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Abstract

This paper analyzes whether government intervention on firms' employment policies have an effect on the employment of the elderly. As a result of the pensionable age increasing in Japan, this policy makes a difference between the mandatory retirement age and the pensionable age. The Japanese government has obliged firms to employ elderly workers until they reach the pensionable age. According to literature, the labor force participation rate of elderly male workers increased after the implementation of this policy. However, according to this paper's results, after omitting the unobserved heterogeneity and controlling for worker demographics, there is no effect on the employment of the elderly workers. Consequently, this paper discusses why the government intervention in the demand side of the elderly labor market has no effect on elderly employment. According to this discussion, it is possible that a firm avoids the costs from employing the elderly by using measures that are not illegal, while following the directives of the law.

JEL codes: C21, J14, J18, J21, J23, J26, J38

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1 Introduction

Retirement related policies, such as a reform of the pension system have become important in developed countries as to sustain social security systems. Many developed countries have faced the same problems of decreasing birthrate and ageing populations. As a population ages, the cost of social security and social welfare increases, eroding the country's budget. As such, numerous developed countries have reformed their pension systems to reduce the cost of social security and social welfare. Many developed countries, such as the United States, the United Kingdom, and Korea have already decided to increase pension eligibility age over the next decades. Japan has already increased pension eligibility age. Pension reforms in developed countries are expected to influence retirement. As Gruber and Wise (1998) discuss, the relationship between the social security system and retirement in developed countries has attracted a lot of attention in economics. In many developed countries, regulations about the mandatory retirement system have also been reconsidered when reforming the pension systems, especially after 2000. For example, the UK, Germany, and France have reformed the law that regulates mandatory retirement age. However, in the US, the mandatory retirement system has been abolished in the 1980s.

In the US, there are studies that provide direct evidence on the effect of the abolition of mandatory retirement age,[1] which is discussed in this paper (Neumark and Stock (1999), Ashenfelter and Card (2002), von Wachter (2002) and Adams (2003)). Ashenfelter and Card (2002) analyze the labor market for university professors. According to their results, the employment of workers protected by the law increases. Except in the US, there is not enough evidence with respect to the effect of reforming regulations on the mandatory retirement age, although some developed countries have reformed regulations regarding the mandatory retirement system. In fact, the results in this paper are different compared to the result in the US. Below, I discuss why this is the case.

In Japan, the government has changed the basic pension eligibility age from 60 to 65, so as to decrease the payment amount for public pensions. However, many firms set their mandatory retirement age at around 60. As a result, many elderly reach the mandatory retirement age before they start receiving their public pension. The Japanese government has recently encouraged firms to reemploy elderly people after reaching the mandatory retirement age, until they arrive at the basic pensionable age (flat-rate part).[2] This regulation is called the Elderly Employment Stabilization Law (EESL). Kondo and Shigeoka (2016) was the first to analyze this policy.[3] They estimated the probability of being a salaried worker at age 60-65. Moreover, they compared the 1945 birth year cohort with the 1946 cohort. The result was that the 1946 birth year cohort was more likely to consist of salaried workers at ages 60 and 61 by 2.4 and 3.2 percent, respectively. This effect seems small. However,

[1] Since Lazear (1979), theoretical research that answers why there is a mandatory retirement has developed. Examples are the related studies such as Lazear (1981), Burkhauser and Ouinn (1983), Lazear and Moore (1984) and Lang (1989).

[2] The government allowed firms that used a restrictive reemployment system not to remove it.

[3] Clark and Ogawa (1992) estimated the effect of the change in the mandatory retirement policy on the wage profile before the EESL.

they have the weakness of data limitation as I subsequently explain. The goal of this paper is to estimate the effect of the EESL on the employment of the elderly and discuss how a firm reacts to this policy after implementation. According to the results, before 2013, there are no significant positive effects on the employment of the elderly, which is discussed in subsequent sections. According to the Ministry of Health, Labour and Welfare, there is an exemption to the implementation of the EESL before 2013, and there are no clear statements with respect to wage contracts when a firm engages in a contract with a worker who wants to continue work after the mandatory retirement age. Additionally, there is an important exception: before 2013, a firm could restrict the workers offered reemployment by accepting the agreement from a labor union. This is an "escape route" from additional costs, which firms could use. As explained, most firms react to this policy by introducing a reemployment system, without abolishing the mandatory retirement system or increasing the mandatory retirement age, which means that many firms choose a reaction that enables them to use these "escape routes." This point is further discussed in the subsequent sections.

There are numerous related studies that analyze government intervention in the labor market. However, the studies directly analyzing the effect of changing the mandatory retirement policy on the employment of the elderly are limited, and are discussed in the literature review section. I also provide evidence by showing what happened after the implementation of the government intervention in the demand side of the elderly labor market. The remainder of this paper is organized as follows: in section 2, I discuss the effect of the EESL and review literature; section 3 describes the data; in section 4, I explain the estimation procedure; section 5 reports the results; and section 6 concludes the paper.

2 Discussion and Literature Review

2.1 What is the EESL?

With respect to the EESL, Kondo and Shigeoka (2016) explain its details. Briefly, the Japanese pension program is divided into two parts: the basic pension (flat rate part) and the income-related pension (wage proportional part). The pension eligibility ages of these two programs are different. This paper uses the pension eligibility age presented in Motegi et al. (2016). Please see Table 1. In Japan, the pension eligibility age has gradually increased. For employees in private companies or the public sector, the pension including the basic pension and the income-related pension, which is called the Employees' Pension Insurance or the Mutual Aid Insurance, are provided. For self-employed workers, only the basics pension, which is called the National Pension Insurance, is provided by the government.

The EESL is a law which obliges a firm to increase the mandatory retirement age, omit the mandatory retirement system, or give a reemployment offer and employ workers reaching the mandatory retirement age until they arrive at the basic pensionable age (flat rate) after 2006. Depending on the birth year of elderly workers, the pensionable age increases. The mandatory retirement age is around 60 in Japan. As a result, for example, the elderly born in 1945 arrive at the mandatory retirement age before they arrive at the basic pensionable

age (flat rate) (age 63) if the mandatory retirement age is age 60. The government prepared this law to fill a gap between the pensionable age (flat rate) and the mandatory retirement age. Figure 1 shows this fact. The year in this figure is the birth year (e.g., 1947, 1948). For example, with respect to workers born between 1944 and 1945, there is a gap between the pensionable age (flat rate) and the of age 60. The blue line shows the age when a worker starts receiving pension (flat rate part). With respect to the workers born after 1946, the government obliges firms to increase the mandatory retirement age, abolish the mandatory retirement system, or make a reemployment offer and employ workers arriving at the mandatory retirement age until they arrive at the pensionable age (flat rate part). This is, in summary, the EESL concept.

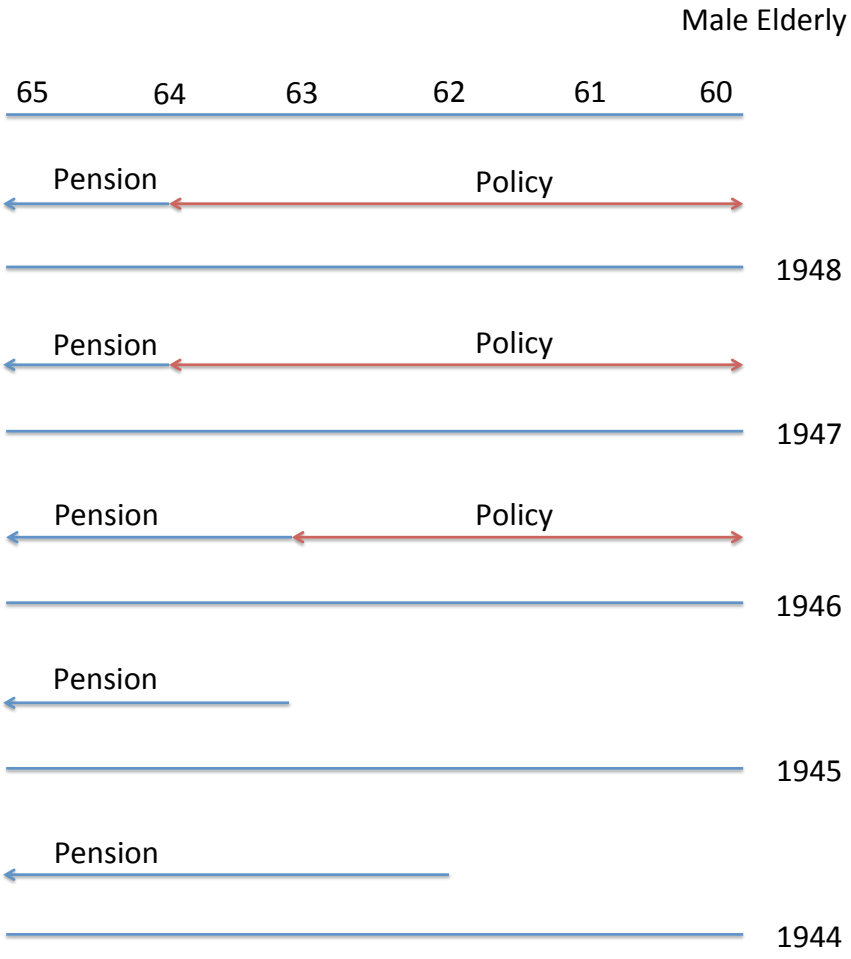
However, in the EESL, there is a important exception. Before 2013, a firm could restrict the workers who can get a reemployment offer by accepting the agreement from a labor union. This exception has been omitted after 2013, and a firm is obliged to employ all workers who want to continue to work in the firm after the mandatory retirement age. Additionally, there is no clear statement in the law with respect to wage contracts when a firm makes a reemployment offer to a worker reaching at the mandatory retirement age. As explained in section 6 , many firms introduce the reemployment system without increasing the mandatory retirement age or omitting it. When a firm engages in a reemployment contract with a worker, they discuss a decreased wage rate with the workers who intend to work in the firm after the mandatory retirement age, as the law does not concretely mention anything with respect to decreasing wage rates for these workers.

