

Fake it till you (don't) make it: Fake diplomas and signaling in labor markets

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Resumo

A escolarização cria novas habilidades ou apenas sinaliza as habilidades preexistentes dos indivíduos? Oferecemos evidência nova sobre essa questão clássica no contexto da educação de jovens e adultos no Brasil. Em 2018, a polícia do Rio de Janeiro fechou abruptamente 21 escolas de ensino médio, apresentando evidências de que essas escolas vendiam diplomas sem oferecer qualquer instrução educacional — fornecendo, portanto, um sinal, mas não capital humano. Pareamos os registros de alunos com dados administrativos de emprego formal (RAIS) e encontramos que, inicialmente, os retornos do diploma de ensino médio no mercado de trabalho são semelhantes para portadores de credenciais legítimas e falsas. Em poucos anos, porém, o valor dos diplomas falsos começa a declinar. Os ganhos iniciais dos portadores de diplomas falsos estão associados a um pico na probabilidade de troca de emprego e de ocupação logo após a obtenção do diploma. Com o tempo, esses indivíduos apresentam volatilidade substancialmente maior na participação no mercado de trabalho formal: a probabilidade de deixar um emprego ao menos três vezes no período é 10 pontos percentuais mais alta. O valor da credencial falsa deprecia mais rapidamente em contextos nos quais a produtividade do trabalhador é mais facilmente observável. Em conjunto, os resultados indicam que, ao menos no curto prazo, a escolarização atua principalmente como sinal no mercado de trabalho — mas a força desse sinal se desfaz à medida que os empregadores aprendem sobre a verdadeira produtividade de seus empregados.

Palavras-chave: diplomas falsos; sinalização; capital humano; aprendizado do empregador; mercado de trabalho.

Abstract

Does schooling create new skills or does it merely signal individuals' underlying abilities? We provide new evidence on this longstanding question in the context of adult education in Brazil. In 2018, police in Rio de Janeiro abruptly shut down 21 high schools which sold diplomas without providing any educational instruction — thus providing a signal but not human capital. We match student records with historical employment data and find that initially, the labor market returns to high school degrees are similar for individuals with legitimate and fake credentials. However, within a few years, the value of fake diplomas begins to decline. The initial gains for fake diploma holders are closely associated with a spike in the probability of changing jobs and occupations shortly after obtaining the diploma. Over time, these individuals experience substantially greater turnover: the likelihood of leaving a job at least three times over the period is 10 percentage points higher. The value of the fake credential depreciates more rapidly in contexts where worker productivity is more readily observable. Overall, the results provide strong evidence that, at least in the short term, schooling acts primarily as a signal in the labor market — but the strength of that signal erodes quickly as employers learn about the true productivity of their employees.

Keywords: fake diplomas; signaling; human capital; employer learning; labor market.

1 Introduction

Do schools teach skills, or do they simply signal the underlying abilities of individuals? This fundamental question remains central in the economics of education. On the one hand, there is the human capital model in which workers acquire new skills through schooling and subsequently rent these skills to the labor market (Becker, 1994; Ehrenberg et al., 2021). On the other hand, there is the signaling model, where education serves primarily to reveal the underlying abilities of the students, with its monetary and non-monetary costs deterring students with low ability from pursuing further education (Spence, 1973; Arrow, 1973). The signaling perspective has been extensively reviewed and empirically tested (Weiss, 1995). Empirical attempts to distinguish between the two theories have relied on various identification strategies, including compulsory schooling laws (Bedard, 2001), discontinuities in educational requirements (Clark and Martorell, 2014), and employer learning models (Lange, 2007). Although hybrid models that incorporate both skill acquisition and signaling are plausible (Hungerford and Solon, 1987), the literature has not yet reached a consensus on whether one framework clearly dominates the other.

We focus on the adult education market in Brazil and take advantage of a unique natural experiment: on September 24, 2018, law enforcement authorities conducted raids on 11 private schools in Rio de Janeiro as part of *Operação Nota Zero* (Operation Grade F). The investigation revealed that these schools, most of which had operated for a decade or more, provided no educational services other than conferring fake degrees. Later, as the investigation expanded, police uncovered ten more schools that also sold fraudulent diplomas.

