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Do retirement windfalls create entrepreneurs? Evidence from Türkiye's 2023 retirement age reform

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Research Article

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Abstract

Little is known about whether a sudden pension windfall turns mid-career workers into entrepreneurs. This paper studies Türkiye's 2023 reform that removed the minimum retirement age for workers first insured before September 1999. Within a single year, the reform gave about 1.76 million workers a lifetime pension and, for employees, a statutory severance entitlement, and it allowed them to keep working. I combine monthly social security bulletins, a new province panel of active taxpayers by tax regime and official firm registration statistics for 70 provinces, and I exploit regional variation in the share of workers who became eligible. Per excess retiree, the number of pensioners who kept working in registered jobs rose by 0.30 to 0.52. Business creation did not respond. New firm registrations, net firm formation, corporate taxpayers, withholding-tax agents and the total number of individual business taxpayers show no detectable change, and the upper confidence bound for new firms is about one firm per 200 retirees. The stock of individual businesses tilted towards the income-tax-exempt micro regime, but this shift does not survive corrections for multiple testing. Effects do not grow where credit is scarce, and the reform did not raise job placements of young workers or change average earnings. A large liquidity windfall at retirement sustained registered wage work but created no measurable job-creating entrepreneurship, which matters for policies that count on pension and severance wealth to generate decent work.

JEL Classification J26; L26; H55; J32; O17

Plain English Summary

A huge pension windfall kept Turkish retirees at work but did not turn them into entrepreneurs. In 2023, Türkiye allowed about 1.76 million mid-career workers to retire at once with a lifetime pension and, for employees, a severance payment. Comparing provinces that differed in how many workers became eligible, I find that between a third and a half of the new retirees kept working in registered jobs, but firm registrations, employer businesses and the number of business owners did not rise, and no jobs opened up for young workers. The only change was a weak shift towards a tax-exempt micro-business regime. The principal implication for policy is that pension, severance and micro-enterprise tax rules should be designed as labour market policy, because retirement wealth alone will not generate job-creating start-ups or decent jobs.

1 Introduction

Entrepreneurship is often presented as a route to decent work, and many policies aim to convert household wealth into new firms. The reasoning is that a cash windfall should raise entry when would-be entrepreneurs are liquidity constrained, and some of the new firms should hire. Evidence from lotteries, mineral royalties, municipal fiscal windfalls and unemployment insurance reforms broadly supports this view (Bellon et al., 2021; Bermejo et al., 2025; Garmaise & Natividad, 2024; Hombert et al., 2020), although Hurst and Lusardi (2004) find little relation between wealth and entry over most of the wealth

distribution. Much less is known about the largest windfall that ordinary workers ever receive, the pension and severance wealth that becomes available at retirement. It is also unclear whether the businesses such wealth creates are of the job-creating or the subsistence kind, a distinction stressed by Schoar (2010), Levine and Rubinstein (2017) and Fairlie and Fossen (2020). Causal evidence on pensions and work comes mainly from older workers in high-income countries and from rural pension programmes (Gelber et al., 2022; Geyer et al., 2020; Hernæs et al., 2016; Huang & Zhang, 2021), and it rarely measures firm creation.

This paper studies a reform that delivered such wealth to a very large group of prime-age workers at once. In March 2023 Türkiye removed the minimum retirement age for workers who were first insured before 8 September 1999 and who met the required number of contribution days and years of insurance. When the President announced the reform in December 2022 he stated that 2.25 million people would be able to retire immediately (Reuters, 2022). Eligible employees could claim a lifetime pension and the statutory severance payment of one month of wages per year of service, and all new retirees could keep working while drawing the pension under a reduced contribution regime. The average age of the new retirees was about 48 according to the Minister of Labour and Social Security (Türkiye Gazetesi, 2025), which is close to the mean age of founders of high-growth firms in the United States (Azoulay et al., 2020). The reform created a natural experiment in which a large population of experienced, mid-career workers received a permanent income stream and, in many cases, a lump sum, with no requirement to stop working. Experienced workers also matter for the survival of young Turkish firms (Taymaz & Yılmaz, 2026), which makes the question of whether they become founders or remain employees economically important.

I measure the response with official data that are public but have not been combined before. Monthly social security bulletins report, for every province, the stock of old-age pensioners, of compulsorily insured employees and self-employed, and of pensioners who keep working. Annual reports of the Revenue Administration report the number of active taxpayers by tax type and province, which allows me to separate standard-regime individual business taxpayers, corporate taxpayers, withholding-tax agents and the simplified regime for very small sole proprietors. Official registration statistics report new firms and closures by province. Exposure to the reform ranges from 1.5 to 13.3 percent of provincial formal employment, reflecting differences in the age and tenure structure of formal employment that date back to the 1990s. I estimate continuous-exposure difference-in-differences and event-study models with region-by-period fixed effects and exposure-specific trends, an instrument based on the 2002 stock of insured workers, and, for the social security outcomes, a within-province comparison of men and women, whose eligibility rules differed. Because the sample has 70 provinces, I report wild cluster bootstrap and randomization inference, sensitivity to violations of parallel trends and multiple-testing corrections alongside conventional standard errors.

A large share of new retirees kept working in registered jobs. Per excess retiree, the number of working pensioners rose by 0.30 by the end of 2023 and by 0.37 by the end of 2024, and instrumental-variable (IV) and within-province estimates lie between 0.38 and 0.53. The reform did not, however, raise

business creation. New firm registrations, closures, net firm formation, corporate taxpayers and withholding-tax agents show no detectable change, and the upper bound of the 95 percent confidence interval for new firm registrations is about one firm per 200 retirees per year, or about 7 percent of the pre-reform registration rate at mean exposure. The total number of individual business taxpayers did not rise either. Within individual businesses the stock shifted towards the simplified regime, whose earnings have been exempt from income tax since 2021, but this shift is offset by a decline in standard-regime taxpayers, is sensitive to moderate departures from parallel trends and does not survive a correction for multiple testing. Effects are not larger where credit is scarce, whereas lottery windfalls in Spain had their largest effects where credit was limited (Bermejo et al., 2025). Public employment service placements of workers aged 15 to 29 did not rise in high-exposure provinces, which contradicts the argument, used to justify the 1992 Turkish reform, that early retirement frees jobs for the young.

The paper adds a new and large source of variation to the work on liquidity and entrepreneurship. Unlike lottery prizes or royalty payments, pension and severance wealth arrive together with a change in labour market status and a permanent income stream, so the reform tests whether wealth creates entrepreneurs when the recipients are experienced workers with a guaranteed income. It creates very few, and the confidence intervals are narrow relative to the pre-reform rate of firm registration. The paper also speaks to research on age, entrepreneurship and bridge employment, which mostly concerns older workers in high-income countries (Kautonen et al., 2014; Kautonen et al., 2017; von Bonsdorff et al., 2017; Zhang & Acs, 2018; Zhu et al., 2022; Zissimopoulos & Karoly, 2007). The workers treated by the Turkish reform are much younger, and they live in an emerging economy with a large informal sector. A further link is to work on how pension rules and micro-enterprise tax regimes affect informality and job quality in middle-income countries (Aşık, 2024; Brook & Whitehouse, 2006; Jessen & Kluve, 2021; Öztürk Göktuna & Dayangaç, 2024; Rocha et al., 2018). Aşık (2024) shows that an earlier Turkish early-retirement incentive pushed workers into informal employment. I show that the 2023 reform, which combined early retirement with a low contribution rate for working pensioners, kept many retirees in registered work but did not turn them into employers.

The rest of the paper is organised as follows. Section 2 describes the reform and the tax regimes. Section 3 reviews the literature and states the hypotheses. Sections 4 and 5 present the data and the empirical strategy. Section 6 reports the results, including a test of whether retirements made room for young workers, Section 7 discusses their implications for decent work and Section 8 concludes.