Table 1: Public Pension Reform in Japan

Birth Cohort	Public pension reform year	Pensionable age			
		Employees' pension		Mutual aid pension	
		Flat-rate part	Wage proportional part	Flat-rate part	Wage proportional part
		Men		**Men & Women**	
-1941.4.1	-	60	60	60	60
1941.4.2-1943.4.1	2001	61	60	61	60
1943.4.2-1945.4.1	2004	62	60	62	60
1945.4.2-1947.4.1	2007	63	60	63	60
1947.4.2-1949.4.1	2010	64	60	64	60
1949.4.2-1953.4.1	2013	65	60	65	60
1953.4.2-1955.4.1	2013	65	61	65	61
1955.4.2-1957.4.1	2016	65	62	65	62
1957.4.2-1959.4.1	2019	65	63	65	63
1959.4.2-1961.4.1	2022	65	64	65	64
1961.4.2-	2025	65	65	65	65
		Women			
-1932.4.1	-	55	55		
1932.4.2-1934.4.1	1987	56	56		
1934.4.2-1936.4.1	1990	57	57		
1936.4.2-1937.4.1	1993	58	58		
1937.4.2-1938.4.1	1993	58	58		
1938.4.2-1940.4.1	1996	59	59		
1940.4.2-1946.4.1	2001	60	60		
1946.4.2-1948.4.1	2006	61	60		
1948.4.2-1950.4.1	2009	62	60		
1950.4.2-1952.4.1	2012	63	60		
1952.4.2-1954.4.1	2015	64	60		
1954.4.2-1958.4.1	2018	65	60		
1958.4.2-1960.4.1	2018	65	61		
1960.4.2-1962.4.1	2021	65	62		
1962.4.2-1964.4.1	2024	65	63		
1964.4.2-1965.4.1	2027	65	64		
1965.4.2-	2030	65	65		

Source: Ministry of Health, Labor and Welfare

Figure 1: The Elderly Employment Stabilization Law



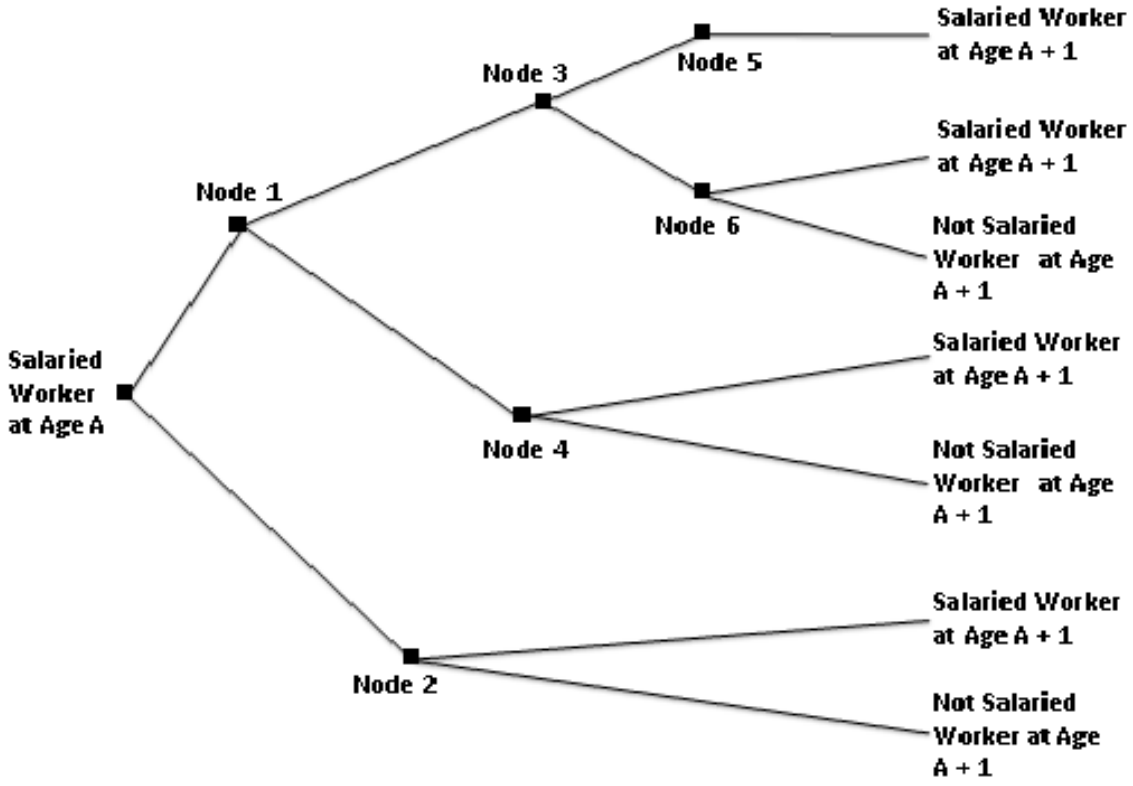
2.2 The effect of EESL

In this section, I discuss what happened after the implementation of the EESL. This policy makes firms change their employment system. As a result, it also works as a restriction for firms. If we were to precisely understand the impact of this policy, we have to analyze the channels which influence the outcome of whether a worker works or not. For example, one is whether firms increase the number of offers to reemploy workers (Channel (2)). The other is whether firms rescind or increase the mandatory retirement age (Channel (1)). Another is whether workers accept the offer or not (Channel (3)). If we only consider whether a worker works or not after the mandatory retirement age, we cannot distinguish between the three channels. The results in the literature (Kondo and Shigeoka (2016)) consider the combined effects on each channel. In this paper, to clarify and understand the EESL effect, I discuss the factors that decide the impact of this policy with respect to the labor participation rate after the implementation of the EESL. By using this framework, we can better understand the estimations of both the literature and this paper and better interpret the result.

The retirement path of a worker after the mandatory retirement age is shown in Figure 2. Assuming that only one cohort exists, I explain the meaning of each node in Figure 2:

- Node 1: A worker i faces the mandatory retirement age.
- Node 2: A worker i does **not** face the mandatory retirement age.
- Node 3: A worker i receives a re-employment offer at age A.
- Node 4: A worker i does **not** receive a reemployment offer at age A.
- Node 5: A worker i **accepts** a reemployment offer at age A.
- Node 6: A worker i **rejects** a reemployment offer at age A.

