Changes in Japan's labor market during the Lost Decade and the role of demographics[☆]

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ABSTRACT

We study the changes that took place in the Japanese labor market due to the decade-long stagnation of the 1990s. Using the Labor Force Survey micro-data from 1983 to 2008 we construct worker flows and study the effects of the so-called Lost Decade on unemployment, employment and participation. We perform the analysis both at the aggregate level and disaggregated by age and gender to understand the type of worker that was most affected by the long recession. We also perform counterfactual experiments to study the importance of demographic factors in such changes. We find that the decade-long recession significantly altered the state of the labor market, although not all workers were affected equally. We find that while almost all changes observed in the unemployment rate can be attributed to the recession, part of the evolution of the employment to population ratio and a large extent of the decline in the participation rate can be accounted for by the aging of the population. We also find that the aging effects are stronger for female workers than for their male counterparts.

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1. Introduction

It is well-known that the 1990s in Japan was a time of stagnation. Output per capita grew at an average of 0.5%, much lower than the average of the previous decade, 3.2%. Several studies have pointed to the decline in total factor productivity as the reason for the weak growth of the Japanese economy during these years (e.g., Hayashi, 2003; Hayashi and Prescott, 2002; Miyagawa, 2003). In a more recent book, Fukao (2012) shows that the decline of work hours is also a crucial factor explaining the low growth rate of GDP per capita during this period. Furthermore, he highlights the importance of low fertility, population aging, changes in the regulation on work hours, and a surge in the share of contingent workers, as crucial aspects behind the drop in hours worked.

During this period, so-called the Lost Decade, the labor market suffered one of the worst periods in recent Japanese history: Unemployment reached a historical high of 5.4% in 2002, more than 2.5 times the level in 1990.[1] 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. Also, the steady decline of labor force participation and employment to population ratio are, to some extent, responsible for the changes in the labor force dynamics. The experience during the 1990s is far different from that in the 1980s, and its effects persist into the 2000s. This sharp rise and persistently

[1] In this paper, Japan's Lost Decade is defined as the period starting in the forth quarter of 1990 and ending in the first quarter of 2002. This definition is supported by the structural break point test by Bai and Perron applied to the time series of Japanese GDP.

high unemployment rate, together with the declining trend of labor force participation have been one of the greatest concerns for economists and policy makers.[2]

The main purpose of this paper is to examine, both descriptively and analytically, how the Lost Decade changed the Japanese labor market and how persistent its effects were. In particular, we ask the following questions: How are the Japanese labor markets in the 2000s different from the ones in the 1980s? Did the Lost Decade damage the Japanese labor markets permanently, or did the Japanese labor market recover to the levels in the 1980s? And, what is the role of demographic changes in the developments of the labor markets during the Lost Decade? Since the labor markets are affected not only by macroeconomic conditions but also by demographic factors, it is very important to understand which, and by how much, the different changes are responsible for the evolution of labor market during these turbulent times. This, in turn, should provide crucial information for the design of appropriate policy measures by the government.

It is widely recognized that it is imperative to study labor market flows to uncover the determinants of the changes in the unemployment rate and the labor force participation rate.[3] Using monthly data of Japanese Labor Force Surveys from 1983 to 2008, we construct stock and flow variables of the Japanese labor market to compare the labor market's characteristics over three decades (before, during and after the Lost Decade). As stock variables, we look at the unemployment rate, the labor force participation rate, and the employment to population ratio. As flow variables, we study six transition flows among the three states, employment, unemployment, and inactivity (or out-of-the-labor-force). We construct both gross flows (total number of workers who move from one state to another), and flow rates (fraction of workers who move across states, such as the job separation and job finding rates).

