RIETI Discussion Paper Series 11-E-039

Changes in Japan's Labor Market Flows due to the Lost Decade

Julen ESTEBAN-PRETEL
National Graduate Institute for Policy Studies

NAKAJIMA Ryo
Yokohama National University

TANAKA Ryuichi
Tokyo Institute of Technology

The Research Institute of Economy, Trade and Industry
http://www.rieti.go.jp/en/

RIETI Discussion Paper Series 11-E-039
April 2011

Changes in Japan's Labor Market Flows due to the Lost Decade*

Julen ESTEBAN-PRETEL† (National Graduate Institute for Policy Studies)
Ryo NAKAJIMA‡ (Yokohama National University)
Ryuichi TANAKA§ (Tokyo Institute of Technology)

Abstract

We construct worker flows for the Japanese labor market in an internationally comparable manner, and study the consequences of the deep and lasting recession of the 1990s in the Japanese labor market. We analyze the changes in employment, unemployment and inactivity, as well as the worker flows between this states by using detailed Labor Force Survey micro-data from 1983 to 2008. In order to understand what type of worker was most affected by the long recession, we disaggregate the data according to several worker and employer's characteristics. We find that the so-called Lost Decade of the 1990s changed the state of the labor market from all the previous points of view, although some types of workers were more affected than others.

.

Keywords: flow analysis, unemployment, and the Japanese labor market.
JEL classification: E2; E13; O4; J6

* The authors wish to thank Gary Hansen, Hidehiko Ichimura, Daiji Kawaguchi, Hiroshi Teruyama, and participants at the 3rd International Conference of Macroeconomics and Policy, in Tokyo, and the International Conference on Topics in Labor Economics, in Kyoto, for valuable comments and discussions. We are specially thankful to Hiroshi Teruyama for sharing the codes for the initial part of the data analysis. This paper is party of Daiji Kawaguchi's research project at the Research Institute of Economy Trade and Industry, at the Japanese Ministry of Economy, Trade and Industry. The authors acknowledge financial support for this project by the Grant-in-Aid for Young Researchers of the Japanese Ministry of Education, and the Institute of Economic Research at Kyoto University. All remaining errors are our own.
† National Graduate Institute for Policy Studies, Roppongi 7-22-1, Minato-ku Tokyo, 106-8677 Japan. E-mail: julen@grips.ac.jp; Tel: +81-3-6439-6108.
‡ Department of Economics 79-3 Tokiwadai, Hodogaya ward Yokohama 240-8501, JAPAN E-nail: rn231@ynu.ac.jp Tel/Fax: +81-45-339-3561.
§ Graduate School of Information Science and Engineering, 2-12-1 O-okayama Meguro-ku, Tokyo 152-8552, Japan. Email: tanaka@mei.titech.ac.jp; Tel / Fax: +81-3-5734-3760.

1 Introduction

The 1990s in Japan, so called the Lost Decade, was a time when output per capita grew at an average of 0.5%, far below the average of the previous decade, 3.2%, and the labor market suffered one of the worst periods in recent Japanese history. Workers were fired in record numbers, and unemployment reached a historical high of 5.4% in 2002, more than 2.5 times the level in 1990. Underlying this substantial increase in unemployment lies a decrease in the probability of unemployed workers to find jobs, and an increase in that of employed workers losing their jobs.[1] While the previous facts may be well known, many other interesting facts about the worker flows in the Japanese economy are not.

In this paper we use Labor Force Survey data to establish the most important facts regarding the Japanese labor market flows and how they changed due to the Lost Decade. We perform and empirical analysis to understand if the changes from the 1980s to the 2000s due to the recession of the 1990s are significant, or if on the other hand, these flows have returned to the pre-Lost Decade levels. We also study if the facts that are found at the aggregate level, that is, pooling all types of workers together, still hold valid when the data is disaggregated by worker and firm characteristics, such as age, gender, firm size or sector of employment.

Our findings show that, at the aggregate level, the employment to population ratio dropped significantly, and the unemployment and participation rates increased significantly, from the 1980s to the 2000s. During the 1990s both the finding rate decreased and the separation rate increased, and they did not return to the pre-Lost Decade levels after the decade was over.

When the data is disaggregated by worker characteristics we find that the previous facts change to some extent. Our analysis shows that among the different age groups, young workers suffer the highest unemployment rates, along with the highest transition rates from employment statuses. Young workers were also the ones most affected by the Lost Decade in terms of increases in the separation rates, although middle-aged workers were the ones who saw the biggest drops in their finding rates from the 1980s to the 2000s. In terms of gender, the most striking observation is the much lower employment and participation rates for women (almost 30 percentage points lower), and the fact that the participation rate has the shape of an M over the life-cycle of female workers. The Lost Decade seemed to have affected more negatively male than female workers, in terms of the changes in the flow rates, but the 1990s also meant that women at childbearing age were more attached to the labor force, and transition into inactivity less often. The regional analysis shows less differences across areas of Japan, but we find that the regions of Hokkaido/Tohoku and Kinki are the ones where workers suffer highest unemployment rates and higher separations with lower re-employment opportunities.

We also study the worker flows and their changes due to the Lost Decade looking at firms or jobs characteristics. Looking at the sector to which the firm belongs,[2] we find that, not surprisingly, in Japan

[1] The experience during 1990s is far different from one in 1980s, and the stagnation seems to go on in 2000s. This sharp rise and persistence in unemployment has been one of the greatest concern for economists and policy makers. For instance, Esteban-Pretel, Nakajima and Tanaka (2010) argue that the decline of total factor productivity is to some extent responsible for the rise of unemployment rate of Japan in 1990s.

[2] Abe and Ohta (2001) and Sakata (2002) point out the segmentation by industry is important for the analysis of the Japanese labor market.

the Public sector is where workers are more stable, and it was the one which was least affected by the Lost Decade. Workers in the primary sector suffer the highest separation rates and also suffered the largest changes due to the recession of the 1990s. In terms of firm size, small and medium size firms are the ones that display highest rates of separation and where workers move more frequently from unemployment. They were also the ones whose rates changed more due to the Lost Decade. Finally, the data show that self-employed and contingent workers separate more often from their firms than regular workers. It also shows that workers move most frequently from unemployment into regular jobs, but from inactivity into contingent jobs. The lost decade affected self-employed workers the most in terms of their separation rates and the chances to find that type of job from unemployment or inactivity.

Our paper belongs to the strand of literature that tries to understand the determinants of changes of unemployment and participation rate by studying the flows of workers in the labor market. One of the examples of flow analysis is Blanchard and Diamond (1990). They construct the data of the U.S. workers flows and study the relationship between business cycle and job finding and separation flows. They also disaggregate the worker flows by age and sex and find that the relationship between business cycle and worker flows are different across age and sex.

For Japan, Higuchi, Seike, and Hayami (1987), Mizuno (1992), and Ohta and Teruyama (2003a) are some of the earliest pieces of research of this type. Among them, Ohta and Teruyama (2003a) use flow data from 1980 to 2000, and disaggregate the flows by sex, age, industry, firm size, and employment status. Using monthly data from Labor Force Surveys from 1980 to 2000, they look at the determinants of the movement of unemployment rate.[3] Kuroda (2003) studies the flow data of Ohta and Teruyama (2003a) from 1985 to 2000 to investigate the factors contributing to the rise of unemployment rate during 1990s. She finds that the rise of job separation rate and the fall of job finding rate are responsible for the rise of unemployment rate during 1990s. Sakura (2006) is another example of the flow analysis using Labor Force Survey data. He analyzes the flows with 1977-2005 monthly LFS data, but disaggregate the flows by gender only. He finds similar results as in Ohta (2005), and these results are also similar to those in Kuroda (2003). Ohta, Genda, and Teruyama (2008) analyze the labor market flows from 1974 to 2006 monthly LFS data without disaggregation of the data by demographics. They find similar results as in Ohta (2005) and consistent to Kuroda (2003) and Sakura (2006). They also conduct simulations in Shimer (2007) with LFS data and find that surge in job separation rate is the most responsible for the sharp increase of unemployment rate. This result is contrary to the finding in Shimer (2007) for the U.S. (for the U.S., Shimer (2007) claims that the drop in the job finding rate is the most responsible for the increase in unemployment rate). As the latest update, Teruyama (2010) reports some updates of Ohta and Teruyama (2003b) using aggregate flow data from the Labor Force Survey.

In this paper, we follow on the steps of the previously mentioned papers on Japan's labor market flows, but we differ in that we construct the flows using the method used by Shimer (2007). This method has been used to construct worker flow series for many other countries, and therefore makes our results and data series easily comparable to international studies. Hence, one of the contribution of our paper is to provide an internationally comparable worker flow analysis, with detailed disaggregation, that extends up to 2008.

[3]Some of the results are summarized in Ohta and Teruyama (2003b) and Ohta (2005).

The reminder of the paper is organized as follows. Section 2 explains the Labor Force Surveys as a primary data source and how to construct labor market flow data. Section 3 reports the changes of job market flows, and Section 4 reports the changes in job finding and separation rates. Section 5 reports disaggregate flows. Section 6 concludes.

2 Construction of Flow Data

We now explain how we construct flow data with Labor Force Surveys.

2.1 Data

The data are based on the Labor Force Survey (LFS) of the Japanese Statistics Bureau and Statistics Center from 1982 to 2008. The LFS is conducted every month. Each household is surveyed for two consecutive months, and is out of the survey for the next ten months, and then in the survey again for another two consecutive months. From this survey structure, the LFS is comparable to the Consumer Population Survey (CPS) in the United States.

Like CPS, the LFS provides the information on labor market flows. With the survey structure, 50 percent of the sample in each month is in their second month of the survey. Hence, it is possible to observe the transition among the three status of employment: employed (E), unemployed (U), or not-in-labor-force (I) by matching the information with the employment status in the previous month.[4] With three employment status, we have nine categories of worker flows; EE, EU, EI, UE, UU, UI, IE, IU, and II. For example, if a worker who was employed in the previous month is now unemployed, this worker is categorized into EU.

It is well-known that adding flow data does not necessarily yield figures consistent with those by stock data. This is mainly because the flow data uses only a half of sample, while stock data uses all available sample. In order to make these two series as close as possible, Ministry of Labour (1986) proposed adjustments to the gross flow data. For the details of the adjustments, see Ministry of Labour (1986) or Sakura (2006).

2.2 Construction

Given the survey design of the LFS, we follow a matching method used by Shimer (2007) to construct the worker flow data.[5] That is, individual records are matched over two consecutive months using information

[4]The LFS is conducted in the last week of each month. The definition of unemployed in the LFS is given by those who has no job and did not work at all during the reference week, who is ready to work if work is available, and who is engaged in any job-seeking activity or was preparing to start business during the same week. This definition of unemployment is consistent with the definition by the International Labour Organization.

[5]There is another method to construct flow data in Ohta and Teruyama (2003). They construct flow data using information of employment status in the previous month. Since this information is contained in the second- and forth-month surveys, they do not have to match individual data for consecutive months. We construct the flow data by their method and check if they are different from our data. We find that these two series are close to each other.

of unique household identifiers[6], individual line numbers, sex and age. We then compute the sample-weighted gross flows across three states, employment E, unemployment U, and not-in-the-labor-force I, so that the between-three-states flows are obtained for the following nine categories : EE, EU, EI, UU, UI, UE, II, IE and IU. Let w_{it} be the sample weight of worker i at month t in the LFS. Let G_t^{XY} be the group of workers who move from state $X \in \{E, U, N\}$ to state $Y \in \{E, U, N\}$ at month t. Then, the gross flow from state X to Y is given by

$$F_t^{XY} = \sum_{i \in G_t^{XY}} w_{it}.$$

The transition probabilities follow from the flows. For example, the transition probability from employment state E to unemployment state U at time t is computed by

$$p_t^{EU} = \frac{F_t^{EU}}{\sum_{Y \in \{E,U,I\}} F_t^{EY}}.$$

Other transition probabilities are computed similarly. It should be noted that all the flows and transition probabilities are seasonally adjusted using a ratio-to-moving average technique.

The time series of unemployment (and other stock variables) based on the flow data is not exactly same as one calculated with stock data, because the former is calculated with subset of the samples used for the latter. To construct a flow data consistent with the one based on the stock data, we adjust the flow data based on the correction method by Ministry of Labor (1986). The method used by many authors such as Ohta and Teruyama (2003a) and Sakura (2006) is explained in Appendix A.

In the sections that follows we analyze the evolution and changes in the labor market states of workers, employment (E), unemployment (U) and inactivity (I), and in the flows between each of these states. We consider three widely-used variables to characterize the three employment states: (i) to understand the employment state, we look at the employment to population ratio, which we define as the ratio of the number of employed workers to the sum of employed, unemployed and inactive workers ($\frac{E}{E+U+I}$); (ii) we study the unemployment rate through the unemployment rate, defined as the ratio of the number of unemployed workers to the sum of employment and unemployment ($\frac{U}{E+U}$); (iii) finally, we analyze the state of inactivity via the participation rate, which is defined as the ratio of the sum of employment and unemployment to the sum of the three states, employment, unemployment and inactivity ($\frac{E+U}{E+U+I}$).

3 The Labor Market at the Aggregate Level

We now proceed to analyze the Japanese labor market, and the changes brought about by the decade-long recession of the 1990s. We start our analysis at the aggregate level. We first establish some general facts about the long-run levels of the employment statuses and the flows of workers between such statuses. Those are the facts that most people have in mind when thinking about the Japanese labor market. We then analyze if such long-run levels are representative of the evolution of these variables over the three decades, or if there were significant changes due to the Lost Decade. After the aggregate facts

[6] We construct the unique household identifier by employing the information of the sample area code, interviewed period and household's characteristics.

are established, we proceed to study the data at the disaggregate level in order to understand if the patterns observed at the aggregate level are mostly due to certain types of workers, whose labor market experiences dominate those of the rest, or if on the contrary, the same patters are observed for all types of workers.

3.1 Long-run Evidence

The Japanese labor market has for many years been seen as one with very stable employment and low rates of unemployment. As we can see in the top panel of Table 1, which shows the main statistics of each variable for the whole sample period, on average over the last 25 years, 60 percent of the employable workers in Japan had a job. Of those who did not have a job, only a small fraction, 3.7 percent, were unemployed. Putting this two numbers together shows that the participation rate in Japan averaged 63.2 percent in the last three decades.

The previous numbers for employment, unemployment and inactivity, while informative about the aggregate state of the labor market, may reflect very different possibilities in terms of worker dynamics. It is well known that Japan has had a long tradition of very stable employment, but not all workers remain in the same company all their careers. For this reason it is important to understand if beneath, for instance, the low unemployment numbers, lie a very dynamic labor market, where workers have jobs because they are able to transition quickly to new employment opportunities after losing a job, without spending much time unemployed, or if on the other hand, unemployment is low because workers are not very likely to lose their jobs. To understand this we look at the flows of workers between the different statuses.

The numbers for the worker flow rates on the top panel of Table 1, show that the Japanese is not a very dynamic labor market. On the average month between 1983 to 2008, 98 percent of workers retained their job and only 0.4 percent of workers moved into unemployment. Those workers who were unemployed during this period had an 11 percent chance of finding a job during a give month, and an almost 80 percent probability of remaining unemployed. Finally, for an average worker outside of the labor force, the probability of finding a job was, as would be expected, very low, at 2.3 percent per month.