Brazil requires all schools to publish a list of students who completed their diplomas. We scraped the online listings of degree recipients from all high schools in the state of Rio de Janeiro, the core of the fraudulent scheme, and merged these student diploma lists (both fake and real) with RAIS (*Relação Anual de Informações Sociais*), an employer–employee dataset that contains the complete formal labor market history of all workers in Brazil from 1995 to 2020. We compare labor market outcomes across three groups: recipients of fraudulent diplomas from the 21 schools identified in the police investigation, adults who earned legitimate high school diplomas during the same period, and matched high school dropouts. This longitudinal approach enables within-person comparisons and allows us to identify precise discontinuities in earnings profiles that coincide with diploma receipt.

Our findings reveal several key patterns. Initially, both fraudulent and legitimate diplomas yield substantial and statistically similar returns, suggesting that the signaling value of credentials operates independently of underlying human capital acquisition. However, these returns diverge significantly over time. While employment probabilities continue rising for legitimate graduates, they begin declining for holders of fraudulent credentials. Similarly, mean wages diverge between the two groups, regardless of whether we condition on employment status. These temporal patterns align closely with predictions from signaling theory and the employer learning literature. Consistent with signaling models, individuals who remain with the same employer after obtaining a diploma experience negligible wage gains — likely because incumbent employers already possess detailed information about worker productivity, rendering educational signals less informative. In contrast, many individuals strategically time diploma receipt with job transitions, where prospective employers have limited productivity information. These job changes create opportunities for diplomas to function as effective signals, generating substantially larger observed returns.

We also document important sectoral heterogeneity. In industries with limited career advancement

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opportunities and compressed wage structures, employment dynamics remain remarkably similar between fraudulent and legitimate diploma holders. Significant divergences in log wages emerge only in sectors where career ladders provide substantial opportunities for upward mobility and wage growth — precisely the contexts where educational signaling effects should be more pronounced.

Our research contributes to two primary strands of literature. First, we advance understanding of education’s signaling value. Previous studies such as Clark and Martorell (2014) and Mazrekaj and Cabus (2019) employ regression discontinuity designs around diploma requirements, yielding mixed evidence on signaling effects. Our natural experiment — comparing fraudulent and legitimate credentials within identical institutional contexts — provides a clear opportunity to estimate the signaling and human capital effects separately. Second, we contribute novel evidence to the employer learning literature. Building on Altonji and Pierret (2001), Lange (2007), Bordon and Braga (2020), and Kahn (2013), we document the dynamic evolution of credential values as employers acquire information about worker productivity. Our design allows us to observe learning processes for workers with identical signals but heterogeneous underlying human capital.

The study most closely aligned with our population — adult learners — is Tyler et al. (2000), who exploit interstate variation in GED passing standards. While their quasi-experimental design provides valuable insights into credentialing effects, our approach offers the opportunity to directly compare fraudulent and legitimate credentials within identical institutional settings, and our matched employer–employee data allows us to track how returns evolve as employers learn about worker productivity. Our work also advances beyond regression discontinuity studies such as Clark and Martorell (2014), Graetz (2021) and Jepsen et al. (2016), and recent research on skill certifications (Mancino et al., 2024): these studies cannot separate signaling from human capital effects, since all credentialed individuals in their samples possess the underlying skills. Our setting — where some individuals hold credentials without corresponding human capital — enables us to isolate pure signaling mechanisms and observe their temporal evolution. Finally, our study relates to Arteaga (2018) and Hansen et al. (2024), who examine signaling where individuals differ in human capital but hold the same diploma; we focus on adult high school education, a context where employer information asymmetries may be particularly pronounced (Arcidiacono et al., 2010).

The remainder of the paper is organized as follows. Section 2 provides background on the Brazilian context. Section 3 presents a basic signaling model with fake diplomas. Section 4 describes the data and empirical strategy. Section 5 presents the main results. Section 6 discusses implications for signaling and learning models, and Section 7 concludes.

2 Institutional background

Since 1988, Brazil has undergone a remarkable educational transformation. In 1992, only 32% of Brazilians aged 17 had completed primary and middle education, rising to 86% by 2019; high school completion rates among 20-year-olds increased from less than 20% to over 70% in the same period (Pereira, 2022). Substantial challenges remain: at age 18, only one in two Brazilians has finished high school, and dropout rates are particularly acute in high school, where nearly 10% of students drop out each grade every year.

