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# The long-term consequences of entrepreneurship: Earnings trajectories of former entrepreneurs

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## Abstract

**Research Summary:** Previous literature has documented a large short-term earnings gap for entrepreneurs that return to the wage sector. Using matched employer–employee data from the Belgian Labor Market & Social Protection Database, we document how this initial gap is remarkably persistent. Former entrepreneurs earn 27% less than propensity-scored matched controls 5 years after returning to wage work, which is almost unchanged from the short-term earnings drop. About 60% of this gap results from reductions in hours worked while the remaining 40% is due to reductions in the wage rate. We offer evidence that the decline in hours worked is a choice of former entrepreneurs and therefore reflects a compensating differential, while the decline in the wage rate is a penalty resulting from statistical discrimination by employers.

**Managerial Summary:** While previous work recognizes that entrepreneurs experience reduced earnings when they return to the wage sector, little evidence exists about the long-term consequences of a spell of entrepreneurship. Using detailed administrative data from a large sample of Belgian entrepreneurs and wage employees, we document an earnings gap of about 27% compared with observationally equivalent employees 5 years after returning to wage work. About 60% of this earnings gap results from a reduction in hours worked, and this part appears to be the result of individual

choices. The remaining 40% of the earnings gap is due to a decline in the wage rate, and this part appears to be imposed on returning entrepreneurs by employers.

#### KEYWORDS

earnings penalty, entrepreneurship, preferences, returns, signaling

## 1 | INTRODUCTION

About 35% of individuals start a business at least once during their working life (Hincapié, 2020) and most of these entrepreneurs return to paid employment within a few years (Kaiser & Malchow-Møller, 2011). Nevertheless, the career consequences of this type of work experience are not well understood. Recent scholarship on the short-term labor market effects of entrepreneurial spells documents that entrepreneurs who return to paid employment earn a wage below that of their nonentrepreneurial counterparts (e.g., Baptista, Lima, & Preto, 2012; Bruce & Schuetze, 2004; Failla, Melillo, & Reichstein, 2017; Kaiser & Malchow-Møller, 2011; Mahieu, Melillo, Reichstein, & Thompson, 2019), with only a few exceptions (Hyytinen & Rouvinen, 2008; Luzzi & Sasson, 2016). However, the significance of this wage loss for understanding the returns to entrepreneurship depends on its persistence, something we know little about.

We know of just two studies on the long-term earnings trajectories of returning entrepreneurs.<sup>1</sup> Manso (2016) finds that in the United States, the wage discount experienced upon reentry to the wage sector is transitory and disappears quickly. In contrast, Merida and Rocha (2021) find no differential for young entrepreneurs in Denmark but one that is both significant and persistent among older entrepreneurs. Clearly, we have more to learn. In this article, we document the magnitude and temporal patterns of the earnings losses of former entrepreneurs using administrative matched employer–employee data from Belgium. We construct a dataset that contains quarterly earnings histories between 2000 and 2016 for a large comprehensive sample of employees who become entrepreneurs between 2004 and 2016 and a matched sample of workers who stay in paid employment during that period.

In line with previous research, we find that immediately upon reentering the wage sector former entrepreneurs earn 27% less per quarter than their matched counterparts. However, we also document a remarkable persistence to this earnings gap, which remains unchanged even 5 years after they return to wage work. Our data also allow us to decompose the gap into its two components: a reduction in hours worked that accounts for 60% of the gap, and a decline in the wage rate that accounts for the remaining 40%.

How evidence of a persistent earnings gap affects our understanding of the returns to entrepreneurship depends on the answers to two questions. First, does the earnings gap result from choices made by former entrepreneurs or is it a penalty imposed on them by market frictions? If it is the former, then the gap reflects a compensating differential and looking only at wages

<sup>1</sup>There is a somewhat larger literature on the long-term earnings consequences of entering entrepreneurship that either focuses on those that remain in entrepreneurship (e.g., Hamilton, 2000), or that do not distinguish between continuing entrepreneurs and returnees (Campbell, 2013; Daly, 2015; Dillon & Stanton, 2017).

will be uninformative about the real long-term returns to a spell of entrepreneurship. If instead the earnings gap is a penalty, studies that compare entrepreneurs' earnings with those of their wage-earning counterparts will systematically overestimate the expected present value of entering entrepreneurship.

Second, are entrepreneurs aware of the earnings penalty? We do not have an answer to this question, but we can reasonably conjecture that prospective entrepreneurs are likely to be uninformed about the long-term consequences of entrepreneurial exit, while active entrepreneurs contemplating exit and looking for wage work will quickly become informed during their job search. If so, then an unanticipated earnings penalty that is imposed on former entrepreneurs will induce excess entry into entrepreneurship. An unanticipated earnings penalty also affects how we interpret solutions to the private equity premium puzzle (cf. Moskowitz & Vissing-Jørgensen, 2002) that rely on the real option value of being able to return to wage work at a wage independent of spells of entrepreneurship (e.g., Choi, 2017; Manso, 2016; Vereshchagina & Hopenhayn, 2009): the explanation requires prospective entrepreneurs to be uninformed about the long-term earnings losses that are outside their control, and realized returns to private equity will still be systemically less than expected returns. In contrast, if active entrepreneurs contemplating exit have become informed about the earnings penalty, our findings may offer an explanation for why entrepreneurs persist in running their own businesses despite earning less than observationally equivalent workers (cf. Hamilton, 2000).

The implications of our findings that there is a persistent earnings gap therefore depend on the mechanisms behind it. We consider several candidate mechanisms. First, we examine whether the earnings gap can be explained by a simple selection mechanism whereby individuals facing deteriorating long-term labor market prospects migrate into entrepreneurship, and continue to face those same diminished prospects upon their return to the wage sector. Second, we examine whether the gap results from a decline in firm- and industry-specific capital brought about by a greater tendency for entrepreneurs to change employers and industries. We show that neither the reduction in hours worked nor the reduction in the wage rate can be explained by either of these two mechanisms.

Our third candidate explanation, a supply-side story, is that entrepreneurs have distinct preferences that induce them to seek work arrangements that provide them with greater flexibility. We identify several characteristics of work arrangements—choosing part-time work, a tendency to job hop, and becoming a hybrid engaged simultaneously in wage work and entrepreneurship—that we argue serve as proxies for a preference for flexibility. We show that these characteristics collectively account for almost all the reduction in hours worked. At the same time, they explain none of the wage differential, consistent with the conjecture they are a choice and are not caused by market frictions. We therefore conclude that the 60% part of the earnings gap accounted for by a reduction in hours worked is a compensating differential.

Finally, we look at evidence for a demand-side explanation: that entrepreneurs may be disadvantaged by negative expectations about their fit and productivity in wage work following what may be perceived by potential employers as an unsuccessful foray into entrepreneurship. We show that returnees whose perceived entrepreneurial performance is likely to be worse than their pre-entry labor market performance suffer the largest reduction in wages, consistent with the conjecture that entrepreneurial failure induces a penalty when failure is a surprise. We conclude that the 40% part of the earnings gap accounted for by a reduction in the wage rate is a penalty imposed on returning entrepreneurs.

## 2 | EMPIRICAL SETTING AND DATA

### 2.1 | The Belgian data

We use a matched sample of entrepreneurs and employees extracted from the Belgian Datawarehouse's Labor Market & Social Protection (DWH LM&SP). The Datawarehouse contains quarterly socioeconomic data from all Belgian social security institutions, and provides a wealth of demographic information on the full Belgian population as well as detailed information about their employers, employment status, and income for all quarters between 2000 and 2016. The frequency of data reporting is particularly valuable as it allows us to capture very short spells of entrepreneurship.

### 2.2 | Sample construction

Our initial sampling population consists of all full-time employees working in one job in the first quarter of 2004, between the age of 22 and 49, not working in the primary sector, and without entrepreneurial experience between 2000 and 2004. For data continuity, we restrict the sample to individuals that were continuously resident in Belgium between 2004 and 2016.

We assign individuals who become entrepreneurs at some point between 2004 and 2016 to the treatment group and those who remain solely in wage employment during that time frame to the control group. We label individuals as "entrepreneurs" if their sole source of income is from self-employment for some of the time during the sampling period. As a result, we have entirely excluded from the sample individuals that are only ever hybrids, working simultaneously in self-employment and wage work.

From this initial population, we use propensity score matching to match individuals that subsequently became entrepreneurs with individuals that remained continuously employed despite having the same ex ante probability of transitioning into entrepreneurship. Matching was based on a number of demographic and employment characteristics (including individuals' wages and wage growth) measured between 2000 and 2004 (i.e., predating our analysis period). We describe in detail the process of sample construction, the variables used in the matching procedure, and the main balance statistics that corroborate the success of our matching procedure in the online appendix.