Figure 2: Retirement Path of Workers after the Mandatory Retirement Age



Subsequently, I define the following sets:

$$A^{T}_{\text{salaried}} = \left\{ i \middle| \ i \text{ is a salaried worker at age } T. \ \right\}$$

$$A_{\text{node } k} = \left\{ i \middle| \ i \text{ is on node } k. \ \right\}$$

Then, I consider the meaning of the following probability:

$$\Pr\left\{ i \in A^{A+1}_{\text{salaried}} \middle| \ i \in A^{A}_{\text{salaried}} \ \right\} \tag{1}$$

For simplicity, I define the probability as follows:

$$\Pr\left\{ A^{A+1}_{\text{salaried}} \middle| \ A^{A}_{\text{salaried}} \ \right\} = \Pr\left\{ i \in A^{A+1}_{\text{salaried}} \middle| \ i \in A^{A}_{\text{salaried}} \ \right\} \tag{2}$$

I also discuss the policy effects of the EESL by using the following expression, thus showing that there are three important paths through which this policy influences workers and firms:

$$\begin{aligned}
&\Pr\left\{ A^{A+1}_{\text{salaried}} \middle| \ A^{A}_{\text{salaried}} \ \right\} \\
&= \Pr\left\{ A^{A+1}_{\text{salaried}} \middle| A_{\text{node 5}} \right\} \underbrace{\Pr\left\{ A_{\text{node 5}} \middle| A_{\text{node 3}} \right\}}_{\text{Effect Channel (1)}} \underbrace{\Pr\left\{ A_{\text{node 3}} \middle| A_{\text{node 1}} \right\}}_{\text{Effect Channel (2)}} \underbrace{\Pr\left\{ A_{\text{node 1}} \middle| A^{A}_{\text{salaried}} \right\}}_{\text{Effect Channel (3)}} \\
&+ \Pr\left\{ A^{A+1}_{\text{salaried}} \middle| A_{\text{node 6}} \right\} \left(1 - \underbrace{\Pr\left\{ A_{\text{node 5}} \middle| A_{\text{node 3}} \right\}}_{\text{Effect Channel (1)}} \right) \underbrace{\Pr\left\{ A_{\text{node 3}} \middle| A_{\text{node 1}} \right\}}_{\text{Effect Channel (2)}} \underbrace{\Pr\left\{ A_{\text{node 1}} \middle| A^{A}_{\text{salaried}} \right\}}_{\text{Effect Channel (3)}} \\
&+ \Pr\left\{ A^{A+1}_{\text{salaried}} \middle| A_{\text{node 4}} \right\} \left(1 - \underbrace{\Pr\left\{ A_{\text{node 3}} \middle| A_{\text{node 1}} \right\}}_{\text{Effect Channel (2)}} \right) \underbrace{\Pr\left\{ A_{\text{node 1}} \middle| A^{A}_{\text{salaried}} \right\}}_{\text{Effect Channel (3)}} \\
&+ \Pr\left\{ A^{A+1}_{\text{salaried}} \middle| A_{\text{node 2}} \right\} \left(1 - \underbrace{\Pr\left\{ A_{\text{node 1}} \middle| A^{A}_{\text{salaried}} \right\}}_{\text{Effect Channel (3)}} \right)
\end{aligned}$$

I define the above expression for one cohort. To consider the difference of (1) between two cohorts, I introduce another cohort. To simplify the discussion, consider that there are only two cohorts, $C1$ and $C2$. Additionally, there is only one mandatory retirement age, A. Assume that the policy is introduced after cohort $C1$ faces the mandatory retirement age and some individuals do not face the mandatory retirement age because some firms did not introduce the mandatory retirement system. I analyze the difference between cohort $C1$ and cohort $C2$. However, I omit the discussion on the difference of the following terms of (3) to focus on the effects on the demand side of the labor market.[4]

[4]The effect on the four terms of (3) is caused by the difference in the characteristics of workers who arrive at nodes 2, 4, 5, and 6. In fact, when workers arrive at nodes 2, 4, 5, and 6, they decide whether they will

$$\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 5}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 6}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 4}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 2}}\right\} \quad (3)$$

By the way, $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 5}}\right\}=1$ because a salaried worker will become a salaried worker when he/she accepts a reemployment offer, the first effect on Channel (1) represents the path of the effect of acceptance of reemployment by workers. Some firms may decrease wages to reduce employment cost when they reemploy workers after the mandatory retirement age. If the amount of the offered wage is very low when workers are reemployed, these workers may reject the offer. As a result, the acceptance rate may decrease. The second effect on Channel (2) represents the path of the effect that a firm prepares an office where workers are able to work after the mandatory retirement age. Channel (3) represents the path where some firms rescind or increase the mandatory retirement age. Effect Channel (3) represents the path that some firms rescind or increase the mandatory retirement age after the EESL. Then, I define $\Delta\Pr\left\{A^{A+1}_{\text{salaried}}\middle|\ A^{A}_{\text{salaried}}\ \right\}$ as the difference of $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|\ A^{A}_{\text{salaried}}\ \right\}$ between $C1$ and $C2$. Finally, I can derive the following relationship by the definition of probability measure.

$$\Delta\Pr\left\{(A^{A+1}_{\text{salaried}})^{c}\middle|\ A^{A}_{\text{salaried}}\ \right\}=-\Delta\Pr\left\{A^{A+1}_{\text{salaried}}\middle|\ A^{A}_{\text{salaried}}\ \right\} \quad (4)$$

I discuss the relationship between (4) and the results in the literature. Kondo and Shigeoka (2016) estimate $\hat{\beta}_{61}-\hat{\beta}_{60}=0.032-0.024=0.008$. Let δ_1 and δ_2 be the factors included in $\beta_{61}-\beta_{60}$. I explain these in the next section, along with the relationship $\beta_{61}-\beta_{60}=-\Delta\Pr\left\{(A^{61}_{\text{salaried}})^{c}\middle|\ A^{60}_{\text{salaried}}\ \right\}+\delta_1+\delta_2=\Delta\Pr\left\{A^{61}_{\text{salaried}}\middle|\ A^{60}_{\text{salaried}}\ \right\}+\delta_1+\delta_2$ using relationship (4).

2.3 Literature Review

2.3.1 Literature Estimates

Kondo and Shigeoka (2016) use a dummy variable of being a salaried worker. The outcome is influenced by effects from multiple channels, explained in detail subsequently. They used the following outcome:

$$y_i=\begin{cases}1 & \text{if } i \text{ is a salaried worker at survey year.}\\ 0 & \text{if } i \text{ is not a salaried worker at survey year.}\end{cases} \quad (5)$$

They analyzed two cohorts, which had the same pension eligibility age. If I consider this environment, they utilize an environment where the difference of the following probabilities $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 5}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 6}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 4}}\right\},\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 2}}\right\}$

continue being salaried or not. If workers arrive at node 6, they have to apply to another firm. Whether they become a salaried worker at age $A+1$ or not depends on the state variables (e.g. pension eligibility in the next period) which workers have on nodes 2, 4, 5, and 6. With the introduction of the EESL, the distribution of the characteristics of workers on nodes 2, 4, 5, and 6 changes. However, these influences are not clear.

between the two cohorts is small. As I explained, $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 5}}\right\}=1$. For example, let us consider $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 2}}\right\}$. If two workers (workers 1, 2) with different pension eligibility ages arrive at node 2, it is possible that the decisions of these workers are different conditional on demographics. If the pension eligibility age of one cohort (worker 1) is age $A+1$ and the other (worker 2) is age $A+2$, worker 2 is more willing to work conditional on demographics. I can discuss the terms $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 6}}\right\}$, $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 4}}\right\}$, $\Pr\left\{A^{A+1}_{\text{salaried}}\middle|A_{\text{node 2}}\right\}$ can be analyzed in the same manner.

Age_i is a vector of age dummy variables. $Age_{it}=1$ means that the dummy variables, except the age t dummy variable, are zero in the vector Age_i and the age t dummy variable is equal to one. Kondo and Shigeoka (2016) estimate the following parameter:[5] $T_i=1$ if the birth year of i is 1946.

$$\begin{aligned}\beta_{61}-\beta_{60}=&\Big(\Pr[y_i=1|T_i=1,X_i=x,Age_{i61}=1]-\Pr[y_i=1|T_i=1,X_i=x,Age_{i60}=1]\Big)\\&-\Big(\Pr[y_i=1|T_i=0,X_i=x,Age_{i61}=1]-\Pr[y_i=1|T_i=0,X_i=x,Age_{i60}=1]\Big)\end{aligned}$$

Then, I can rewrite this parameter as follows. Here, $\Pr[y_i=1|X_i=x,T_i=1,Age_{i60}=1]=\alpha_{60}+\beta_{60}+\gamma+\delta'x$.

$$\begin{aligned}&\Big(\Pr[y_i=1|T_i=1,X_i=x,Age_{i61}=1]-\Pr[y_i=1|T_i=1,X_i=x,Age_{i60}=1]\Big)\\&\quad-\Big(\Pr[y_i=1|T_i=0,X_i=x,Age_{i61}=1]-\Pr[y_i=1|T_i=0,X_i=x,Age_{i60}=1]\Big)\\&\qquad=\underbrace{\Big[\Big(\Pr[y_i=1|T_i=1,Age_{i61}=1]-\Pr[y_i=1|T_i=1,Age_{i60}=1]\Big)}_{\text{Part 1}}\\&\qquad\underbrace{-\Big(\Pr[y_i=1|T_i=0,Age_{i61}=1]-\Pr[y_i=1|T_i=0,Age_{i60}=1]\Big)\Big]}\\&\quad-\Big[\Big(\int\delta'xdF(x|T_i=1,Age_{i61}=1)-\int\delta'xdF(x|T_i=1,Age_{i60}=1)\Big)\\&\qquad\qquad-\Big(\int\delta'xdF(x|T_i=0,Age_{i61}=1)-\int\delta'xdF(x|T_i=0,Age_{i60}=1)\Big)\Big]\end{aligned}$$

