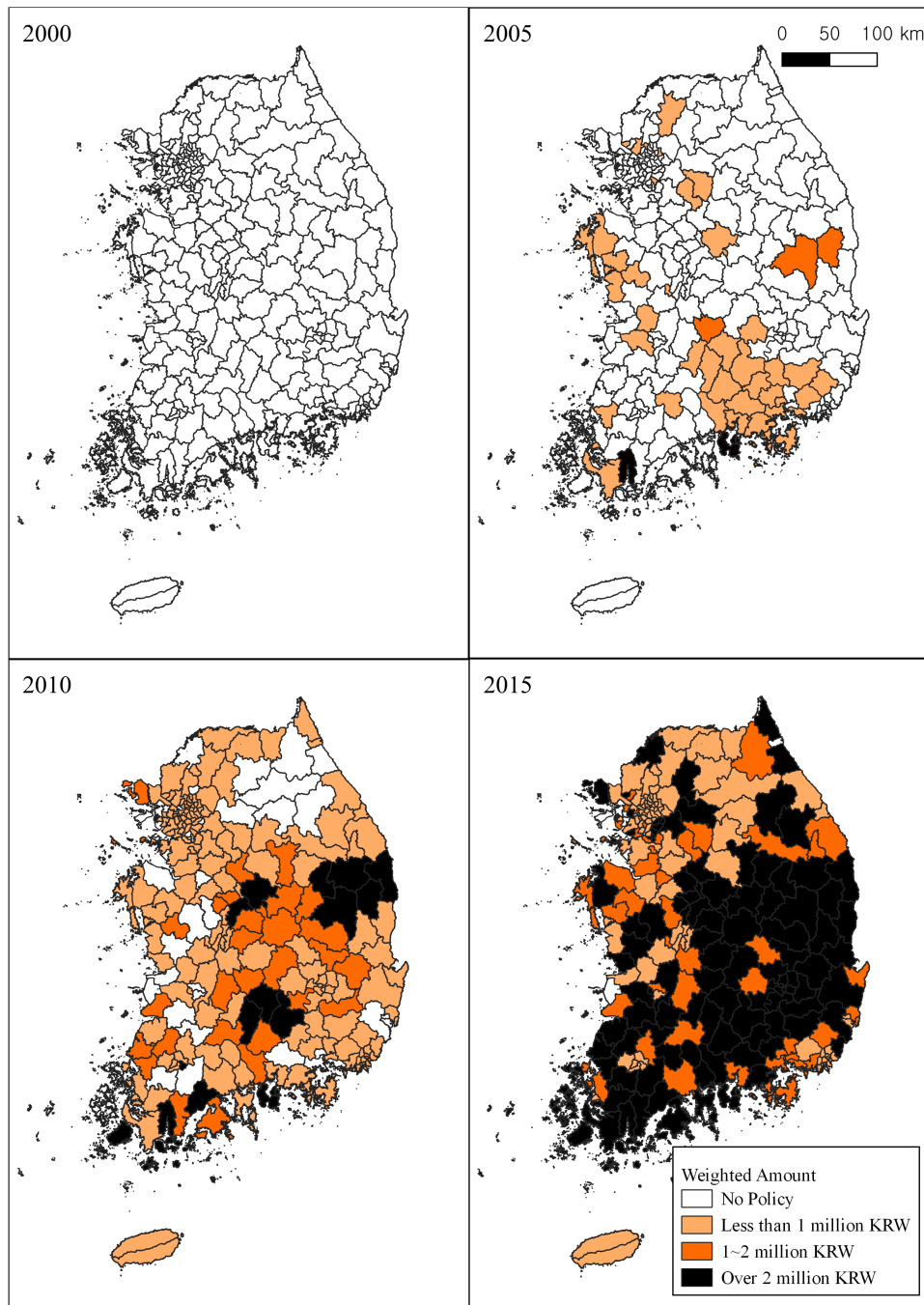
Figure 1: The Number of Municipalities with the Cash Transfer Policy



Notes: This graph represents the annual trends of the number of the municipalities which have adopted the cash transfer policy.

Source: Author, with data from Open Information System.

Figure 2: The Amount Change of the Pro-natal Cash Transfer



Notes: This graph reports how the cash transfer policy spreads out nationwide over the period. The unit of the amount is million KRW, weighted by birth composition (real price as of 2015 KRW).

Source: Author, with data from Open Information System.