In summary, over the last three decades, the Japanese labor market has been characterized by a very low unemployment rates with little flows between employment statuses. Workers did not lose their jobs frequently, but when they did, they would not get re-employed quickly.

3.2 Changes due to the Lost Decade

Low unemployment rates and low transition rates between employment statuses are features of the Japanese labor market when studied over a long horizon of time. However, has the labor market been this way for long? And more importantly, has the situation changed in the face of the deep and prolong recession suffered in Japan over the 1990s?

In order to understand how stable have been the employment and unemployment rates, as well as the worker flow rates, we now turn to study the evolution of these variables over time. In particular we

focus on the changes that took place during the 1990s and analyze whether any changes that may have occurred due to the Lost Decade have become permanent, or if on the other hand the labor market has returned to state of the 1980s.

Figure 1 shows the evolution of the three stock variables from 1993 to 2008.[7] We can see that the long-run low Japanese unemployment rate explained before hides some very important facts that become clear when observing the evolution of the variable over time. The unemployment rate averaged 2.9 percent in the 1980s, whereas it averaged 4.8 percent from 2000 to 2008. This large increase in the unemployment rate was due to an almost three fold increase over the 1990s, from a minimum of 2.01 percent in 1991 to a maximum of 5.5 percent in 2002. This dramatic increase in the unemployment rate was accompanied by an even larger decline in the employment to population ratio, which decrease by more than 3 percentage points over the Lost Decade. Hence, the increase in unemployment could have been even larger if the participation rate had not dropped also by around 2 percentage points.

We have seen that during the 1990s Japan suffered a drop in employment and large rise in both unemployment and inactivity. Given the changes in these variables, it is natural to ask if also the worker flow rates changed over this period, or remained low and close to their long-run averages. Table 1 and Figure 2 help us answer this question and uncover some interesting facts. First, despite the drop in employment from the 1980s to 2000s, the probability for a worker to remain employed from one month to the next remained almost unchanged at 98 percent.[8] Second, the increase in the unemployment rate was mostly due to a 50% increase in the inflow rate from employment (EU rate), which rose from 0.3 in the 1980s to 0.6 percent in the 2000s. The other factor that contributed to increasing unemployment over the period was the decrease in job finding rate from unemployment (UE rate), which decreased slightly from 11.8 percent in the 1980s to 10.7 percent in the 2000s. Third, in terms of worker flows for individuals out of the labor force, the Lost Decade reduced the number of workers loosely attach to the labor force. These types of workers usually move directly between inactivity and employment, and the data shows that monthly flow rates between these two states decreased from the 1980s to the 2000s. At the same time, the transition rates between inactivity and unemployment increased, which seems to indicate that workers remained (or entered) in the labor force after losing (or before finding) a job. However, in terms of magnitudes, the flow rates related to inactivity did not change very much between the 1980s and the 2000s.

In summary, at the aggregate level Japan is a country that has enjoyed a very low unemployment rate for many years. This low rate was accompanied by fairly low worker movements between labor market statuses, with low job separation rates and not so high finding rates. However, the long recession of the 1990s meant that some of these facts changed. The unemployment rate almost doubled from the 1980s to the 2000s, and the employment to population ratio and the participation rates both dropped. Underlying these changes in employment and unemployment, we find substantial variations in worker flow rates were in the job separation and job finding probabilities.

[7] The red horizontal lines represent the decade averages for the 1980s, 1990s, and 2000s. The shaded areas represent the recession periods, from peak to troughs, as dated by Japan's Cabinet Office. The data is available under the heading "The determination of Business-Cycle Peak and Trough" from the Cabinet Office website: http://www.esri.cao.go.jp/en/stat/di/di-e.html, The vertical solid black line marks the first quarter of each decade.

[8] Workers transitioned more into unemployment, but less into inactivity, which seemed to have balanced each other.

4 Disaggregate Analysis

The aggregate analysis presented above serves as an excellent starting point to understand the state of the Japanese labor market in recent decades. However, the above conclusions are drawn pooling all workers in the economy together and are, therefore, representative of the average worker. While in many instances knowing the aggregate level facts is enough for the type of analysis that needs to be done, in many others we need to understand if the aggregate level conclusions hold for all types of workers, or only for the average one. For instance, one may ask questions such as: Do workers of all ages have very low unemployment rates in Japan? Is the participation rate, which in the case of female workers may be tied to fertility issues, the same for men and women? Did all regions of Japan suffered equally from the Lost Decade? Did workers in the primary sector lose jobs more frequently than those in the tertiary sector? What about workers in regular versus contingent jobs? or in small versus large firms?

The answer to the previous, and many other similar questions cannot be found by studying solely aggregate level data. In order to answer them a more disaggregated analysis is necessary. One in which the data is divided according to worker's characteristics and that, hence, will allow us to draw a much clearer picture of the labor market in Japan, and its changes due to the 1990s recession. We perform such disaggregated study in this section, where we look first at worker characteristics and then at job characteristics.

In the regression analysis that follows, we implement regressions to identify the group that has suffered from the Lost Decade. The regression model is given as follows:

$$Y_{kt} = \sum_{s=1}^{T} \alpha^s \delta_{kt}^s + \sum_{m=1}^{K} \beta^m G_{kt}^m + \gamma^{90} D_{kt}^{90} + \gamma^{00} D_{kt}^{00} + \sum_{m=1}^{K} \rho_m^{90} (D_{kt}^{90} \times G_{kt}^m) + \sum_{m=1}^{K} \rho_m^{00} (D_{kt}^{00} \times G_{kt}^m) + \varepsilon_{kt}.$$

where Y_{kt} is the target state variable for group k at quarter t; $\delta_{kt}^s$is a quarterly dummy, and $\delta_{kt}^s = 1$ if quarter $t = s$; G_{kt}^m is a group dummy, and $G_{kt}^m = 1$ if group $k = m$; D_{kt}^{90} is a 1990s dummy, and $D_{kt}^{90} = 1$ if quarter t belongs to 1990's; and $D_{kt}^{00}$is a 2000s dummy, and $D_{kt}^{00} = 1$ if quarter t belongs to 2000's.

We consider the state variables including the 3 labor status variables, E, U and I, as well as 9 labor flow variables, EE, EU, EI, UU, UI, UE, II, IE and IU. The estimate of the parameter, ρ_m^{00}, is reported, which captures the change of the state variable for group m from the 1980s to the 2000s. In other words, if the estimate of ρ_m^{00} is significant in magnitude, it is implied that the workers of group m have experienced substantial structural change in terms of the targeted state variable during the Lost Decade.

4.1 Worker's Characteristics

4.1.1 Age

It is clear to everyone that young people are different in many aspects to older individuals. They differ in their interests, priorities, and experiences. Also importantly, they face different horizons until the retirement age. But, do these disparities translate into variations in the labor market experiences as worker age?

Figure 3 and Table 2 display the main variables of interest for different age groups. We can clearly observe that age really does matter when trying to comprehend the labor market experience of Japanese workers.

The first thing to note is that the unemployment rate is U-shaped, and that both the employment to population ratio and the participation rate have the form of an inverted U. This implies that workers of young age are the most likely to find themselves without a job and not attach to the labor force, and that this likelihood increases again for workers close to retirement.

Table 2 and Figure 3 show that the low, 3.7 percent, unemployment rate seen at the aggregate level is only representative of the average worker. The unemployment rate for the youngest age group, 15 to 20, is much higher than that, averaging almost 9 percent over the whole sample period. This rate decreases with age, and finds its minimum point for workers aged between 45 to 49, at 2.2 percent. For workers about to retire, 60 to 64 years of age, the unemployment rate increases again to more than 5.5%.

So, if unemployment varies greatly with age, do the worker flow rates also change as individuals become older? The answer is yes, and can again be seen in Figure 3 and Table 2. The main two flow rates, separation (EU) and finding (UE) rates, are markedly age dependent. Young workers are much more likely to find jobs, with individuals aged 15 to 19 having a finding rate of around 15 percent, which is almost 3 times larger than that of people about to retire, around 6 percent for workers aged 60 to 64. However, along with a higher finding rate we find a much higher separation rate for young workers. Once more almost 3 times as large, 1.44 and 0.52 for the workers aged 15 to 19 and 60 to 64, respectively. The other flow rates, while also displaying variations across ages, they do not show as clearly monotonic pattern as the finding and separation rates.

We saw that at the aggregate level the 1990s represented a big change in the level of unemployment and some of the worker flow rates. When looking at the data by age, were worker of all ages equally affected by the prolong recession? The easiest way to answer this question is to look at Figure 3. We can observe that in terms of employment states, the unemployment rate is the variable which shows a more visible change from the 1980s to the 2000s. In particular young workers seemed to be the ones most affected by the increase in unemployment, and older ones the least affected. The fact that the change due to the Lost Decade was more severe for younger workers is corroborated by our regression analysis, which most important results are shown in Table 3. We can see in the second column of the table, which shows the change in the variable from its value in the 1980s to that of the 2000s, that the 1990s meant a significant increase in the unemployment rate of young workers, whereas it was not so noticeable for older ones.

The previously explained increase in unemployment for young workers was mostly due to the increase in the separation rate, which went up across the board, but was also highest, and significantly so (as shown by the regression analysis), for younger individuals. Interestingly, the finding rate for younger and older workers increased from the 1980s to the 2000s, which means that the decrease in this rate that we observed at the aggregate level was mostly driven by the decrease in the chances of re-employment for middle-aged workers. So in this case, the middle-aged workers were the ones who suffered the most from the 1990s in terms of changes in the finding rates. However, it is worth noting that the regression analysis shows that the changes in the finding rate from the 1980s to the 2000s were not significant for any age group

except for the age group of 60 to 64.[9] In terms of the other flow rates, there are once more, variations in the signs and significance of the changes over the three decades. The most noticeable change is in terms of the increase in the flow rate from inactivity to unemployment, which raised significantly for all age groups.This increase in the IU flow rate may be due to an increase of female labor force participation during the recession. It is well-known that female labor force participation correlates negatively to non-female household income such as husband's income. During the recession, household income may have dropped to a low level and as a result females who stayed at home before the recession may have started to participate in the labor market to maintain household income.

Summarizing, in Japan age plays an important role in the labor market experience of workers. The unemployment rate is U-shaped over the life-cycle of workers, and the finding rate and separation rates are declining with age. Hence, young workers suffer the highest unemployment rates, but face a much more dynamic labor market with higher chances of moving between employment statuses. The 1990s recession increased unemployment the most for young workers, who also suffered the highest increases in the job separation rate. However, it was the middle-aged workers who were the most affected by the decline in job finding rate due to the Lost Decade, whereas this rate increased for very young and old workers.

One additional feature of the data that becomes apparent by looking at Figure 3 is that both the employment to population ratio and the participation rate display a slight inverted hump for workers aged 30 to 34. In order to understand this decline in employment and participation for workers in this particular age group, an even more disaggregate analysis, one that separates male and female workers, is needed. We execute such analysis in the next sub-section.

4.1.2 Gender

One very visual way in which workers differ is in their gender. It can be argued that men and women are equal in many aspects, in particular their abilities and strengths to perform different jobs. However, what cannot be denied by looking at the data summarized in Figures 4 to 6, and Tables 4 and 5, is that the labor market experiences of male and female workers in Japan are vastly different.

Female workers have lower employment to population ratio and participation rates than men, and the magnitude of this difference is close to 30 percentage points (both variables are close to 77 percent for men and around 49 percent for women). This difference in the participation and employment levels, however, does not translate into substantial variation in their unemployment rate, which is 3.5 and 3.4 percent for men and women, respectively.

Not only the average employment and participation levels are lower for women, but the evolution over the life-cycle is also very different. We can clearly see this by looking at the differences in the employment to population ratio and participation rates for men and women in Figures 5 and 6 respectively. While men's employment and participation rates are shaped as an inverted U, women's are clearly shaped as an M. Many female workers in Japan tend to stop working, and exit the labor market for a number of years, between the ages of 25 and 34, and this is a pattern that we do not observe for men. Given the age at

[9]This increase in UE flow may be to some extent due to the implementation by the government of employment promotion for old workers above 60 as a response to the change of starting age of pensions from 60 to 65.

which the withdrawal from the labor market occurs for women, it seems that fertility, and the decision to bare and raise children, are issues that greatly affect the labor market experiences of female workers in Japan.

In terms of the transition rates across employment states, the biggest difference in their levels between men and women, is observed for the probability to retain a job and to remain unemployed (EE and UU respectively), which are lower for women, and the probability to exit the labor force (EI and UI) which are higher for female workers. The other transition rates, while not identical for both genders, are closer in their magnitudes.

The 1990s affected male and female workers differently. Looking at Figures 5 and 6, and the numbers in Table 4 we can see that the employment and participation rates declined for men of all ages, whereas they overall for women, but increased for those women who would normally exit the market at the age of childbearing. The unemployment rate increased for both genders, with the biggest increased suffered by younger workers. As shown in Table 5, the changes in the levels of the labor market statuses between the 1980s and the 2000s were significant for both genders, although as already mentioned, larger in magnitude for men.

The Lost Decade also brought different changes to transition rates for male and female workers. While the separation rate increased by a similar amount for both genders between the 1980s and the 2000s, the finding rate decreased for men, but increased for women (although the change in the finding rate is not significant). Furthermore, while most of the other transition rates did not significantly change for men from the 1980s to the 2000s, women experienced a significant change in almost all of them due in large part to the variation for women at childbearing age. Women between 24 to 34 have in recent years become more attached to the labor force, with lower transition rates into inactivity, and higher flows back into employment and job-search activities.

Therefore, we have seen that, while men and women suffer similar rates of unemployment, Japanese women have been traditionally much less attached to the labor force than men. Women also display higher finding and separation rates than men, and more importantly higher transitions into inactivity, especially at the ages between 24 to 34. The Lost Decade affected more the employment and participation rates of male workers than those of female workers (except for those at childbearing age). The 1990s also meant increases in the separation rates for both genders, but drops in the finding rate of men and rises in the re-employment chances of women. Also important for women is that workers at childbearing age have become more attached to the labor force and now transition less into inactivity.

4.1.3 Region

Japan is a country with vasts differences across regions in terms of, for instance, climate, population density, or operational industries. But once again, it is worth asking if, for example, workers in Tokyo suffer the same unemployment and job-transition rates than workers in Hokkaido. Understanding the differences in labor experiences of workers in the various regions may shed some light to issues of migration of workers across the country.

While Japan is politically divided into 47 sub-national jurisdictions (prefectures), in order to ease the analysis at the regional level, we have grouped the different prefectures into 6 regions: Hokkaido and

Tohoku, Kanto, Hokuriku and Tokai, Kinki, Chugoku and Shikoku, Kyushu and Okinawa.[10] Tables 6 and 7, and Figure 7 summarize the main features of the data when disaggregated by region of residence of the worker.