The focal sample in this study are entrepreneurs who exit out of entrepreneurship and go back for at least one quarter to paid employment, along with their matched controls. There are in total 19,704 such individuals, around 30% of the full matched sample of 64,473. About 65% of all the entrepreneurs remain self-employed until the end of the sampling period, while about 5% exit entrepreneurship but do not return to wage work within the sampling frame. The relatively low exit numbers compared to samples used in other studies (e.g., Dillon & Stanton, 2017; Manso, 2016) can in part be explained by the high costs of terminating a business in Belgium, which increases the threshold for exit (Gimeno, Folta, Cooper, & Woo, 1997).

Finally, we restrict the sample to entrepreneurs who take a job with a different firm than the one they had worked for pre-entrepreneurship. This is because the process of hiring and retaining entrepreneurs that return to the same employer is likely to be structurally different from that of entrepreneurs who take a job at a different firm (Swider, Liu, Harris, & Gardner, 2017), and thus previous work finds no wage penalty for these entrepreneurs (Mahieu et al., 2019). After imposing these sample restrictions, we retain a sample of 16,542 entrepreneurs and their matched counterparts. We observe these individuals for 68 quarters between 2000 and 2016.

## 2.3 | Variables

Our first dependent variable is the logarithm of a worker's "normal" remuneration from wage employment in each quarter,  $Ln(Quarterly\ earnings)$ , where "normal" remuneration includes any (pretax) wage that is not a severance payment or a bonus. Quarterly earnings are reported in 2004 Euros. Next, we decompose quarterly earnings into the logarithm of an employee's wage rate,  $Ln(Wage\ Rate)$ , and the logarithm of their hours worked per quarter,  $Ln(Hours\ Worked)$ . The average wage rate is measured as the reported quarterly earnings divided by the number of paid full-time working days per quarter for full-time workers, or as the quarterly earnings divided by the number of hours worked times 7.6 for part-time workers (i.e., we assume a 38-hr week for full-time employees).

The main independent variables, other than those used in our matching procedure, are as follows: *Time Since Entrepreneurship* is a series of dummy variables indicating the number of quarters since a person has exited entrepreneurship and returned to wage work (or the number of quarters until a person leaves wage work for entrepreneurship for the quarters before the entrepreneurial spell). We define a spell of entrepreneurship as all the subsequent quarters an individual's socioeconomic status equals "working as self-employed." This means that their only source of income comes from entrepreneurial activities. Hence, we start counting the quarters since entrepreneurship from the moment an entrepreneur starts earning a wage in paid employment again, even if they are still registered as self-employed. Likewise, we define a person's last quarter in wage work before entrepreneurship as the last quarter in which they are in wage work, even when they are already registered as self-employed.

*Entrepreneurial earnings* indicates an entrepreneur's reported annual income. Annual income is recorded as zero if the entrepreneur actually had an income of zero or if operating expenses exceeded revenue.<sup>2</sup>

*Employer change* is a dummy equaling one if a person starts working for a new employer in a given quarter. This includes employer-to-employer moves, self-employment-to-employer moves, and moves from unemployment to employment. We use this variable to verify whether entrepreneurs' wages depend on their job-hopping behavior after entrepreneurship.

*Job contract type* is an indicator for whether the worker has a full-time, part-time, or *special* contract. The category *special* encompasses employees with very short/irregular contracts (interim, seasonal work, and occasional work in hospitality).

*Hybrid* is a dummy indicating whether a person's socioeconomic status equals "working in paid employment and as self-employed" in a certain quarter. These are entrepreneurs who are still working in paid employment while establishing their business, or who return to wage work while still continuing to operate their business.

## 2.4 | Descriptive statistics

The online appendix provides detailed descriptive statistics for the sample of entrepreneurs who return to wage work and their matched employees. A large majority, 77%, are male and worked for small and private employers at the moment of entry into entrepreneurship, similar to samples used in other studies (Azoulay, Jones, Kim, & Miranda, 2020; Elfenbein, Hamilton, & Zenger, 2010; Özcan & Reichstein, 2009). The summary statistics on earnings and job

<sup>2</sup>Social security data for the self-employed automatically reports negative incomes as zero.

characteristics mirror data in previous studies. Entrepreneurs earned significantly less than the matched employees in the last quarter before entry into entrepreneurship, indicating that in the period between 2004 and entry into entrepreneurship, entrepreneurs' earnings grew more slowly than those of the control group. Part of this differential reflects a change in hours worked: although all individuals in our sample were working full-time in wage employment in 2004, 18% of our entrepreneurs had transitioned to a part-time position prior to entrepreneurship, compared with only 7% of the controls. In addition, 34% of entrepreneurs began as hybrids before they transitioned to full-time entrepreneurship (cf. Folta, Delmar, & Wennberg, 2010).

We highlight three observations from the summary statistics of the post-entrepreneurship experience. First, entrepreneurs experienced a significant earnings discount in the short term after reentry in line with previous research; 1 year after entrepreneurship, the average entrepreneur earned 5,455 Euros per quarter, while the average employee in the control group earned 6,958 Euros per quarter. Second, this quarterly earnings gap results both from entrepreneurs working in jobs with a lower wage rate and from working fewer hours per quarter: 1 year after entrepreneurship, entrepreneurs earned a wage rate that was 11% lower than the matched controls, and worked almost 10% fewer hours. Third, the persistence of this earnings gap is evident in the raw data, with almost no change in the earnings gap or in its decomposition into the wage rate and hours worked 5 years after entrepreneurship.

### 3 | ESTIMATION

#### 3.1 | Methodology

We adopt the methodology of Jacobson, Lalonde, and Sullivan (1993) to calculate conditional estimates of the earnings gaps. These estimators were previously applied in combination with propensity score matching by Couch and Placzek (2010) to estimate the earnings losses of displaced workers, and by Campbell (2013) to measure the returns to start-up experience in California's semiconductor industry. The earnings gaps associated with a spell of entrepreneurship are defined as the difference between the earnings of employees before and after entrepreneurship and their expected earnings had they remained in wage work throughout the sample period. The matched controls provide an estimate of the counterfactual expected earnings. This definition of the earnings gap allows the events that lead workers to become entrepreneurs to affect wages prior to entry in entrepreneurship. Additionally, this definition compares entrepreneurial entry on a certain date to an alternative that rules out a spell of entrepreneurship not only that date but also at any time in the future.

We estimate the model

$$y_{it} = \alpha_i + \beta_t + \sum_{k \geq -20} D_{it}^k \delta_k + \varepsilon_{it}, \quad (1)$$

where  $y_{it}$  is the natural logarithm of the quarterly earnings of employee  $i$  in quarter  $t$ . The  $\beta_t$ 's are dummies capturing the general earnings trend within the sample. The dummy variables  $D_{it}^k = -20, -19, \dots, -2, -1, 0, 1, 2, \dots$ , jointly indicate time before and after entrepreneurship. For positive values of  $k$ ,  $D_{it}^k = 1$  if, at date  $t$ , individual  $i$  had exited entrepreneurship  $k$  quarters before. Similarly, if  $k$  is negative individual  $i$  completely left wage work and entered entrepreneurship  $-k$  quarters later. The parameters  $\delta_k$  therefore summarize how wages differ from those

more than 20 quarters prior to entrepreneurship.<sup>3</sup> The “fixed effect”  $\alpha_i$  captures permanent observable and unobservable characteristics of individuals, and those that were potentially not accounted for in the matching procedure (like, for example, risk preferences). Robust *SEs*,  $\varepsilon_{it}$ , are clustered at the individual level. We estimate Equation (1) applying the fixed effects within-estimator.

### 3.2 | Main results

Figure 1 reports point estimates of the earnings gaps,  $\delta_k$ , along with 95% confidence intervals for each quarter beginning with the 20th quarter prior to entrepreneurship and ending with the 24th quarter after entrepreneurship.<sup>4</sup> Time 0 indicates the last quarter an individual is employed in wage work before becoming fully self-employed. The dashed vertical line marks the separation between the periods before and after entrepreneurship. We define the first period after entrepreneurship (time = 1) as the moment when the entrepreneur again receives a wage in paid employment. This means that we “collapse” all the periods between the moment of leaving paid work for entrepreneurship and the moment of returning to the paid sector, since we do not observe wage information for the entrepreneurs during that time.

In line with previous studies (Bruce & Schuetze, 2004; Failla et al., 2017; Kaiser & Malchow-Møller, 2011; Mahieu et al., 2019), we find that entrepreneurial earnings are substantially discounted at the time of reentry into the wage sector. Four quarters after entrepreneurship, entrepreneurs earn 36% less than their expected levels per quarter, an earnings gap that is significantly larger than what we had seen in the summary statistics. This initial earnings gap decays little over time. Even 5 years after their spell of entrepreneurship, former entrepreneurs' quarterly earnings remain on average around 27% below their expected levels. The results suggest that former entrepreneurs' earnings will not catch up to their expected levels, at least in the medium term.

