

Labour force ageing: Its impact on employment level and structure. The cases from Japan and Australia

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1. Introduction

Recently, population ageing has become a major concern in developed countries. Of particular interest are the implications of ageing for labour markets. Often addressed in the debate is the possibility of labour force shortages, and its subsequent economic implications. Raising participation rates of underutilized demographic age/sex groups (older people and females) and migration are the policy options being debated as possible solutions (Hoehn 2000; McDonald and Kippen 2001; Orzechowska 2001; Ogawa 2003; The Treasury 2004).

An underlying assumption of this policy debate is perfect substitution between the different age/sex/ethnic groups within a labour force. In other words, it is being assumed that decrease in relative supply of one category can be easily mitigated by increase in the other without changes in their relative wages. This is not the case in the reality. A number of economic studies have proved that particular age/sex/ethnic categories of labour possess different skill-wage characteristics, which make them imperfect substitutes in the production process (Freeman 1979; Martin and Ogawa 1988; Hamermesh 2001). In addition, limited substitutability of these labour force groups is displayed in their different employment patterns, and distribution among industries. Any changes in the age/sex/ethnic composition of the labour force will have impact on the employment patterns, and employment distribution among industries (Martin and Ogawa 1984).

The author considers this assumption to be the major limitation of the debate. This study focuses on examining one aspect of the limited substitutability of particular age/sex/ethnic groups within the ageing labour force. It concentrates on the relationship between changes in the age structure of the population aged 15 years and over and employment of particular age/sex/ethnic groups within labour force as it ages. Comparing two countries (Japan-Australia) in different stages of ageing allows on the simultaneous analysis of different levels of ageing.

2. Data and method

The relationship between changing age composition and employment of different age/sex/ethnic groups is addressed by means of one and two factor decomposition of the difference between two rates. This technique has been developed by the Kitagawa (1955), slightly amended by Das Gupta (1978) and widely applied by the number of others to the analysis of the age structural effect on the employment patterns (Martin and Ogawa 1984), occupational sex segregation (Bianchi and Rytina 1986) as well as fertility, mortality and mobility rates differentials (Cho and Retherford 1973; Wilson 1988; Liao 1989)

The employment data used in the analysis was taken from Japanese and Australian censuses between 1960 and 2000. The decomposition considered age composition and employment rates as components of change in the overall employment rate across an intercensal period. The work was carried out for all industries combined and for a classification of industries into 11 types that are comparable across the two countries.

The results are presented in the form of “age composition component” and “rate component”. The “age composition component” stands for the increase or decrease in employment supply between two periods: p and $p+10$ that would be required if employment rates by age remained at constant, average p , $p+10$ level. The “rate component” is interpreted as changes in the employment demand between two periods p and $p+10$ that would have had occurred if the age composition remained at, constant at average p , $p+10$ level.

4. Conclusions

Given age/sex/ethnic specific employment patterns of particular industries, with the advances in the ageing of the labour force:

- the significance of the age composition effect grows, and tends to take increasingly negative values for total employment (the values for the age composition effect are much stronger for Japan, than for Australia). Given the current age/sex/ethnic specific employment patterns, an aged population structure becomes less favorable to the total employment
- the significance and direction of the age composition effect varies for particular industries. Although some industries benefit from the changes in the age composition, (i.e. Agriculture), for most (i.e. Wholesale-retail trade, Services, Finance, Insurance and Property) the age compositional changes tend to be unfavorable.
- The proposed policy options such as increasing participation rates of females, elderly and increasing migration levels, offered as solution to ageing labour force should be viewed as only partial solutions, as their benefits are compromised by issues of age/gender/ethnic substitutability within the labour force
- In the context of results of the above analysis, the ageing of the labour force, under present industrial structure and in the absence of significant productivity increases, points towards labour force shortages, and possible economic slow down.

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