This increased demand for education has been matched by a rise in the number of schools offering programs to teach and retrain workers. In 2019, approximately 3.2 million students were enrolled in adult education (*Educação de Jovens e Adultos* – EJA) programs, of whom approximately 1.2 million were pursuing high school completion (INEP, 2020). Brazil’s private school sector is highly decentralized, with hundreds of small private schools in Rio de Janeiro alone. The regulations for establishing a private school are relatively lax: a school can operate by presenting a coherent curriculum

plan and having at least one room available for classes, and accreditation simply requires registering awarded diplomas with the State Department of Education.

2.1 Operação Nota Zero

On the morning of September 24, 2018, 110 police officers conducted a major operation targeting 11 private schools, as well as the homes of their owners, directors, and staff. These schools allegedly sold more than 350,000 fake diplomas over five years to individuals seeking a high school degree without completing the required coursework, generating up to R\$700 million (approximately 130 million USD). The operation was widely covered by the Brazilian media (O Globo, 2018; G1 Rio, 2018).

The investigation, carried out by the Rio de Janeiro Civil Police in collaboration with the State Department of Education, uncovered a market for fake high school diplomas issued by legally recognized institutions. These schools enrolled far more students than authorized: in 2015, one such school (Instituto Educacional Luminis) had 12,021 students enrolled — 120 times its authorized capacity of 100 students. The process of buying a fake diploma was straightforward: individuals would contact intermediaries, provide personal information, and make a payment; the diploma, issued within days, falsely certified attendance of at least 75% of classes and passing grades. We reached out to one of these merchants by email to inquire about purchasing a diploma; a high school diploma would cost R\$600 (around 110 USD) and could be issued within five days. Although similar schemes were found across the country, the State of Rio de Janeiro was a major hub due to lax enforcement; the police found that most out-of-state buyers came from Minas Gerais, Paraná, and Mato Grosso do Sul.

3 Theoretical background

In the human capital model (Becker, 1994), each lesson imbues the student with tangible skills that the individual rents to employers for a wage. In the signaling model (Spence, 1973), schools impose costs on students, with lower-ability individuals facing disproportionately large costs; employers, unable to observe ability directly, rely on schooling to identify the most able. Consider a simple formulation. Let w_h and w_l be the productivity of high (h) and low (l) types, $C_h < C_l$ the per-period cost of schooling for each type, and r the discount rate. High types obtain Q years of schooling if

$$\sum_{t=Q}^T \frac{w_h}{(1+r)^t} - \sum_{t=0}^Q \frac{C_h}{(1+r)^t} > \sum_{t=0}^T \frac{w_l}{(1+r)^t}, \quad (1)$$

and low types remain unschooled so long as the analogous condition with C_l is reversed. If a Q exists such that both inequalities hold, the model produces a separating equilibrium in which schooling choices reveal ability.

The introduction of fake diplomas complicates this equilibrium. Let R_i be the reputation cost for person i if found to hold a fake diploma — legal consequences, subsequent treatment by employers, and/or psychological costs of dishonesty — distributed across the population, and let D_i be the expected time during which individual i avoids detection. Once detected, the individual earns w_l for the remainder of the career. A worker will purchase a fake credential when the discounted wage premium earned during the undetected period exceeds the price of the diploma plus the expected reputation cost. Two implications follow. First, because the fake diploma is cheap relative to years of schooling, the pooling induced by fraud erodes the informational content of the credential precisely where detection is slow. Second, the speed of detection — and hence the horizon over which fake credentials retain value — depends on how quickly employers observe productivity on the job. The empirical

analysis below tests both implications: fake and legitimate diplomas should command similar returns on impact, with the returns to fake diplomas eroding as employers learn, and eroding faster in settings where productivity is more readily observable.

4 Data and empirical strategy

4.1 Data sources and sample construction

We combine three data sources: (i) administrative records of investigations about schools suspected of granting fake diplomas; (ii) the *Diário Oficial do Estado do Rio de Janeiro* (DOERJ), the official registry that publishes the names of all high school graduates in the state; and (iii) RAIS, an employer–employee matched administrative dataset from the Ministry of Labor covering the universe of formal labor contracts in Brazil from 1995 to 2020.