Figure 1 also shows that entrepreneurs experience declining earnings in the quarters leading up to their full-time entry into entrepreneurship. Future entrepreneurs' earnings start to diverge meaningfully from their expected levels around 3 years before entry into entrepreneurship, and the gap widens dramatically during the three quarters immediately before entry, a fact that we will explicitly take into account in subsequent analysis.

### 3.3 | Hours worked and wage rate

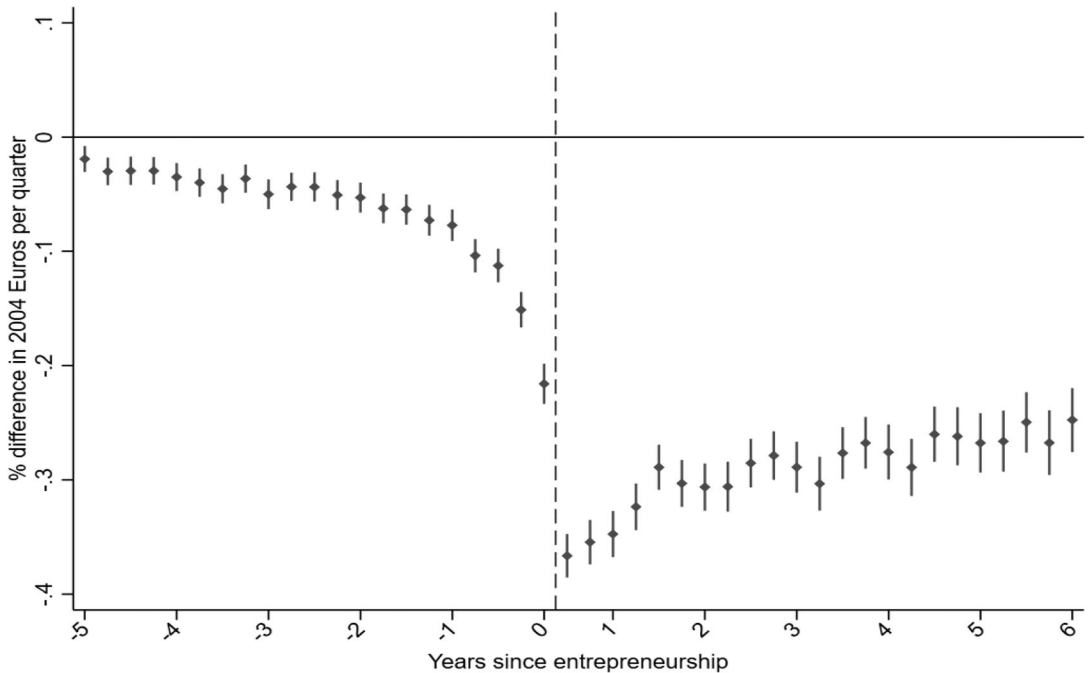
In this section, we decompose the earnings gap into losses due to reduced working hours and losses due to a reduced wage rate. The results are depicted in Figure 2.<sup>5</sup> About 60% of the quarterly earnings gaps is accounted for by differences in hours worked, while the remaining 40% is due to differences in the wage rate. Five years after entrepreneurship, this earnings gap is divided approximately evenly between reductions in wages and hours worked.

<sup>3</sup>The reason for setting the minimum value of  $k$  to  $-20$  is that while the matching removed earnings differences between entrepreneurs and nonentrepreneurs between 2000 and 2004, diverging trends might start occurring after 2004. As a robustness test, we also set the minimum value of  $k$  to  $-24$  and  $-28$ . This did not alter the results.

<sup>4</sup>We suppress the estimated coefficients for the first quarter in wage work after entrepreneurship, which consistently exhibit exceptionally large declines because individuals returning to wage work usually do not start working at the exact beginning of a quarter. A table of regression coefficients and *SEs* are available in the online appendix.

<sup>5</sup>The online appendix provides the corresponding regression estimates and *SEs*.



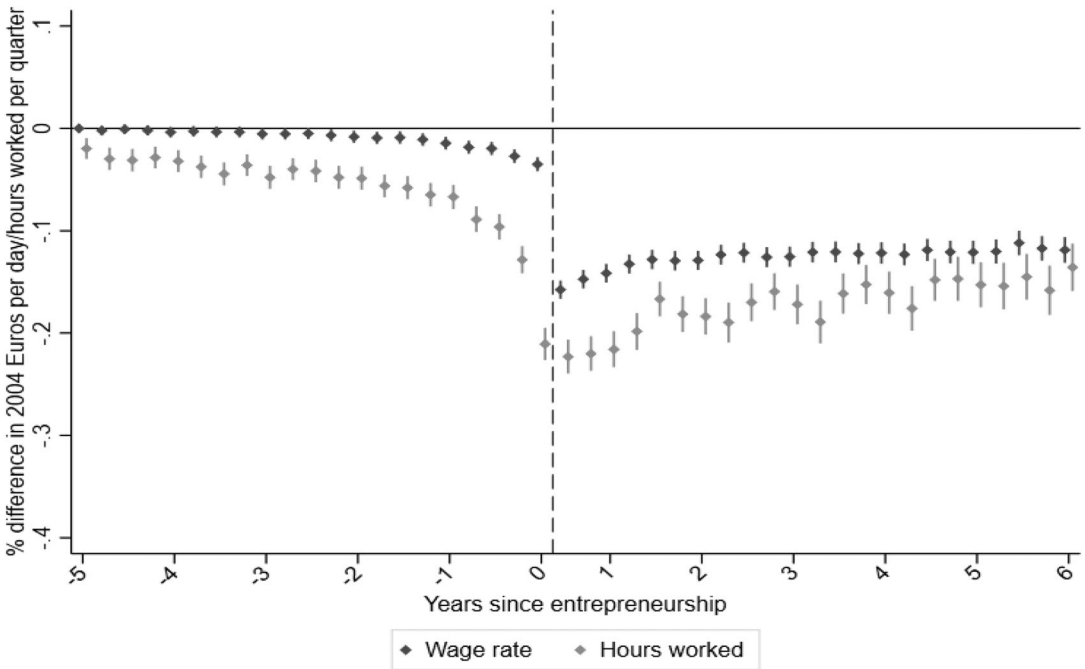


**FIGURE 1** Quarterly earnings losses of entrepreneurs returning to wage work. Regressions of  $\ln(\text{quarterly earnings})$  on time since entrepreneurship for entrepreneurs returning to wage work. We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

To further examine the persistence of this earnings loss and whether hours worked or the wage rate contribute the most to explain the lack of recovery, we estimate the extent to which earnings/hours worked in the first job landed after entrepreneurship can predict earnings/hours worked 5 years later. In Table 1, we regress the differences in quarterly earnings, the wage rate, and hours worked between entrepreneurs and their matched counterparts after 5 years on the initial difference when the entrepreneur reenters wage work. The results in Column 1 indicate that a 10% increase in the initial quarterly earnings penalty is related to only a 2% increase in the penalty after 5 years. Results for the wage rate in Column 2 show a much stronger relationship: a 10% increase in the initial penalty is associated with an almost 6% increase in the penalty after 5 years. On the contrary, a 10% increase in initial hours worked results in only a 1% increase in hours worked 5 years later.

Does changing jobs alter these findings? In Columns 4–6 of Table 1, we include a dummy for whether the entrepreneur changed firm in the first 5 years after entrepreneurship. We find that a job change has no power in reducing the initial decline in the wage rate.<sup>6</sup> In contrast, we observe that changing jobs eliminates almost 10% of the initial reduction in hours worked.

<sup>6</sup>There is a well-established literature showing that initial job outcomes can have long-lasting effects. Baker, Gibbs, and Holmstrom (1994) find that cohorts who earn less when they join a firm will continue to earn below-average wages years later. Oyer (2006) finds that PhD economists who graduate during a downturn are less likely to obtain a placement at a high-ranked institution, and have lower productivity and a lower probability of working at a high-ranked institute 15 years later. Schoar and Zuo (2017) find that managers who start their career during a recession are more likely to do so in a small, lower paid firm, and end up heading smaller firms and receiving lower wages years later. Similarly, Oyer (2008), Kahn (2010), and Oreopoulos, von Wachter, and Heisz (2012) all document persistent earnings declines of graduating from college in a recession.



**FIGURE 2** Reduction in wage rate and hours worked. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since entrepreneurship for entrepreneurs returning to wage work. We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

The results indicate that initial hours worked are a poor predictor of future hours worked while the initial wage rate is a good predictor of the future wage rate, even though in both cases, the sample means are similar upon reentry and after 5 years. Moreover, job switching further weakens the predictive power of initial hours worked but does not eliminate the persistent effect of the initial wage. The implication is that there are at best modest barriers to changing hours worked, although as many entrepreneurs choose to reduce them over time as do those that choose to increase them. In contrast, the results for the wage rate suggest that entrepreneurs face structural barriers to changing the *status quo* when they incur a penalty in their initial job after entrepreneurship.