In Part 1, y_i^t can be defined as:

$$y_i^t=\begin{cases}1 & \text{if } i \text{ is a salaried worker at age } t.\\ 0 & \text{if } i \text{ is not a salaried worker at at age } t.\end{cases}\tag{6}$$

Part 1 can be rewritten as follows:

[5] They assume $E[\epsilon_i|X_i=x,T_i=t,Age_i=a]=0$

$$
\begin{aligned}
&\underbrace{\Big(\Pr[y_i=1|T_i=1,Age_{i61}=1]-\Pr[y_i=1|T_i=1,Age_{i60}=1]\Big)}_{\text{Part 1}}\\
&\underline{-\Big(\Pr[y_i=1|T_i=0,Age_{i61}=1]-\Pr[y_i=1|T_i=0,Age_{i60}=1]\Big)}\\
&=\underbrace{-\Big(\Pr[y_i^{61}=0,y_i^{60}=1|T_i=1]-\Pr[y_i^{61}=0,y_i^{60}=1|T_i=0]\Big)}_{\text{Part 2 (This part equals } -\Delta\Pr\left\{(A^{61}_{\text{salaried}})^c\middle|\ A^{60}_{\text{salaried}}\right\})}\\
&\quad+\Big(\Pr[y_i^{61}=1,y_i^{60}=0|T_i=1]-\Pr[y_i^{61}=1,y_i^{60}=0|T_i=0]\Big)
\end{aligned}
$$

Let me assume that the population of one cohort is fixed. If the mandatory retirement age is 60, Part 2 of the following expression means $\Delta\Pr\left\{(A^{61}_{\text{salaried}})^c\middle|\ A^{60}_{\text{salaried}}\right\}$. This is the difference in $\Pr\left\{(A^{61}_{\text{salaried}})^c\middle|\ A^{60}_{\text{salaried}}\right\}$ between cohort 1945 and cohort 1946.
It is possible that the influence of the following parts is small if I considering the meaning of each part.

- $$
  \begin{aligned}
  -\delta_1=&\Big(\int\delta' x dF(x|T_i=1,Age_{i61}=1)-\int\delta' x dF(x|T_i=1,Age_{i60}=1)\Big)\\
  &-\Big(\int\delta' x dF(x|T_i=0,Age_{i61}=1)-\int\delta' x dF(x|T_i=0,Age_{i60}=1)\Big)
  \end{aligned}
  $$

  Remark: The difference-in-differences of conditional expectation about $\delta' x$ between age 61 and age 60. Kondo and Shigeoka (2016) use region dummies and the unemployment rate as control variables.

- $\delta_2=\Pr[y_i^{61}=1,y_i^{60}=0|T_i=1]-\Pr[y_i^{61}=1,y_i^{60}=0|T_i=0]$
  Remark: The difference in the probability of being a salaried worker at age 61 while not a salaried worker at age 60.

I derive the relationship $\beta_{61}-\beta_{60}=-\Delta\Pr\left\{(A^{61}_{\text{salaried}})^c\middle|\ A^{60}_{\text{salaried}}\right\}+\delta_1+\delta_2=\Delta\Pr\left\{A^{61}_{\text{salaried}}\middle|\ A^{60}_{\text{salaried}}\right\}+\delta_1+\delta_2$ using equation (4). Kondo and Shigeoka (2016) estimates $\hat{\beta}_{61}-\hat{\beta}_{60}=0.032-0.024=0.008$. It is possible that this magnitude is produced by $\Delta\Pr\left\{(A^{61}_{\text{salaried}})^c\middle|\ A^{60}_{\text{salaried}}\right\}$ and small factors δ_1 and δ_2. The estimate of Kondo and Shigeoka (2016) was influenced by multiple channels, from all the effects on the three channels discussed in section 2.2.

2.3.2 Effect of Government Intervention on the Elderly Labor Market in the US

According to the literature on the US, since the 1980s, studies about retirement have been published continuously (e.g., Fields and Mitchell (1984), Alan and Thomas (1986) and

Slade (1987)). With respect to mandatory retirement in the US, Neumark (2003) explains its history and the relevant literature.6 Some studies have focused on government intervention in the supply side of the labor market (e.g., Staubli and Zweimüller (2013) and Neumark and Song (2013)). I here discuss the results on the US related to this paper. Since around 1990, in the US, many studies have provided evidence with respect to how a firm discriminates workers based on their age. (e.g., Hutchens (1988), Hirsch et al. (2000) and Adams (2002)). Johnson and Neumark (1997) analyze the consequences of age discrimination in the workplace. Lahey (2008) analyzes the effect of the age discrimination law on the labor market. The following four studies directly analyze the abolition of the mandatory retirement system.

- Neumark and Stock (1999)
  - After the implementation of age discrimination laws, the labor force participation of workers protected by age discrimination laws increases.
  - With respect to other workers which age discrimination laws do not protect, the effect is not clear.
  - They indicate that age discrimination laws steepen age-earning profiles for workers entering the labor market.
- Ashenfelter and Card (2002)
  - A special exemption from the 1986 Age Discrimination Act allowed colleges and universities not to abolish compulsory retirement at age 70 until 1994.
  - After the abolition of mandatory retirement, the retirement rates at 70 and 71 fell by two thirds after 1994.
- von Wachter (2002)
  - Overall, the labor force of workers 65 and older increases by 10 percent to 20 percent after the end of mandatory retirement. Neither job tenure nor wage of older workers were affected.
- Adams (2003)
  - This study analyzes the effect of age discrimination laws on employment, hiring, and retirement.
  - With respect to employment, the labor force participation rate increases for the workers which the laws protect.
  - However, there is no clear effect with respect to the workers which the laws do not protect.
  - With respect to hiring and retirement, there is no effect.

2.4 Paper Objectives and Results

This paper analyzes the effect of government intervention in the demand side of the elderly labor market on the employment of the elderly. According to the literature review, with respect to the workers which age discrimination laws protect, the labor force participation rate increases. However, as I discuss in the subsequent sections, the results are different for Japan, and I further discuss the reasons for this.

Finally, I analyze why the results are different from those of Kondo and Shigeoka (2016). This is due to the difference in the estimation procedure. The estimation procedure in this paper omits the unobserved heterogeneity and controls for important demographics. This paper shows that there is no significant effect if we control and omit the factors which cause a bias of the coefficient. Additionally, Kondo and Shigeoka (2016) indicate that the effect of the EESL is weak, although there is a significant effect.

3 Data

I use the Preference Parameters Study, provided by the Osaka University Institute of Social and Economic Research,[6] which is mainly conducted for calculating parameters of preferences defining utility functions, that is, time preference, risk aversion, habit formation, externality. The panel survey has been conducted every year since 2004. The surveyed individuals are men and women aged 20-69. This survey is conducted by a self-administered placement method. In this paper, I use the dataset from 2003 to 2013, with only the samples whose birth year is between 1941 and 1950. The response rate is 71.1 percent in 2003. This panel data are suitable for this study because the data include the labor force participation around age 60 with respect to the observations born between 1941 and 1950.

In Japan, there is a dataset focusing only on surveying the elderly whose name is the Japanese Study of Aging and Retirement (JSTAR),[7] which is a panel survey of elderly people aged 50 or older conducted by the Research Institute of Economy, Trade and Industry, Hitotsubashi University, and, more recently, the University of Tokyo. However, the JSTAR has been conducted since 2007, which means that the labor participation information before age 60 is not available for the elderly whose birth year is around 1945. As a result, I use the Preference Parameters Study. This dataset is the most suitable panel data for this study. In section 5, which presents main results in this paper, I use the Preference Parameters Survey. However, I use the JSTAR in section 6 to discuss the results. I explain what data from the JSTAR I use in section 6.

Finally, in section 6, I use another dataset which is the Fact-finding Survey on the Work Conditions among Small and Medium-sized Enterprises (Chusho kigyo rodo jijo jittai chosa) conducted by the National Federation of Small Business Associations.[8] The surveyed firms

[6] See the website at (http://www.iser.osaka-u.ac.jp/surveydata/engpanelsummary.html) for details on the Preference Parameters Study.

[7] See the website at (http://www.rieti.go.jp/en/projects/jstar/) for details on the JSTAR.