Working in collaboration with the Rio de Janeiro State Department of Education, we obtained access to preliminary investigations, police records, lawsuits, and decisions of the State Council of Education, identifying 21 schools involved in diploma-selling schemes. Forensic evidence illustrates the mechanical nature of the fraud: diplomas issued to different students reproduce identical grade tables line by line, and intermediaries circulated formal “payment plans” pricing the credential at exactly R\$600.

We scraped the DOERJ to collect the full names of all high school graduates in the state, with graduating semester, year, and school. After cleaning fuzzy entries, we identify 549,195 real diploma holders and 134,651 fake diploma holders, and restrict the sample to individuals uniquely identified by their full names (608,934 diploma holders). From RAIS we construct the set of all workers satisfying four conditions: their full name is reported in RAIS; they formally worked at least once in one of the four states where diploma-selling was most common (RJ, MG, PR, MS); they were born after 1955; and they are uniquely identified by their full name. This yields 32,022,752 formal workers. To be included in the analysis, an individual must appear in RAIS at least once in the five years before graduation; we include observations within a window of five years before and after obtaining the credential, requiring age of at least 25 in the graduation year and graduation between 2000 and 2015.

We compare fake diploma holders with two groups. The first consists of adults who earned degrees from legitimate high schools during the same period, identified from the same DOERJ scraping. The second consists of high school dropouts: adults who completed primary education (grade 9) but did not obtain a high school degree. For each diploma holder (fake or true), we match ten dropouts of the same sex, born in the same year and in the same region, selecting randomly when more than ten matches are available. Summary statistics show that both treated groups start with somewhat higher formal-employment rates and wages than controls, while fake and legitimate diploma recipients are quite similar to each other across most variables.

4.2 Empirical strategy

We use a dynamic difference-in-differences specification with two-way fixed effects, testing robustness with the estimator of Abraham and Sun (2021). For each labor market outcome, we estimate two

separate regressions on different samples:

$$y_{i,t} = \alpha_i^A + \lambda_t^A + \sum_{l=-5}^{-2} \gamma_l^{lead} \text{Legit}_{i,t}^l + \sum_{l=0}^5 \gamma_l^{lag} \text{Legit}_{i,t}^l + \beta^A X_{i,t} + v_{i,t}^A, \quad (\text{A})$$

$$y_{i,t} = \alpha_i^B + \lambda_t^B + \sum_{l=-5}^{-2} \mu_l^{lead} \text{Fake}_{i,t}^l + \sum_{l=0}^5 \mu_l^{lag} \text{Fake}_{i,t}^l + \beta^B X_{i,t} + v_{i,t}^B. \quad (\text{B})$$

Equation (A) estimates the dynamic effects of obtaining a legitimate diploma using the sample of treated individuals and their matched controls; Equation (B) conducts the analogous analysis for fake diplomas. The event-time indicators $\text{Legit}_{i,t}^l$ and $\text{Fake}_{i,t}^l$ equal one if individual i is l periods away from obtaining the credential; $l = -1$ is the omitted reference category. The vector $X_{i,t}$ contains gender, race, age and state of residence, and a full set of calendar-year dummies, absorbing year-specific shocks common to all workers. The lag coefficients capture the effects of obtaining each type of diploma relative to the year before issuance, while the lead coefficients serve as placebo tests for the parallel-trends assumption. As high school dropouts tend to enter the labor market earlier, outcomes not conditioned on employment often show a negative but improving employment gap prior to graduation; importantly, both groups of diploma holders exhibit very similar pre-treatment trends.

4.3 Panel structure: balanced and unbalanced samples

By default, panels constructed from RAIS are unbalanced: individuals appear only when formally employed, so coefficients estimated on the unbalanced panel are interpreted as conditional on formal employment. In addition, we estimate the same regressions on a balanced panel, including all individuals in every year of the eleven-year window and imputing zeros for employment and earnings when an individual is not observed in RAIS. The balanced specification captures extensive-margin outcomes such as participation in the formal labor market and transitions into and out of employment.

5 Results

5.1 Employer-reported educational attainment

RAIS contains information reported by firms on the education levels of their employees, which we use to measure the employer's assessment of the worker's educational attainment. Figure 1 shows the evolution of the likelihood of an individual being classified as a high school graduate by their employer, conditional on being employed. We observe a sharp increase of 25 percentage points in this probability after obtaining the diploma, both for those who genuinely studied and for those who purchased a fake credential — direct evidence that both groups present, and employers record, the new credential.