These results also suggest that different mechanisms lie behind the reduction in hours worked and the daily wage discount. Our working hypothesis is that the reduction of hours worked comes from the supply side (we suspect driven largely by entrepreneurs' preferences), while the decline in the wage rate is a result of demand-side mechanisms by which former entrepreneurs suffer adverse labor market treatment.

### 3.4 | Robustness checks

We will explore the evidence for our working hypothesis in Sections 4 and 5. However, before doing so, we conduct some robustness checks. In this section, we investigate whether our baseline results might be the result of simple explanations that relate to our choice of sample and control group. In Section 3.4.1, we examine whether workers that face deteriorating labor market opportunities are more likely to enter entrepreneurship and are more likely to continue to face

**TABLE 1** The role of the first job after entrepreneurship

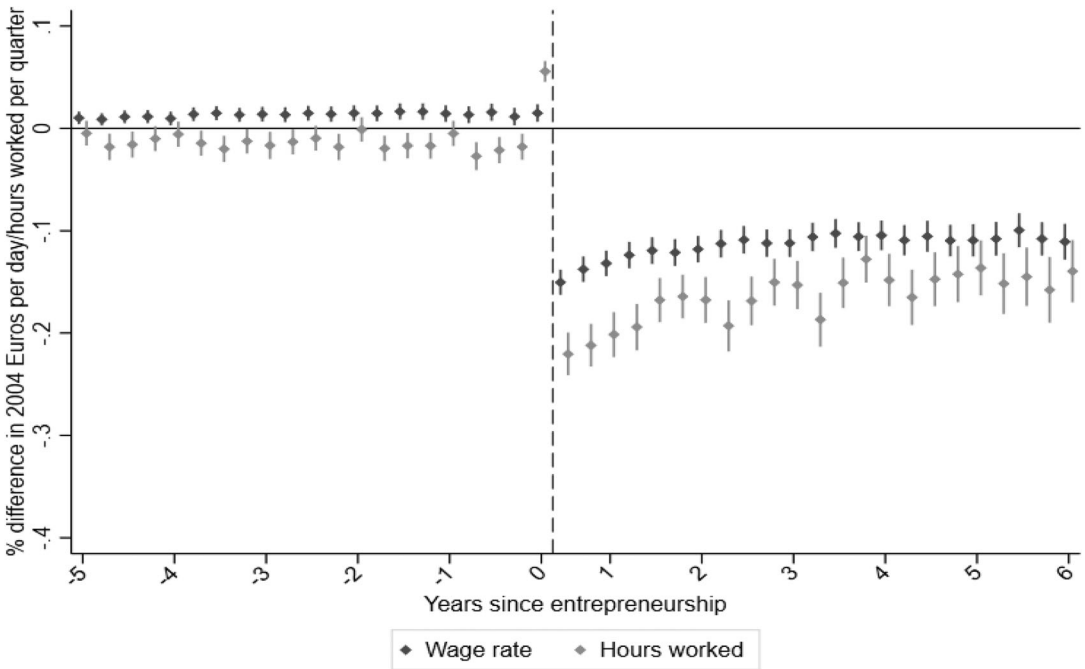
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Diff. in quarterly earnings after 5 years	Diff. in wage rate after 5 years	Diff. in hours worked after 5 years	Diff. in quarterly earnings after 5 years	Diff. in wage rate after 5 years	Diff. in hours worked after 5 years
Diff. in reentry quarterly earnings	0.187 (0.017)			0.181 (0.017)		
Diff. in reentry wage rate		0.572 (0.035)			0.570 (0.035)	
Diff. in reentry hours worked			0.106 (0.015)			0.101 (0.016)
Employer change				0.115 (0.030)	0.020 (0.011)	0.093 (0.024)
Constant	-0.824 (1.139)	-0.184 (0.154)	-0.760 (1.294)	-0.876 (1.099)	-0.193 (0.161)	-0.805 (1.261)
Observations	2,512	2,512	2,512	2,512	2,512	2,512
R <sup>2</sup>	.083	.356	.048	.088	.357	.052

Note: Regressions of quarterly earnings, wage rate, and hours worked differences between entrepreneurs and their matched counterparts 5 years after entrepreneurship on the initial differences at the quarter of reentry in wage work. We include quarter fixed effects in all regressions. Robust SEs in parentheses.

those limited opportunities after they return to wage work. In Section 3.4.2, we ask whether our findings result from the fact that entrepreneurs are more likely to have changed employer than the control group, in which case our results could arise from a loss of firm-specific capital. Finally, in Section 3.4.3, we explore whether the results could be driven by a loss of industry-specific capital arising from the greater frequency with which entrepreneurs change their industry of employment. In each case, we explore these simple explanations by restricting our sample and repeating our earlier analysis, and in each case, we find no change from our baseline results.

### 3.4.1 | Limited labor market opportunities

Some employees become necessity entrepreneurs, pushed into entrepreneurship by limited job prospects. If their prospects have not improved by the time they return to wage work, our main results might be explained by a simple process of negative selection into entrepreneurship (Hurst & Pugsley, 2011; Levine & Rubinstein, 2017, 2018; Nikiforou, Dencker, & Gruber, 2019; Schoar, 2010). Noting that necessity entrepreneurs are drawn from the left tail of the wage distribution (Åstebro, Chen, & Thompson, 2011; Elfenbein et al., 2010; Levine & Rubinstein, 2018), we reestimate our baseline model for the wage rate and hours worked after excluding from the sample individuals whose pre-entrepreneurship wage fell below the 25th percentile. The results are shown in Figure 3. Eliminating low earners from the sample eliminates the pre-entrepreneurship decline in the wage rate *before* entrepreneurship. However, the post-entrepreneurship wage discount persists with a magnitude that is unchanged from our main results. Figure 3, combined with our fine-grained matching procedure and the inclusion of individual-fixed effects in the regressions, offers compelling evidence that the post-entrepreneurship wage rate penalty and the reduction of hours worked are not a by-product of pre-entrepreneurship self-selection.

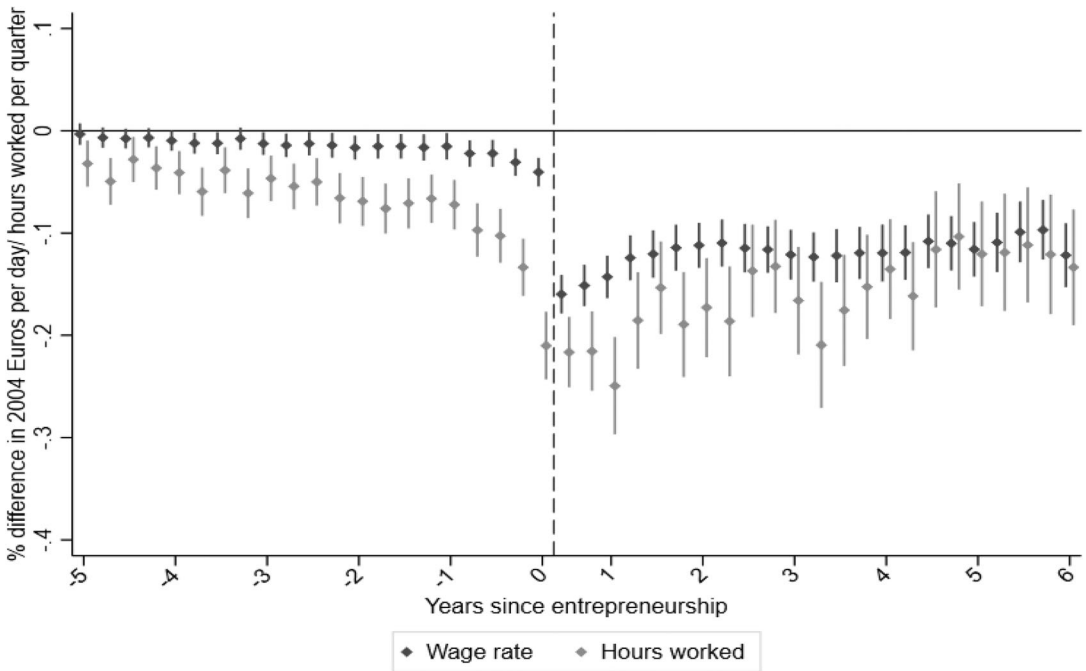


**FIGURE 3** Opportunity entrepreneurs. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since entrepreneurship for entrepreneurs returning to wage work. We restrict the sample to entrepreneurs in the top 75% of the wage distribution right before entering entrepreneurship. We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

### 3.4.2 | Loss of firm-specific capital

Most entrepreneurs returning to wage work join a different employer than the one they had before they became entrepreneurs, while most employees in the control group do not change employers. If human capital contains a significant firm-specific component (e.g., Coff, El-Zayaty, Ganco, & John, 2020), our main results may be picking up the effect of job switching in general rather than the impact of entrepreneurial experience.