[8] See the website at (https://ssjda.iss.u-tokyo.ac.jp/Direct/gaiyo.phpeid0407langeng) for details on the Fact-finding Survey on the Work Conditions among Small and Medium-sized Enterprises.

are drawn from the firms whose number of employees is below 300. This survey is conducted by a self-administered placement method, resulting in repeated cross-section data. With respect to firms whose number of employees is above 300, public repeated cross section data are not available. In this survey, information about the mandatory retirement policy among small and medium-sized enterprises is available. Additionally, there is no panel data of Japanese firms at present. With respect to the Study of Employment in Small Companies, I also explain which data I use in section 6.

4 Estimation Procedure

In this section, I explain the estimation procedure, which uses only observations whose birth year is between 1941 and 1950. I estimate the following equation, similar to the difference-in-diffeences method.

$$y_{it} = \beta_0 + \lambda_t + \beta_1 1\{60 \leq age_{it}\} 1\{1946 \leq birthyear_i \leq 1950\} + \gamma' x_{it} + a_i + \epsilon_{it} \tag{7}$$

where y_{it} is an indicator equal to one when a respondent works at period t. λ_t is a time fixed effect. a_i is an individual fixed effect. x_{it} are control variables at period t. x_{it} include the respondent's age, family structure, whether a respondent arrives at their basic pensionable age (flat rate part) and the amount of assets in the previous wave. Consequently, I analyze the difference in labor force participation after age 60 between those born between 1941 and 1945 and between 1946 and 1950. The coefficient β_1 identifies this effect. The following relationship illustrates this point.

The trend of the labor force participation rate is shown in Figures 3 and 4. According to these figures, before age 60, there is no difference in the trend between those born from 1941 to 1945 and from 1946 to 1950. According to Figures 3 and 4, the male labor force participation rate of people for birth years between 1946 and 1950 is larger than for those born between 1941 and 1945 after age 60. However, the labor force participation rate of individuals born between 1946 and 1950 is also larger than for those born between 1941 and 1945 before age 60. As a result, it is possible that this is not due to the effect of government intervention. Subsequently, according to Figures 5 and 6, there is a difference in the ratio of self-employed workers. As the birth year increases, the ratio of self -employed workers increases as well. Of course, these workers are not subject to government intervention. According to these discussions, the labor force participation of those born between 1941 and 1945 is smaller than for those born between 1946 and 1950 after age 60, although the ratio of those subject to government intervention is smaller. It is possible that the effect of government intervention is weak.

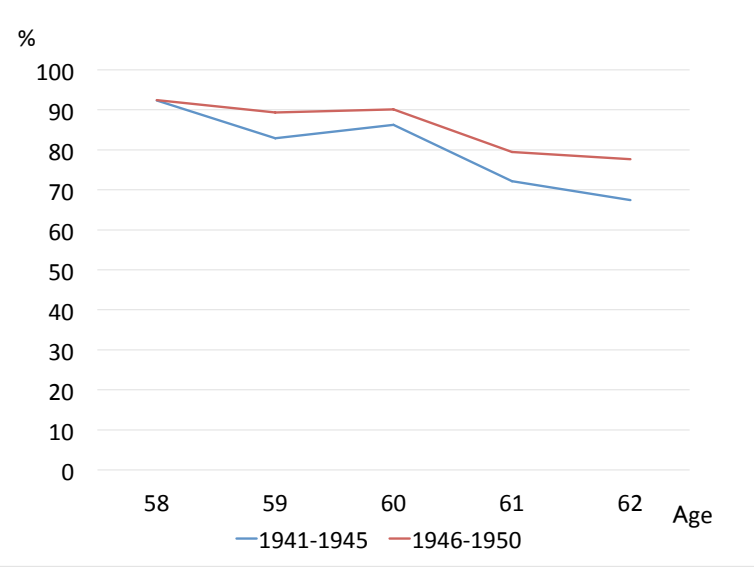
Next, I discuss the trend of labor force participation of a particular group: male elderly who are both working and not self-employed at the first wave (birth year from 1941 to 1945) and male elderly who are both working and not self-employed at the sixth wave (birth year from 1946 to 1950). This group seems to be directly influenced by this policy. Figure 7 shows the trend of labor force participation between male elderly who are both working and not self-employed at the first wave (birth year from 1941 to 1945) and male elderly who are both working and not self-employed at the sixth wave (birth year from 1946 to 1950). Before age 60, the trend is similar, but there is a difference in labor force participation between those born from 1941 to 1945 and those born from 1946 to 1950 after age 60. However, it is possible that this is not due to the EESL. This point is verified in the estimation part. Subsequently, I control for the factors of respondent demographics and business cycle, and so on. This group is a main target to analyze in this paper because the effect of the government intervention seems to directly influence it.

This paper has certain limitations. The Preference Parameters Study asks respondents only respondents' birth year. As a result, the exact age at the time of the interview is unknown. Additionally, whether a respondent arrives at the basic pensionable age (flat rate part) is also unknown. In this paper, I set age = survey year - birth year, and the basic pensionable age (flat rate part) is based on Table 1. However, the birth month is unknown. As such, the pension eligibility age is set by birth year A, which is equal to that of people with the birth date between $A.4.2$ and $A + 1.4.1$.

I estimate equation (7) by separating the following groups and report the results in the next section. With respect to Group 2, I focus on the observations who work just before age 60. With respect to Group 3, I focus on the observations who work (not self-employed) before age 60. Finally, with respect to Group 4, I focus on the observations who are not working just before age 60.

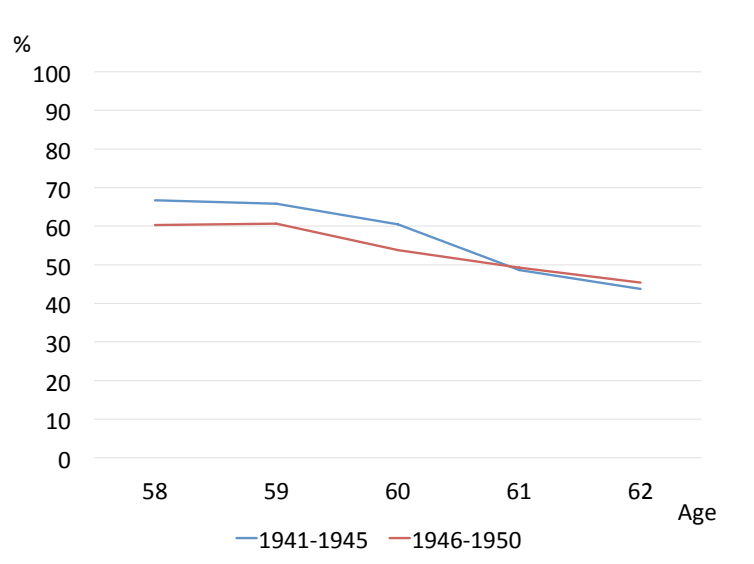
- Group 1: (birth year from 1941 to 1945) all female and male elderly versus (birth year from 1946 to 1950) all female and male elderly
- Group 2: (birth year from 1941 to 1945) female and male elderly working at the first wave versus (birth year from 1946 to 1950) female and male elderly working at the sixth wave
- Group 3: (birth year from 1941 to 1945) male elderly who are both working and not self-employed at the first wave versus (birth year from 1946 to 1950) male elderly who are both working and not self-employed at the sixth wave
- Group 4: (birth year from 1941 to 1945) female and male elderly who are not working at the first wave versus (birth year from 1946 to 1950) female and male elderly who are not working at the sixth wave

Figure 3: Labor Participation (Male)



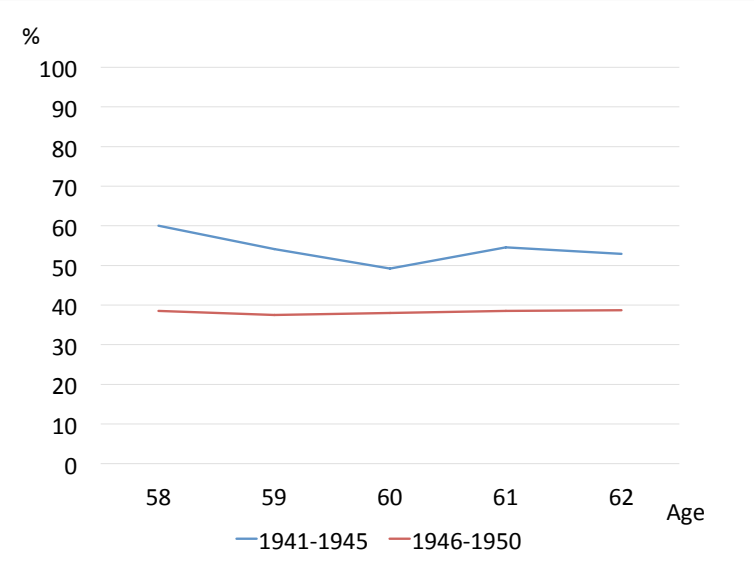
Source: The Preference Parameters Study
Blue: birth year from 1941 to 1945, Red: birth year from 1946 to 1950

