Are firms willing to employ a greying and feminizing workforce?☆

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HIGHLIGHTS

► Are firms willing to employ more older individuals, in particular older women?
► We focus on how larger shares of older workers affects gross profits.
► We find limited negative impact of rising shares of older men.
► But a large negative effect of larger shares of older women.
► Services industry does not mitigate older women's disadvantage.

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ABSTRACT

Are employers willing to employ more older individuals, in particular older women? Higher employment among the older segments of the population will only materialize if firms are willing to employ them. Although several economists have started considering the demand side of the labour market for older individuals, few have considered its gender dimension properly; despite evidence that lifting the overall senior employment rate in the EU requires significantly raising that of women older than 50. In this paper, we posit that labour demand and employability depend to a large extent on how the age/gender composition of the workforce affects firm's profits. Using unique firm-level panel data we produce robust evidence on the causal effect of age/gender on productivity (value added per worker), total labour costs and gross profits. We take advantage of the panel structure of data and resort to first differences to deal with a potential time-invariant heterogeneity bias. Moreover, inspired by recent developments in the production function estimation literature, we also address the risk of simultaneity bias (endogeneity of firm's age-gender mix choices in the short run) by combining first differences with i) the structural approach suggested by Ackerberg, Caves and Frazer (2006), ii) alongside more traditional IV-GMM methods (Blundell and Bond, 1998) where lagged values of labour inputs are used as instruments. Results suggest no negative impact of rising shares of older men on firm's gross profits, but a large negative effect of larger shares of older women. Another interesting result is that the vast and highly feminized services industry does not seem to offer working conditions that mitigate older women's productivity and employability disadvantage, on the contrary. This is not good news for older women's employability and calls for policy interventions in the Belgian private economy aimed at combating women's decline of productivity with age and/or better adapting labour costs to age-gender productivity profiles.

1. Introduction

Expanding the range of employment opportunities available to older workers will become increasingly important in most EU countries as demographics (ageing populations[1]) and public policy[2] will combine to increase the share of older individuals in the labour force. Across the EU, with the exception of some Nordic countries, there is also that older women are clearly less present in employment than older men.[3] But this should change.

The first point we raise in this paper is that a greying workforce will also become more female. Two elements combine in support of

this prediction. The first one is the lagged effect[4] of the rising overall female participation in the labour force (Peracchi and Welch, 1994).[5] The second factor is labour policy. Policymakers will concentrate on promoting older women's employment because - conditional on a certain young- or prime-age participation record - women still leave the labour market earlier than men[6] (Fitzenberger et al., 2004).

The second focal point of this paper is the idea that higher employment among the older segments of the EU population (male or female) will only materialize if firms are willing to employ these individuals. One cannot take for granted that older individuals who are willing to work - and are strongly enticed to do so because (early) retirement benefits are no longer accessible - do obtain employment. Anecdotal evidence abounds to suggest that firms "shed" older workers. Dorn and Sousa-Poza (2010)[7] show, for instance, that *involuntary* early retirement is the rule rather than the exception in several continental European countries: in Germany, Portugal and Hungary more than half of all early retirements are, reportedly, not by choice.

In short, there is a need to understand better the capacity of EU labour markets to adapt to ageing and feminizing workforces.

The existing economic literature primarily covers the supply side of the old-age labour market. It examines the (pre)retirement behaviour of older individuals (Mitchell and Fields, 1984) and its determinants, for example how the generosity of early pension and other welfare regimes entices people to withdraw from the labour force (Saint-Paul, 2009). In the Belgian case, there is strong evidence that easy access to early retirement benefits[8] and old-age pension systems made it financially unattractive to work after the age of 55. The implicit tax on continued work has risen strongly since the 1960s and has played a significant role in the drop in the employment rate among older individuals (Blöndal and Scarpetta, 1999; Jousten et al., 2008). Other papers with a supply-side focus examine how poor health status precipitates retirement (Kalwij and Vermeulen, 2008) or the importance of non-economic factors (i.e. family considerations) in the decision of older women to retire (Pozzebon and Mitchell, 1989; Weaver, 1994).

The demand side of the labour market for older individuals has started to receive some attention from economists. Some have examined the relationship between age and productivity at the level where this matters most: firms. They have estimated production functions expanded by the specification of a labour-quality index à la Hellerstein and Neumark (1995) (HN henceforth).[9] According to Malmberg et al. (2008), an accumulation of high shares of older adults in Swedish manufacturing plants does not negatively impact plant-level productivity. By contrast, Grund and Westergård-Nielsen (2008) find that both mean age and age dispersion in Danish firms are inversely U-shaped in relation to firms' productivity. But these authors use cross-sectional approaches. More recent analysis of the German evidence by Göbel and Zwick (2009), using panel data to control for the endogeneity of age structure, produces little evidence of an age-related productivity decline. By contrast, Lallemand and Rycx (2009), who use

Belgian firm-level panel data[10], conclude that older workers (>49) are significantly less productive than prime-age workers, particularly in ICT firms.