Looking at Table 6 we see that workers in the areas of Hokkaido/Tohoku and Kinki suffer the toughest labor market experiences. These areas display 3 to 5 percentage points lower employment and participation rate than other regions. They also suffer the highest unemployment rates in the country, with 1 to 1.5 percentage points higher rates than the other regions. At the same time, Hokkaido/Tohoku and Kinki are also the areas with highest separation rates and lowest finding rates. On the opposite side we find that the region of Hokuriku/Tokai is the area with lowest unemployment, higher participation rate and more favorable transition rates between employment and unemployment.

The Lost Decade seem to have affected all regions in the same direction, although the Kinki area was the most affected. Table 6 shows that the employment and participation rates significantly decreased for all regions between the 1980s to the 2000s, and the unemployment rate significantly increased for all areas between the two time periods, with the Kinki region seeing the largest increase. The evidence on the worker flow rates is a more mixed, although the clearest change is in the transition rate from employment to both unemployment and inactivity, that increased in similar magnitude for all regions. The job finding rate decreased for all regions, although not significantly in all cases. Finally, the other transition rates changed in the directions seen for the aggregate data for almost all regions and all rates, but these changes are only systematically significant for the regions of Chugoku/Shikoku and Kyushu/Okinawa.

In summary, we find that there are some differences in the levels of the rates studied across the regions of Japan, with the areas of Hokkaido/Tohoku and Kinki being the ones with largest unemployment, highest separations and lowest finding rates. The area with best labor market experiences seems to be Hokuriku/Tokai. In terms of the recession of the 1990s, the changes are fairly homogeneous across regions, but the Kinki area seemed to have suffered the largest change.

4.2 Firm/Job's Characteristics

Up until this point, we have seen that some of the aggregate facts found in Section 3 related to the changes in the labor market due to the Lost Decade still hold when disaggregating the data by worker's characteristics. Such is the case the increase in unemployment or the increase in the separation rate. However, we have found that the changes in other rates depend on the age or gender of the worker, as is the case for the participation rate or the job finding rate. Given that the increase in unemployment and separation rates from the 1980s to the 2000s seem to have occurred for all ages and gender, we now turn to analyze worker turnover (both at the exit and entry level) for different types of firms or job characteristics. We study the data from the point of view of the sector of employment, size of the firm

[10] Hokkaido and Tohoku area contains Hokkaido, Aomori, Iwate, Miyagi, Akita, Yamagata, and Fukushima. Kanto area contains Ibaraki, Tochigi, Gunma, Saitama, Chiba, Tokyo, and Kanagawa. Hokuriku and Tokai area contains Niigata, Ishikawa, Toyama, Fukui, Yamanashi, Gifu, Nagano, Shizuoka, Aichi, and Mie. Kinki area contains Osaka, Hyogo, Kyoto, Shiga, Nara, and Wakayama. Chugoku and Shikoku area contains Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Tokushima, Kagawa, Ehime and Kochi. Kyushu and Okinawa area contains Fukuoka, Saga, Oita, Kumamoto, Nagasaki, Miyazaki, Kagoshima, and Okinawa.

and the type of employment.

We take advantage of the structure of the Labor Force Survey to study not only transitions between employment and unemployment or inactivity, but also between jobs of different types. In particular, we calculate transition matrices that show the employment-to-employment yearly transition rates between jobs of different characteristics, such as for instance between firms of different sizes.[11]

4.2.1 Employer's Sector

Figure 8 and Tables 8 and 9 summarize the data from the point of view of the sector of employment.[12] Not surprisingly, the more stable sector in Japan is the public sector, where 99.2 percent of workers employed in that sector remained employed one month later, and has the lowest separation rate, with 0.14 percent and 0.5 percent of workers every month moving into unemployment and inactivity, respectively over the whole sample period. The second best sector in terms of employment stability is the tertiary, or service sector, followed by the secondary and then the primary. It is worth noting that the primary sector in Japan has the highest transition rate from employment to inactivity, probably due to the aging and retirement of many workers in this sector.

In terms of movements into employment, if a worker was unemployed or inactive in an average month over the last three decades in Japan, and if he or she found a job in the following month it was most likely in the tertiary sector, where 3.1 percent of unemployed and 0.5 percent of inactive workers transitioned. The public sector absorbed the smallest fraction of unemployed and inactive workers.

Movement of workers between sectors, while rear from one month to the next are more common when looking at the sector of employment one year apart. Table 10 displays the yearly transition probabilities across different sectors, as well as from and to unemployment and inactivity. We can see that the most likely event is for a worker to remain employed in the same sector from one year to the next, but interestingly we observe that if a primary sector worker moves it is mostly to inactivity or the secondary sector or tertiary sectors, but hardly ever to the public sector. Secondary sector workers transition to tertiary sector jobs, followed by inactivity, if they are not still employed in a secondary sector job. Workers in the tertiary sector are more likely to move to inactivity or into secondary sector jobs, if not they are not still employed in the tertiary sector. Finally, employees of the public sector mostly move to service sector jobs if they move at all.

We have seen that the separation rates increased at the aggregate level due to the prolonged recession of the 1990s, but were workers in all sectors equally affected? The results of Tables 8 and 9 show that the separation rate significantly increased in all sectors, but it was more pronounced for the secondary and tertiary sectors. The transition rate from employment to unemployment increased from 0.4 in the 1980s to 0.55 in the 2000s for the secondary sector, and from 0.4 to 0.6 in the tertiary sector for the same two decades. The sector that was least affected was the public sector.

[11] We only calculate yearly transition rates and not monthly rates, since the data does not display enough worker movement between jobs from one month to the next. However we find that there is many more transitions when comparing employment states one year apart.

[12] Sectors are defined as follows: Primary: agriculture and fishery; Secondary: construction, manufacturing, and electricity; and Tertiary: transportation, wholesale, finance, and services.

In summary, the public sector in Japan is the most stable one in terms of workers leaving their employment. Furthermore, it was also the one least affected in terms of the separation rate by the Lost Decade. The tertiary sector absorbs most unemployed and inactive workers, and it was the only one for which the attraction of unemployed significantly increased workers due to the Last Decade.

4.2.2 Firm Size

The previous analysis has shown that workers in the public sector in Japan are in the most stable jobs. The government as a whole is the largest employer in Japan, but what do we find when we look at workers employed in private sector firms of different sizes?

Tables 11 and 12, and Figure 9 summarize the data for workers in firms of various sizes.[13] We find that as the employer becomes larger so that the chance of retaining a job from one month to the next. Similarly, and excluding the government, larger firms are the ones that display the lowest separations, with 0.32 and 0.69 percent of workers at firms of size mega transitioning into unemployment and inactivity in a given month. These rates are almost doubled for small and medium size firms. Interestingly, while smaller firms suffer higher job separations, they also absorb a larger fraction of unemployed and inactive workers. Almost a combined 3.5 percent of unemployed workers moved into jobs at small or medium every month from 1983 to 2008.

When we look at transition rates from one year to the next, which are displayed in Table 13, we find that when workers move to firms of different size from the one that currently employs them, they tend to move to work for employers with a size not too different from the current one. For instance, if workers at small firms move to another firm, they mostly go to employers of medium size. Workers at firms of medium size, when moving, they move to either small or large size, but rarely to mega-sized firms to the government. Worker at large firms move to either medium or mega size employers, and not frequently to small firms. And similarly for Mega size firm workers, who mostly transition into large firms.

Over the whole sample period larger firms display lower separations, but also lower hirings directly from unemployment or inactivity. The Lost Decade, however, affected the separation rates of firms of all sizes, and the chances of moving into unemployment increased significantly for workers in employers of all sizes. The transition rates from unemployment only significantly decreased from the 1980s to the 2000s for firms of small size, which where actually the ones doing most of the hiring during the 1980s. The fact that firms of all sizes increased their separation rates, whereas the finding rate only significantly dropped for small firms, may be an explanation for why the rise in the separation rate from the 1980s to the 2000s was much more significant than the drop in the finding rate.

Therefore, we find that the size of the firm is very important for employment experience of a worker. The larger the firm, the lower the probability of losing the job. On the other hand, workers are much more likely to move into smaller size firms from unemployment and inactivity. However, when moving between jobs from one year to the next, workers tend to switch to employers who do not differ in size too much from their previous firm. The 1990s created a permanent increase in the separation rate for firms of all sizes, but only significantly decreased the finding rate into small size firms.

[13] We define the sizes of firms as follows: Small:1: 1 to 9 workers; Medium: 10 to 99 workers; Large: 100 to 999; and Mega: 1000 and above.

4.2.3 Employment Type

The previous two subsections have shown that the worker flows between employment and unemployment in the Japanese labor market have traditionally occurred more frequently in the primary and secondary sectors and with small and medium size firms. So we now ask: what were the types of jobs that workers at these firms were separating from and finding employment into? To answer this question, we separate the jobs that workers hold into 3 categories: regular, contingent and self-employed.[14]

Figure 10 and Tables 14 and 15 contain the summary of the data that allow us to answer the previous question. We can see that, as could be expected, regular jobs are the ones with lowest separation rates (0.36 and 0.49 percent into unemployment and inactivity, respectively), and contingent jobs are the ones with the highest (1.6 and 5.3 percent into unemployment and inactivity, respectively). Surprisingly, especially given the rise in contingent employment in Japan over the last decades, unemployed workers were more likely to transition into employment at a regular job, than at a contingent job. However, the transition rate into employment from inactivity is highest into self-employment, followed by contingent employment and the lowest rate is into regular jobs. The fact that, as we have explained above, many women in Japan take some time off from the labor market when they have children, and often times when they come back they transition directly from inactivity into contingent jobs, may explain why the IE rate is higher into contingent employment, whereas the UE rate is higher into regular employment.

If we look at the yearly transition rates between types of jobs, we find that very rarely regular workers move into contingent-type jobs (3.18 percent). However, we observe that close to 30 percent of contingent workers move into regular employment from one year to the next. This seems to indicate that contingent jobs serve, in some instances, as an intermediate step between unemployment or inactivity and a regular job. Self-employed workers remain in that type of job much more frequently than contingent workers, and if they move to another job from one year to the next, they mostly move into regular jobs.

The Lost Decade brought changes to the separation rates of workers in all types of jobs, but only significantly increasing this rate from the 1980s to the 2000s for regular and contingent workers, with the largest changes being seen for contingent workers. In terms of movements from unemployment and inactivity into employment, the chances to find a regular or contingent jobs increased from the 1980s to the 2000s, and decreased moving into self-employment. This seems to indicate the decline in the UE rate at the aggregate level, may be due, in terms of the types of jobs into which workers moved, to lower transitions into self-employment.

In summary, regular jobs, many of which are held at the public sector, are the most stable jobs in Japan. They have lower separations rates, and they absorb a fair amount of workers from unemployment, although less from inactivity. We also find that about 1/3 of contingent workers move into regular jobs from one year to the next, but there are not frequent moves from regular employment into contingent jobs. Finally, due to the Lost Decade there was an increase in the separation rate of all types of jobs. The 1990s also meant an increase in the movement from unemployment and inactivity into regular and contingent jobs, but a decrease into self-employment.

[14]These three categories are defined as follows: Regular: full-time, and executive official; Contingent: temporary, and daily; Self-Employed: self-employed with/without employee, family employee, and on-the-size-job.

5 Conclusions

Japan's labor market has been characterized over the last three decades by low unemployment rates and low worker flow rates between employment statuses at the aggregate level. For the average worker in Japan, it was not likely to lose his or her job, but if it happened, it would take some time to find a new one.

The pronounced and lasting recession of the 1990s brought some changes to the previous facts. We find that the unemployment rate substantially increased over the course of the 1990s, and it did not return to the level of the 1980s after the Lost Decade was over. This increase in unemployment, together with the drop in labor market participation, was accompanied by rises in the separation rate and reductions in the finding rate, although the former was more pronounced that then latter.

The previous conclusions, which are drawn by pooling all types of workers together, change to some extent when we disaggregate the data by worker and firm characteristics. We find that among the different age groups, young workers suffer the highest unemployment rates, along with the highest transition rates from employment statuses. Young workers were also the ones most affected by the Lost Decade in terms of increases in the separation rates, although middle-aged workers were the ones who saw the biggest drops in their finding rates from the 1980s to the 2000s. In terms of gender, the most striking observation is the much lower employment and participation rates for women (almost 30 percentage points lower), and the fact that the participation rate has the shape of an M over the life-cycle of female workers. This last fact is due to the withdrawal of many women from the labor market at the time of childbearing. The Lost Decade seemed to have affected more negatively male than female workers, in terms of the changes in the flow rates, but the 1990s also meant that women at childbearing age were more attached to the labor force, and transition into inactivity less often. The regional analysis shows fewer differences across areas of Japan, but we find that the regions of Hokkaido/Tohoku and Kinki are the ones where workers suffer highest unemployment rates and higher separations with lower re-employment opportunities.

We also study the worker flows and their changes due to the Lost Decade looking at firms or jobs characteristics. We find that, not surprisingly, in Japan the Public sector is where workers are more stable, and it was the one which was least affected by the Lost Decade. Workers in the primary sector suffer the highest separation rates and also suffered the largest changes due to the recession of the 1990s. In terms of firm size, small and medium size firms are the ones that display highest rates of separation and where workers move more frequently from unemployment. They were also the ones whose rates changed more due to the Lost Decade. Finally, the data show that self-employed and contingent workers separate more often from their firms than regular workers. It also shows that workers move most frequently from unemployment into regular jobs, but from inactivity into contingent jobs. The lost decade affected self-employed workers the most in terms of their separation rates and the chances to find that type of job from unemployment or inactivity.

References

[1] Abe, M., Ohta, S. (2001), Fluctuations in Unemployment and Industry Labor Markets. Journal of the Japanese and International Economics 15, 437-464.

[2] Blanchard, O., Diamond, P. (1990), The Cyclical Behavior of the Gross Flows of U.S. Workers. Brookings Papers on Economic Activity, 85-155.

[3] Esteban-Pretel, J., Nakajima, R., Tanaka, R. (2008), Are Contingent Jobs Dead Ends or Stepping Stones to Regular Jobs? Evidence from a Structural Estimation, RIETI Discussion Paper Series 09-E -002.

[4] Esteban-Pretel, J., Nakajima, R., Tanaka, R. (2010), TFP Growth Slowdown and the Japanese Labor Market in the 1990s, Journal of the Japanese and International Economies, 24, 1, 50-68.

[5] Genda, Y. (1998), Job Creation and Destruction in Japan, 1991-1995, *Journal of the Japanese and International Economies*, 12, 1-23.

[6] Higuchi, Y., Seike, A., Hayami, H. (1987), Rodoshijyo: Danjyo Rodoryoku no Shyugyo Kodo no Henka (Labor Market: Changes in Labor Market Participation Behavior of Men and Women) in Hamada, K., Kuroda, S., and Horiuchi, A., ed., "Nihon Keizai no Macro Bunseki" (Marcoeconomic Analysis of the Japanese Economy), 263-283, University of Tokyo Press.

[7] Kuroda, S. (2003), Analysis of Changes in Japan's Unemployment Rate Using Gross Flow Data, Monetary and Economic Studies, 21 (1), 69-104.