We address this concern in two ways. First, we check the sensitivity of the baseline results to a restricted sample where the matched employees change employer within a year of the quarter the entrepreneur reenters wage work. Figure 4 shows the results. Although the smaller sample reduces precision, the point estimates are very close to those found in the main analysis. Second, we examine whether movers in the control group display a persistent wage discount similar to former entrepreneurs. To do so, we run regressions of the wage rate and hours worked on the number of quarters since the first observed job change for the full sample of control employees (i.e., we exclude the entrepreneurs). This is a similar design to the one used in the main analysis of the paper, except that individuals that have not (yet) changed employer serve as the control group. The results in Figure 5 show that, in contrast to the outcomes for entrepreneurs, both the wage rate and hours worked of job movers catch up quickly in the periods following a job change. Within 2 years after a job change, there are no observable differences between movers and stayers, and starting from 4 years after a job change, movers even earn a premium and work longer hours. These findings suggest that the earnings losses of entrepreneurs are not due to labor market frictions related to job changing in general.



**FIGURE 4** Matched movers. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since entrepreneurship for entrepreneurs returning to wage work. We restrict the sample to entrepreneurs whose matched counterparts change employer within a 1-year timeframe around the quarter the entrepreneur reenters wage work. We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

### 3.4.3 | Loss of industry-specific capital

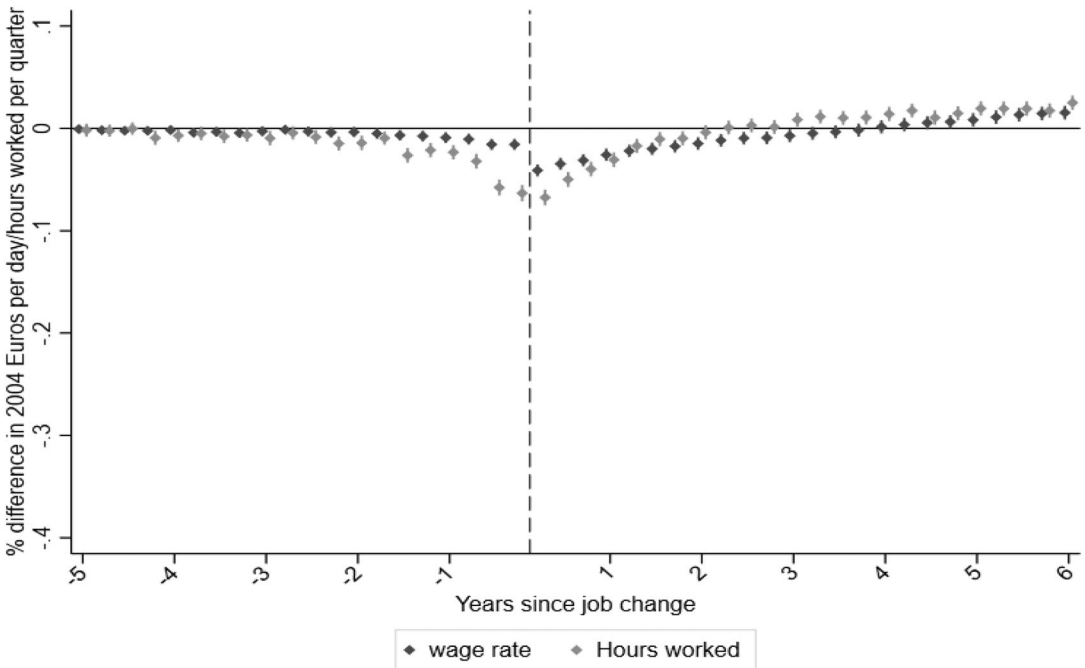
In a similar vein, our findings might be the result of industry-specific human capital lost to industry mobility (e.g., Eggers & Song, 2015; Kaiser & Malchow-Møller, 2011; Neal, 1995; Starr, Ganco, & Campbell, 2018).<sup>7</sup> We test for this possibility by estimating the wage losses separately for a restricted sample of industry switchers. The results in Figure 6 show that entrepreneurs who change industries incur a reduction in the wage of about 13% and a reduction in hours worked of 16% 5 years after entrepreneurship. These results are very similar to those for the full sample, indicating that industry switching does not appear to drive our results.

## 4 | SUPPLY-SIDE EXPLANATION: PREFERENCE FOR FLEXIBILITY

We now turn to explore the origins of the reduction in hours worked, which accounts for about 60% of the estimated earnings differential. We interpret this finding in terms of supply side explanations. In particular, we offer suggestive evidence for a mechanism which we broadly label as a *preference for flexibility*.

A rich literature has explored the importance of nonpecuniary preferences in driving the decision to enter and remain in entrepreneurship despite low pecuniary gains (e.g., Elfenbein &

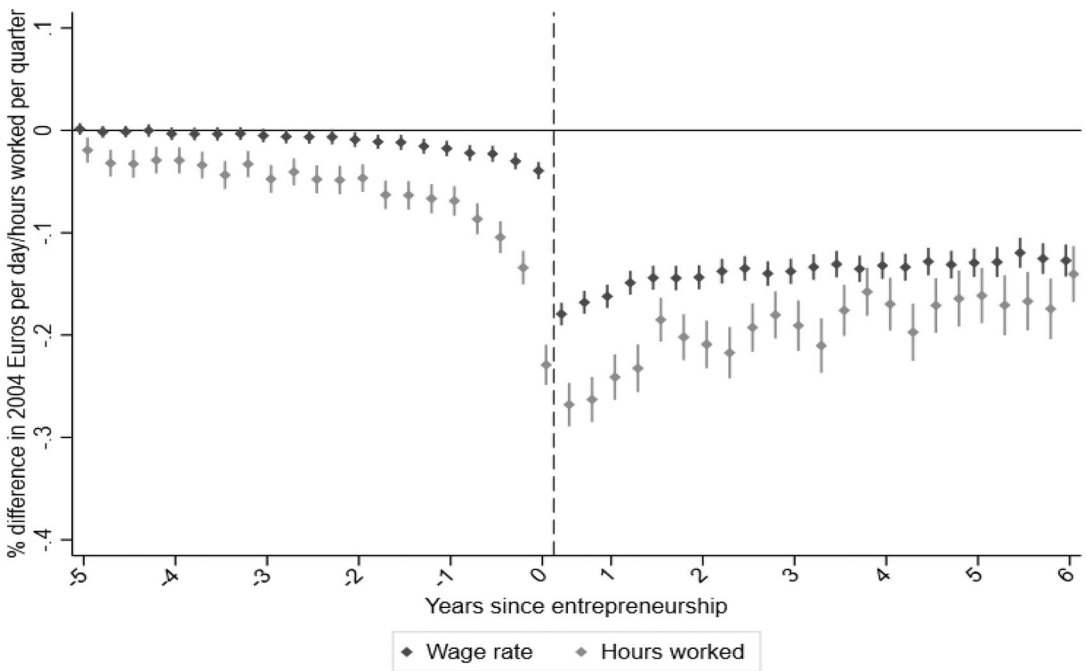
<sup>7</sup>In our sample, only one-third of entrepreneurs return to the same industry at the NACE 2-digit level.



**FIGURE 5** Job changers in the control group. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since first job change for employees in the control group. We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

Knott, 2015; Gimeno et al., 1997; Hamilton, 2000), including a preference for autonomy (Benz & Frey, 2008; Hamilton, 2000) and a taste for variety (Åstebro & Thompson, 2011). Drawing on this literature, we suggest that individuals who enter *and also exit* from entrepreneurship tend to exhibit a preference for flexible work arrangements, which results in a weaker attachment to the labor market and therefore a choice to work fewer hours.

In an effort to derive testable implications, we suggest that individuals with a preference for flexibility are more likely to opt for part-time jobs, for dual jobs arrangements particularly in the form of hybrid entrepreneurship, and for more frequent job changes. First, prior research in labor economics has well documented that certain workers place a higher value in workplace hours flexibility, especially in the form of part-time work (Flabbi & Moro, 2012; Wiswall & Zafar, 2018). Second, while in the wage sector dual jobholding is primarily associated with moonlighting and thus the possibility of earning extra-income, hybrid entrepreneurship can be explained by the possibility to gain nonpecuniary benefits absent in one's paid job (Folta et al., 2010), such as pursuing a hobby and increasing variety in daily tasks. Hybrid entrepreneurs may decide to work fewer hours in the wage sector compared to entrepreneurs who completely exit self-employment, to keep on dedicating part of their working hours on their side project. Finally, a tendency to job hop among would-be entrepreneurs is a well-documented fact (e.g., Elfenbein et al., 2010; Failla et al., 2017) that has been interpreted in terms of a taste for variety or a “hobo” syndrome (Åstebro & Thompson, 2011; Hyytinen & Ilmakunnas, 2007; Munasinghe & Sigman, 2004). Such an intermittent job history is associated with fewer hours worked.