2 Institutional background

2.1 The 2023 reform

The 1999 social security reform introduced minimum retirement ages of 58 for women and 60 for men for workers insured for the first time after 8 September 1999, and it set transitional age thresholds for those already insured. Workers who had completed their contribution days and years of insurance but had not reached the transitional age became a large and politically organised group. Law No. 7438,

which entered into force on 3 March 2023, removed the age requirement for everyone first insured before 8 September 1999 and left the other conditions unchanged. For employees these are 20 years of insurance for women and 25 years for men and between 5,000 and 5,975 contribution days, depending on the date of first insurance (Esas Denetim, 2023; Haber7, 2023). Conditions for the self-employed scheme differ. The President announced the reform on 28 December 2022 (Reuters, 2022), about two months before the law entered into force. By the end of 2023 about 2 million people had retired under the new rule (NTV, 2024). This count includes civil servants, who were also covered by the reform but are not part of the analysis.

The reform amounted to a large liquidity shock. Retirement entitles employees to the statutory severance payment of one month of gross wages per year of service, subject to a ceiling. Retirees receive a lifetime pension. Retirees may keep working, in which case they pay the social security support contribution instead of regular contributions, whether they work as employees or as self-employed. The law also provided that if a retiring worker started work again at the last private-sector workplace within 30 days, five points of the employer's support contribution would be paid by the Treasury (Law No. 7438). To help firms finance severance payments, the Treasury-backed Credit Guarantee Fund introduced a support package in March 2023 for small and large firms, with loans that could be used only for the severance of workers retiring under the law (KGF, 2023).

2.2 Tax regimes for small businesses

Individuals who earn business income in Türkiye are taxed either under the standard regime, with bookkeeping and annual returns, or under the simplified regime for very small traders and craftspeople whose purchases, sales or gross receipts stay below statutory thresholds and who meet further conditions on location and activity. Law No. 7338 of October 2021 exempted earnings under the simplified regime from income tax with effect for earnings from 1 January 2021. The simplified regime covers the smallest sole proprietorships, such as corner shops, taxi drivers, barbers and market traders, which typically operate without employees. Every business that pays wages must withhold income tax and is registered as a withholding-tax agent, and corporations are registered as corporate taxpayers. These distinctions show whether business ownership changed and in which form. Stocks of taxpayers by regime change both through entry and exit and through movement between regimes, a point that matters for the interpretation of the results.

3 Related literature and hypotheses

A standard occupational choice model with borrowing constraints predicts that a cash windfall raises entry into entrepreneurship, especially where credit is scarce. Lottery evidence from Spain finds higher start-up entry and job creation in winning regions, with the strongest effects in sectors dependent on external finance and in regions with limited credit (Bermejo et al., 2025). Shale royalty windfalls in Texas raised business formation (Bellon et al., 2021), fiscal windfalls to Peruvian municipalities raised firm entry into formal borrowing (Garmaise & Natividad, 2024), and a cash transfer programme in Brazil raised the number of small entrepreneurs through spillovers between households rather than by relaxing

recipients' own constraints (Ribas, 2020). Insurance against downside risk raised entry in France without lowering the quality of entrants (Hombert et al., 2020), and job-protected leave in Canada raised the creation of incorporated firms with employees (Gottlieb et al., 2022). Field experiments find high returns to capital in microenterprises (de Mel et al., 2008). Against this, Hurst and Lusardi (2004) find little relation between wealth and entry over most of the wealth distribution.

Transfers tied to leaving a job can have the opposite effect. In Spain, a cut in unemployment benefits raised job finding but lowered start-up rates (Camarero Garcia & Hansch, 2024), and across European countries generous unemployment compensation goes together with less new business creation, especially of the opportunity type (Bilan & Apostoaie, 2023). Severance wealth raises cash on hand and changes job search behaviour (Card et al., 2007). Start-up subsidies for the unemployed turn such transfers into self-employment, but the subsidised firms lag behind regular start-ups in survival, job creation and innovation (Caliendo et al., 2020).

The retirement setting adds further forces. A permanent pension reduces the need for labour income and may lower the return to the effort and risk that growth-oriented entrepreneurship requires. Removing earnings tests or lowering the cost of working while drawing a pension raises the labour supply of pensioners (Gelber et al., 2022; Hernæs et al., 2016), and higher pension ages keep many workers in their previous labour market state for longer (Geyer et al., 2020; Rabaté et al., 2024). Age changes the type of entrepreneurship more than its level. The wish to run a firm with employees peaks in the late forties and declines thereafter, while solo self-employment keeps rising with age (Kautonen et al., 2014), and the propensity to be an incorporated rather than an unincorporated entrepreneur falls over parts of the life cycle (Zhang & Acs, 2018). For late-career founders, starting a business is associated with a higher quality of life but lower income (Kautonen et al., 2017). The distinction between subsistence and transformational entrepreneurship (Schoar, 2010), between incorporated and unincorporated self-employment (Levine & Rubinstein, 2017) and between solo and employer entrepreneurs (Coad et al., 2017; Sorgner et al., 2017) is central to the question. Below the median of the earnings distribution, self-employment pays considerably less than wage work and offers weaker protection (Pantea, 2022), and tax and institutional settings shape whether new entrepreneurs are of the necessity or the opportunity kind (Audretsch et al., 2022).

Micro-enterprise tax regimes also affect how businesses are registered. Brazil's individual micro-entrepreneur programme formalised existing informal businesses rather than creating new ones (Rocha et al., 2018), Georgia's micro-business regime had at most short-lived effects on registrations (Bruhn & Loeprick, 2016), and businesses move between legal and tax forms in response to tax differentials (Waseem, 2018). A meta-analysis of formalisation interventions in low- and middle-income countries reviews how lower taxes, simpler registration and enforcement affect firm and worker formality (Jessen & Kluve, 2021).

These considerations yield four hypotheses. H1 states that a substantial share of new retirees remained in registered work. H2 states that the windfall raised the creation of job-creating firms, measured by firm

registrations, net firm formation, corporate taxpayers and withholding-tax agents. H3 states that any entrepreneurial response was concentrated in micro self-employment, measured by simplified-regime taxpayers and by the total number of individual business taxpayers. H4 states that, if liquidity constraints bind, effects are larger where credit is scarce. The argument that early retirement frees jobs for the young implies that hiring of young workers rose where more workers retired.

4 Data

4.1 Social security records

I downloaded every monthly insured-persons bulletin published by the Social Security Institution (Sosyal Güvenlik Kurumu, 2018–2026) between January 2018 and July 2026 (103 files) and parsed the province tables. These report, by province and month, the number of compulsorily insured employees, of compulsorily insured self-employed outside agriculture, of old-age pensioners in both schemes, and of pensioners who work and pay the social security support contribution. Province tables can be parsed consistently from November 2018. The working-pensioner series is available monthly from August 2021 and is also split by sex. It covers working pensioners from both schemes and does not distinguish employees from self-employed. Province totals match the national totals printed in each bulletin.

4.2 Active taxpayers by tax regime

The annual activity reports of the Revenue Administration (Gelir İdaresi Başkanlığı, 2019–2026) contain a table of active taxpayers by tax type for each province at the end of the year. I extracted this table from the reports for 2018 to 2025. The variables used are standard-regime income taxpayers, simplified-regime taxpayers, corporate taxpayers and withholding-tax agents. Presidential Decision No. 10380 of September 2025 (Cumhurbaşkanı Kararı No. 10380, 2025) moved simplified-regime taxpayers in many activities in metropolitan provinces into the standard regime from 1 January 2026. The national number of simplified-regime taxpayers falls from 821,849 at the end of 2024 to 539,739 at the end of 2025, so the analysis ends in 2024.