[8] Ministry of Health, Labour and Welfare, (2006), Jinko Dotai Tokei Tokushu Hokoku (Special Report on the Statistics of Population Dynamics).

[9] Ministry of Labour, (1986), Rodo Hakusho (White Paper on Labour). Ministry of Labour (in Japanese).

[10] Mizuno, A. (1992) Nihon no Shitsugyo Kodo (Unemployment Behavior in Japan), Chuo University Press.

[11] Ohta, S., Teruyama, H. (2003a), Rodoryoku Flow Data ni yoru Shugyo oyobi Shitsugyo no Bunseki (Analysis on Employment and Unemployment based on Workforce Flow Data), Keizai Bunseki 168 (The Economic Analysis), 125-189 (in Japanese).

[12] Ohta, S., Teruyama, H. (2003b), Flow Data karamita Nihon no Shitsugyo -1980-2000 (Japanese Unemployment by Using Flow Data - 1980-2000), Nihon Rodo Kenkyu Zasshi (The Monthly Journal of the Japan Institute of Labour) 516, 24-41.

[13] Ohta, S. (2005) Furo kara Kangaeru (Studying from Flow Data). In: Otake, F. (Eds.), Ouyokeizaigakyu heno Sasoi. Nihonhyoronsha, 55-89 (in Japanese).

[14] Ohta, S., Genda, Y., Teruyama, H. (2008), 1990 Nendai Iko no Nihon no Shitsugyo: Tenbo (Japanese Unemployment after the 1990s: A Survey). Bank of Japan Working Paper No. 08-J-4 (in Japanese).

[15] Sakata, K. (2002) Sectoral Shifts and Cyclical Unemployment in Japan, Journal of the Japanese and International Economies, 16, 227-252.

[16] Sakura, K. (2006), Flow Data ni yoru Wagakoku Rodoshijo no Bunseki (Analysis of the Japanese Labor Market by Using Flow Data). Bank of Japan Working Paper Series No06-J-20.

[17] Shimer, R. (2005), The Cyclical Behavior of Equilibrium Unemployment and Vacancies, *American Economic Review,* 95 (1), 25-49.

[18] Shimer, R. (2007), Reassessing the Ins and Outs of Unemployment, mimeo.

[19] Teruyama, H. (2010) 1990 Nendai Iko no Roudou Shijo to Shitugyo Ritsu no Jyosho (Japanese Labor Market and the Rise of Unemployment Rate after the 1990s), Nihon Rodo Kenkyu Zasshi (The Monthly Journal of the Japan Institute of Labour) 597, 5-12.

A Data Adjustment

The time series of unemployment (and other stock variables) based on the flow data is not exactly same as one calculated with stock data, because the former is calculated with approximately a half of the samples used for the latter. For example, population in labor force in April of 1984 calculated from stock data was 36.11 million, while that from flow data was 35.78 million.

To construct flow data consistent with the one based on the stock data, we need adjust flow data. Ministry of Labour (1986) proposed a method to make flow data consistent to stock data. This adjustment is done in two steps. In the first step, the "total" numbers such as employed, unemployed and inactive workers calculated from flow data are replaced by those calculated from stock data. Since the numbers based on stock data are considered more accurate than those with flow data because of a larger sample size, this adjustment reduce the sampling bias due to the construction of flow data.

In the next step, these adjusted "total" numbers are allocated to each flow using the ratios calculated from the unadjusted flow data. With this adjustment, we can obtain flow data whose "total" numbers are consistent with those based on stock data, and ratios are consistent with the ratios of unadjusted flow data. For detail explanation with example, please see Ministry of Labour (1986).

Table 1: Summary Statistics for Emp to Pop Ratio, Unemp, Particip, and Worker Flows Rates: Aggregate

	Emp /Pop	Unemp Rate	Particip Rate	EE	EU	EI	UE	UU	UI	IE	IU	II
1983-2008												
Mean	60.28	3.68	62.57	98.14	0.43	1.37	10.97	78.37	9.92	2.28	0.60	97.03
SD	1.76	1.00	1.32	0.16	0.14	0.12	1.54	1.63	0.98	0.25	0.11	0.24
Min	57.35	2.30	59.84	97.60	0.19	1.11	7.53	73.84	7.74	1.82	0.35	96.38
Max	62.61	5.61	64.18	98.43	0.83	1.81	14.27	81.82	13.38	2.94	0.86	97.54
1980s												
Mean	61.35	2.94	63.21	98.16	0.30	1.44	11.82	77.61	9.57	2.48	0.58	96.83
SD	0.47	0.21	0.46	0.15	0.05	0.11	1.41	1.12	0.86	0.18	0.06	0.20
Min	60.42	2.45	62.47	97.80	0.19	1.27	8.57	74.96	7.74	2.15	0.49	96.38
Max	62.25	3.32	64.13	98.37	0.38	1.69	13.65	80.10	11.08	2.94	0.72	97.27
1990s												
Mean	61.53	3.22	63.57	98.22	0.40	1.31	10.58	78.46	10.05	2.35	0.51	97.04
SD	0.79	0.80	0.34	0.11	0.11	0.10	1.61	1.94	0.95	0.19	0.08	0.18
Min	59.65	2.30	62.78	97.96	0.22	1.11	7.53	73.84	8.58	1.92	0.35	96.58
Max	62.61	4.99	64.18	98.43	0.67	1.55	13.29	81.82	12.26	2.80	0.68	97.50
2000s												
Mean	58.05	4.77	60.96	98.03	0.56	1.39	10.75	78.85	10.04	2.05	0.70	97.18
SD	0.69	0.54	0.83	0.15	0.09	0.13	1.32	1.39	1.05	0.16	0.08	0.21
Min	57.35	3.82	59.84	97.60	0.40	1.20	8.23	75.80	8.21	1.82	0.57	96.75
Max	59.74	5.61	62.78	98.35	0.83	1.81	14.27	81.62	13.38	2.45	0.86	97.54

Note: Age: 15 and above, Gender: All, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Table 2: Emp to Pop Ratio, Unemp, Particip, and Worker Flows Rates: by Age

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	Emp/Pop				**Unemployment Rate**				**Participation Rate**			
15 and above	60.28	61.35	61.53	58.05	3.68	2.94	3.22	4.77	62.57	63.21	63.57	60.96
15 to 19	15.40	15.78	15.99	14.44	8.79	6.98	8.50	10.51	16.88	16.96	17.47	16.14
20 to 24	68.18	69.76	70.50	64.38	6.14	4.09	5.46	8.48	72.61	72.74	74.56	70.35
25 to 29	77.44	74.32	78.20	79.02	4.65	3.11	4.15	6.39	81.26	76.71	81.60	84.41
30 to 34	74.23	72.94	74.05	75.44	3.48	2.33	2.95	4.95	76.93	74.68	76.31	79.37
35 to 39	78.00	78.46	78.48	77.13	2.79	2.01	2.26	3.99	80.24	80.07	80.29	80.33
40 to 44	82.22	82.38	82.72	81.55	2.38	1.68	2.04	3.31	84.23	83.78	84.44	84.34
45 to 49	83.02	82.30	83.65	82.89	2.24	1.59	1.86	3.16	84.93	83.63	85.23	85.60
50 to 54	79.96	78.28	81.01	80.12	2.37	1.84	1.86	3.34	81.91	79.75	82.54	82.88
55 to 59	72.62	69.19	73.97	73.79	3.07	3.10	2.42	3.76	74.92	71.40	75.81	76.67
60 to 64	53.15	52.22	54.12	52.81	5.60	4.93	5.60	6.12	56.30	54.93	57.33	56.24
65 and above	23.23	24.66	24.74	20.44	1.69	1.40	1.43	2.19	23.62	25.02	25.09	20.90
	EE				**EU**				**EI**			
15 and above	98.14	98.16	98.22	98.03	0.43	0.30	0.40	0.56	1.37	1.44	1.31	1.39
15 to 19	91.18	92.62	90.68	90.60	1.44	1.26	1.42	1.61	7.00	5.70	7.38	7.57
20 to 24	96.93	97.34	97.01	96.52	1.02	0.74	0.95	1.32	1.98	1.86	1.95	2.10
25 to 29	98.43	98.42	98.50	98.35	0.65	0.45	0.62	0.83	0.91	1.11	0.86	0.79
30 to 34	98.65	98.52	98.73	98.66	0.45	0.33	0.38	0.62	0.89	1.14	0.88	0.71
35 to 39	98.72	98.54	98.80	98.76	0.40	0.33	0.33	0.52	0.88	1.12	0.86	0.71
40 to 44	98.83	98.65	98.88	98.91	0.35	0.29	0.31	0.44	0.81	1.06	0.80	0.63
45 to 49	98.85	98.62	98.94	98.93	0.32	0.26	0.28	0.40	0.82	1.10	0.78	0.66
50 to 54	98.71	98.34	98.85	98.83	0.31	0.25	0.25	0.42	0.97	1.38	0.89	0.74
55 to 59	98.25	97.64	98.43	98.54	0.37	0.39	0.30	0.43	1.36	1.94	1.26	1.02
60 to 64	96.74	96.27	96.94	96.88	0.52	0.41	0.50	0.62	2.69	3.25	2.51	2.46
65 and above	94.43	93.91	94.74	94.48	0.20	0.16	0.18	0.25	5.30	5.84	5.01	5.22
	UE				**UU**				**UI**			
15 and above	10.97	11.82	10.58	10.75	78.37	77.61	78.46	78.85	9.92	9.57	10.05	10.04
15 to 19	14.79	14.13	15.14	14.90	70.09	71.09	69.35	70.13	14.71	14.24	15.19	14.56
20 to 24	15.70	15.17	16.18	15.58	74.43	73.49	73.81	75.85	9.68	11.15	9.79	8.40
25 to 29	13.51	13.27	13.41	13.82	76.97	75.70	76.72	78.23	9.34	10.78	9.65	7.89
30 to 34	12.67	12.96	13.03	12.05	76.30	75.15	74.99	78.65	10.85	11.66	11.76	9.21
35 to 39	12.67	13.29	12.81	12.03	75.40	73.38	74.95	77.46	11.80	13.18	12.09	10.42
40 to 44	12.55	12.54	13.61	11.39	74.84	72.86	73.51	77.85	12.50	14.55	12.71	10.67
45 to 49	11.52	12.04	11.33	11.33	76.13	73.78	75.58	78.58	12.16	13.96	12.84	10.00
50 to 54	10.33	10.72	10.85	9.45	76.98	75.35	75.64	79.73	12.56	13.83	13.41	10.63
55 to 59	8.45	8.50	8.28	8.61	78.54	78.72	77.00	80.12	12.88	12.63	14.57	11.19
60 to 64	6.23	4.69	5.89	7.80	76.64	78.02	78.08	73.97	17.00	17.02	15.90	18.21
65 and above	7.47	6.11	7.11	8.93	64.49	67.24	65.07	61.70	27.86	26.55	27.45	29.33
	IE				**IU**				**II**			
15 and above	2.28	2.48	2.35	2.05	0.60	0.58	0.51	0.70	97.03	96.83	97.04	97.18
15 to 19	1.58	1.20	1.53	1.92	0.29	0.24	0.25	0.37	97.93	98.29	97.99	97.60
20 to 24	4.47	3.91	4.55	4.80	1.37	1.12	1.23	1.71	93.52	94.45	93.52	92.80
25 to 29	2.94	2.30	2.64	3.76	1.61	0.92	1.29	2.50	95.39	96.74	95.99	93.69
30 to 34	2.63	2.48	2.38	3.04	1.01	0.66	0.68	1.65	96.32	96.82	96.91	95.29
35 to 39	3.13	3.09	3.11	3.20	1.01	0.84	0.75	1.45	95.79	96.01	96.08	95.30
40 to 44	3.57	3.57	3.56	3.59	1.11	1.08	0.83	1.44	95.26	95.31	95.54	94.91
45 to 49	3.48	3.42	3.41	3.60	1.09	1.02	0.76	1.50	95.39	95.51	95.78	94.86
50 to 54	3.03	2.98	3.04	3.04	0.92	0.81	0.71	1.24	96.00	96.14	96.20	95.68
55 to 59	2.63	2.61	2.65	2.62	0.84	0.73	0.64	1.15	96.49	96.59	96.68	96.20
60 to 64	2.10	2.23	2.05	2.04		0.53	0.69	1.10	97.07	97.15	97.21	96.86
65 and above	1.07	1.13	1.09	1.00	0.08	0.06	0.06	0.13	98.83	98.76	98.84	98.86

Table 3: Regression Results for Change in Rate from the 1980s to 2000s: by Age

	Emp /Pop	Unemp Rate	Particip Rate	EE	EU	EI	UE	UU	UI	IE	IU	II
15 to 19	-1.375***	3.191***	-0.942*	-1.704***	0.417***	1.618***	0.286	-0.0117	-0.575	0.923***	0.323*	-0.907***
	(-3.38)	(11.10)	(-2.38)	(-8.87)	(5.64)	(9.33)	(0.23)	(-0.01)	(-0.40)	(4.64)	(2.55)	(-3.58)
20 to 24	-5.417***	4.038***	-2.518***	-0.501**	0.659***	-0.0143	-0.0741	3.313	-3.641*	1.097***	0.784***	-1.870***
	(-13.32)	(14.05)	(-6.36)	(-2.61)	(8.91)	(-0.08)	(-0.06)	(1.92)	(-2.52)	(5.52)	(6.19)	(-7.39)
25 to 29	4.663***	2.931***	7.578***	0.249	0.455***	-0.583***	0.0609	3.485*	-3.780**	1.661***	1.770***	-3.270***
	(11.47)	(10.20)	(19.13)	(1.30)	(6.16)	(-3.36)	(0.05)	(2.02)	(-2.62)	(8.35)	(13.96)	(-12.92)
30 to 34	2.468***	2.277***	4.567***	0.454*	0.361***	-0.686***	-1.393	4.456*	-3.344*	0.767***	1.183***	-1.745***
	(6.07)	(7.92)	(11.53)	(2.36)	(4.88)	(-3.96)	(-1.14)	(2.58)	(-2.31)	(3.86)	(9.33)	(-6.89)
35 to 39	-1.367***	1.624***	0.131	0.540**	0.264***	-0.672***	-1.743	5.032**	-3.650*	0.320	0.797***	-0.928***
	(-3.36)	(5.65)	(0.33)	(2.81)	(3.57)	(-3.88)	(-1.42)	(2.91)	(-2.53)	(1.61)	(6.28)	(-3.67)
40 to 44	-0.866*	1.284***	0.428	0.584**	0.229**	-0.689***	-1.635	5.939***	-4.768**	0.236	0.548***	-0.614*
	(-2.13)	(4.47)	(1.08)	(3.04)	(3.10)	(-3.98)	(-1.34)	(3.44)	(-3.30)	(1.18)	(4.32)	(-2.43)
45 to 49	0.558	1.217***	1.837***	0.623**	0.218**	-0.700***	-1.192	5.743***	-4.844***	0.389	0.671***	-0.865***
	(1.37)	(4.24)	(4.64)	(3.25)	(2.95)	(-4.04)	(-0.97)	(3.32)	(-3.35)	(1.96)	(5.29)	(-3.42)
50 to 54	1.803***	1.154***	3.014***	0.807***	0.238**	-0.897***	-1.742	5.338**	-4.090**	0.264	0.624***	-0.679**
	(4.43)	(4.01)	(7.61)	(4.20)	(3.22)	(-5.17)	(-1.42)	(3.09)	(-2.83)	(1.33)	(4.92)	(-2.68)
55 to 59	4.571***	0.315	5.151***	1.223***	0.109	-1.183***	-0.364	2.351	-2.324	0.212	0.616***	-0.597*
	(11.24)	(1.10)	(13.01)	(6.37)	(1.48)	(-6.82)	(-0.30)	(1.36)	(-1.61)	(1.07)	(4.86)	(-2.36)
60 to 64	0.555	0.848**	1.188**	0.925***	0.292***	-1.054***	2.625*	-3.106	0.300	0.0133	0.753***	-0.507*
	(1.37)	(2.95)	(3.00)	(4.81)	(3.95)	(-6.08)	(2.14)	(-1.80)	(0.21)	(0.07)	(5.94)	(-2.00)
65 and above	-4.260***	0.443	-4.244***	0.888***	0.161*	-0.873***	2.340	-4.591**	1.892	0.0699	0.254*	-0.117
	(-10.48)	(1.54)	(-10.72)	(4.63)	(2.18)	(-5.03)	(1.91)	(-2.66)	(1.31)	(0.35)	(2.00)	(-0.46)

Note: t statistics in parentheses (* p<0.05, ** p<0.01, *** p<0.001). Number of observations: 1144.