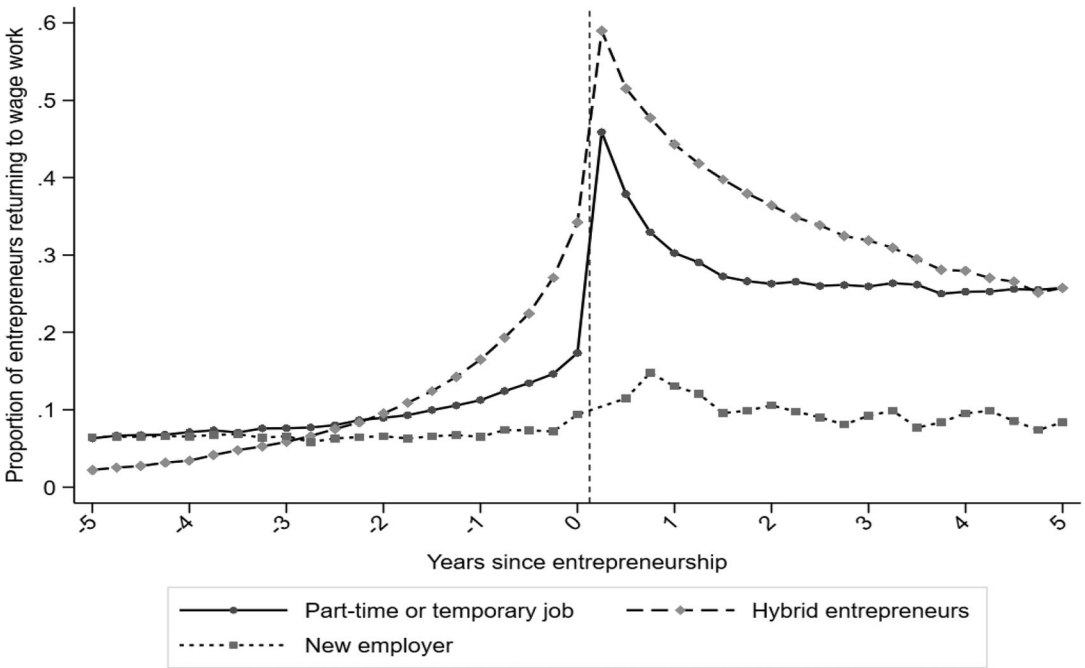


**FIGURE 6** Industry switchers. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since entrepreneurship for entrepreneurs returning to wage work. We restrict the sample to entrepreneurs who start working in a different industry after entrepreneurship as they worked in right before entering entrepreneurship (at the NACE 2-digit level). We control for individual and time fixed effects. Vertical bars represent 95% confidence intervals

We begin with descriptive evidence. In Figure 7, we plot the job contract type, job change, and hybrid status variables by the time since entrepreneurship. Figure 7 shows that an increasing share of entrepreneurs founded their businesses while still working in a job, and gradually selected into non-full-time positions closer to the date of full-time entrepreneurship. An analogous picture can be observed *after* the entrepreneur reentered the wage sector. Almost 60% are still self-employed when starting to work for an employer after full-time entrepreneurship, and more than 45% return to a non-full-time job after entrepreneurship. These numbers decline sharply in the first few periods after returning to wage work. Yet, even 5 years after entrepreneurship, former entrepreneurs still have a considerably higher likelihood of working in part-time or temporary jobs, compared both to their matched counterparts and to the periods before they became an entrepreneur.

The figure also documents the temporal patterns in job changing behavior in the periods before and after entrepreneurship. Future entrepreneurs change jobs and employers more often closer to the date of entry into entrepreneurship, with a surge in the period right before they transition to self-employment (9.4%). Furthermore, the rate of job moves by former entrepreneurs peaks in the first year after they reenter wage work (14.8%). This rate only gradually decreases in the years afterward.

The descriptive evidence shows that entrepreneurs are more likely to job hop, to move into part-time and temporary jobs, and to become hybrids both before and after entrepreneurship. We now investigate the extent to which these factors explain the loss of hours worked after entrepreneurship. We expect that if these factors are good proxies for (potentially time-varying)



**FIGURE 7** Part-time or temporary jobs, hybrid entrepreneurship, and employer changes. Proportion of entrepreneurs in part-time or temporary jobs, hybrid entrepreneurship, and starting to work for a new employer in the time before the onset of entrepreneurship and after the cessation of entrepreneurship. Since, by definition, all entrepreneurs start working for a new employer in the first quarter of reentry in wage employment, we omit this quarter for graphical reasons in the third graph

preferences for flexibility, then accounting for them will reduce the observed reduction in hours worked but not the wage rate.<sup>8</sup>

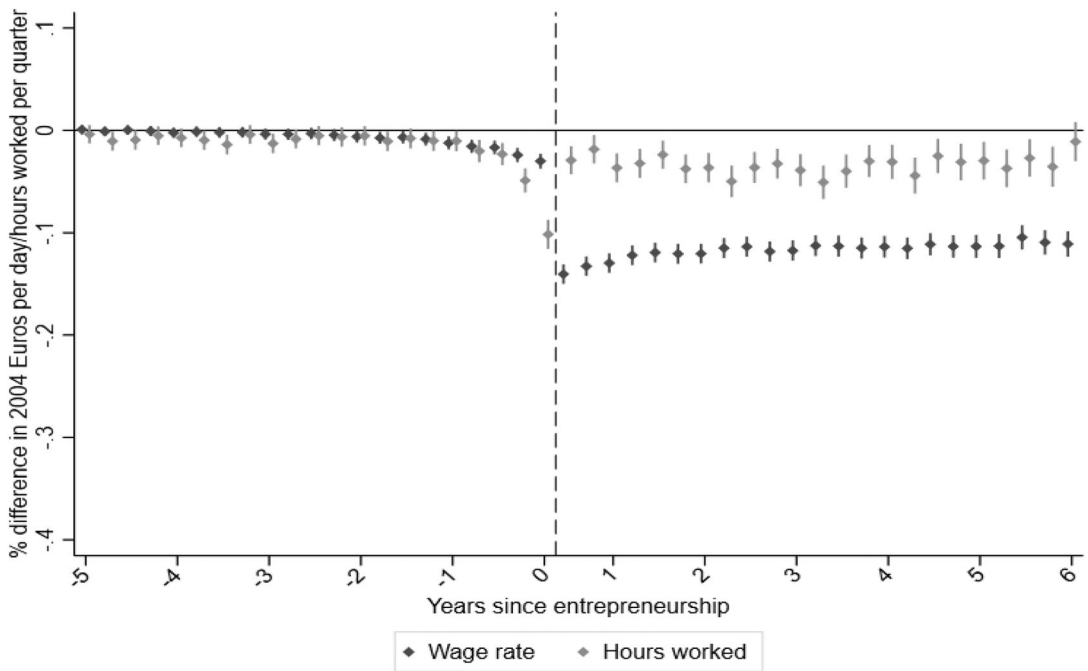
To test this, we include in our baseline model indicators for job contract type, hybrid status, and job changing. The results are shown in Figure 8. As expected, the reduction in hours worked is almost completely eliminated (3% 5 years out of entrepreneurship). However, there is almost no impact on the difference in the wage rate (still 11.3%). This latter finding suggests that the tendencies to engage in part-time work, hybrid entrepreneurship, and to change jobs are not caused by market frictions, and are thus in line with our conjectured supply-side mechanism. To conclude, the reduction in hours worked is explained by the hybrid status, contract type, and job change variables which we consider to overall capture individuals' preference for flexibility.

## 5 | DEMAND-SIDE EXPLANATIONS: LABOR MARKET EXPECTATIONS

In this section, we seek to explore the origins of the wage rate loss which corresponds to roughly 40% of the estimated wage penalty (cf. Figures 1 and 2). We propose the source of this

<sup>8</sup>Of course, the wage rate is not necessarily independent of the type of work being done by entrepreneurs. Thus, if these controls are also correlated with unobserved traits that are negatively related to wages, we will also see a reduction in the residual penalty as measured by the wage rate.





**FIGURE 8** Controlling for job contract type (full-time, part-time, temporary), hybrid status, and employer switches. Regressions of  $\ln(\text{wage rate})$  (dark) and  $\ln(\text{hours worked})$  (light) on time since entrepreneurship for entrepreneurs returning to wage work. We control for individual and time fixed effects, job contract type, hybrid status, and employer switches. Vertical bars represent 95% confidence intervals

loss lies in the expectations held by prospective employers regarding entrepreneurs' future productivity and fit in wage work. These market expectations are shaped by entrepreneurs' prior careers, including the entrepreneurial experience. Prospective employers tend to hold favorable expectations about the entrepreneurial qualities of individuals with a prior successful track record in the wage sector, given their high opportunity costs of leaving a well-paid job.