4.3 Firm registrations, closures, banking and wages

The Small and Medium Enterprises Development Organization (KOSGEB) publishes monthly reports on firm openings and closures, based on data of the Union of Chambers and Commodity Exchanges of Türkiye, with province tables for the current and the previous year. I use the January to November totals for 2021 to 2024, which cover companies, cooperatives and sole proprietors registered in the trade registry, and I record openings and closures. Liquidations are reported separately and are not subtracted, because firms that enter liquidation are counted again when they close. Registrations are counted in the province of the trade registry office, which is normally the province of the registered seat. The same figures for a given year agree across consecutive reports. Province tables for registrations with the craftspeople registry contain evident errors in 2022 and are not used. Annual tables of the Turkish Employment Agency report job placements through the public employment service by age group and

province for 2019 to 2025. Quarterly province data on deposits and loans come from the Banking Regulation and Supervision Agency. Average daily insurable earnings of compulsorily insured employees by province and month, overall, for the private sector and by sex, come from the social security bulletins. The minimum-wage bite is the gross daily minimum wage in force in December 2022 (215.70 Turkish lira, TL) divided by the average daily insurable earnings of private-sector employees in each province, taken from the social security bulletin.

4.4 Exposure and instrument

For each province I define excess 2023 retirements as the increase in old-age pensioners in both schemes between February and December 2023 minus ten times the average monthly increase between February 2022 and February 2023. Exposure is excess retirements divided by formal employment in December 2022, defined as compulsorily insured employees plus non-agricultural self-employed plus working pensioners. Excess retirements sum to 1.76 million nationally, of which 1.63 million are former employees and 0.13 million former self-employed. This is consistent with the official count of about 2 million retirements under the new rule by the end of 2023, which also includes civil servants. The instrument is the number of compulsorily insured workers in 2002, taken from the Social Security Institution's 2002 yearbook, divided by compulsorily insured employees in 2022. It measures the weight of the pre-1999 formal workforce in today's formal employment, in the spirit of share-based exposure designs (Goldsmith-Pinkham et al., 2020). The eleven provinces hit by the February 2023 earthquakes are excluded, which leaves 70 provinces. Table 1 reports descriptive statistics.

Table 1
Descriptive statistics for the 70 provinces outside the earthquake zone

Variable	Mean	SD	Min	Max
Exposure, excess 2023 retirements (% of formal employment)	7.19	2.83	1.46	13.29
Formal employment, Dec 2022 (thousands)	265.36	722.52	11.56	5755.31
Working pensioners, Dec 2022 (% of formal employment)	3.75	1.68	0.64	7.57
Micro-regime taxpayers per 1,000 formal workers, 2022	75.57	30.36	8.12	130.11
Standard-regime taxpayers per 1,000 formal workers, 2022	114.89	22.14	72.27	168.17
Corporate taxpayers per 1,000 formal workers, 2022	37.43	10.18	20.09	69.94
New firm registrations per 1,000 formal workers, January to November 2022	4.65	1.75	1.93	10.76
Minimum-wage bite, Dec 2022	0.73	0.11	0.45	0.91
Instrument, 2002 insured stock relative to 2022	0.28	0.09	0.06	0.53

Notes. Formal employment is compulsorily insured employees plus non-agricultural self-employed plus working pensioners. The minimum-wage bite is the gross daily minimum wage in force in December 2022 divided by average daily insurable earnings of private-sector employees. SD, standard deviation. Sources are the Social Security Institution, the Revenue Administration and KOSGEB.

5 Empirical strategy

The baseline event-study model for an outcome Y measured in province p and period t is

$$Y_{pt} = \alpha_p + \gamma_{r(p)t} + \sum_k \beta_k \cdot Exp_p \cdot \mathbb{1}[t = k] + \epsilon_{pt}$$

where α_p are province fixed effects, $\gamma_{r(p)t}$ are fixed effects for the region of the province (Nomenclature of Territorial Units for Statistics, NUTS, level 1) interacted with the period, and Exp_p is exposure. Outcomes are expressed as counts divided by December 2022 formal employment, so that β_k is the change in the outcome per excess retiree. The reference period is December 2022, the month in which the reform was announced, or the year 2022 for annual data. Region-by-period effects absorb regional shocks such as the reallocation that followed the earthquakes, the 2023 elections and the monetary tightening that began in mid-2023. Standard errors are clustered by province. A large language model (Claude, Anthropic) was used to assist with statistical programming; the author checked all code and results.

For the monthly social security outcomes the main estimates are long differences between December 2022 and December 2023 or December 2024, net of the change between December 2021 and December 2022 extrapolated linearly, regressed on exposure with region fixed effects. For firm registrations, which are annual flows, the long difference is the change in January to November registrations relative to 2022. For the annual taxpayer stocks the main specification pools the post-reform years and adds an exposure-specific linear trend estimated on 2018 to 2024, so that the coefficient measures the break in the exposure gradient after 2022.

Exposure is built from realised retirements and could reflect local conditions that also affect business outcomes. I address this concern in several ways. I instrument exposure with the 2002 stock of insured workers (Sosyal Sigortalar Kurumu, 2003). The first stage is 0.111 (standard error 0.028) with an F statistic of 16.3, and I report Anderson-Rubin confidence sets that remain valid when instruments are weak. The instrument also correlates with slower growth of formal employment and of business taxpayers before the reform (Online Resource 1, Table S1), so I use it only together with trend adjustment for the taxpayer outcomes and treat it as a complement to the main design. I show event-study coefficients for every outcome and report the sensitivity of the main taxpayer estimates to violations of parallel trends of the relative-magnitudes type (Rambachan & Roth, 2023), as recommended in recent reviews of the difference-in-differences literature (Roth et al., 2023). I add the minimum-wage bite and log credit per worker, each interacted with year, and I exclude the ten provinces adjacent to the earthquake zone, to which many survivors moved. For the social security outcomes I also exploit the fact that eligibility rules differed by sex. I compute exposure separately for men and women in each province and estimate a model with province-by-sex, province-by-month and sex-by-month fixed effects, which removes all local shocks common to men and women. Because exposure is continuous, the coefficients can be read as average dose-response slopes only under the stronger parallel-trends assumptions discussed by Callaway et al. (2024), so I also report estimates by exposure tercile.

Inference with 70 clusters and a spatially correlated treatment calls for caution. For each main coefficient I report p values from heteroskedasticity-robust or province-clustered standard errors, from standard errors clustered at the level of the 26 NUTS-2 regions, from a wild cluster bootstrap with Rademacher weights imposing the null hypothesis, and from randomization inference that permutes exposure across provinces within NUTS-1 regions. I also adjust p values for the seven business outcomes with the Holm procedure.

6 Results

6.1 Retirement and continued registered work

Figure 1 shows the national series. The number of old-age pensioners in the employee scheme rose by about 1.78 million between February and December 2023, against an increase of about 0.18 million in the preceding twelve months. The number of working pensioners rose from 920 thousand in February

2023 to 1.865 million in December 2023, while the number of compulsorily insured employees fell sharply in April 2023 as retirees were reclassified. Exposure varies widely within regions (Fig. 1b).