Figure 4: Labor Participation (Female)



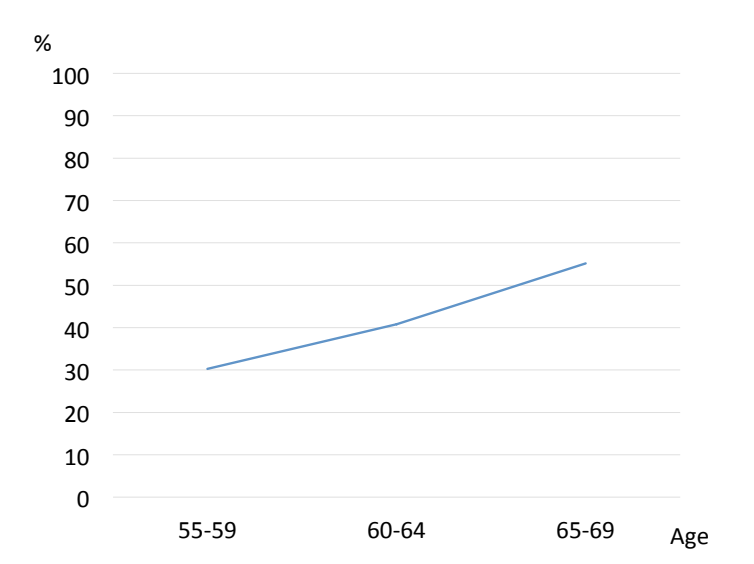
Source: The Preference Parameters Study
Blue: birth year from 1941 to 1945, Red: birth year from 1946 to 1950

Figure 5: The Ratio of Self-Employed Workers (Male)



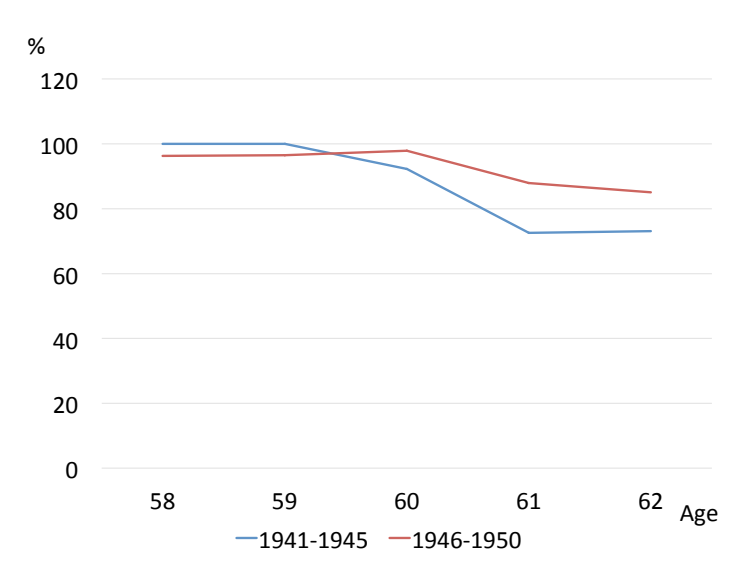
Source: The Preference Parameters Study
Blue: birth year from 1941 to 1945, Red: birth year from 1946 to 1950

Figure 6: The Ratio of Self-Employed Workers (Male)



Source: Census 2005

Figure 7: Labor Participation (Male, Not Self-Employed)



Source: The Preference Parameters Study
Blue: birth year from 1941 to 1945, Red: birth year from 1946 to 1950

5 Results

This section discusses the results. According to Table 2, which presents the results of Group 3. These elderly people seem to be directly influenced by the EESL. As we can observe, the coefficient of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is significantly negative for the OLS. However, when I omit the unobserved heterogeneity, the coefficient of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is not significant. The OLS estimator of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is biased. The coefficient of living with a parent is significantly negative. It is possible that this implies the decrease of labor supply due to informal care for parents. However, this fact cannot be confirmed because of data limitations. According to this result, the effect of government intervention is weak, which is further discussed in the next section. I also compare the result here with the results of Kondo and Shigeoka (2016). According to them, the labor force participation rate of salaried workers born in 1946 is significantly larger than that of salaried workers born in 1945 at ages 60 and 61 by 2.4 and 3.2 percent, respectively. This impact is considered small. However, they use repeated cross sectional data and do not control for educational characteristics and other demographics. When omitting the unobserved heterogeneity and control demographics of workers, I cannot confirm the significant increase in the labor participation rate. However, the weakness of this paper is that the sample size is small. In fact, the standard error of the coefficient of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ in the fixed effects result is large. The absolute value of the coefficient $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is comparatively large.

Table 3 shows the results for Group 1, exhibiting the difference in labor force participa-

tion between the elderly workers born between 1941 and 1945 and those born between 1946 and 1950 by gender. As per Table 3, no significant result is obtained for both in female and male labor force participation when I omit the unobserved heterogeneity. In this analysis, the standard error of the coefficient of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is comparatively small and the sample size is comparatively large. Table 4 shows the results for Group 2, birth year from 1941 to 1945 of male elderly who are both working and not self-employed at the first wave versus male elderly born from 1946 to 1950, who are both working and not self-employed at the sixth wave). Additionally, in this case, the labor force participation rate of female and male workers does not significantly increase when I estimate the model without omitting the unobserved heterogeneity. When I omit the unobserved heterogeneity, no significant effect of the coefficient of $1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$ is obtained.

Finally, Table 5 presents the results for Group 4 of female and male elderly born from 1941 to 1945 who are not working at the first wave versus female and male elderly born from 1946 to 1950 who are not working at the sixth wave). While I cannot detect a significant increase in the labor force participation rate for Groups 1-3, I find a significant decrease in labor force participation rate between the elderly born between 1941 and 1945 and between 1946 and 1950. When I omit unobserved heterogeneity, there is a decrease in the labor force participation rate for both female and male workers. This implies that the inflow of elderly workers who do not work around age 60 into the labor market decreases after the implementation of the EESL. Especially for male workers, the effect is large. However, I cannot verify whether this effect is caused by the EESL or not. Because of data limitations, for example, I cannot compare the labor force participation around age 60 between workers born from 1941 to 1945 and from 1936 to 1940.

Table 2: Labor Force Participation 1

	(1) Male_Not_Selfemployed_OLS	(2) Male_Not_Selfemployed_FE
$1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$	0.3242***	0.1599
	(0.0669)	(0.2926)
age	-0.1571	0.1862
	(0.2139)	(0.2348)
age squared	0.0013	-0.0020
	(0.0017)	(0.0019)
married	0.0784	-0.0589
	(0.0567)	(0.0631)
the number of children	0.0915***	-0.0164
	(0.0172)	(0.0286)
living with a parent	-0.0514	-0.1665***
	(0.0409)	(0.0518)
less than high school	-0.0654	0.0064
	(0.0450)	(0.0570)
high school	0.0136	0.0832
	(0.0330)	(0.0584)
N	713	713

Standard errors in parentheses

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

Asset level dummies in the previous period (high, middle), a dummy of arriving at the basic pensionable age, wave dummies and regional dummies are also included in the estimation model.

Table 3: Labor Force Participation 2

	(1) Female_OLS	(2) Male_OLS	(3) Female_FE	(4) Male_FE
$1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$	0.0533	0.1144***	0.0060	0.0540
	(0.0348)	(0.0380)	(0.0306)	(0.1377)
age	-0.0235	-0.0344	0.0362	-0.0772
	(0.0985)	(0.0866)	(0.0999)	(0.1072)
age squared	-0.0001	0.0000	-0.0004	0.0003
	(0.0008)	(0.0007)	(0.0008)	(0.0009)
married	-0.1751***	0.1323***	-0.0861	-0.0524
	(0.0276)	(0.0348)	(0.0542)	(0.0382)
the number of children	0.0631***	0.0474***	0.0067	-0.0060
	(0.0127)	(0.0095)	(0.0287)	(0.0195)
living with a parent	-0.0064	-0.0178	0.0405	-0.1028***
	(0.0400)	(0.0245)	(0.0424)	(0.0278)
less than high school	0.1332***	0.0028	0.0043	0.0238
	(0.0418)	(0.0254)	(0.0461)	(0.0538)
high school	-0.0039	0.0300	-0.0121	0.0423
	(0.0359)	(0.0193)	(0.0366)	(0.0436)
N	2306	2444	2306	2444

Standard errors in parentheses

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

Asset level dummies in the previous period (high, middle), a dummy of arriving at the basic pensionable age, wave dummies and regional dummies are also included in the estimation model.