Table 4: Emp to Pop Ratio, Unemp, Particip, and Worker Flows Rates Disaggregated by Gender

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	Emp/Pop				**Unemployment Rate**				**Participation Rate**			
Both	60.28	61.35	61.53	58.05	3.68	2.94	3.22	4.77	62.57	63.21	63.57	60.96
Men	74.57	77.06	76.04	70.99	3.49	2.57	3.01	4.73	77.24	79.10	78.40	74.52
Women	48.12	48.43	49.22	46.64	3.38	2.59	3.08	4.32	49.79	49.72	50.78	48.75
	EE				**EU**				**EI**			
Both	98.14	98.16	98.22	98.03	0.43	0.30	0.40	0.56	1.37	1.44	1.31	1.39
Men	98.77	98.93	98.83	98.57	0.44	0.35	0.40	0.56	0.78	0.71	0.76	0.86
Women	96.75	96.19	96.84	97.08	0.52	0.44	0.49	0.63	2.70	3.34	2.64	2.27
	UE				**UU**				**UI**			
Both	10.97	11.82	10.58	10.75	78.37	77.61	78.46	78.85	9.92	9.57	10.05	10.04
Men	11.35	11.81	11.60	10.72	80.42	79.96	79.98	81.27	8.12	8.11	8.31	7.92
Women	12.89	11.73	13.11	13.53	68.10	66.69	67.52	69.83	18.84	21.36	19.16	16.51
	IE				**IU**				**II**			
Both	2.28	2.48	2.35	2.05	0.60	0.58	0.51	0.70	97.03	96.83	97.04	97.18
Men	2.05	2.04	2.05	2.05	0.70	0.56	0.60	0.91	97.16	97.25	97.25	96.99
Women	2.05	2.10	2.08	1.97	0.50	0.48	0.41	0.61	97.40	97.35	97.45	97.38

Table 5: Regression Results for Change in Rate from the 1980s to 2000s: by Gender

	Emp /Pop	Unemp Rate	Particip Rate	EE	EU	EI	UE	UU	UI	IE	IU	II
Men	-6.899***	1.988***	-5.537***	-0.221	0.347***	0.0133	-1.115	1.538	-0.402	0.125	0.419***	-0.449**
	(-12.95)	(14.77)	(-9.65)	(-1.22)	(8.17)	(0.08)	(-1.07)	(1.17)	(-0.34)	(1.09)	(5.96)	(-3.38)
Women	-2.621***	1.555***	-1.939**	1.031***	0.328***	-1.214***	1.772	3.354*	-5.065***	-0.0146	0.210**	-0.160
	(-4.92)	(11.56)	(-3.38)	(5.70)	(7.72)	(-7.34)	(1.69)	(2.55)	(-4.26)	(-0.13)	(2.99)	(-1.20)

Note: t statistics in parentheses (* p<0.05, ** p<0.01, *** p<0.001). Number of observations: 208.

Table 6: Emp to Pop Ratio, Unemp, Particip , and Worker Flows Rates Disaggregated by Region

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	Emp/Pop				**Unemployment Rate**				**Participation Rate**			
Hokkaido & Tohoku	59.09	60.77	60.24	56.52	3.70	3.11	3.03	4.92	61.35	62.72	62.12	59.45
Kanto	62.10	63.05	63.31	60.03	3.32	2.29	3.15	4.31	64.23	64.52	65.36	62.74
Hokuriku & Tokai	64.58	66.54	65.88	61.62	2.63	1.86	2.37	3.52	66.32	67.80	67.47	63.87
Kinki	58.53	59.86	60.33	55.49	4.11	2.92	3.68	5.51	61.02	61.66	62.63	58.73
Chugoku & Shikoku	63.98	66.32	65.26	60.73	2.71	1.70	2.30	3.96	65.74	67.46	66.80	63.23
Kyushu & Okinawa	62.56	63.31	63.84	60.56	3.46	2.26	3.27	4.59	64.80	64.77	66.00	63.48
	EE				**EU**				**EI**			
Hokkaido & Tohoku	97.95	97.79	98.09	97.93	0.48	0.42	0.40	0.61	1.54	1.76	1.48	1.44
Kanto	97.91	97.83	97.96	97.92	0.49	0.39	0.47	0.58	1.59	1.76	1.55	1.49
Hokuriku & Tokai	98.11	98.00	98.17	98.12	0.39	0.30	0.36	0.49	1.49	1.68	1.45	1.38
Kinki	97.76	97.78	97.74	97.76	0.55	0.40	0.54	0.69	1.67	1.80	1.70	1.54
Chugoku & Shikoku	98.09	97.93	98.16	98.14	0.40	0.32	0.34	0.52	1.49	1.71	1.49	1.32
Kyushu & Okinawa	98.12	97.86	98.21	98.22	0.45	0.34	0.42	0.57	1.41	1.78	1.34	1.19
	UE				**UU**				**UI**			
Hokkaido & Tohoku	11.48	11.45	11.84	11.10	76.36	76.20	75.08	77.91	12.00	12.20	12.91	10.83
Kanto	12.54	12.29	12.48	12.80	74.66	72.86	75.15	75.50	12.66	14.63	12.21	11.63
Hokuriku & Tokai	13.49	13.77	13.48	13.29	73.74	72.53	73.50	74.96	12.58	13.43	12.82	11.64
Kinki	11.00	10.16	11.45	11.17	75.72	75.61	74.65	77.00	13.16	14.09	13.78	11.76
Chugoku & Shikoku	12.93	14.29	12.49	12.37	74.43	71.72	73.97	77.05	12.31	13.82	13.01	10.35
Kyushu & Okinawa	11.62	11.52	12.79	10.39	76.05	72.67	75.20	79.62	12.09	15.29	11.92	9.80
	IE				**IU**				**II**			
Hokkaido & Tohoku	1.90	2.01	1.88	1.82	0.51	0.49	0.40	0.65	97.52	97.39	97.65	97.47
Kanto	2.19	2.11	2.20	2.23	0.59	0.52	0.50	0.75	97.16	97.30	97.22	96.98
Hokuriku & Tokai	2.30	2.44	2.33	2.17	0.51	0.46	0.42	0.64	97.10	96.98	97.14	97.14
Kinki	1.95	1.84	2.09	1.88	0.66	0.56	0.57	0.83	97.35	97.56	97.28	97.26
Chugoku & Shikoku	2.19	2.58	2.17	1.89	0.52	0.49	0.43	0.64	97.24	96.83	97.33	97.44
Kyushu & Okinawa	1.96	2.08	1.94	1.89	0.56	0.46	0.48	0.74	97.41	97.38	97.51	97.33

Notes: Okinawa area contains Fukuoka, Saga, Oita, Kumamoto, Nagasaki, Miyazaki, Kagoshima, and Okinawa. Hokkaido and Tohoku area contains Hokkaido, Aomori, Iwate, Miyagi, Akita, Yamagata, and Fukushima. Kanto area contains Ibaraki, Tochigi, Gunma, Saitama, Chiba, Tokyo, and Kanagawa. Hokuriku and Tokai area contains Niigata, Ishikawa, Toyama, Fukui, Yamanashi, Gifu, Nagano, Shizuoka, Aichi, and Mie. Kinki area contains Osaka, Hyogo, Kyoto, Shiga, Nara, and Wakayama. Chugoku and Shikoku area contains Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Tokushima, Kagawa, Ehime and Kochi. Kyushu and Okinawa area contains Fukuoka, Saga, Oita, Kumamoto, Nagasaki, Miyazaki, Kagoshima, and Okinawa.

Table 7: Regression Results for Change in Rate from the 1980s to 2000s: by Region

	Emp /Pop	Unemp Rate	Particip Rate	EE	EU	EI	UE	UU	UI	IE	IU	II
Hokkaido & Tohoku	-5.167***	1.454***	-4.449***	0.311*	0.263***	-0.442***	-3.470*	3.697	-1.610	-0.0398	0.219**	-0.153
	(-12.84)	(8.34)	(-10.70)	(2.56)	(4.76)	(-4.10)	(-2.11)	(1.80)	(-1.00)	(-0.25)	(2.70)	(-0.86)
Kanto	-3.934***	1.674***	-2.956***	0.258*	0.265***	-0.402***	-2.605	4.628*	-3.236*	0.270	0.296***	-0.553**
	(-9.78)	(9.60)	(-7.11)	(2.12)	(4.79)	(-3.73)	(-1.58)	(2.25)	(-2.00)	(1.71)	(3.64)	(-3.10)
Hokuriku & Tokai	-5.834***	1.310***	-5.097***	0.288*	0.267***	-0.430***	-3.595*	4.414*	-2.034	-0.122	0.237**	-0.0685
	(-14.50)	(7.51)	(-12.26)	(2.37)	(4.82)	(-3.98)	(-2.18)	(2.15)	(-1.26)	(-0.78)	(2.92)	(-0.38)
Kinki	-5.297***	2.239***	-4.108***	0.140	0.367***	-0.393***	-2.111	3.376	-2.565	0.189	0.332***	-0.535**
	(-13.17)	(12.84)	(-9.88)	(1.16)	(6.63)	(-3.65)	(-1.28)	(1.64)	(-1.59)	(1.20)	(4.08)	(-3.00)
Chugoku & Shikoku	-6.505***	1.912***	-5.400***	0.371**	0.278***	-0.512***	-5.038**	7.317***	-3.711*	-0.538***	0.207*	0.373*
	(-16.17)	(10.97)	(-12.99)	(3.06)	(5.02)	(-4.74)	(-3.06)	(3.56)	(-2.30)	(-3.42)	(2.55)	(2.09)
Kyushu & Okinawa	-3.662***	1.983***	-2.459***	0.520***	0.300***	-0.724***	-4.252*	8.931***	-5.730***	-0.0409	0.335***	-0.283
	(-9.10)	(11.37)	(-5.91)	(4.29)	(5.43)	(-6.71)	(-2.58)	(4.35)	(-3.55)	(-0.26)	(4.13)	(-1.58)

Note: t statistics in parentheses (* p<0.05, ** p<0.01, *** p<0.001). Number of observations: 624.

Table 8: Worker Flows Rates Disaggregated by Sector

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	EE				**EU**				**EI**			
Primary	93.94	93.92	94.24	93.61	0.26	0.24	0.20	0.34	5.51	5.50	5.28	5.76
Secondary	98.50	98.28	98.60	98.57	0.46	0.40	0.42	0.55	1.02	1.30	0.96	0.87
Tertiary	98.08	98.08	98.08	98.07	0.49	0.40	0.45	0.60	1.41	1.50	1.44	1.30
Public	99.22	99.34	99.22	99.14	0.14	0.13	0.11	0.18	0.54	0.48	0.56	0.57
					UE				**IE**			
Primary					0.19	0.30	0.16	0.13	0.19	0.25	0.18	0.14
Secondary					1.59	1.84	1.63	1.34	0.20	0.24	0.20	0.16
Tertiary					3.06	2.48	3.16	3.42	0.50	0.43	0.51	0.54
Public					0.07	0.07	0.07	0.06	0.01	0.01	0.01	0.01

Notes: Sectors are defined as follows: Primary: agriculture and fishery; Secondary: construction, manufacturing, and electricity; and Tertiary: transportation, wholesale, finance, and services.

Table 9: Regression Results for Change in Rate from the 1980s to 2000s: by Sector

	EE	EU	EI	UE	IE
Primary	-0.0773	0.232***	0.0166	-0.224	-0.107***
	(-0.35)	(4.44)	(0.08)	(-1.64)	(-6.13)
Secondary	0.516*	0.275***	-0.670**	-0.554***	-0.0771***
	(2.36)	(5.26)	(-3.31)	(-4.06)	(-4.43)
Tertiary	0.223	0.332***	-0.440*	0.894***	0.110***
	(1.02)	(6.36)	(-2.17)	(6.54)	(6.34)
Public	0.0374	0.179***	-0.157	-0.0526	0.000976
	(0.17)	(3.41)	(-0.78)	(-0.38)	(0.06)

Note: t statistics in parentheses (* $p<0.05$, ** $p<0.01$, *** $p<0.001$). Obs.: 416.