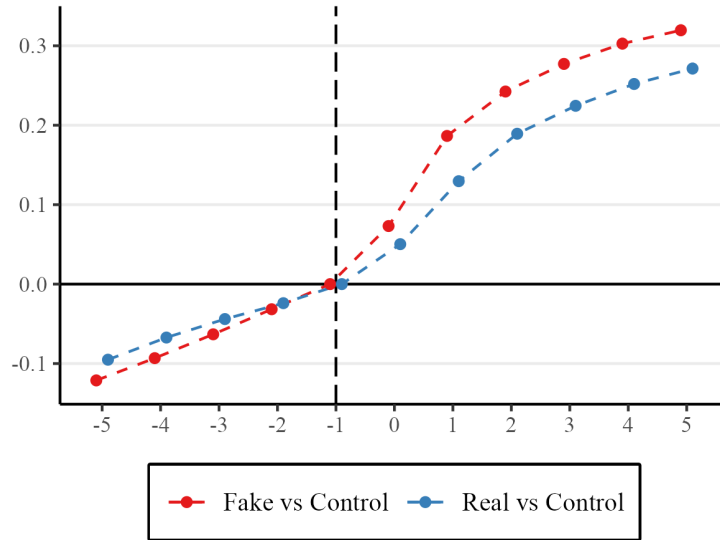


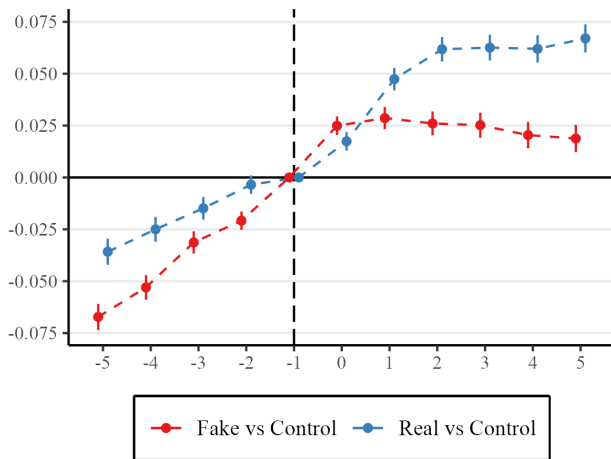
Figure 1: Probability of high school reported by employer

Note: Dynamic event-study coefficients from the two-way fixed-effects model. The outcome is the probability of having a high school diploma reported by the employer, conditional on employment. Red: fake diploma holders vs. matched controls; blue: legitimate diploma holders vs. matched controls.

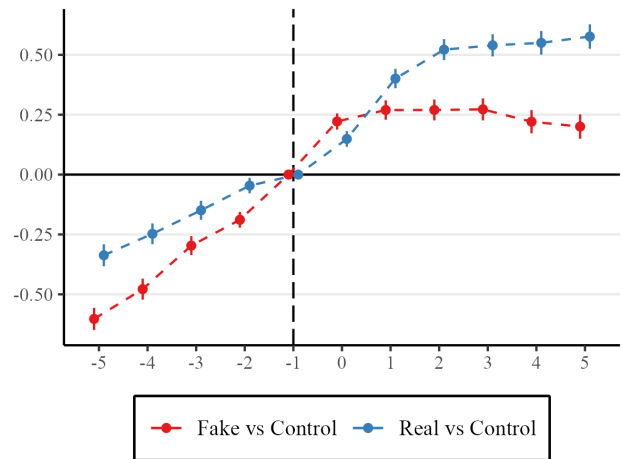
5.2 Employment and wages

The left panel of Figure 2 illustrates the trajectory of formal employment probabilities, in the balanced panel, for individuals who either complete an adult high school or acquire a fake diploma, compared to matched high school dropouts. During the five years prior to diploma issuance, two patterns emerge: (i) employment probabilities of both real and fake diploma holders increase relative to dropouts, who tend to enter the labor market earlier (Ashenfelter, 1978); and (ii) the two groups of diploma holders exhibit similar pre-trends. The five years following issuance reveal distinct patterns. In the year the diploma is obtained, both groups experience a clear short-term gain — approximately a 2.5% increase in the probability of holding a formal job. These gains then diverge: individuals with fake credentials see the initial gain stabilize and then decline, while genuine graduates experience sustained improvements, with gains between 5% and 7.5%.