Table 4: Labor Force Participation 3

	(1) Female_Work_OLS	(2) Male_Work_OLS	(3) Female_Work_FE	(4) Male_Work_FE
$1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$	0.2161***	0.1671***	0.0661	0.0748
	(0.0510)	(0.0476)	(0.0588)	(0.1575)
age	-0.5415**	0.0349	0.0744	0.1831
	(0.2340)	(0.1556)	(0.2272)	(0.1729)
age squared	0.0040**	-0.0004	-0.0008	-0.0019
	(0.0019)	(0.0013)	(0.0018)	(0.0014)
married	-0.1108***	0.0590	-0.0145	-0.0630
	(0.0394)	(0.0475)	(0.0547)	(0.0616)
the number of children	0.0914***	0.0508***	0.0357	-0.0218
	(0.0195)	(0.0129)	(0.0395)	(0.0269)
living with a parent	-0.1544***	0.0031	-0.0613	-0.1059***
	(0.0566)	(0.0297)	(0.0597)	(0.0391)
less than high school	0.1196	-0.0464	-0.0011	-0.0026
	(0.0729)	(0.0311)	(0.0863)	(0.0545)
high school	0.0578	-0.0491**	-0.0305	0.0408
	(0.0695)	(0.0236)	(0.0719)	(0.0386)
N	785	1118	785	1118

Standard errors in parentheses

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

Asset level dummies in the previous period (high, middle), a dummy of arriving at the basic pensionable age, wave dummies and regional dummies are also included in the estimation model.

Table 5: Labor Force Participation 4

	(1) Female_Not_Work_OLS	(2) Male_Not_Work_OLS	(3) Female_Not_Work_FE	(4) Male_Not_Work_FE
$1\{60 \leq age_{it}\}1\{1946 \leq birthyear_i \leq 1950\}$	-0.1018***	0.0666	-0.0578*	-0.2666*
	(0.0378)	(0.0658)	(0.0323)	(0.1558)
age	-0.1470	-0.2102*	0.0639	-0.0903
	(0.1058)	(0.1269)	(0.1124)	(0.1514)
age squared	0.0008	0.0014	-0.0006	0.0005
	(0.0009)	(0.0010)	(0.0009)	(0.0013)
married	-0.1824***	0.1932***	-0.0940	0.0048
	(0.0335)	(0.0495)	(0.0631)	(0.0245)
the number of children	0.0572***	0.0388***	-0.0051	0.0055
	(0.0145)	(0.0140)	(0.0373)	(0.0274)
living with a parent	0.0565	-0.0443	0.1154**	-0.1093***
	(0.0483)	(0.0389)	(0.0563)	(0.0395)
less than high school	0.0331	0.0458	-0.0142	0.0543
	(0.0483)	(0.0379)	(0.0378)	(0.0840)
high school	-0.0791**	0.0635**	-0.0198	0.0519
	(0.0390)	(0.0287)	(0.0270)	(0.0643)
N	1521	1326	1521	1326

Standard errors in parentheses

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

Asset level dummies in the previous period (high, middle), a dummy of arriving at the basic pensionable age, wave dummies and regional dummies are also included in the estimation model.

6 Discussion: What happened after the implementation of EESL?

As previously discussed, no effect of government intervention on the employment of the elderly workers is observed. In this section, I consider why there is no effect of the EESL on the employment of the elderly. To understand the mechanism of this policy effect, we need to consider the channels of this policy effect, as discussed in section 2.2. Consequently, this study must answer the following three questions:

- 1. Did the probability of receiving a reemployment offer increase? (Channel 2)
- 2. Did the number of firms which abolished or increase the mandatory retirement age increase? (Channel 3)
- 3. Did the acceptance rate of reemployment offers decrease due to low wages offer by firms? (Channel 1)

With respect to Channels 2 and 3, the dataset partly implies these facts. On the other hand, with respect to question 3, there is no available data to clarify this point. Table 8 shows whether a firm carries out the employment policy the EESL requires.[9] In 2006 and 2007, almost all firms carries out the necessary employment policy. According to Table 9, most firms obey the EESL by introducing the reemployment system. Subsequently, the first question can be used by using the JSTAR. There is a sharp increase in the ratio of people receiving a reemployment offer after arriving at the mandatory retirement age, as shown in Figure 10. Reemployment offer 1 means the ratio of workers receiving a reemployment offer from the firm where they arrive at the mandatory retirement age. Reemployment offer 2 means the ratio of workers receiving a reemployment offer from the firm where they arrive at the mandatory retirement age or affiliated firms (including Reemployment offer 1). According to Figure 10, there is a sharp increase in the ratio of workers receiving a reemployment offer after those born in 1946 arrive at the mandatory retirement age. According to Figure 10, the ratio of firms obeying the EESL increases after the workers born in 1946 arrive at the mandatory retirement age. According to this figure (reemployment 2), the ratio of workers receiving the reemployment offer increases by about 10 percent. This approximates the ratio of workers who cannot get the reemployment offer without the EESL. It is possible that the rejection rate for the offers in this group is high. According to Usui et al. (2015), male employees aged 54 gradually move to part-time work or retire after beginning to receive pension. Those who continue to work cannot choose their optimal working hours, although wanting to choose more working hours. Potentially, it is possible that there are some elderly who cannot continue to work, although he/she wants to continue to work if he/she receives a reemployment offer.

With respect to the mandatory retirement age, there is a change in the distribution between 2004 and 2008, at least for firms whose number of employees is below 300. According

[9]See the website at http://www.mhlw.go.jp/stf/houdou/0000101253.html (in Japanese)

to Table 11, the ratio of firms wanting to adopt the mandatory retirement age above 64 in 2004 is larger than that in 2008.

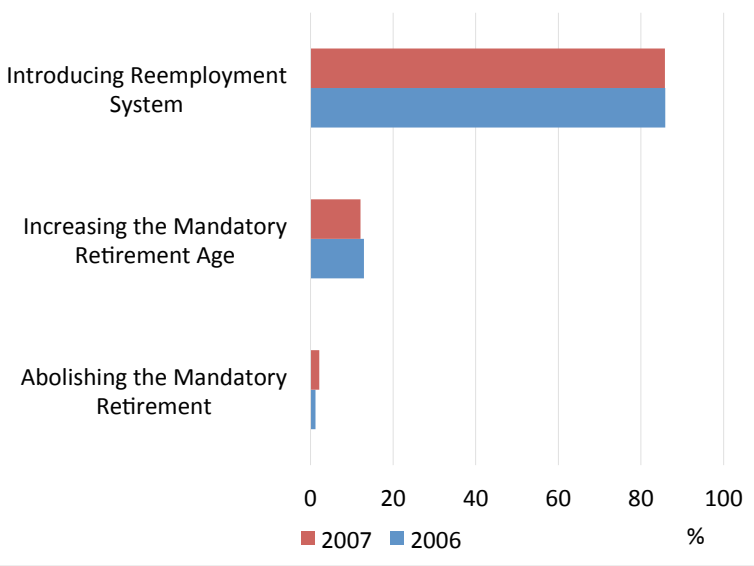
According to these facts, firms change the employment policy after 2006 by making reemployment offers or increasing the mandatory retirement age. However, according to this paper's results, the employment of the elderly workers does not significantly change after the workers born in 1946 reach 60.[10] The firms have obeyed the government directions; introducing the reemployment system, abolishing the mandatory retirement age, or increasing the mandatory retirement age. The analysis of Channel 1 is important for understanding what happened after the implementation of the EESL, thus providing scope for future work. It is possible that the firms tried to reduce the cost of obeying the EESL by decreasing wages after the mandatory retirement age when they engage in a contract with the workers reaching mandatory retirement age. There is no clear statement with respect to wage contracts when a firm gives a reemployment offer to a worker. Kondo (2016) finds a decline in earnings of the elderly workers who reached age 60 after 2006. This evidence is based on only observable wage. The offered wage when making a contract of reemployment after the implementation of the EESL should be thus analyzed. It is possible that some workers reject an offer because the offered wage is too low.