We suggest that the magnitude of the wage rate loss depends on a comparison between expected and actual observed entrepreneurial performance. The observed decision to exit and return to the wage sector may signal poor startup performance and thus low entrepreneurial abilities (e.g., Koellinger, Mell, Pohl, Roessler, & Treffers, 2015). In the case of entrepreneurs with a successful prior career, the exit decision may induce the hiring firm to conclude that the choice to become entrepreneurs was a mistake and discount the candidate for not having met the high market expectations. The conflicting signals of high earnings as employee and (presumed) low ability as entrepreneur may also simply increase the uncertainty around the candidate's true ability contributing to the observed penalty.<sup>9</sup>

There are reasons to believe that this initial penalty is harder to recover if the entrepreneur is over-qualified for his first job landed after entrepreneurship (Lazear, Shaw, & Stanton, 2018). Placement of high-ability individuals into less demanding jobs induces a down-skilling which

<sup>9</sup>Consistent with this, Mahieu et al. (2019) offer evidence that entrepreneurs who come from the top of the pre-entry wage distribution—the so-called “stars” (e.g., Åstebro et al., 2011; Carnahan, Agarwal, & Campbell, 2012)—are the most penalized upon reentry in the wage sector because employers view them as “risky hires.”

in turn decreases former entrepreneurs' wage growth rate, and may lead to a persistent wage gap in line with the notion of task-specific human capital (Gibbons & Waldman, 2006). This long-term effect could also be ascribed to the difficulty for a former entrepreneur to dissociate their reputation from a poor business. For example, Belenzon, Chatterji, and Daley (2017) show that high-ability individuals tend to become eponymous entrepreneurs and this may have strong reputational consequences for their future career in case of startup failure.

We test this labor market expectation mechanism by analyzing the wage consequences separately for the group of entrepreneurs who experienced a successful track record in the wage sector prior to entrepreneurship and for those who do not. In line with previous studies on the returns to entrepreneurial experience (Elfenbein et al., 2010; Manso, 2016), our measure of career success is a person's position in the wage distribution right before entry into entrepreneurship. In particular, we run separate regressions for entrepreneurs with pre-entry quarterly earnings above and below the median.

The results for the wage rate are shown in Figure 9, Panel a. There are two notable findings: first, entrepreneurs with high pre-entry wages experience an increase in their wage rate compared to their matched counterparts pre-entrepreneurship, contrary to entrepreneurs with low pre-entry wages whose relative wage rate decreases. Second, and more importantly, after entrepreneurship there is almost no observable difference in the wage rate loss between the two groups, even years after these entrepreneurs have returned to the wage sector. Given the upward trend for the stars pre-entrepreneurship, this shows that they incur a larger penalty that appears to be persistent. In contrast, the results shown in Panel b indicate that the reduction in hours worked post-entrepreneurship is equally small for both groups. This reaffirms our intuition that the greater wage rate loss for the stars is not driven by supply-side mechanisms which instead result in a reduction of hours worked (cf. Section 4).

One concern with respect to the labor market expectation mechanism could be that the wage rate loss might instead reflect self-selection out of entrepreneurship; that is, entrepreneurs who exit and go back to the wage sector have failed and thus the penalty is a penalty for poor performance. In unreported analyses (available upon request), we find that entrepreneurs with high pre-entry wages are less likely to exit, in line with a performance interpretation of the exit decision (for a study on the drivers of the exit decision, see, e.g., Gimeno et al. (1997)). We also find that entrepreneurial earnings mediate the effect of wages on the probability of exiting entrepreneurship. In other words, those with low (*high*) pre-entry wage tend to exhibit lower (*higher*) entrepreneurial earnings and are in turn more (*less*) likely to exit.

In light of this evidence, our results in Figure 9 are particularly illustrative of our proposed labor market expectations mechanism. Entrepreneurs whom the labor market expected to perform poorly (because of their lower pre-entry wages) are *the least* penalized. Overall, these pieces of evidence reinforce the notion that the adverse labor market treatment is not a by-product of failed entrepreneurs but on the contrary of unsatisfied market expectations for high-wage individuals. Moreover, it clarifies that prior wage affects entrepreneurial earnings/exit and reentry wages in a distinct and opposite fashion. We next explicitly exploit heterogeneity in entrepreneurial earnings among entrepreneurs who have exited to further illuminate our mechanism.

Our proposed mechanism hinges on the assumption that the decision to exit may signal poor entrepreneurial ability and that this contrasts with the favorable market expectations for stars. If this is true, we should observe that the effect is amplified when we use an observable proxy for entrepreneurial ability, namely the earnings as an entrepreneur. Specifically, we propose that for stars pursuing an entrepreneurial career is a double-edged sword: if they perform

well as entrepreneurs they are not penalized but also not rewarded, while if they fail or perform poorly they are the most penalized. Such asymmetric treatment originates from the consistency of the observed entrepreneurial performance with the market expectation. On the contrary, we expect that former entrepreneurs with low-pre entry wages are penalized less independent of how well they performed in entrepreneurship, since the employer does not hold high expectations. Low entrepreneurial earnings are unlikely to induce a prospective employer to revise its prediction of an entrepreneur's ability downward if it has already observed a low pre-entrepreneurship wage, but it may do so if the pre-entry wage was high.<sup>10</sup>

To sum up, we expect that the pre-entrepreneurship wage is positively associated with the magnitude of the wage penalty, while entrepreneurial earnings are negatively associated with the penalty, but the sensitivity of the penalty to variations in entrepreneurial earnings is greater for individuals that earned a high pre-entrepreneurship wage.

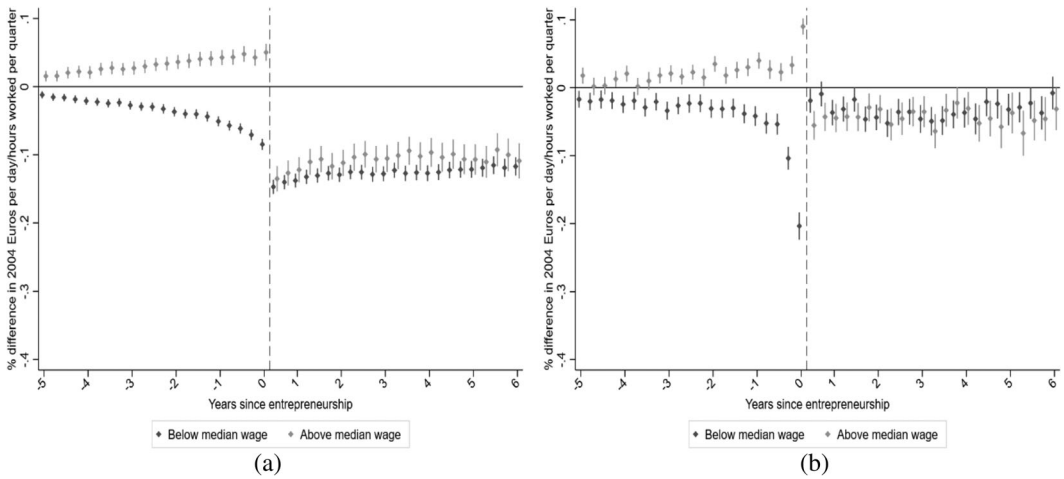
To test this conjecture, we regress the wage rate difference between entrepreneurs and their matched controls at the time of reentry on entrepreneurial earnings, the pre-entry wage and their interaction, controlling for time effects. We then plot the predicted values of the dependent variable against values of the two regressors. Figure 10 shows a contour plot of the results. Light-shaded areas indicate a lower penalty, while darker-shaded ones indicate a greater loss. Holding entrepreneurial earnings on the y-axis constant, we observe that those with higher wages prior to entry into entrepreneurship are penalized more, consistent with Mahieu et al. (2019). Holding the wage before entrepreneurship on the x-axis constant, we also find that those earning more as entrepreneurs have, on average, lower penalties. However, we also observe our expected interaction effect: differences in entrepreneurial performance matter more for explaining the wage penalty of stars than of those earning less before entry into entrepreneurship.

Finally, we run an additional test to further probe the mechanism. We assumed that the explanation behind the double-edged sword for stars is the high market expectation. If this is true we should observe that the penalty should be (close to) zero when the market holds (close to) zero expectations about a candidate's performance in entrepreneurship. We exploit variation in age to test this intuition and argue that young individuals have little work experience and thus lack a track record of performance on which the hiring firms form their beliefs around the unobserved quality of a job candidate.