Table 2 reports the long-difference estimates. Per excess retiree, working pensioners rose by 0.298 (0.057) by December 2023 and by 0.373 (0.062) by December 2024. The instrumental-variable estimates are 0.375 (0.094) and 0.515 (0.096), with Anderson-Rubin 95 percent confidence sets of 0.16 to 0.59 and 0.33 to 0.77. The event study in Fig. 1c shows flat pre-reform coefficients and a jump in the first quarter of 2023. The within-province comparison of men and women gives 0.38 (0.04) about nine months after the reform, 0.51 (0.04) after about 21 months and 0.53 (0.04) after about 33 months (Online Resource 1, Fig. S1). The randomization-inference p value is below 0.001, and leaving out one NUTS-1 region at a time gives estimates between 0.33 and 0.42 for December 2024 (Online Resource 1, Table S2). Between a third and a half of new retirees remained in registered work, which supports H1. The data do not show whether they did so as employees or as self-employed pensioners, and many retirees probably stayed with the same employer, which the five-point employer subsidy for rehiring within 30 days encouraged.

Table 2
Pension take-up, continued registered work and formal employment

Outcome per excess retiree	OLS, Dec 2023	IV, Dec 2023	OLS, Dec 2024	IV, Dec 2024
Panel A Changes net of the Dec 2021 to Dec 2022 change				
Working pensioners	0.298 (0.057)	0.375 (0.094)	0.373 (0.062)	0.515 (0.096)
Compulsorily insured employees	0.213 (0.296)	−0.084 (0.969)	0.669 (0.514)	0.453 (1.438)
Non-agricultural self-employed	−0.052 (0.027)	−0.099 (0.079)	−0.070 (0.043)	−0.088 (0.119)
Net formal employment	0.458 (0.305)	0.191 (0.964)	0.973 (0.533)	0.880 (1.413)
Working pensioners, Anderson-Rubin 95% set		[0.16, 0.59]		[0.33, 0.77]
Panel B Raw changes since Dec 2022				
Working pensioners	0.291 (0.056)	0.388 (0.091)	0.360 (0.059)	0.542 (0.118)
Compulsorily insured employees	−0.420 (0.230)	−0.967 (0.642)	−0.596 (0.283)	−1.313 (0.788)
Non-agricultural self-employed	−0.054 (0.025)	−0.158 (0.081)	−0.073 (0.036)	−0.206 (0.110)
Net formal employment	−0.182 (0.244)	−0.738 (0.626)	−0.308 (0.305)	−0.977 (0.770)

Notes. Each cell reports the coefficient on exposure from a cross-province regression of the change in the outcome divided by December 2022 formal employment, with NUTS-1 region fixed effects, for 70 provinces. Panel A subtracts the December 2021 to December 2022 change extrapolated linearly. The instrument is the 2002 stock of insured workers relative to 2022 employment, with a first-stage coefficient of 0.111 (0.028) and an F statistic of 16.3. Heteroskedasticity-robust standard errors are in parentheses. OLS, ordinary least squares; IV, instrumental variable. The Anderson-Rubin sets are robust to weak instruments.

The effect on net formal employment, which counts compulsorily insured employees, self-employed and working pensioners together, is not identified. Its sign depends on whether pre-existing trends are removed, because high-exposure provinces had slower employment growth before the reform, and the confidence intervals are wide (Table 2). The number of compulsorily insured self-employed outside agriculture fell by 0.05 to 0.07 per excess retiree, which partly reflects the reclassification of self-employed retirees who keep working into the working-pensioner category. I therefore draw no conclusions about net employment.

6.2 Firm creation

Table 3 and Fig. 2 report the business creation outcomes. New firm registrations did not respond. The coefficient for January to November 2023 is − 0.0025 (0.0036) firms per excess retiree, and for 2024 it is − 0.0010 (0.0056). The placebo change between 2021 and 2022 is − 0.0042 (0.0061). Firm closures did not rise, and net firm formation, defined as openings minus closures, is − 0.0064 (0.0079) in 2023 and − 0.0004 (0.0080) in 2024. The upper bound of the 95 percent confidence interval for registrations in 2023 is 0.0046, or one additional firm per 217 retirees. At mean exposure this bound corresponds to 7 percent of the 2022 registration rate. The instrumental-variable estimates are also close to zero, with an Anderson-Rubin confidence set for 2023 registrations of − 0.034 to 0.014. Corporate taxpayers show a coefficient of − 0.007 (0.008) and withholding-tax agents, which include every business that pays wages, show − 0.039 (0.037). None of these coefficients is significant under any of the inference procedures in Table 4. There is no evidence that the windfall raised the creation of firms with employees, and H2 is rejected.

Table 3
Firm creation and business taxpayers

Outcome per excess retiree	OLS	IV	Anderson-Rubin 95% set
Panel A Firm flows, long differences relative to 2022			
New firm registrations, 2023	−0.0025 (0.0036)	−0.0060 (0.0106)	[− 0.034, 0.014]
New firm registrations, 2024	−0.0010 (0.0056)	0.0148 (0.0121)	[− 0.010, 0.044]
Net firm formation, 2023	−0.0064 (0.0079)	−0.0248 (0.0210)	[− 0.085, 0.013]
Net firm formation, 2024	−0.0004 (0.0080)	0.0188 (0.0149)	[− 0.012, 0.056]
Firm closures, 2023	0.0040 (0.0062)		
New firm registrations, 2022 placebo	−0.0042 (0.0061)		
Panel B Taxpayer stocks, 2018 to 2024	OLS with exposure trend	IV, deviations from province trends	Reduced form on instrument
Micro-regime taxpayers	0.062 (0.028)	0.111 (0.066)	0.0110 (0.0064)
Standard-regime taxpayers	−0.050 (0.027)	−0.052 (0.051)	−0.0056 (0.0052)
All individual business taxpayers	0.013 (0.024)	0.059 (0.066)	0.0054 (0.0067)
Corporate taxpayers	−0.007 (0.008)	−0.015 (0.021)	−0.0018 (0.0021)
Withholding-tax agents	−0.039 (0.037)	−0.109 (0.077)	−0.0115 (0.0071)

Notes. Panel A reports long differences of January to November counts relative to 2022 (2021 for the placebo) divided by December 2022 formal employment, regressed on exposure with NUTS-1 fixed effects and robust standard errors. Net firm formation is openings minus closures. Panel B uses year-end stocks for 2018 to 2024. The OLS column reports the coefficient on exposure × post from a model with province and region × year fixed effects and an exposure-specific linear trend, with standard errors clustered by province. The IV column regresses the mean 2023 to 2024 deviation from each province's 2018 to 2022 linear trend on exposure instrumented by the 2002 insured stock. The reduced form regresses the stock on instrument × post with an instrument-specific trend.

Table 4
Inference for the main estimates

Outcome	Coefficient (SE)	p, robust or province-clustered	p, NUTS-2 clustered	p, wild cluster bootstrap	p, randomization inference	p, Holm-adjusted
Working pensioners, Dec 2023	0.298 (0.057)	< 0.001	< 0.001	–	< 0.001	–
Working pensioners, Dec 2024	0.373 (0.062)	< 0.001	< 0.001	–	< 0.001	–
New firm registrations, 2023	−0.0025 (0.0036)	0.504	0.514	–	0.492	1.000
New firm registrations, 2024	−0.0010 (0.0056)	0.862	0.876	–	0.861	–
Net firm formation, 2023	−0.0064 (0.0079)	0.418	0.377	–	0.311	1.000
Micro-regime taxpayers	0.062 (0.028)	0.029	0.061	0.019	0.026	0.202
Standard-regime taxpayers	−0.050 (0.027)	0.069	0.072	0.083	0.087	0.417
All individual business taxpayers	0.013 (0.024)	0.603	0.546	0.618	0.645	1.000
Corporate taxpayers	−0.007 (0.008)	0.387	0.547	0.416	0.340	1.000
Withholding-tax agents	−0.039 (0.037)	0.298	0.332	0.307	0.214	1.000

Notes. Robust p values are heteroskedasticity-robust for the cross-province long differences and clustered by province for the taxpayer panel. The wild cluster bootstrap uses Rademacher weights, imposes the null hypothesis and clusters by province with 1,999 replications. Randomization inference permutes exposure across provinces within NUTS-1 regions (2,000 permutations for long differences and 1,000 for the panel). A dash indicates that the statistic is not reported. Holm adjustment is applied to the family of seven business outcomes in the table, namely new firm registrations 2023, net firm formation 2023 and the five taxpayer outcomes.

