Labor adjustment, productivity and output volatility: An evaluation of Japan's Employment Adjustment Subsidy

Naomi N. Griffin*

Macroeconomic Analysis Division, Congressional Budget Office, Washington, DC, USA

ARTICLE INFO

ABSTRACT

Griffin, Naomi N.—Labor adjustment, productivity and output volatility: An evaluation of Japan's Employment Adjustment Subsidy

This paper provides a quantitative examination of the impact of Japan's Employment Adjustment Subsidy, a major employment insurance policy since 1975, on labor adjustment, productivity and output fluctuation in the iron and steel sector. A partial equilibrium industry model with heterogeneous establishments and aggregate uncertainty shows that the EAS reduces steady-state labor productivity by encouraging labor hoarding, and in some cases, preventing the exit of least efficient establishments. The EAS also reduces job flows and increases average establishment-level employment. Although the impact on productivity is roughly proportional to the size of subsidized workers in most cases, the effects of the subsidy on output and employment volatility are more than proportional. First, the subsidy can lead to a sizable increase in output fluctuations over business cycles by symmetrically increasing the output response to shocks. This result is achieved through lower output via a subsidy during unfavorable times and higher output via less time and money spent on hiring during favorable times. Second, the subsidy meets its primary objective of reduced employment volatility. The reduction can be considerable when firing costs are high. *J. Japanese Int. Economies* **24** (1) (2010) 28–49. Macroeconomic Analysis Division, Congressional Budget Office, Washington, DC, USA.

Published by Elsevier Inc.

* Fax: +1 202 226 0332.
  E-mail address: naomi.griffin@cbo.gov

1. Introduction

This paper examines the Employment Adjustment Subsidy (EAS), a core Japanese employment insurance policy since 1975. The EAS program allows establishments to reduce output during unfavorable business conditions without laying off workers by providing part of the costs of sustaining excess workers.[1] The EAS policy has not yet been formally analyzed despite recent macroeconomic literature emphasizing job reallocation as a driving force behind business cycles. Therefore, the primary objective of this paper is to point out some of the key implications of the policy through the application of a theoretical framework of heterogeneous establishments with aggregate uncertainty. In particular, this paper investigates the impact of the EAS on average labor productivity, job flows and entry/exit rates at the steady-state. In addition, it examines the implications of the policy for the volatility of employment, output and productivity over business cycles.

Between 1990 and 2002, more than 360 billion yen (over 3.6 billion US dollars) was spent on the EAS. On average between January 1991 and October 2001, about 170,000 establishments were eligible for the subsidy program.[2] According to the *1996 Establishment Census*, there were about 6.5 million establishments in Japan (excluding public service) with 770,000 in manufacturing. Thus, the average number of targeted establishments corresponds to 2.6% of the total number of establishments, or approximately 20% of manufacturing establishments. The number of targeted establishments peaked at 411,000 units in February 2000.

The EAS recipients are heavily concentrated in the manufacturing sector, with the largest beneficiary being the iron and steel industry. The manufacturing sector and the iron and steel industry, respectively, received approximately 94% and 40% of the total subsidy bill between 1990 and 2002.[3] Although the program in principle involves the entire economy, this paper focuses on the iron and steel industry due to the program's high concentration in this industry. The calibrated industry model developed later will attempt to match key moments obtained from the data for this industry.

Using longitudinal data sets in the US manufacturing sector, Davis and Haltiwanger (1990, 1992, 1999) and Davis et al. (1996) exposed the importance of idiosyncratic differences across establishments in explaining business cycle dynamics. Many theoretical frameworks analyzing industry dynamics, such as Jovanovic (1982), Hopenhayn (1992), Hopenhayn and Rogerson (1993), Ericson and Pakes (1995) and Campbell and Fisher (2004), also stressed the importance of heterogeneity across firms when characterizing firm's production and entry/exit decisions. To the extent that the EAS interacts with such heterogeneity across establishments within an industry, the appropriate theoretical framework to analyze the effect of the policy must also encompass similar features.

In addition, prior research concerning the implications of differing labor market institutions, particularly European employment policies, has shown that labor market policies have an important effect on equilibrium job flows, unemployment and productivity. Hopenhayn and Rogerson (1993), for instance, illustrate that high firing costs in Europe, which interfere with the process of job reallocation, lead to a sizable reduction in employment and a drop in average productivity. Others have stressed the interactions between a changing economic environment and labor market policy. Ljungqvist and Sargent (1998) explain that generous unemployment benefits increase unemployment rates when the

---

[1] Since 1975, the employment insurance programs had three central interrelated projects: (1) *an employment stabilization project* that was carried out through the Employment Adjustment Subsidy, (2) *a skill development project* providing assistance to the management and development of job training centers, and (3) *a workers' welfare project* providing employment consultation. The employment stabilization project has been the most predominant of the three.

[2] As described later in this paper, additional criteria set by the government in terms of past employment and output trends must be satisfied in order to receive the subsidy.

[3] In October 2001, the Japanese government abolished industry selection completely in response to criticism that the program was skewed toward particular industries: the current guidelines provide that any establishment can receive the subsidy if specific and much stricter criteria are satisfied. Namely, the monthly average of the last 6 months' production has to drop by more than 10% and employment has to be less than or equal to, in comparison with the same months of the previous year. Previously, the monthly average of the last *three* months' production had to be strictly less, while employment had to be equal or less than the previous year. Furthermore, the subsidy cannot be given to establishments whose unfavorable business conditions are predicted to last for more than two years, and establishments are no longer able to receive the subsidy continuously for more than a year. Instead, they are required to take a year long hiatus, except during severe economic circumstances.