

Understanding the Age Wage Gap in the German Labor Market

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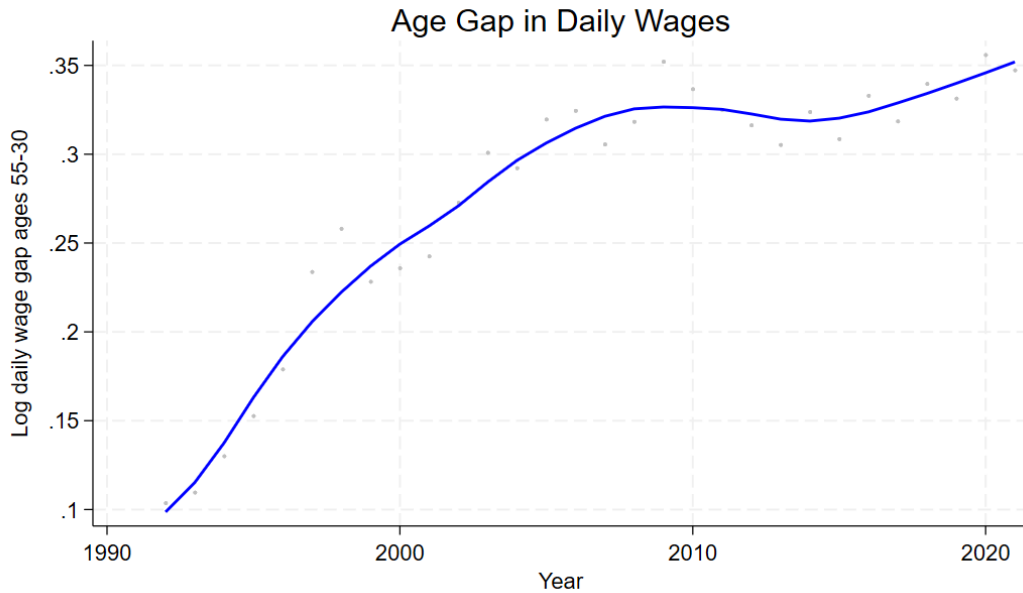
January 28, 2026

Standard Mincerian wage regressions typically include age as a control variable (Mincer (1974)). The wage differences between age groups, especially the old and young, are understood to reflect differences in the returns to experience and training over the life cycle. Rather than being a true *gap*, wage differences by age reflect the age-wage gradient. This paper is a step towards providing a more nuanced understanding of the age wage gap. Using recent retirement reforms in the German labor market, I study the potential role of systematic differences in access to career opportunities between new and old cohorts of workers, following recent studies in the context of the Italian labor market (Bianchi et al. (2023), Bianchi and Paradisi (2024)). I document a substantial and sustained widening of the wage gap between older and younger workers in Germany, and explore the role of internal labor markets as a potential mechanism behind this pattern.

Using rich administrative records from the Sample of Integrated Labor Market Biographies (Antoni et al. (2019)), which provide daily information on employment and earnings histories for a 2% random sample of workers in Germany covered by social security, the analysis shows a protracted increase in the real wage gap between older and younger workers over the past three decades. Specifically, as displayed in the figure below, the gap in log-wage between workers aged 55 and those aged 30 rises from about 0.10 in 1990 to around 0.35 by 2021, indicating a more than threefold increase in the premium earned by older workers at the end of the observed period. Although a positive age-wage gradient is not surprising in cross-sectional data, the longitudinal evolution of wage profiles reveals that the relative position of workers aged 55–60 has improved markedly compared with workers around age 30.

Complementary evidence from the German Socio-Economic Panel (Goebel et al. (2019)), provides additional information on promotions and career events that are not directly captured in administrative data and allows the paper to examine how within-firm career dynamics shape life cycle wage growth. The data shows that in the German context, career trajectories are predominantly shaped within (rather than between) firms: survey evidence suggests that roughly 70% of promotions occur within the same job or establishment, only about 30% involve a change of employer, and average tenure at a firm is on the order of 8–10 years. Bianchi et al. (2023) exploit an Italian pension reform to show that delayed retirement among older workers can generate negative career spillovers for younger colleagues when promotion ladders are congested. The paper argues that a similar set of forces may be at work in Germany, where expected working lives have lengthened over the last decade: the expected duration of working life has increased from about 38.5 to 40.5 years between 2015 and 2024 for the overall population (information from Eurostat), with parallel increases for both men and women. Longer working lives, combined with firm level capacity constraints in higher wage jobs, can tie up internal promotion slots and raise the relative bargaining position of older workers, potentially crowding out younger workers from high wage trajectories.

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Having provided some facts to motivate the potential role of internal labor markets, I move to discussing identification. The ideal experiment would exogenously raise the retirement ages of older workers in treated firms, and leave it unchanged in control firms. Retirement-age reforms can provide a natural-experiment setting, although such reforms apply uniformly to all workers of a certain age across firms. One source of identification comes from a 1999 retirement reform that raised retirement ages for women. I also aim to explore the recent extensions of retirement age in Germany, since this applies to the entire working population, thus allowing me to study the career effects on men as well.

Empirically, the paper seeks to quantify the contribution of internal versus external mobility and promotions to the observed age–wage patterns. I compare the evolution of wage profiles and promotion probabilities for younger and older workers within firms over time, focusing on cohorts entering the labor market under different institutional and demographic conditions. A key set of outcomes includes: (i) within firm wage growth by age and tenure, (ii) the incidence and timing of promotions by age group, and (iii) the relative importance of within versus between firm mobility in explaining wage growth for younger versus older workers. The administrative data supply precise daily earnings and employment spells, making it possible to construct detailed life cycle wage profiles, identify job changes, and measure tenure and sectoral transitions. The SOEP component supplements this with survey based indicators of promotions and subjective career events that serve as proxies for movements up internal wage ladders.

I follow the theoretical framework by [Bianchi et al. \(2023\)](#), and test the predictions in the data. First, if internal labor markets and limited promotion slots are central, the rise in the age wage gap should be associated with stronger wage and promotion growth for older workers within firms, accompanied by slower advancement for younger workers even conditional on observable characteristics. Second, the relative contribution of external mobility to wage growth should be larger for younger workers, reflecting their need to switch employers to escape blocked internal ladders, while older workers capture long tenure returns and promotion rents within firms. Third, the increase in the age wage gap should be more pronounced in sectors and firms where internal labor markets are more structured and promotion hierarchies more rigid. By exploiting variation across firms and sectors, the paper will be able to distinguish environments where career spillovers are plausibly stronger from those

where wage progression is more flexible and market based.

The contribution of the paper to the labor economics literature is threefold. Conceptually, it links the macro trend of rising age wage gaps and longer working lives to micro level internal labor market mechanisms, integrating insights from the literature on wage inequality, experience premia, and promotion dynamics. Empirically, it provides new evidence for Germany using high quality administrative data combined with survey measures of promotions and career events, documenting how the shape of life cycle wage profiles has changed over time and how these changes differ between younger and older workers. Finally, by emphasizing firm level capacity constraints and career spillovers from old to young, the paper speaks to current policy debates on pension reforms, retirement age increases, and their unintended distributional consequences for younger cohorts. In particular, if older workers' wage gains are partly financed by slower wage and career progression among the young, policies that extend working lives or subsidize continued employment at older ages may exacerbate inter-generational inequality.

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