6.3 Individual business ownership and the micro regime

The number of individual business taxpayers, which combines the standard and the simplified regime, did not change. The trend-adjusted coefficient is 0.013 (0.024), with a 95 percent confidence interval

from − 0.035 to 0.061 per excess retiree. Its composition did change. Figure 3a shows coefficients for the simplified regime that are close to zero and stable between 2018 and 2021, followed by increases of 0.061 (0.025) in 2023 and 0.073 (0.027) in 2024 relative to 2022. With an exposure-specific trend the pooled post-reform effect is 0.062 (0.028), or about 6 percent of the 2022 stock at mean exposure. Standard-regime taxpayers show a downward trend in high-exposure provinces that steepened after the reform (Fig. 3b), with a trend-adjusted effect of − 0.050 (0.027).

The simplified-regime effect passes the wild cluster bootstrap (p = 0.019) and randomization inference (p = 0.026), but it is significant only at the 10 percent level with NUTS-2 clustering and its Holm-adjusted p value is 0.20 (Table 4). It remains positive in every leave-one-region-out sample, between 0.035 and 0.078 (Table 5). Under the relative-magnitudes restriction it loses significance once post-reform deviations from parallel trends may reach about 0.46 times the largest change between consecutive pre-reform years (Online Resource 1, Table S3). The tercile estimates show a similar effect in the middle and the top tercile of exposure, so the response is not clearly proportional to exposure (Online Resource 1, Table S4).

Table 5
Robustness of the taxpayer estimates

Specification	Micro-regime taxpayers	Standard-regime taxpayers	All individual business taxpayers	Corporate taxpayers	Withholding-tax agents
Baseline	0.062 (0.028)	−0.050 (0.027)	0.013 (0.024)	−0.007 (0.008)	−0.039 (0.037)
Minimum-wage bite × year	0.056 (0.024)	−0.044 (0.025)	0.012 (0.024)	−0.007 (0.008)	−0.037 (0.037)
Bite and log credit × year	0.056 (0.024)	−0.044 (0.026)	0.012 (0.026)	−0.011 (0.008)	−0.038 (0.039)
Weighted by formal employment	0.038 (0.021)	−0.052 (0.035)	−0.014 (0.022)	−0.013 (0.007)	−0.040 (0.037)
Year instead of region × year effects	0.027 (0.016)	0.003 (0.015)	0.030 (0.018)	−0.003 (0.005)	0.001 (0.019)
No exposure trend	0.088 (0.041)	−0.106 (0.044)	−0.017 (0.053)	−0.042 (0.025)	−0.125 (0.067)
Excluding provinces adjacent to earthquake zone	0.060 (0.031)	−0.052 (0.027)	0.009 (0.025)	−0.007 (0.009)	−0.024 (0.035)
Exposure from employee pensions only	0.055 (0.024)	−0.045 (0.022)	0.010 (0.020)	−0.004 (0.007)	−0.031 (0.031)
Clustered by NUTS-2 region	0.062 (0.032)	−0.050 (0.026)	0.013 (0.021)	−0.007 (0.012)	−0.039 (0.039)
All 81 provinces with earthquake-zone by year effects	0.075 (0.024)	−0.032 (0.028)	0.044 (0.034)	−0.009 (0.007)	−0.026 (0.034)
Leave one NUTS-1 region out, range	0.035 to 0.078	−0.060 to −0.025	0.002 to 0.026	−0.018 to −0.003	−0.058 to −0.010

Notes. Each cell reports the coefficient on exposure × post per excess retiree from the trend-break model of Table 3, Panel B, with standard errors clustered by province unless stated otherwise. Adjacent provinces are Mersin, Niğde, Kayseri, Sivas, Erzincan, Tunceli, Bingöl, Muş, Batman and Mardin. The 81-province specification adds earthquake-zone × year fixed effects.

Because stocks change through entry, exit and movement between regimes, these results do not show that retirees opened six micro businesses per 100. The results say that the number of individual business owners did not rise, and that within individual businesses the stock tilted towards the tax-exempt micro regime. This is consistent with retirees who already ran small businesses, or who opened

new ones while others closed, choosing the regime with the lowest compliance burden. H3 receives at most weak support.

6.4 Liquidity constraints and local labour markets

If severance wealth mattered by relaxing credit constraints, the effects should be larger where credit is scarce, which implies negative interactions with credit depth. Table 6 interacts exposure with standardised log loans and log savings deposits per formal worker in December 2022 and with the minimum-wage bite. For simplified-regime taxpayers and for all individual business taxpayers the interactions with loans are 0.010 (0.024) and 0.014 (0.031), and the interactions with deposits are positive. For corporate taxpayers the interactions with loans and deposits are positive and significant, at 0.031 (0.011) and 0.035 (0.012). The small corporate response that exists is concentrated where finance is deep. Banking data show modest and imprecise increases in housing and vehicle loans in high-exposure provinces and a continuation of the pre-existing relative decline in commercial loans (Online Resource 1, Fig. S2). These patterns are hard to reconcile with a liquidity-constraint explanation, and H4 is rejected.

Table 6
Heterogeneity by credit depth and minimum-wage bite

Interaction of exposure × post with	Micro-regime taxpayers	Standard-regime taxpayers	All individual business taxpayers	Corporate taxpayers	Withholding-tax agents
Log loans per worker (standardised)	0.010 (0.024)	0.004 (0.023)	0.014 (0.031)	0.031 (0.011)	−0.009 (0.047)
Log savings deposits per worker (standardised)	0.037 (0.028)	0.025 (0.026)	0.063 (0.036)	0.035 (0.012)	−0.001 (0.046)
Minimum-wage bite (standardised)	0.119 (0.038)	−0.043 (0.031)	0.076 (0.047)	−0.009 (0.018)	0.017 (0.047)

Notes. Each cell reports the coefficient on the triple interaction of exposure × post with the standardised moderator measured in December 2022, from the trend-break model that also includes the moderator interacted with year. Loans and savings deposits are from the Banking Regulation and Supervision Agency and are divided by formal employment. Standard errors are clustered by province.

The simplified-regime response is larger where the minimum wage bites harder, with an interaction of 0.119 (0.038). In provinces where formal wages are close to the minimum, the tax-exempt micro regime is a more attractive alternative to wage work, which is the pattern expected for necessity rather than opportunity self-employment. This interaction is one of fifteen reported in Table 6 and should be read as suggestive.

6.5 Robustness

Table 5 and Online Resource 1 collect further checks. Excluding the ten provinces adjacent to the earthquake zone leaves all conclusions unchanged, with working pensioners at 0.332 (0.061), new firm registrations at − 0.0008 (0.0038) and simplified-regime taxpayers at 0.060 (0.031). Measuring exposure with employee pensions only, or adding the minimum-wage bite and credit controls, gives similar results. Including all 81 provinces with separate year effects for the earthquake zone raises the simplified-regime coefficient to 0.075 (0.024). The reduced form of the simplified-regime stock on the instrument is positive but imprecise, and the corporate and withholding-tax outcomes remain close to zero in every specification. Without trend adjustment the standard-regime and corporate coefficients become more negative, which reflects their pre-existing trends rather than a reform effect.