Panel B presents earnings for the same sample. Because zero wages are imputed for those not observed in formal employment, the extensive margin dominates: after a similar initial increase, earnings gains for fake diploma holders gradually fade, while individuals with real diplomas sustain and expand their gains over time.



A: Prob. employment

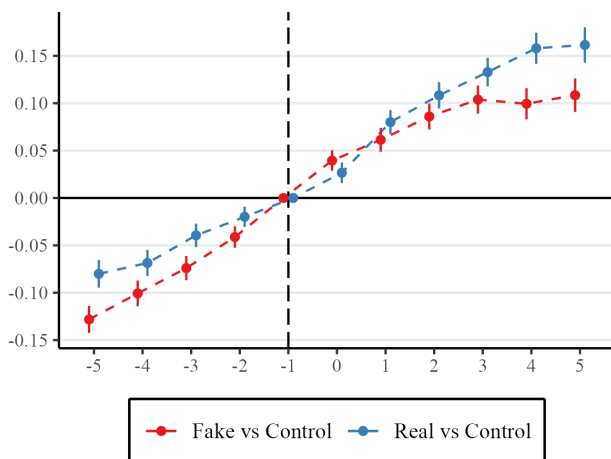


B: Log wage

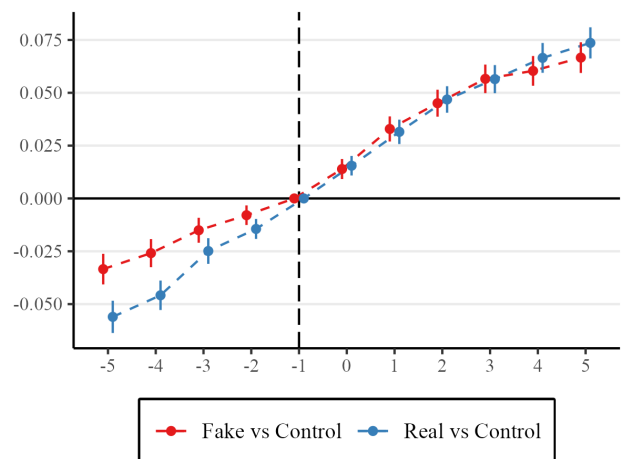
Figure 2: Unconditional effects on employment and wages (balanced panel)

Note: Dynamic event-study coefficients from the two-way fixed-effects model. Panel A: probability of formal employment; Panel B: log of monthly wage plus one, unconditional on employment (zeros imputed when out of RAIS).

Figure 3 turns to workers who remain employed. In the left panel, conditional on holding a formal job, both groups exhibit positive wage trajectories in the initial years, with a slightly steeper path for genuine graduates. Two years after graduation, gains are approximately 10.5% for real diploma holders and 8% for fake ones. From that point onward a divergence emerges and stabilizes at about 5 percentage points: real graduates reach a 15% gain relative to controls, against 10% for fake holders. Panel B reveals that fake diploma holders are as likely as genuine graduates to hold positions in occupations that require a high school credential: among those who maintain formal employment, individuals with fake diplomas are relatively successful in securing jobs consistent with their (fake) credentials, even if they do not keep pace in wages.



A: Log wage (conditional)



B: HS-required occupation

Figure 3: Conditional effects on wages and high school jobs (unbalanced panel)

Note: Panel A: log monthly wage conditional on formal employment; Panel B: probability of employment in an occupation that requires high school education.

In summary, both types of degrees provide positive benefits in the first years after issuance. The benefits decline over time for fake diploma holders: some lose their jobs, while others remain employed but fail to keep pace with the wage and career trajectories of legitimate graduates. These

results align with a model where the signaling value of the credential erodes over time as employers learn that some workers lack the skills required to perform their jobs.

5.3 Transitions

The left panel of Figure 4 plots the probability of having a different formal job compared to the previous year. Individuals who will eventually obtain either type of diploma exhibit similar transition probabilities prior to issuance. However, fake diploma holders show a significantly higher probability of changing jobs immediately after obtaining the credential, a pattern that persists for up to three years; a similar dynamic holds for occupational changes (right panel). This is consistent with individuals using fake diplomas as a signal in the job market, particularly when targeting new employers who have less information about them. The effects are substantial: in the first year after obtaining the diploma, fake diploma holders are six percentage points more likely to change jobs than legitimate graduates.