Table 10: Yearly Transition Probabilities Across Industries

Whole Sample

		State 1 year later					
		Prim.	*Sec.*	*Tert.*	*Pub.*	*U*	*I*
Current State	*Primary*	82.13	2.71	2.39	0.11	0.41	12.23
	Secondary	0.59	87.12	6.32	0.10	1.76	4.05
	Tertiary	0.31	3.85	88.66	0.37	1.65	5.10
	Public	0.32	1.14	7.16	88.52	0.46	2.37
	Unempl.	1.30	13.14	26.49	0.48	32.45	23.81
	Inactivity	0.99	2.21	5.56	0.12	1.00	89.63

1980s

		State 1 year later					
		Prim.	*Sec.*	*Tert.*	*Pub.*	*U*	*I*
Current State	*Primary*	82.27	3.59	2.31	0.10	0.36	11.36
	Secondary	0.86	86.90	6.37	0.10	1.33	4.34
	Tertiary	0.40	4.48	88.39	0.38	1.25	4.99
	Public	0.33	1.21	6.96	88.74	0.47	2.21
	Unempl.	1.89	16.24	24.49	0.46	27.95	26.83
	Inactivity	1.36	3.20	5.68	0.13	0.86	88.22

1990s

		State 1 year later					
		Prim.	*Sec.*	*Tert.*	*Pub.*	*U*	*I*
Current State	*Primary*	81.98	2.82	2.65	0.13	0.36	12.05
	Secondary	0.58	86.68	6.78	0.10	1.74	4.08
	Tertiary	0.31	4.44	88.08	0.40	1.58	5.13
	Public	0.31	1.26	7.51	88.23	0.36	2.30
	Unempl.	1.13	13.22	26.64	0.44	32.67	23.54
	Inactivity	0.98	2.23	5.67	0.13	0.98	89.52

2000s

		State 1 year later					
		Prim.	*Sec.*	*Tert.*	*Pub.*	*U*	*I*
Current State	*Primary*	82.18	1.79	2.15	0.10	0.53	13.23
	Secondary	0.36	87.86	5.70	0.10	2.16	3.76
	Tertiary	0.23	2.57	89.62	0.31	2.08	5.15
	Public	0.31	0.92	6.88	88.70	0.57	2.59
	Unempl.	1.01	10.34	28.06	0.56	36.13	21.50
	Inactivity	0.69	1.33	5.31	0.11	1.14	91.00

Table 11: Worker Flows Rates Disaggregated by Employer's Size

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	EE				**EU**				**EI**			
Small	96.86	96.44	97.01	97.02	0.45	0.40	0.41	0.55	2.66	3.12	2.56	2.42
Medium	98.21	98.33	98.24	98.08	0.63	0.52	0.59	0.77	1.14	1.12	1.15	1.13
Large	98.80	98.95	98.78	98.71	0.42	0.35	0.40	0.52	0.75	0.68	0.80	0.76
Mega	98.98	99.13	98.99	98.85	0.32	0.24	0.28	0.41	0.69	0.61	0.70	0.72
Government	99.02	99.13	99.01	98.94	0.16	0.13	0.14	0.22	0.73	0.69	0.75	0.74
					UE				**IE**			
Small					1.69	1.99	1.67	1.47	0.52	0.62	0.51	0.44
Medium					1.85	1.70	1.93	1.88	0.20	0.17	0.20	0.21
Large					0.86	0.64	0.89	0.98	0.09	0.07	0.10	0.11
Mega					0.48	0.35	0.48	0.57	0.07	0.06	0.07	0.08
Government					0.18	0.17	0.21	0.17	0.04	0.04	0.04	0.05

Notes: Firm sizes are defined as follows: Small: 1 to 9 workers; Medium: 10 to 99 workers; Large: 100 to 999; and Mega: 1000 and above.

Table 12: Regression Results for Change in Rate from the 1980s to 2000s: by Employer's Size

	EE	EU	EI	UE	IE
Small	0.537***	0.135**	-0.623***	-0.405***	-0.118***
	(5.27)	(3.12)	(-7.28)	(-3.74)	(-6.71)
Medium	-0.120	0.191***	-0.0323	0.146	0.0242
	(-1.17)	(4.39)	(-0.38)	(1.34)	(1.38)
Large	-0.198	0.180***	0.0546	0.169	0.0162
	(-1.95)	(4.14)	(0.64)	(1.56)	(0.92)
Mega	-0.171	0.166***	0.0348	0.0472	0.00482
	(-1.68)	(3.82)	(0.41)	(0.44)	(0.27)
Government	-0.149	0.136**	0.00208	-0.0503	-0.00527
	(-1.46)	(3.14)	(0.02)	(-0.46)	(-0.30)

Note: t statistics in parentheses (* $p<0.05$, ** $p<0.01$, *** $p<0.001$). Obs.: 520.

Table 13: Yearly Transition Probabilities Across Employer's Size

Whole Sample

		State 1 year later						
		Small	*Med.*	*Large*	*Mega*	*Gov.*	*U*	*I*
Current State	*Small*	83.43	5.84	1.12	0.61	0.31	1.12	7.53
	Medium	7.45	75.16	7.76	1.76	0.74	2.28	4.78
	Large	1.92	10.87	73.57	7.45	0.60	1.98	3.53
	Mega	1.31	3.40	10.57	79.75	0.39	1.53	2.98
	Gov.	1.38	2.74	1.59	0.91	89.68	0.55	3.11
	Unempl.	13.86	16.04	7.62	3.90	1.53	32.45	23.81
	Inactivity	3.96	2.42	1.43	1.01	0.43	1.00	89.63

1980s

		State 1 year later						
		Small	*Med.*	*Large*	*Mega*	*Gov.*	*U*	*I*
Current State	*Small*	83.76	5.74	0.94	0.50	0.24	0.84	7.88
	Medium	8.60	75.51	7.47	1.51	0.47	1.80	4.52
	Large	2.30	11.47	73.93	7.07	0.42	1.54	3.16
	Mega	1.35	3.01	8.25	83.24	0.32	1.15	2.59
	Gov.	1.35	1.65	0.93	0.53	92.15	0.41	2.90
	Unempl.	17.20	16.20	6.63	3.29	1.38	27.95	26.83
	Inactivity	5.30	2.54	1.46	1.11	0.45	0.86	88.22

1990s

		State 1 year later						
		Small	*Med.*	*Large*	*Mega*	*Gov.*	*U*	*I*
Current State	*Small*	83.75	5.76	1.05	0.58	0.31	1.04	7.47
	Medium	7.36	75.75	7.32	1.66	0.74	2.24	4.88
	Large	1.85	10.62	74.06	7.22	0.61	1.98	3.61
	Mega	1.31	3.28	10.29	80.26	0.37	1.43	3.00
	Gov.	1.37	2.70	1.57	0.60	90.26	0.49	2.99
	Unempl.	13.76	16.23	7.59	3.92	1.52	32.67	23.54
	Inactivity	3.93	2.50	1.48	1.03	0.45	0.98	89.52

2000s

		State 1 year later						
		Small	*Med.*	*Large*	*Mega*	*Gov.*	*U*	*I*
Current State	*Small*	82.73	6.03	1.34	0.74	0.37	1.45	7.30
	Medium	6.56	74.11	8.57	2.12	0.98	2.76	4.87
	Large	1.67	10.67	72.65	8.07	0.76	2.35	3.77
	Mega	1.29	3.88	12.94	76.07	0.47	1.99	3.29
	Gov.	1.40	3.75	2.20	1.63	86.81	0.74	3.45
	Unempl.	11.08	15.66	8.53	4.41	1.68	36.13	21.50
	Inactivity	2.84	2.22	1.33	0.90	0.39	1.14	91.00

Table 14: Worker Flows Rates Disaggregated by Worker's Employment Type

	All	1980s	1990s	2000s	All	1980s	1990s	2000s	All	1980s	1990s	2000s
	EE				**EU**				**EI**			
Regular	99.14	99.25	99.17	99.02	0.36	0.30	0.34	0.43	0.49	0.44	0.48	0.54
Contingent	93.01	92.34	92.63	93.95	1.58	1.53	1.46	1.74	5.31	6.00	5.79	4.23
Self-Employed	96.35	95.96	96.56	96.43	0.25	0.23	0.21	0.31	3.35	3.75	3.18	3.23
					UE				**IE**			
Regular					2.48	2.23	2.69	2.43	0.23	0.18	0.23	0.26
Contingent					2.11	1.93	2.03	2.34	0.34	0.30	0.35	0.36
Self-Employed					0.56	0.74	0.54	0.46	0.36	0.46	0.35	0.28

Notes: Types of employment are defined as follows: Regular: full-time, and executive official; Contingent: temporary, and daily; Self-Employed: self-employed with/without employee, family employee, and on-the-size-job.

Table 15: Regression Results for Change in Rate from the 1980s to 2000s: by Employment Type

	EE	EU	EI	UE	IE
Regular	-0.0795	0.250*	-0.142	0.112	0.0920**
	(-0.26)	(2.33)	(-0.48)	(0.60)	(3.21)
Contingent	1.765***	0.328**	-2.009***	0.318	0.0732*
	(5.70)	(3.06)	(-6.81)	(1.70)	(2.55)
Self-Employed	0.619*	0.192	-0.756*	-0.374*	-0.176***
	(2.00)	(1.79)	(-2.56)	(-1.99)	(-6.16)

Note: t statistics in parentheses (* $p<0.05$, ** $p<0.01$, *** $p<0.001$). Obs.: 312.

Table 16: Yearly Transition Probabilities Across Employment Types

Whole Sample

		State 1 year later				
		Reg.	*Cont.*	*S-Emp*	*U*	*I*
Current State	*Regular*	90.64	3.18	1.52	1.69	2.90
	Contingent	29.79	48.73	3.78	3.08	14.55
	Self-Employed	5.88	1.96	82.99	0.51	8.63
	Unempl.	26.08	12.45	4.77	32.45	23.81
	Inactivity	3.99	2.90	2.41	1.00	89.63

1980s

		State 1 year later				
		Reg.	*Cont.*	*S-Emp*	*U*	*I*
Current State	*Regular*	91.55	2.58	1.74	1.33	2.67
	Contingent	29.18	47.22	5.75	2.55	15.18
	Self-Employed	4.76	2.12	83.92	0.41	8.73
	Unempl.	26.75	11.57	6.54	27.95	26.83
	Inactivity	4.56	2.79	3.53	0.86	88.22

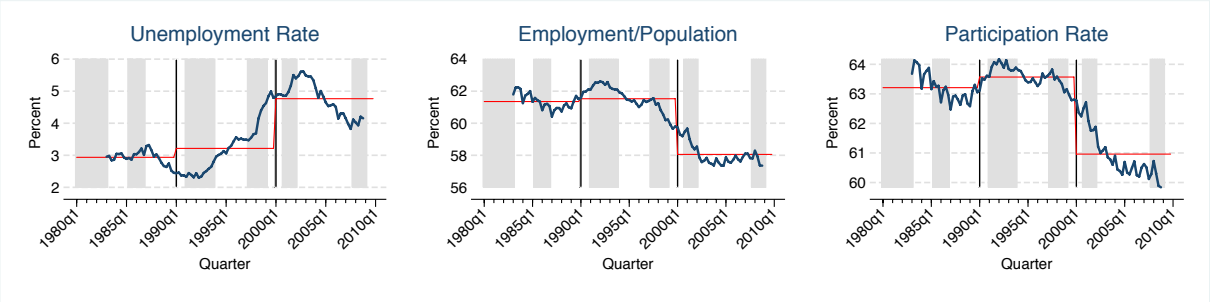
1990s

		State 1 year later				
		Reg.	*Cont.*	*S-Emp*	*U*	*I*
Current State	*Regular*	91.02	2.86	1.48	1.67	2.92
	Contingent	30.09	47.98	3.58	2.88	15.40
	Self-Employed	5.54	1.80	83.69	0.45	8.49
	Unempl.	27.06	11.74	4.52	32.67	23.54
	Inactivity	4.12	2.98	2.33	0.98	89.52

2000s

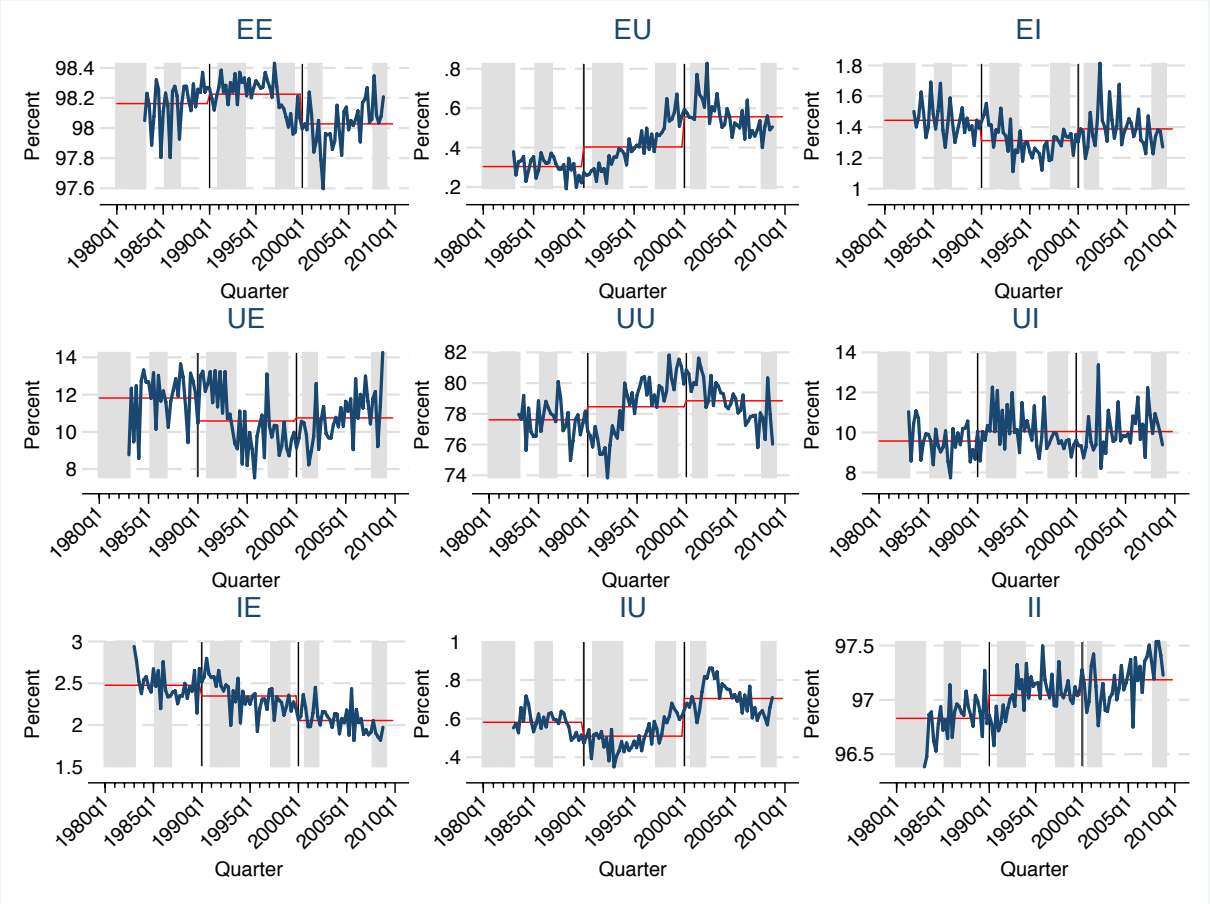
		State 1 year later				
		Reg.	*Cont.*	*S-Emp*	*U*	*I*
Current State	*Regular*	89.36	4.11	1.38	2.02	3.08
	Contingent	29.93	50.98	2.31	3.78	12.94
	Self-Employed	7.26	2.02	81.31	0.66	8.72
	Unempl.	24.26	14.11	3.52	36.13	21.50
	Inactivity	3.34	2.90	1.53	1.14	91.00

Figure 1: Employment to Population Ratio, Unemployment Rate, and Participation Rate: Aggregate