6.6 Did retirements make room for young workers?

When Türkiye abolished the minimum retirement age in 1992, the government argued that early retirement would reduce youth unemployment by freeing jobs for the young (Aşık, 2024). Evidence from the reverse reform suggests that older and younger workers can be substitutes. In South Korea, extending the mandatory retirement age to 60 lowered youth employment, mostly in low-wage industries (Hou & Kim, 2026). The 2023 reform allows a direct test of this argument, because high-exposure provinces lost a larger share of their experienced workforce from the regular contribution pool. I use the annual tables of the Turkish Employment Agency (İŞKUR), which report job placements by age group and province for 2019 to 2025, and estimate the same continuous-exposure model with 2023 to 2025 as the post-reform period. Placements through the public employment service cover only part of all hiring, so the estimates measure one observable channel of youth entry rather than total youth employment.

Table 7 and Fig. 4a show no evidence that the reform increased placements of young workers. Per excess retiree, placements of workers aged 15 to 29 changed by 0.032 (0.077) a year, with a randomization-inference p value of 0.66. With an exposure-specific trend the coefficient is 0.109 (0.090), and the event-study coefficients before 2022 are noisy, so neither specification is significant. At mean exposure the 95 percent confidence interval of the baseline estimate ranges from a fall of about 19 percent to a rise of about 29 percent of the 2022 youth placement rate. The share of young workers among all placements did not rise either. The only age group that shows a positive response is the group aged 45 to 54, which contains the typical age of the new retirees, with 0.043 (0.024) placements per excess retiree (randomization p = 0.06), a peak in 2023 and a smaller estimate of 0.032 (0.024) when the pandemic year 2020 is excluded. This pattern is consistent with some retirees using the public employment service to find new jobs, in line with the rise in working pensioners, rather than with retirees vacating jobs for the young.

Table 7
Youth placements and average earnings

Outcome	Exposure × post	p, randomization inference	With exposure trend	With bite controls	Excluding 2020	Mean per formal worker, 2022
Panel A Placements through the public employment service, per excess retiree per year						
Placements aged 15 to 24	0.006 (0.051)	0.884	0.064 (0.059)	0.054 (0.056)	−0.001 (0.053)	0.0288
Placements aged 25 to 29	0.026 (0.028)	0.256	0.045 (0.033)	0.040 (0.032)	0.015 (0.028)	0.0162
Placements aged 15 to 29	0.032 (0.077)	0.660	0.109 (0.090)	0.095 (0.086)	0.014 (0.079)	0.0450
Placements aged 30 to 44	0.054 (0.047)	0.330	0.131 (0.068)	0.124 (0.068)	0.018 (0.047)	0.0296
Placements aged 45 to 54	0.043 (0.024)	0.060	0.046 (0.030)	0.042 (0.030)	0.032 (0.024)	0.0092
Placements aged 55 and over	0.007 (0.006)	0.298	0.007 (0.009)	0.006 (0.009)	0.004 (0.006)	0.0024
All placements	0.136 (0.142)	0.300	0.293 (0.184)	0.267 (0.181)	0.067 (0.145)	0.0862
Share of placements aged 15 to 29	−0.313 (0.328)	0.388	−0.574 (0.331)	−0.591 (0.323)	−0.152 (0.317)	0.5292
Panel B Log average daily insurable earnings of compulsorily						

Notes. Panel A uses annual placements by age group from the Turkish Employment Agency for 2019 to 2025, divided by December 2022 formal employment, with 2023 to 2025 as the post-reform period, province and region × year fixed effects and standard errors clustered by province. Randomization inference permutes exposure within NUTS-1 regions (500 permutations). The share row uses the share of placements aged 15 to 29 in all placements. Bite controls add the standardised minimum-wage bite interacted with post and with a linear trend. Panel B uses monthly province averages from February 2021 to December 2025, with province and region × month fixed effects, a post indicator from March 2023 and, in the trend column, an exposure-specific linear trend. The bite column adds the bite interacted with month to the trend specification.

insured employees			
Earnings, private sector	−0.213 (0.380)	−0.116 (0.176)	−0.117 (0.181)
Earnings, all employees	0.024 (0.299)	0.024 (0.148)	0.035 (0.148)
Earnings, men	0.074 (0.352)	0.004 (0.167)	0.012 (0.169)
Earnings, women	−0.003 (0.219)	0.142 (0.175)	0.152 (0.176)

Notes. Panel A uses annual placements by age group from the Turkish Employment Agency for 2019 to 2025, divided by December 2022 formal employment, with 2023 to 2025 as the post-reform period, province and region × year fixed effects and standard errors clustered by province. Randomization inference permutes exposure within NUTS-1 regions (500 permutations). The share row uses the share of placements aged 15 to 29 in all placements. Bite controls add the standardised minimum-wage bite interacted with post and with a linear trend. Panel B uses monthly province averages from February 2021 to December 2025, with province and region × month fixed effects, a post indicator from March 2023 and, in the trend column, an exposure-specific linear trend. The bite column adds the bite interacted with month to the trend specification.

I also examine average daily insurable earnings of compulsorily insured employees, which are reported monthly by province in the social security bulletins. These averages exclude working pensioners, so they change both through wage growth and through the departure of senior, typically better-paid workers from the regular contribution pool. Figure 4b shows a gradual pre-reform decline in the exposure gradient and no break after February 2023. With an exposure-specific trend the effect on log private-sector earnings is − 0.116 (0.176), which at mean exposure corresponds to − 0.8 percent with a confidence interval from − 3.3 to 1.6 percent. Controlling for the minimum-wage bite interacted with month leaves the estimate unchanged (Table 7). The reform left no detectable trace in the earnings of the remaining employees, although composition effects cannot be separated from wage effects with aggregate data.

7 Discussion

The reform delivered what the liquidity literature would regard as a large positive wealth shock to experienced workers, yet it created no measurable increase in firms, in firms with employees or in the number of business owners. Several explanations fit the evidence. The pension lowered the need for earned income and therefore the incentive to bear the risk of a growing business, in line with evidence that benefits tied to leaving a job can lower start-up rates (Camarero Garcia & Hansch, 2024). Retirees who wanted to keep working could do so at low cost to themselves and their employers because of the reduced contribution regime and the rehiring subsidy, and many did, consistent with evidence that lowering the implicit tax on working pensioners raises their employment (Gelber et al., 2022; Hernæs et al., 2016). Those who were self-employed or chose self-employment could use the regime with the lowest compliance burden and a full income-tax exemption, which caps the scale of the business by

design. The absence of larger effects where credit is scarce suggests that financing was not the binding constraint for this population. The reform also did not open visible job opportunities for the young. Because many retirees kept working, probably often in the same job, few positions were vacated, which undercuts the argument that early retirement makes room for youth employment.

For decent work the implications are mixed. Keeping a large share of retirees in registered employment is a better outcome than the informal transitions documented for an earlier Turkish reform (Aşık, 2024), and it is consistent with the broader decline of informality in Türkiye since the late 2000s (Bağır et al., 2023). It speaks to target 8.5 of the Sustainable Development Goals on full and productive employment. The entrepreneurial margin speaks to target 8.3, which calls for the formalisation and growth of micro and small enterprises. Here the reform achieved neither more firms nor more employer firms. The tilt towards the tax-exempt micro regime, to the extent that it is real, adds formal registrations of businesses that rarely hire and whose owners often earn less than comparable employees (Pantea, 2022; Sorgner et al., 2017), which corresponds to subsistence rather than transformational entrepreneurship (Schoar, 2010). In Brazil a comparable regime formalised existing informal businesses, and in Georgia a micro-business regime raised registrations only briefly (Bruhn & Loeprick, 2016; Rocha et al., 2018). Policies that count on pension or severance wealth to finance job-creating start-ups among older workers should not expect much without complementary support for growth, and the design of contribution rules for working pensioners shapes whether retirees remain in registered wage work.