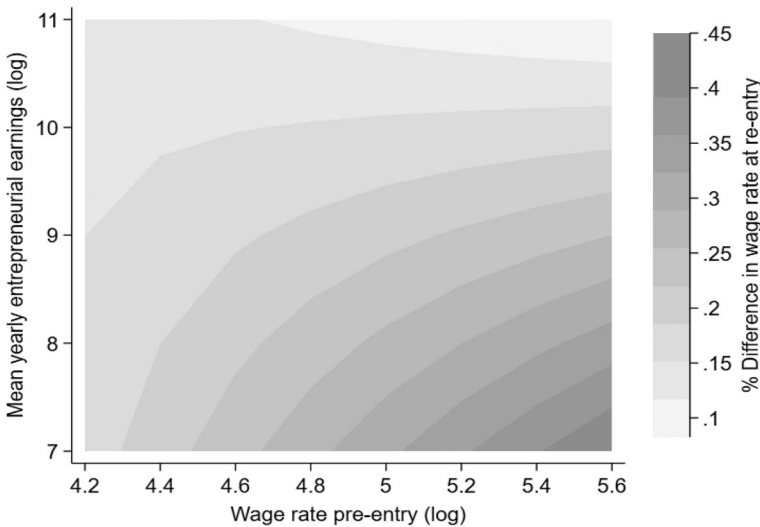
We test this prediction by estimating the wage losses separately for entrepreneurs who are younger than 35, between 35 and 45, and older than 45 at the time of reentry in wage work. The findings presented in Figure 11, Panel a show that indeed the post-entrepreneurship wage rate losses increase monotonically with age: 5 years out of entrepreneurship, the youngest group incurs a wage rate penalty of 8%, compared to 13.3% for the medium-aged group, and 17% for the oldest group of entrepreneurs. In contrast, the results for the hours worked regressions shown in Panel b indicate little difference between the three groups. Again, this is consistent with our notion that differences in preferences (supply-side explanations) do not explain the differential treatment among entrepreneurs of different ages.

The lower penalization of younger entrepreneurs is particularly intriguing in light of recent evidence that the most successful entrepreneurs are middle-aged (Azoulay et al., 2020). Thus, again, the lower penalty is not a by-product of successful entrepreneurship but rather, as

<sup>10</sup>In addition, the signaling value of entrepreneurial earnings for stars is stronger because employers are more inclined to take entrepreneurial earnings into account when evaluating high risk-high returns candidates and, within this group, successful entrepreneurs are more likely to engage in signaling activities to reduce their severe penalty.

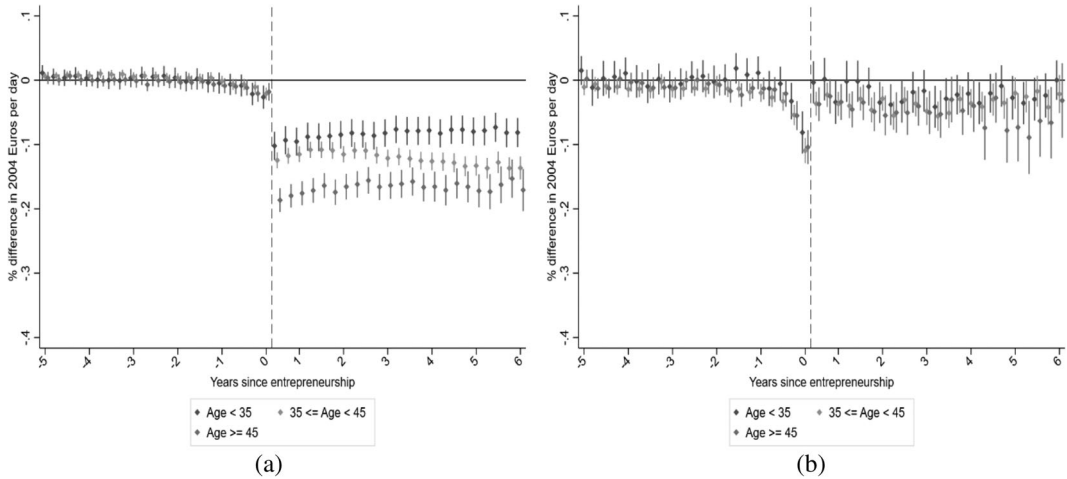


**FIGURE 9** Prior wage. Regressions of  $\ln(\text{wage rate})$  (figure (a)) and  $\ln(\text{hours worked per quarter})$  (figure (b)) on time since entrepreneurship for entrepreneurs returning to wage work with pre-entrepreneurship wages below (dark) and above (light) the median. We control for individual and time fixed effects, job contract type, hybrid status, and employer switches. Vertical bars represent 95% confidence intervals



**FIGURE 10** Entrepreneurial earnings and pre-entrepreneurship wage rate. Contour plot of a regression of the difference in wage rate between entrepreneurs and their matched counterparts in the first quarter after entrepreneurship on  $\ln(\text{wage rate})$  in the last quarter before entrepreneurship interacted with  $\ln(\text{mean yearly entrepreneurial earnings})$ . We control for time fixed effects

proposed, of low market expectations. More broadly, these findings reflect the idea that experimenting with jobs—including entrepreneurship (Kerr, Nanda, & Rhodes-Kropf, 2014)—is common in the early stage of an individual career and viewed favorably by prospective employers as a way for the worker to learn about own skills (Antonovics & Golan, 2012).



**FIGURE 11** Age. Regressions of  $\ln(\text{wage rate})$  (figure (a)) and  $\ln(\text{hours worked per quarter})$  (figure (b)) on time since entrepreneurship for entrepreneurs returning to wage work who are aged younger than 35 (dark gray), between 35 and 45 (light gray) and equal to or older than 45 (medium gray) at the time of reentry in wage work. We control for individual and time fixed effects, job contract type, hybrid status, and employer switches. Vertical bars represent 95% confidence intervals

## 6 | CONCLUSION

We find that former entrepreneurs incur significant and persistent earnings losses years after they return to the wage sector. Five years after returning to wage work, former entrepreneurs earn on average 27% less from wage work per quarter than their matched counterparts. Sixty percent of this decline is accounted for by a decline in hours worked, while the remainder results from a decline in the wage rate. We provide indirect, but compelling evidence that the decline in hours worked largely reflects a supply-side phenomenon while the decline in the wage rate reflects a demand-side phenomenon.

On the supply side, we explain the reduction in hours worked as the outcome of a preference for flexibility among entrepreneurs who reentered the wage sector. This general preference has implications for the choice of work arrangements. Former entrepreneurs may place high value on workplaces that allow for flexible working hours, especially in the form of part-time jobs. Also, they may choose to keep on dedicating time to an entrepreneurial project while working as employee in a main job (hybrid entrepreneurs). Finally, this preference for flexibility may be akin to the entrepreneurial preference for variety (Åstebro & Thompson, 2011) and thus be associated with job hopping behavior. Accordingly, we find evidence that former entrepreneurs are more likely to take on part-time jobs, change job, and become hybrids. More importantly, accounting for these factors explains almost all the reduction in hours worked in paid employment.

On the demand side, we explain the decline in the wage rate as the outcome of a penalty due to a mismatch between labor market expectations and signaled entrepreneurial qualities. We theorize and test that for individuals who were previously successful in their career (high-wage), entrepreneurship is a double-edged sword: if they underperform as entrepreneurs they are highly penalized since the poor result contrasts with the favorable ex ante market

expectations. In contrast, if they perform well, they are not penalized since the outcome is in line with the expectations. We also document that the adverse treatment does not hold for young entrepreneurs since the market has little basis (lack of experience) to form its expectations. In short, our results caution high-wage individuals from experimenting with an entrepreneurial career while encouraging low-wage, young ones.

Several other plausible explanations for the earnings penalty are not supported by the evidence. First, concerns that a spell of entrepreneurship induces a depreciation of firm- or industry-specific human capital due to job or industry mobility (e.g., Kaiser & Malchow-Møller, 2011) do not seem important in our context because our results hold using a control group of movers and industry switchers that would be expected to suffer the same loss of firm and industry-specific capital as do the entrepreneurs. Second, concerns that the earnings penalty may be driven by a substantial fraction of entrepreneurs being pushed into entrepreneurship by limited job prospects that had not resolved themselves by the time they returned to wage work appear unwarranted as well. In fact, opportunity-driven entrepreneurs also incur a wage penalty which is very similar in magnitude to the one observed in the full sample of the main analysis. This result, combined with our rigorous matching procedure and the inclusion of individual fixed effects in the regression, provide compelling evidence that the penalty is not a by-product of negative selection into entrepreneurship.

These findings add to the nascent literature that estimates the long-term returns from an entrepreneurial experience. The contrast between our findings from Belgian data and those of Manso (2016) in the United States suggest that the long-term consequences of entrepreneurship can differ substantially across labor markets, and that concerns regarding productivity and the fit for wage employment of former entrepreneurs may be more pronounced in contexts characterized by high employment protection and, accordingly, relatively little job mobility. Indeed, the magnitude of the losses in the first reentry job is an excellent predictor of the wage penalty years later, which suggests that in labor markets similar to Belgium's former entrepreneurs cannot easily change their circumstances. This echoes existing evidence that initial job placements, for example, upon graduating college, can have long-lasting effects on career trajectories (e.g., Gibbons & Waldman, 2006; Oreopoulos et al., 2012; Oyer, 2006, 2008; Schoar & Zuo, 2017).

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## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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## SUPPORTING INFORMATION

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