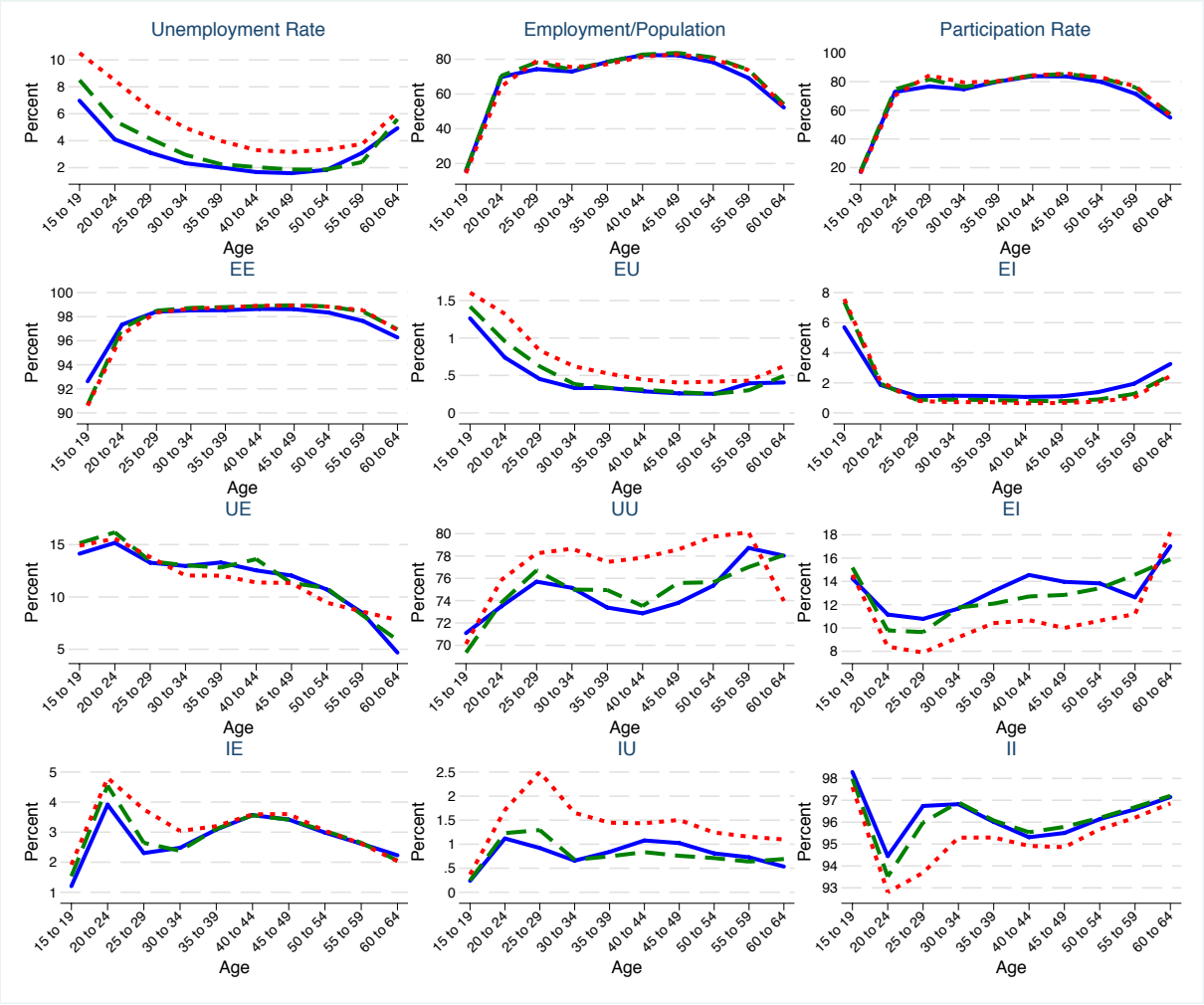
Note: Age: 15 and above, Gender: All, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 2: Worker Flows Rates: Aggregate



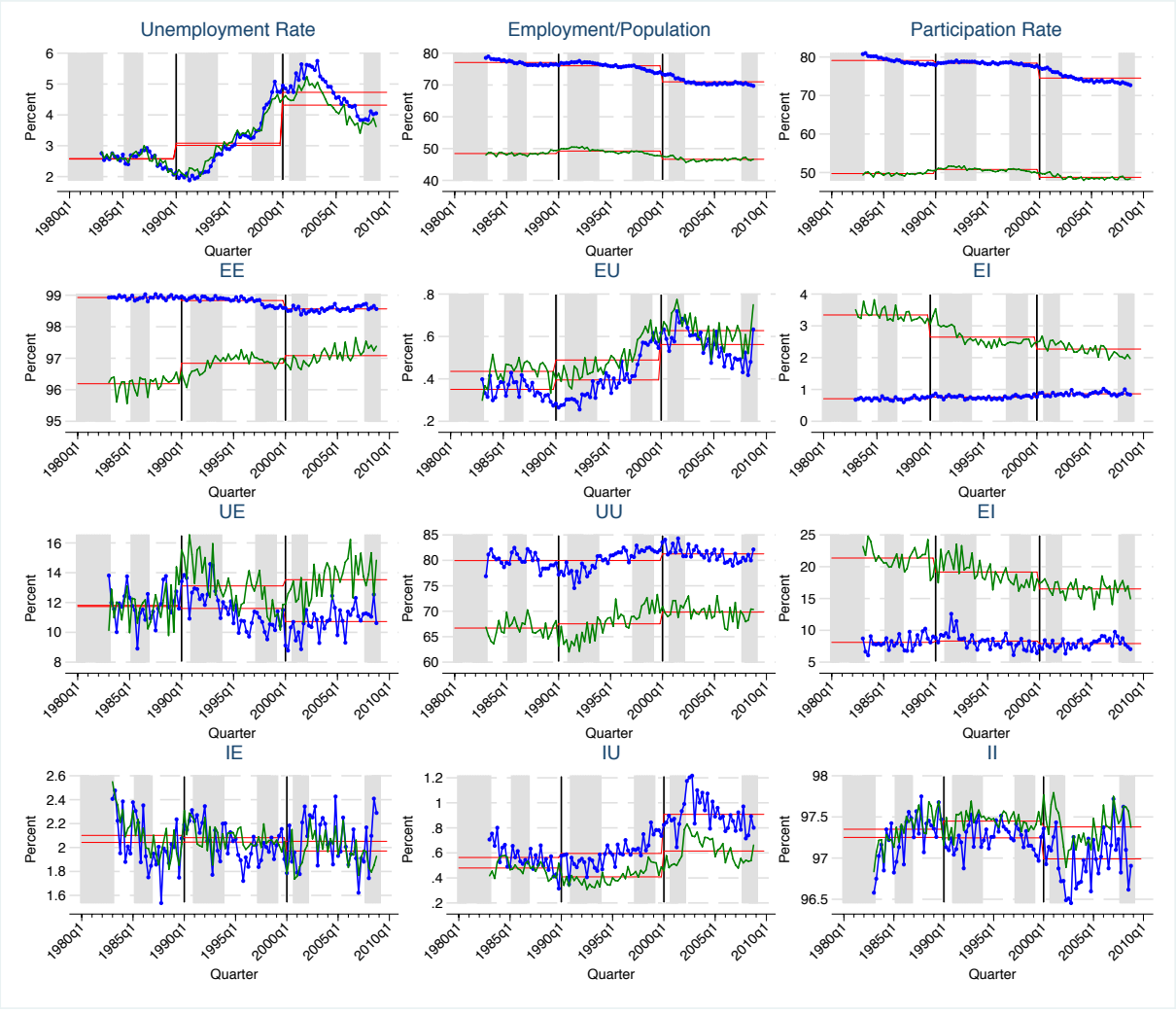
Note: Age: 15 and above, Gender: All, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 3: Emp. to Pop. Ratio, Unemp., Particip, and Worker Flow Rates: by Age



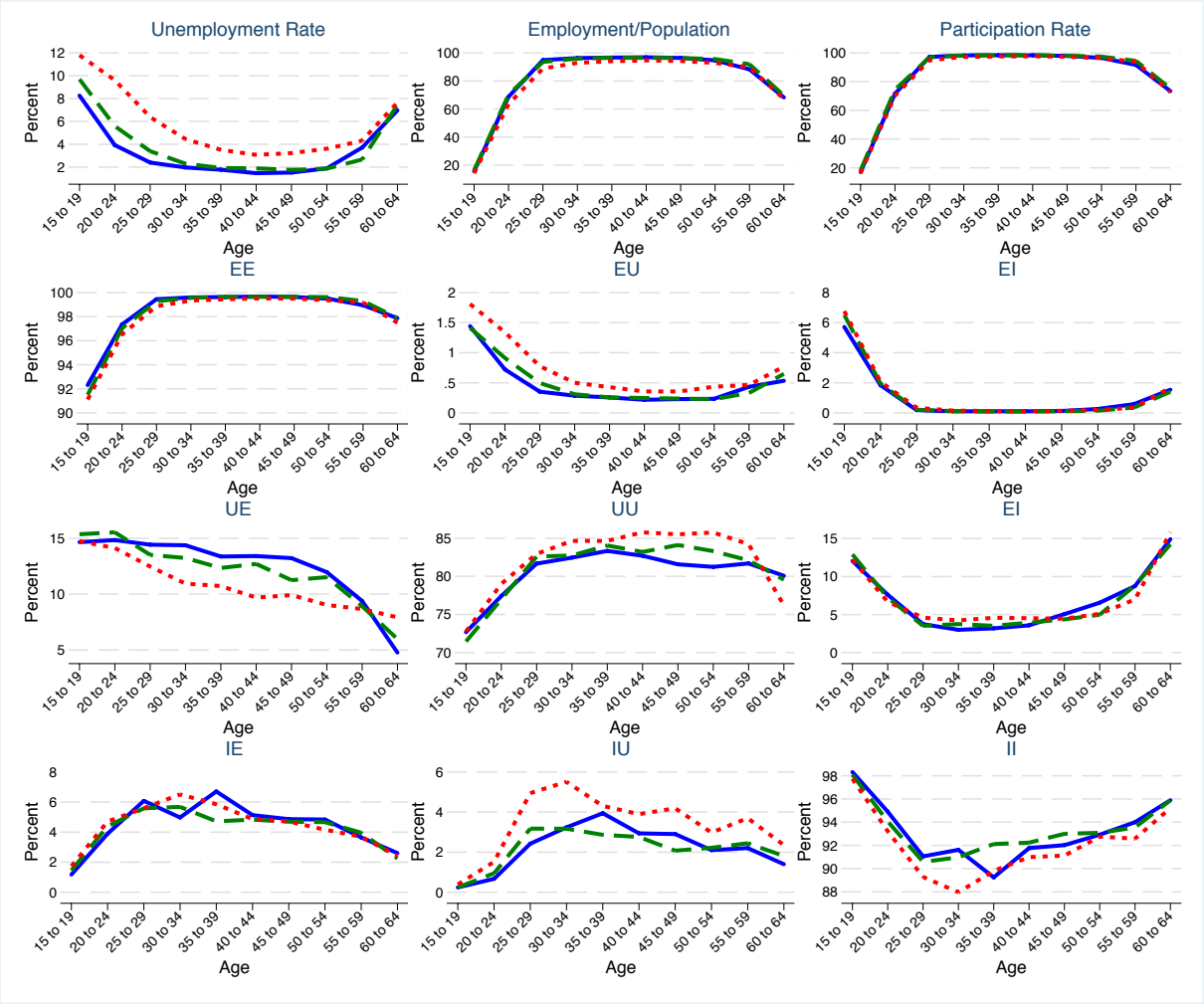
Note: Gender: All, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 4: Emp. to Pop. Ratio, Unemp., Particip, and Worker Flow Rates: by Gender



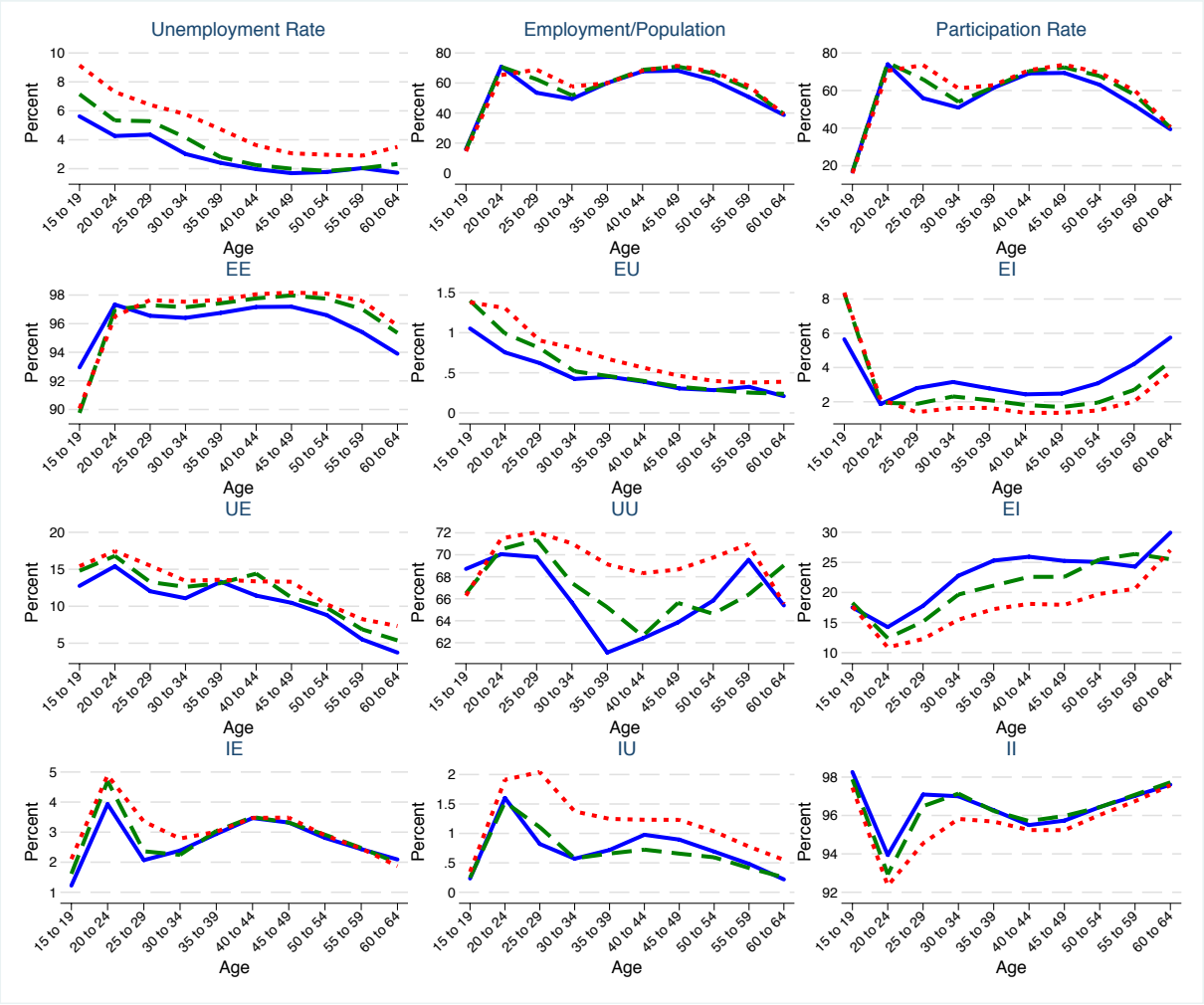
Note: Age: 15 and above, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 5: Emp. to Pop. Ratio, Unemp., Particip, and Worker Flow Rates: Men by Age