The analysis has limits. It relies on province aggregates, and pensions and working pensioners are recorded by the province of the administrative unit, which need not coincide with where retirees live or start businesses. The analysis cannot follow individual retirees, separate working pensioners into employees and self-employed, or observe informal work. Retirees who started informal businesses are not captured, although the evidence from Brazil suggests that informal micro activity is sensitive to tax regimes and would show up partly in simplified-regime registrations. About half of the new retirees do not appear in registered work, and whether they left the labour force or work informally remains a question for research with individual data. The 70-province sample limits precision, the instrument is correlated with pre-reform trends, and the taxpayer data are stocks that do not separate entry from movement between regimes. The null results for firm creation are, however, consistent across data sources, specifications and inference methods.

8 Conclusion

Türkiye's 2023 abolition of the minimum retirement age gave about 1.76 million workers in the employee and self-employed schemes, most of them in mid-career, a lifetime pension and, for employees, a severance lump sum within a single year. Between a third and a half of them kept working in registered jobs. The reform did not raise firm registrations, net firm formation, the number of employer businesses or the number of individual business owners, and the upper confidence bound for new firms is about one firm per 200 retirees per year. The only change in business ownership is a weak tilt towards a tax-exempt micro regime, and there is no evidence that the retirements opened jobs for young workers. A large

windfall at retirement sustained registered work without creating job-creating entrepreneurship. Policy makers who design pension, severance and micro-enterprise tax rules should treat them as labour market policy with direct consequences for the quality of work, and should not count on retirement wealth alone to generate decent jobs.

Declarations

Competing interests The author has no relevant financial or non-financial interests to disclose.

Author contributions The study has a single author, who was responsible for the conception and design of the study, data collection, analysis, and the writing of the manuscript.

Data availability All data come from public sources of the Social Security Institution, the Revenue Administration, KOSGEB and the Banking Regulation and Supervision Agency.

Declaration of generative AI use The author used Claude (Anthropic) for language editing to improve readability and to assist with statistical programming. The author reviewed and edited all content and takes full responsibility for the manuscript.

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Figures

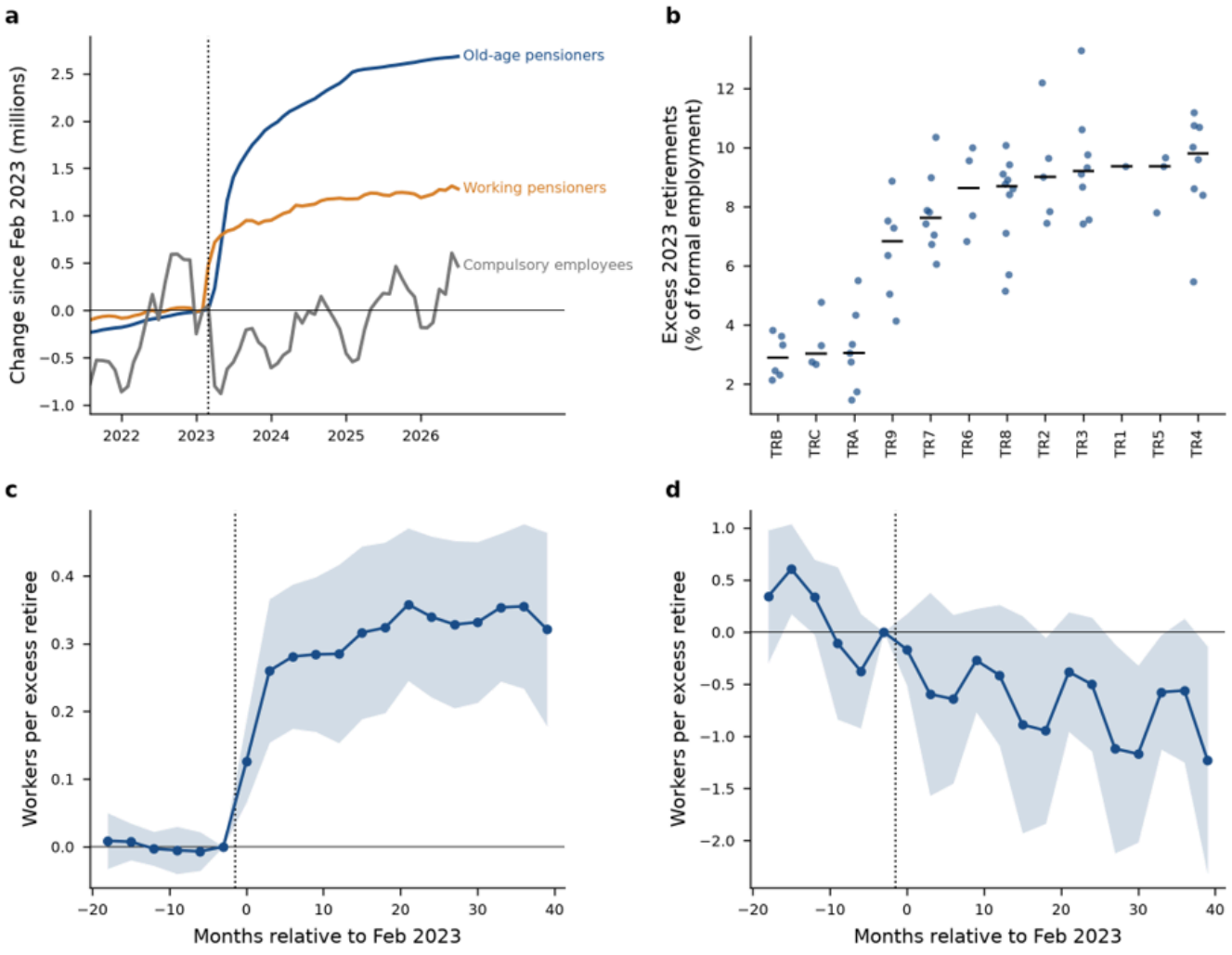


Figure 1

Pension take-up and continued registered work. Panel a shows national changes since February 2023. Panel b shows exposure by NUTS-1 region. Panels c and d show quarterly event-study coefficients per excess retiree for working pensioners and net formal employment, with province fixed effects, region × month fixed effects and 95% confidence intervals, for 70 provinces outside the earthquake zone