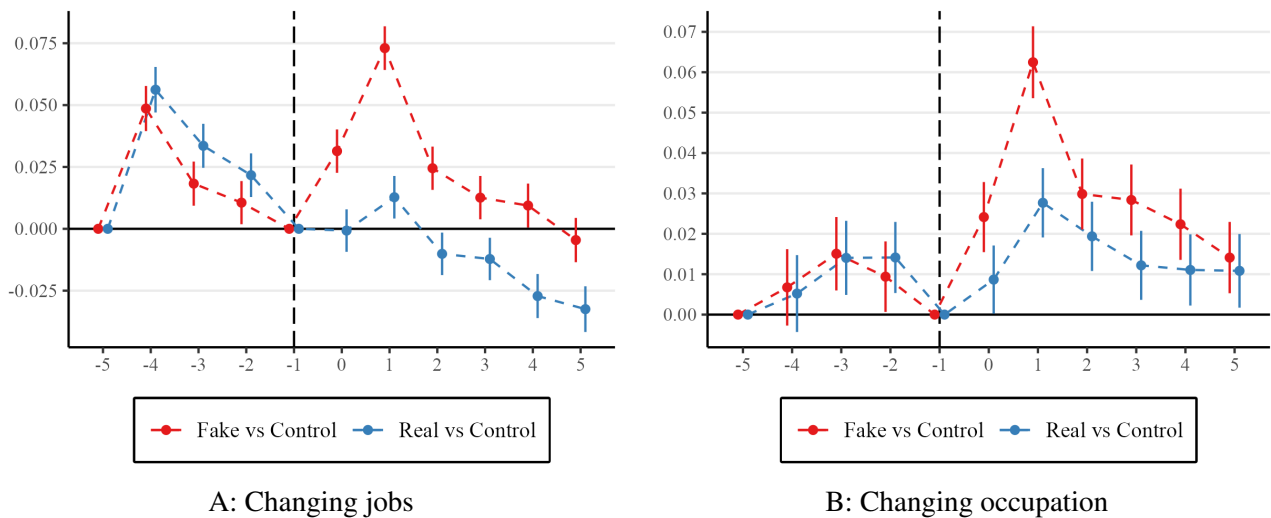


Figure 4: Probability of changing jobs and occupation

Note: Panel A: probability of holding a different formal job relative to the previous year; Panel B: probability of changing occupation (4-digit CBO) relative to the previous year.

Combined with the finding that a significant share of fake diploma holders cannot maintain the same level of labor market participation as legitimate graduates, the higher job-switching probability suggests a group of workers who attempt to “fake it” but ultimately fail to sustain stable employment. We hypothesize that many of these individuals continue to rely on their fake credentials to access new jobs over time, resulting in persistently higher turnover. To test this, we estimate a regression on the balanced panel where the dependent variable equals one if the individual is either non-formally employed or has changed formal jobs more than three times during the observation period. Figure 5 presents the results: individuals with fake diplomas are approximately ten percentage points more likely to fall into this high-turnover category than those with genuine diplomas. This pattern supports our interpretation of a signaling breakdown: workers with fake credentials may initially succeed in securing jobs, but their lack of underlying skills leads to repeated separations.

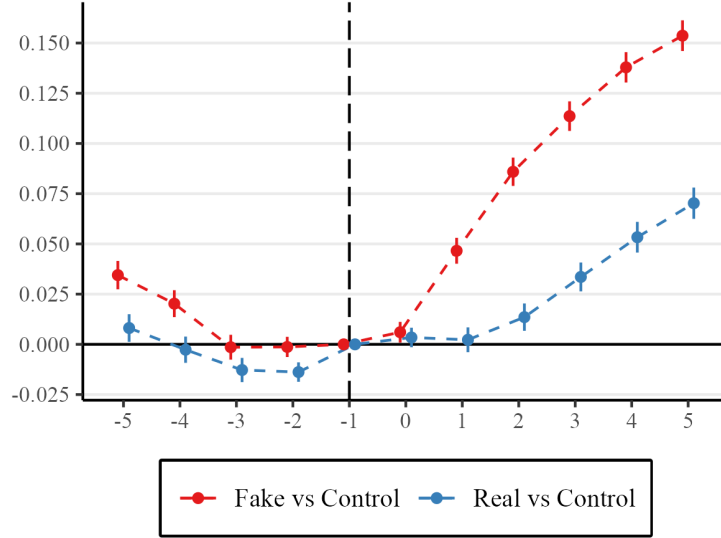


Figure 5: Probability of not being formally employed or being a frequent job switcher

Note: The outcome equals one if the worker is not formally employed in a given year or has changed jobs at least three times since five years before graduating (balanced panel).