The flow rates constructed from the data can be, in many ways, interpreted as fundamental parameters of the labor market, and the changes of these flow rates are a main concern of many researchers and politicians. To evaluate which of the changes in the various rates is more important to account for the changes in the three stock variables (unemployment rate, employment to population ratio, and participation rate), we perform counterfactual simulations. In these counterfactuals, we firstly simulate six series for each of the three stock variables by setting each flow rate constant at the level of the first quarter of 1991, the start of the Lost Decade. Comparing these counterfactual series to the actual series during the Lost Decade, we evaluate the importance of the "removed" flow rate in generating the observed changes in the stock variables. In particular, the larger the discrepancy between the actual and counterfactual series, the more important the changes of that flow are in causing the observed evolution of the stock variable in question. Employing a similar technique, we provide the contribution share of each transition flow to the changes of the stock variables during the Lost Decade.

The labor market stock variables are affected not only by changes in fundamentals, such as flow rates, but also by variations in the composition of the population. Since the Japanese labor market is highly heterogenous across age and gender, we disaggregate the data across these two dimensions and study if the effect of the Lost Decade was relatively homogenous across these demographic groups, or affected some more than others. We also examine the consequences of the demographic changes (aging of the population) on the evolution of the stock variables. To do so, we construct series of stock variables under a counterfactual scenario without the population aging observed during the Lost Decade.

Through the exercises described above, we confirm that during the Lost Decade, the unemployment rate increased, and the labor force participation rate and employment to population ratio decreased. We also find that its effect persists in the 2000s. The analysis of the relative importance of each flow rate reveals that for the unemployment rate, the most important flow explaining its change is employment to unemployment (EU). For the participation rate and the employment to population ratio, the flow from inactivity to employment (IE) is the most important. In terms of the effect of demographic changes, we find that aging had little impact on the unemployment rate, but had substantial effects on the labor force participation rate and the employment to population ratio. Interestingly, we find that the effects of aging are heterogenous between male and female. The participation rate for women, which declined during the Lost Decade, would have increased without population aging, while the male participation rate would have decreased even without population aging.

Our paper is related to the literature that studies the measurement of labor market flows and their importance in explaining unemployment fluctuations. The strand of the literature researching these issues for countries other than Japan have mostly focused on analyzing which flows are more relevant to account for the movements of labor market variables over the business cycle. One of the earliest examples of flow analysis is Blanchard and Diamond (1990). They construct the data of the U.S. worker flows and study the relationship between business cycle and job finding and separation flows. They also disaggregate the worker flows by age and gender and find that the relationship between business cycle and worker flows are different across age and gender. In recent years, one of the most influential papers in this literature is Shimer (2007), which using data for the U.S. concludes that the job finding rate is mostly responsible for the fluctuations in unemployment over the business cycle. Elsby et al. (2009) and Fujita and Ramey (2009), however, use different methodology and find that the job separation rate is also important to explain cyclical movements in unemployment. Other papers have followed Shimer (2007) and conducted similar analysis, although in some cases with different methodologies, for countries such as the U.K. and Japan. For the U.K., Smith (2011) uses data from the British Household Panel Survey (BHPS) and the methodology of Fujita and Ramey (2009) and finds that the separation rate is more important in explaining cyclical unemployment movements. Gomes (2012), on the other hand, uses data from the Labor Force Survey (LFS) and several different methods to conclude that the separation and finding rates are both equally important when explaining changes in unemployment in the U.K. For Japan, Lin and Miyamoto (2012) find that the separation rate is slightly more important than the finding rate when accounting for the cyclical changes in unemployment. Tawara (2011) finds similar results for Japan, although the relative importance of the job finding and separation rates varies across different demographic groups.

Our paper focuses on the long stagnation in Japan of the 1990s, much longer than the length of a business cycle, so the analysis used in the previous papers is not directly applicable for our purposes. Some studies for the Japanese economy, however, have conducted investigations more in line with ours. Higuchi et al. (1987), Mizuno (1992), and Ohta and Teruyama (2003b) are some of the earliest efforts. Using the same flow data as in Ohta and Teruyama (2003b), Ohta (2005) conducts simulation exercises that fix the job separation rate at 1990 level and studies the importance of different sources for the changes in the labor market flows during

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