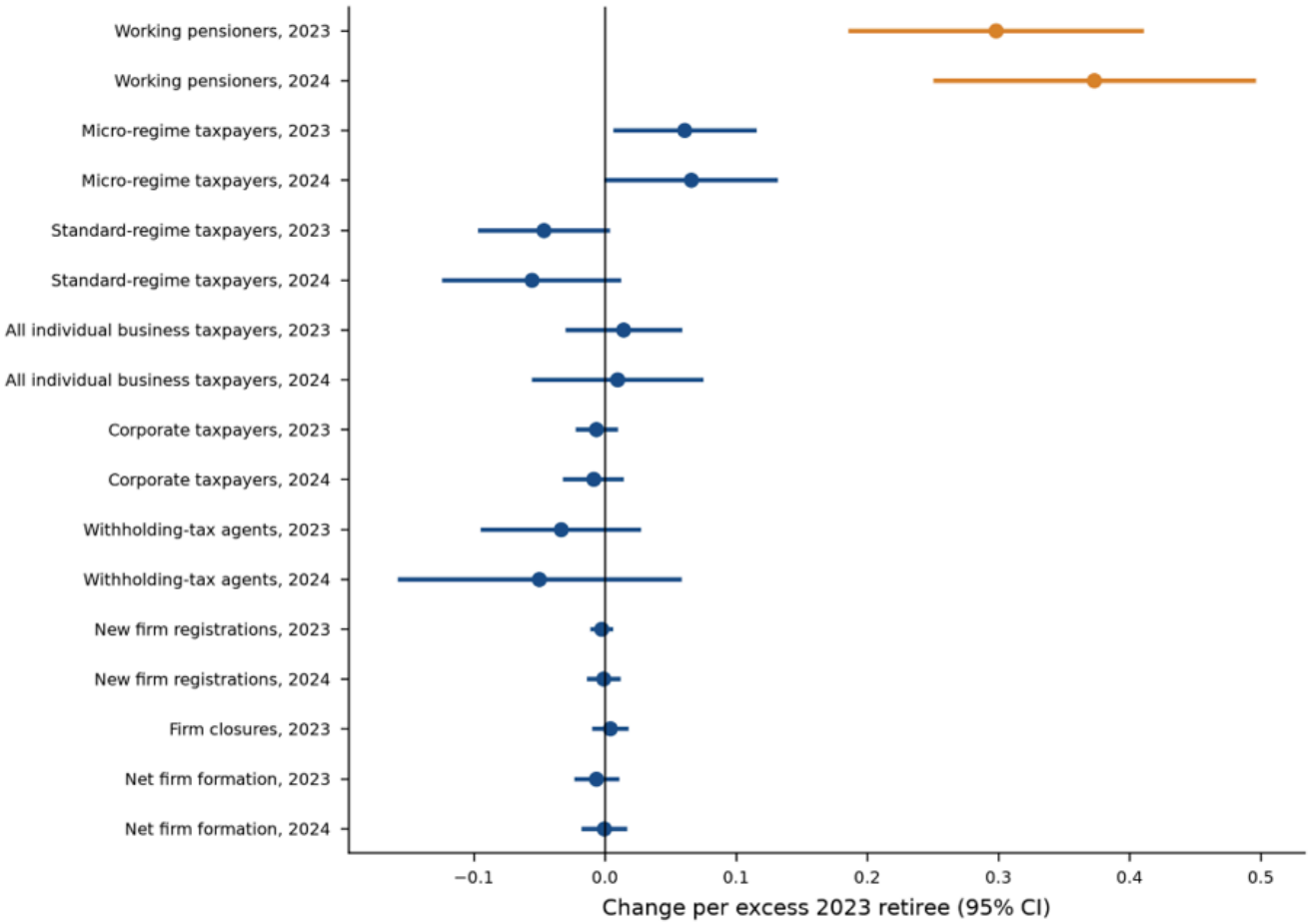


Figure 2

Responses per excess retiree by outcome and year. Taxpayer estimates come from the trend-break specification, working pensioners from long differences net of the December 2021 to December 2022 change, and firm flows from long differences relative to 2022. Bars show 95% confidence intervals (CI)

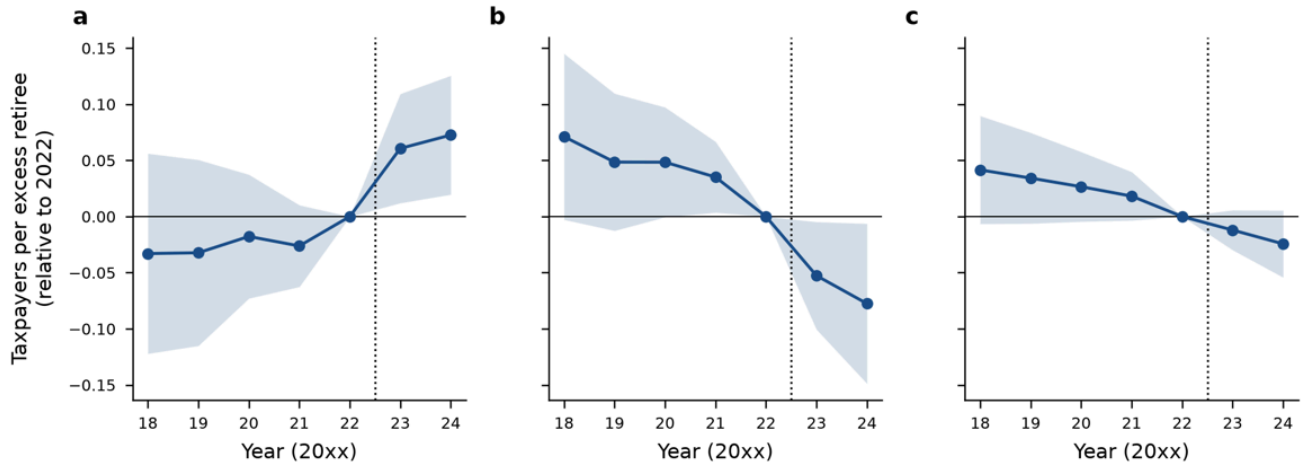


Figure 3

Event studies for taxpayer stocks by regime: micro (simplified) regime (a), standard regime (b) and corporations (c). Coefficients on exposure × year relative to 2022 with province and region × year fixed effects, 70 provinces and 95% confidence intervals clustered by province

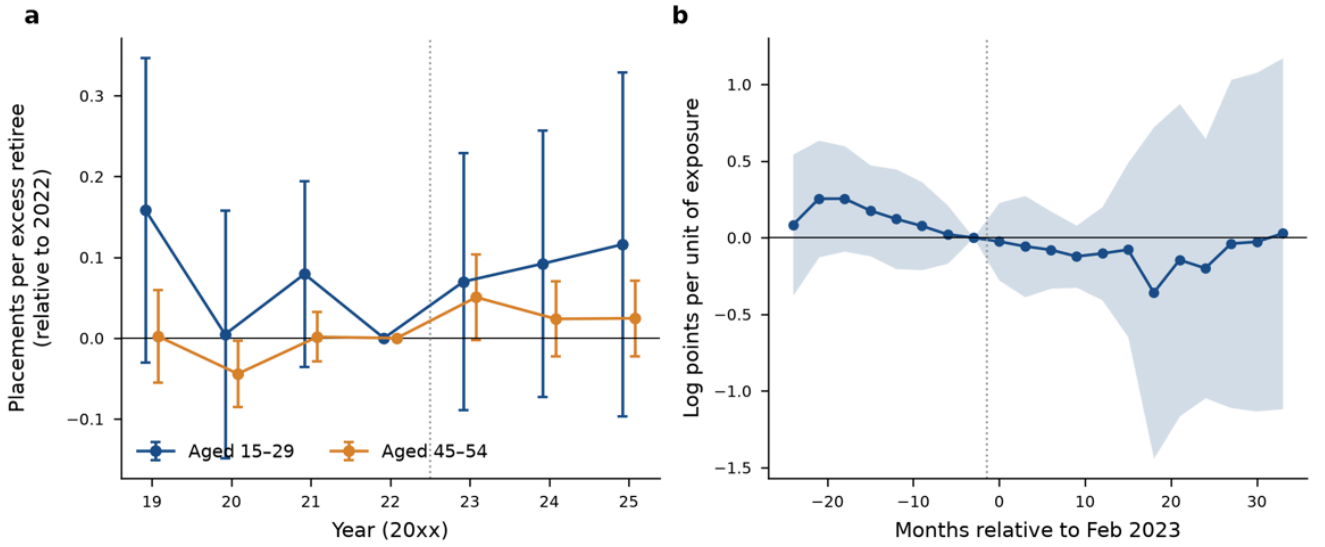


Figure 4

Youth placements and earnings. Panel a shows annual event-study coefficients relative to 2022 for placements of workers aged 15 to 29 and 45 to 54 per excess retiree, with province and region × year fixed effects. Panel b shows quarterly event-study coefficients for log private-sector average daily earnings per unit of exposure, with province and region × month fixed effects. Bars and bands show 95% confidence intervals clustered by province

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- ESM1.pdf