6 Implications for signaling and learning models

We have established that fake diplomas produce a significant short-term boost in employment and wages, with some workers subsequently trapped in a high-turnover equilibrium, whereas genuine diplomas lead to sustained gains. We now examine how this pattern reflects learning by employers and employees, analyzing the heterogeneity of our results. In the interest of space, the corresponding event-study figures are omitted here.¹

6.1 Employer learning

The employer learning literature shows that firms statistically discriminate based on schooling credentials when hiring but update their beliefs as they observe on-the-job performance; Lange (2007) estimates that employers reduce their initial expectation errors about worker productivity by 50% within three years. Motivated by this framework, we split the sample into workers employed at the same firm for at least three years at the time of diploma issuance (*attached workers*) and *non-attached* workers with shorter tenure.

Among attached workers — whose employers have accumulated substantial information about their productivity — both legitimate and fake diploma holders show similar increases in formal employment relative to controls, consistent with the diploma providing limited new information when the employer already knows the worker well. For non-attached workers, in contrast, we observe a clear divergence: legitimate diploma holders experience persistent employment gains, while fake diploma holders display only short-term improvements that dissipate within a few years — exactly the pattern predicted by a learning model in which employers initially respond to the signal but later revise their beliefs. Wage gains are larger for non-attached workers, reflecting the greater informational value of credentials when prior employer knowledge is limited; within this group, legitimate graduates experience substantially higher and more sustained wage growth than fake diploma holders. For attached workers, wage effects are modest for both groups, though consistently higher for legitimate graduates.

¹They are available from the authors upon request.

6.2 Job ladders and the value of credentials

A growing literature emphasizes that labor markets are segmented between occupations and firms offering steep career and wage progression — job ladders — and those providing flat trajectories and limited upward mobility (Cahuc et al., 2006; Lise et al., 2016). We classify occupations into two groups based on the average slope of wage growth with tenure in RAIS: *high-progression* and *low-progression* occupations.

Labor market returns to diploma acquisition differ sharply across these segments. In high-progression occupations, legitimate graduates experience substantially larger and more persistent gains than any other group, with a wage premium exceeding 20% after five years, while fake diploma holders fail to keep pace as their trajectories flatten shortly after obtaining the credential. In low-progression occupations — closer to dead-end jobs in the terminology of Cahuc et al. (2006) — gains are modest and remarkably similar regardless of whether the diploma is real or fake, suggesting that in these segments the diploma functions as a basic entry credential rather than a strong productivity signal. These results align with job ladder models: in occupations with steep wage progression and internal mobility, the market is more effective at distinguishing genuine human capital from mere credentials; where advancement opportunities are limited, the response to educational signals is weaker and less differentiated.

7 Conclusions

This paper investigates whether schooling primarily builds skills or serves as a signal of individuals' underlying abilities, using novel evidence from the adult education sector in Brazil. Exploiting the 2018 police operation that uncovered a network of schools issuing fraudulent high school diplomas without providing any instruction, we compare labor market outcomes for individuals with fake diplomas, legitimate graduates, and matched high school dropouts.

Initially, both fake and legitimate diploma holders experience similar gains, suggesting a strong signaling effect. However, the gains for fake diploma recipients erode quickly. The early returns appear driven by job changes, during which employers are less informed about workers' productivity. In the longer run, individuals with fake diplomas experience greater volatility in formal employment, including a significantly higher likelihood of multiple job separations, and the erosion is faster in occupations where productivity is more readily observable. Overall, our findings provide strong support for the signaling model in the short run, while highlighting how the value of educational signals diminishes as employers learn about workers' true productivity. This erosion underscores the limits of purely signaling-based returns to education and the importance of actual skill acquisition in sustaining labor market outcomes.

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