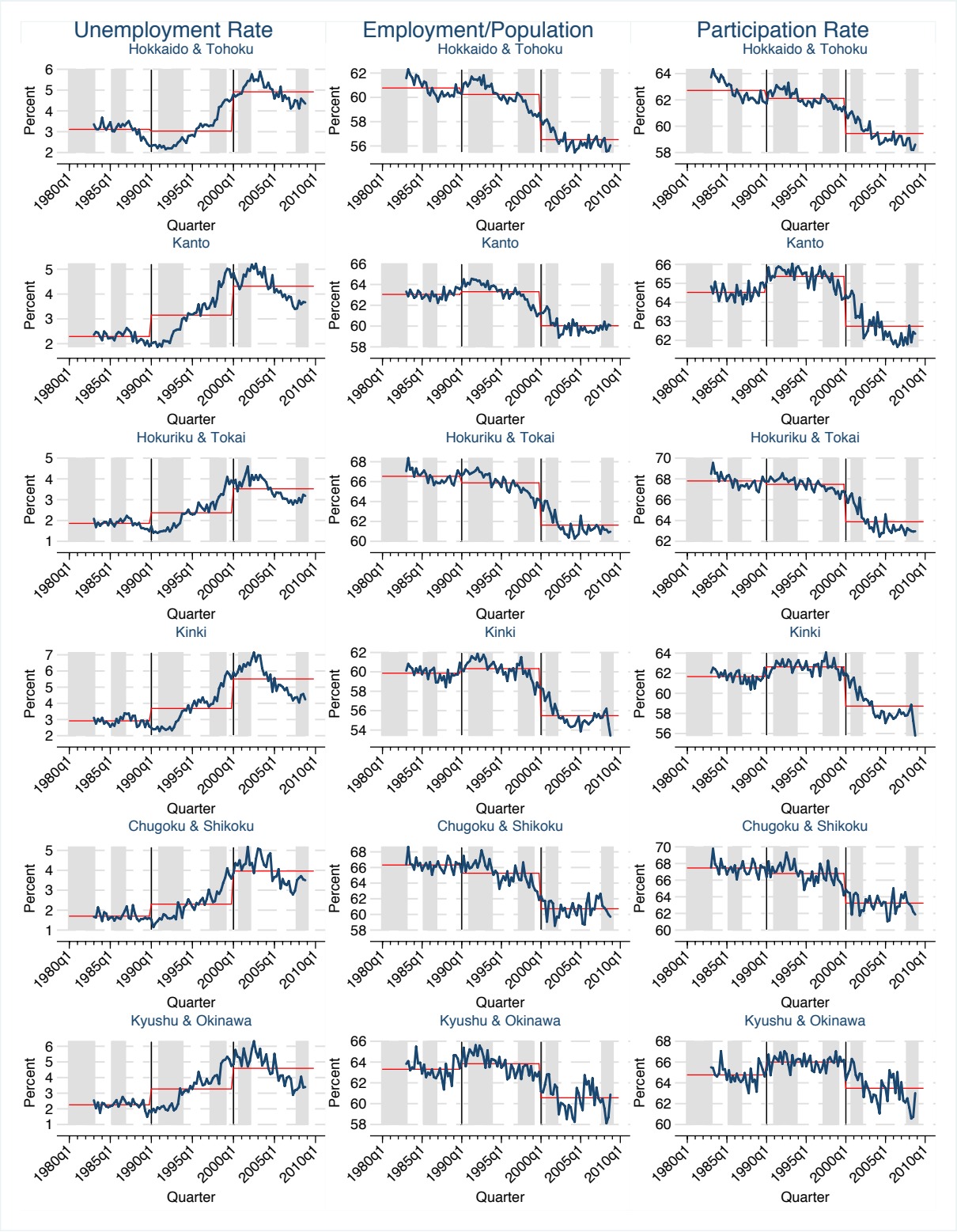
Note: Gender: Men, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 6: Emp. to Pop. Ratio, Unemp., Particip, and Worker Flow Rates: Women by Age



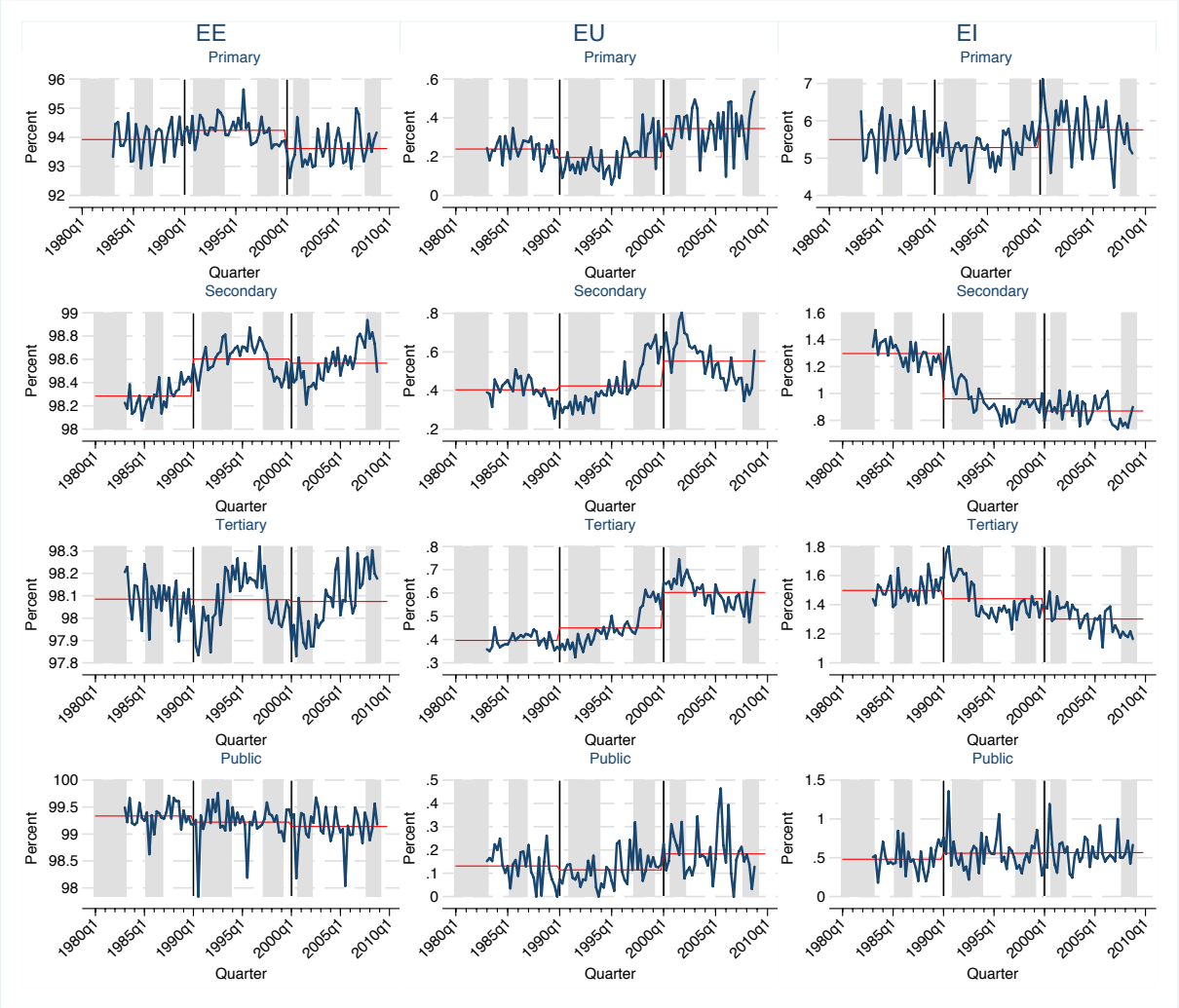
Note: Gender: Women, Region: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 7: Emp. to Pop. Ratio, Unemp., Particip Rates: by Region



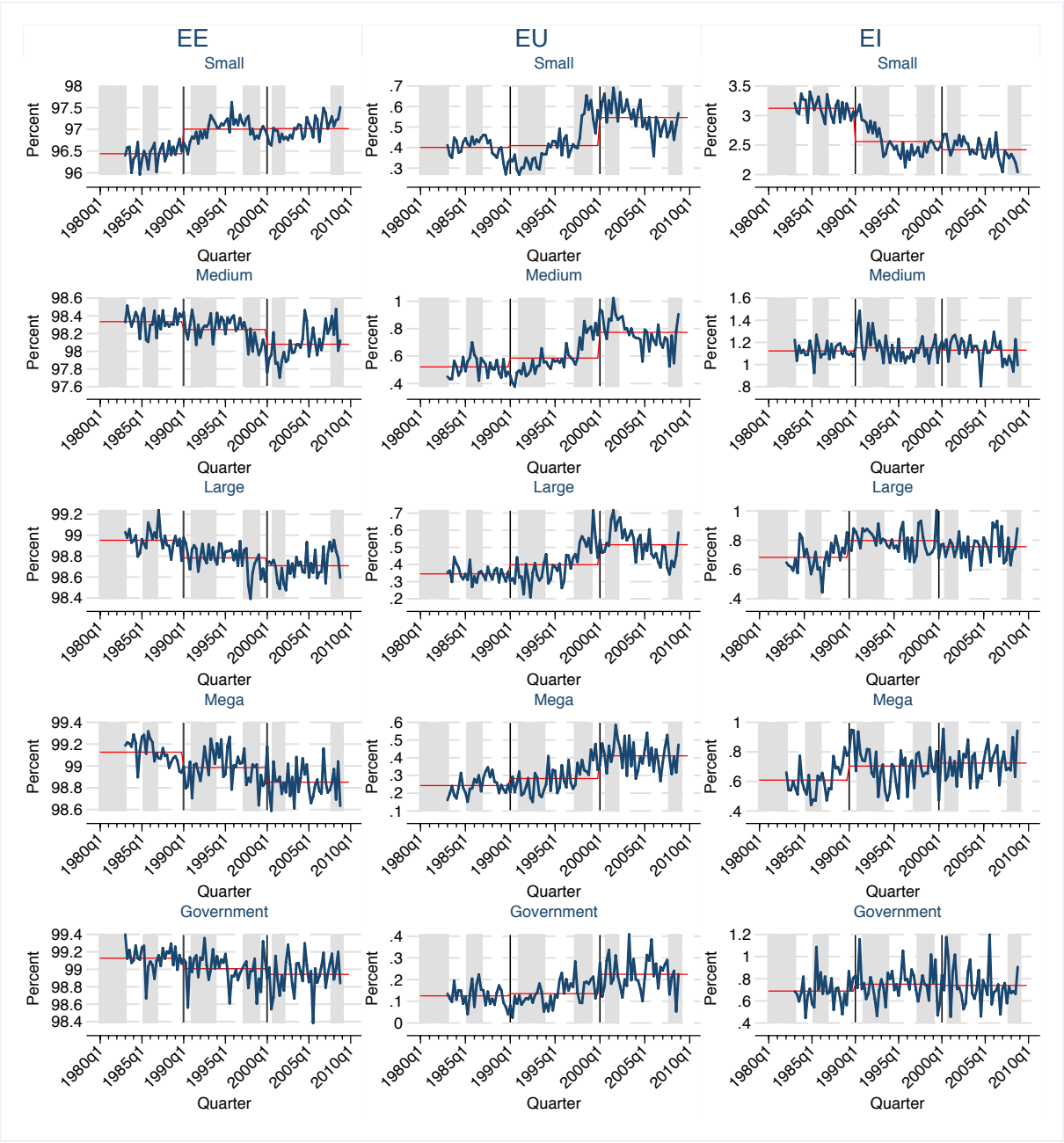
Note: Age: 15 and above, Gender: All, Sector: All, Firm Size: All, Employment Category: All.

Figure 8: Worker Flows Rates: by Sector



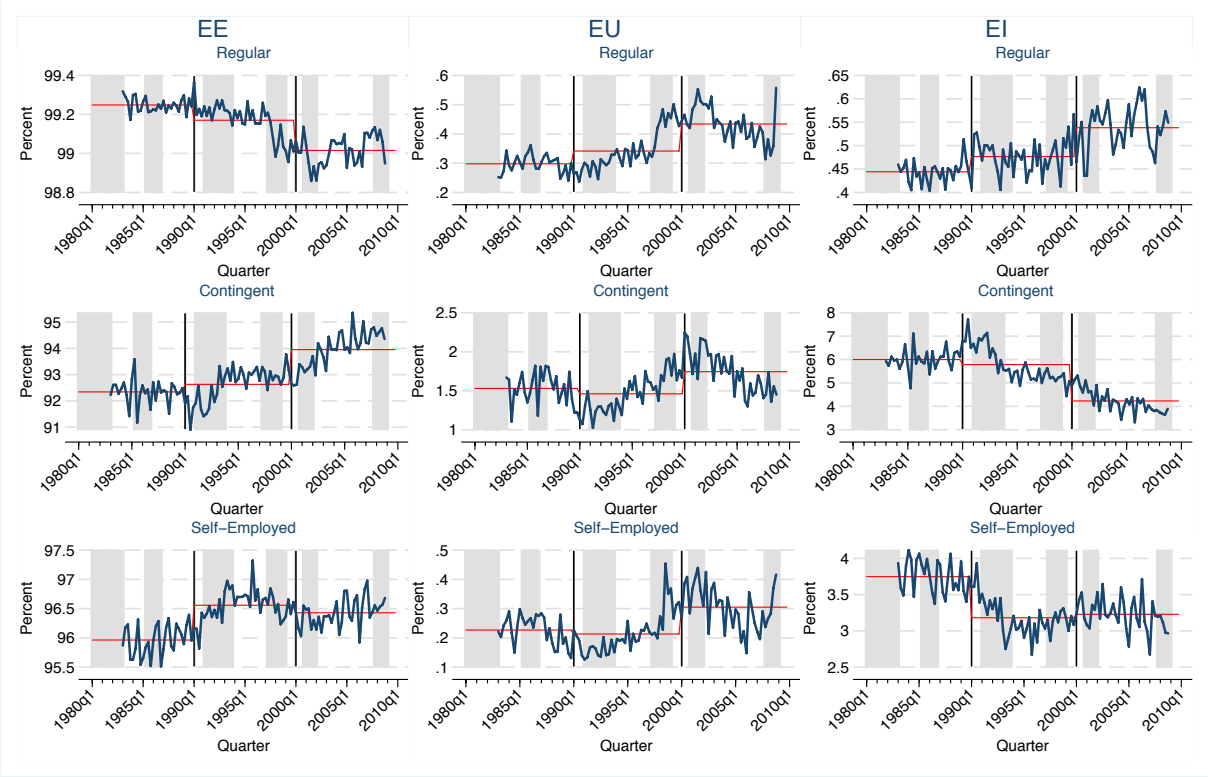
Note: Age: 15 and above, Gender: All, Region: All, Firm Size: All, Employment Category: All.

Figure 9: Worker Flows Rates: by Employer's Size



Note: Age: 15 and above, Gender: All, Region: All, Sector: All, Employment Category: All.

Figure 10: Worker Flows Rates: by Employment Type



Note: Age: 15 and above, Gender: All, Region: All, Sector: All, Firm Size: All.