Figure 8: The Ratio of Firms Preparing the Employment Measures for the Elderly

Source: The Employment of the Elderly Workers, Ministry of Health, Labor and Wealfare

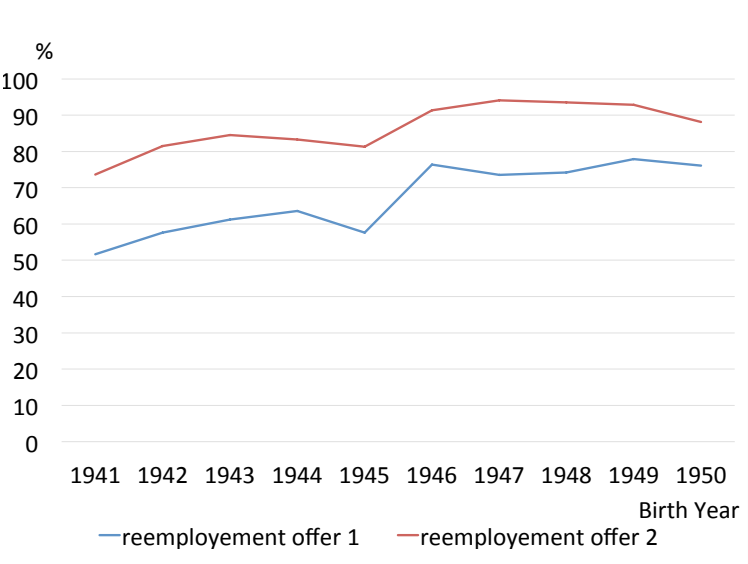
[10] According to the literature's result, there is a significant effect. However, the effect is small.

Figure 9: The Ratio of the Employment Measures for the Elderly (All Firms Preparing the Employment Measures)



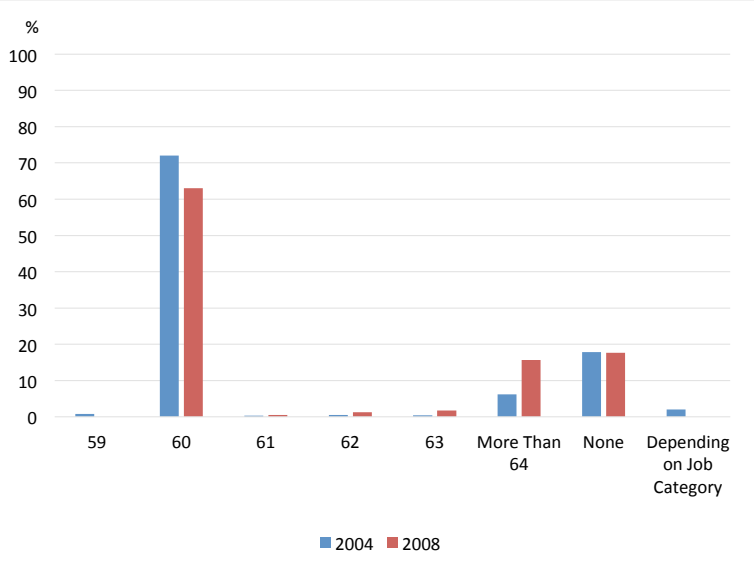
Source: The Employment of the Elderly Workers, Ministry of Health, Labor and Wealfare

Figure 10: The Ratio of Receiving Reemployment Offers



Source: JSTAR

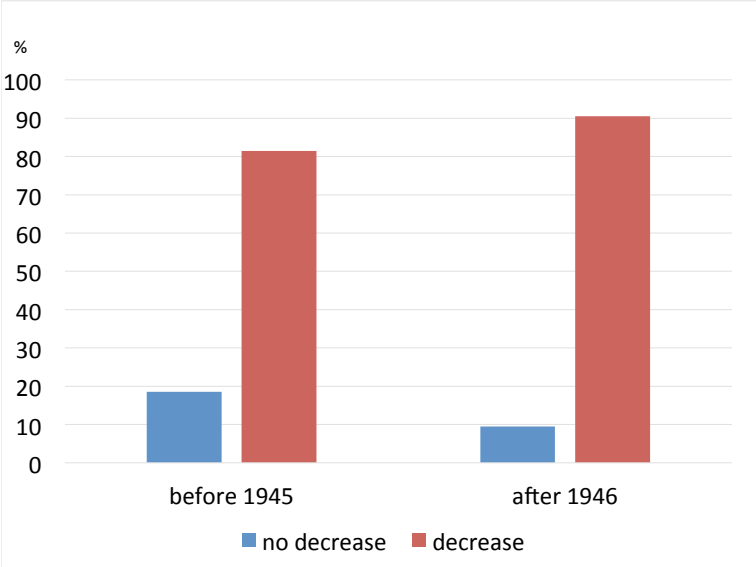
Figure 11: Employment Policy for Elderly Workers in 2004 and 2008: Retirement Age (Only Small and Medium Sized Enterprises: Less than 300 workers)(MRA: Mandatory Retirement Age)



Source: Fact-finding Survey on the Work Conditions among Small and Medium-sized Enterprises (Chusho kigyo rodo jijo jittai chosa)

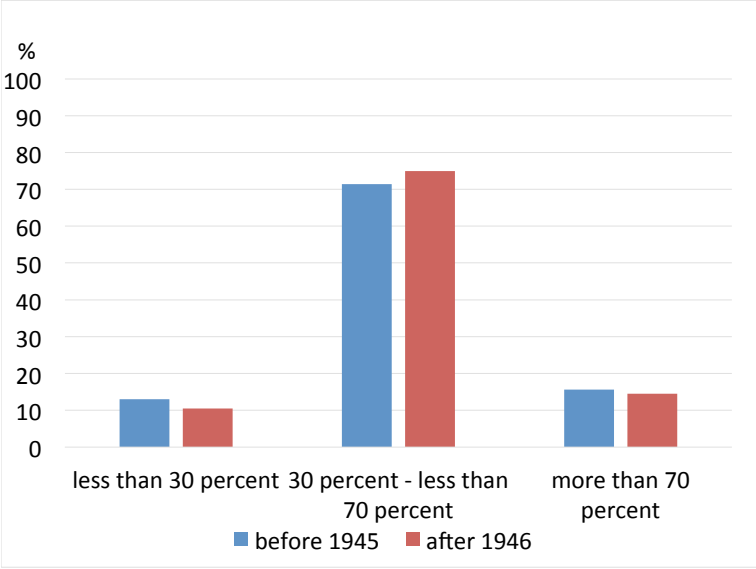
Finally, I identify the changes in the wage contract when a worker receives a reemployment offer from the firm where he/she reaches the mandatory retirement age. Figure 12 shows whether the worker's wage decreases or not after reemployment. This figure also shows the ratio of the worker's wage change after reemployment. According to this figure, the ratio of receiving a decreased wage after reemployment increases by 10 percent after a worker born after 1946 reaches the mandatory retirement age. However, it is unclear whether this is due to the EESL. As such, I compare the workers born in 1945 with those born in 1946. However, the sample size is insufficient with respect to only workers born around 1945 and 1946. Additionally, figure 13 shows the distribution of the wage decrease rate when receiving a reemployment offer. According to this figure, there is an increase in the ratio of the wage decrease rate of between 30 percent and 70 percent. However, this is also not for the dataset which includes only workers born around 1945 and 1946.

Figure 12: The Ratio of Whether Wage Decreases After Reemployment (Reemployment Contract)(Only Workers Receiving a Reemployment Offer)



before 1945: birth year before 1945, after 1946: birth year after 1946
Source: JSTAR

Figure 13: The Ratio of Wage Decrease After Reemployment (Reemployment Contract)(Only Workers Receiving a Reemployment Offer)



before 1945: birth year before 1945, after 1946: birth year after 1946
Source: JSTAR

7 Conclusion

This paper analyzed the effect of government intervention in the demand side of the labor market on the employment of the elderly. However, the results showed that there is no significant effect of the EESL on the employment of the elderly. Additionally, the inflow of the elderly not working around age 60 into the labor market is significantly negative. According to the discussion in section 6, firms obey the government's directions, thus introducing the reemployment system, abolishing mandatory retirement, or increasing the mandatory retirement age. This suggests that firms attempted to reduce additional costs caused by the government policy by choosing actions that the government does not prohibit. As a result, the number of reemployment offers has increased after the implementation of the EESL.

However, there is no clear statement in the law with respect to wage contracts when a firm makes a reemployment offer to a worker reaching the mandatory retirement age. As explained in section 6 , many firms introduce the reemployment system or increase the mandatory retirement age without abolishing the mandatory retirement age. When a firm makes a reemployment contract with a worker, it discusses a wage decrease rate with the worker who intends to work in the firm after the mandatory retirement age. The law does not concretely enforce a certain wage rate. The following question is important for directly analyzing the reason why the employment of elderly workers has not increased: did the acceptance rate of reemployment offers decrease due to low wages offered by firms? (Channel 1)

Specifically, the effect on Channel 1 is worth mentioning. This study showed there was no positive effect on the employment of the elderly. However, firms might decrease the offered wage because they have to give a reemployment offer. After the mandatory retirement age, firms can offer wage rates not strictly regulated. As a result, they have incentives to decrease the offered wage. This is a possible topic for future research.

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