Using panel data and coping with the simultaneity of production and the age structure of the workforce has become key in this literature (more in Section 2). Another key distinction in terms of methodology is between studies which only examine productivity and those that simultaneously consider pay or labour costs. Economists with a focus on labour demand assess employability by examining the difference between individuals' contribution to production and their cost to employers; in other words how they affect (gross) profits. This paper analyses the sensitivity of productivity, labour costs and profits to the workforce structure of firms. Under proper assumptions (see Section 2), this amounts to analyzing the sensitivity these firm-level outcomes to the age/gender shares forming the overall workforce.

One of the first papers that combined the productivity and labour cost dimensions was that of Hellerstein et al. (1999). In a recent replication of that seminal analysis using data covering the US manufacturing sector, the authors (Hellerstein and Neumark, 2007) estimate relative productivity of workers aged 55+ is only 0.87 (ref. group <35=1), whereas relative wages is 1.12. Most papers based on cross-sectional data conclude that firm productivity has an inverted U-shaped relationship with age, while labour costs are either rising with age or flat beyond a certain threshold with a negative impact on profits after 55 (Grund and Westergård-Nielsen, 2008; Skirbekk, 2004, 2008).

Turning to authors using (*a priori* more trustworthy) panel data, the evidence is mixed. For Belgium, Cataldi et al. (2011)[11] find evidence of a negative effect of older workers on the productivity-labour cost gap. Aubert and Crépon (2003, 2007), observe that the productivity of French workers rises with age until around the age of 40, before stabilizing, a path which is very similar to that of wages. But a negative effect on the productivity-labour cost gap is observed with rising shares of workers aged 55+. On the contrary, the absence of such evidence seems to hold for manufacturing in the Netherlands, as explained by van Ours and Stoeldraijer (2011), and in Portugal for the whole economy, as shown by Cardoso et al. (2011).

Our point is that none of the existing papers has adequately considered the gender dimension of ageing, in a context where women are likely to form a growing part of the older labour force. This paper aims at filling that void. True enough, some existing papers consider gender within an HN framework, but they primarily aim at assessing the presence of gender wage discrimination (Vandenberghe, 2011b). Others consider the impact of age or gender (Pfeifer and Wagner, 2012) on firms' performance, but separately. None examines the role of gender in combination with age. Technically, for instance, the Pfeifer & Wagner paper analyses the impact of the overall share of older workers plus that of the overall share women (*vs.* men) on productivity and profits; whereas this paper assesses the impact of shares of women (and men) belonging to different age groups. This is apparently a small difference. But it is essential to get a chance to assess the (potentially variable) willingness of employers to (re)employ older male and female workers (…).

Throughout this paper, we posit that labour demand largely depends on how larger shares of older (male or female) workers affect private firms' gross profits, i.e. the difference between productivity (value added) and total labour cost.[12] More specifically, we try to find firm-level evidence of a negative (or positive) *short-run* effect of larger shares of older (male and female) workers on i) average productivity,

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[4] Also referred to as a cohort effect.

[5] Driven, *inter alia*, by a higher educational attainment of women and a lower fertility of the younger generations.

[6] In other words, life-cycle participation/employment profiles vary by gender. And the female profiles have not changed markedly across cohorts.

[7] The International Social Survey Program data (ISSP) allows them to identify individuals who i) were early retirees and ii) assessed their own status as being involuntary, using the item "I retired early — by choice" or "I retired early — not by choice" from the questionnaire.

[8] While the age of 58 is *a priori* the minimum access age, a lower age of 55, 56 or 57 is possible in some sectors (steel, glass, textile, etc.), presumably reflecting more arduous working conditions. Similar exceptions exist for some workers in the building industry and those who worked shifts. Even more pronounced reductions in the minimum age are possible when the company is recognized as being in real trouble, under which circumstance the age can be brought down to 52 years, or even 50.

[9] The key idea of HN is to estimate a production function (or a labour-cost function), with heterogeneous labour input, where different types (e.g. men/women, young/old) diverge in terms of marginal product.

[10] The Structure of Earnings Survey and the Structure of Business Survey conducted by Statistics Belgium.

[11] Extending the analysis *of Structure of Earnings Survey* and the *Structure of Business Survey* to examine age-wage-productivity nexus.

[12] Strictly speaking, value added minus labour cost is equal to «*Gross operating surplus: the surplus generated by operating activities after the labour factor input has been recompensed*». It is the sum available to pay the share and debt holders, to pay [corporates] taxes and eventually to finance all or a part of investment. OECD on-line glossary (http://stats.oecd.org/glossary/detail.asp?ID=1178).