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Does the color of the collar matter? Firm specific human capital and post-displacement outcomes *

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Abstract

We investigate whether the costs of job displacement differ between blue and white collar workers. In the short run earnings and employment losses are substantial for both groups but stronger for white collars. In the long run, there are only weak effects for blue collar workers but strong and persistent effects for white collars. This is consistent with the idea that firm-specific human capital and internal labor markets are more important in white than in blue collar jobs.

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1 Introduction

The loss of a job is certainly shaking up someone's career temporarily, but might also be a long-term problem. To which extent does the type of a worker's job affect the costs of displacement? Theoretical arguments suggest that losing a job associated with firm-specific human capital is more costly in terms of reduced lifetime earnings than losing a job where pay is closely aligned with a worker's general human capital. Similarly, workers who are displaced from manual work, maybe with piece rate compensation, are less likely to suffer substantial lifetime earnings losses than those displaced from their career path on internal labor markets associated with deferred payment contracts.

This paper looks at displacement costs for two broad occupational groups: white and blue collar workers. Arguably, firm-specific human capital, internal labor markets, and career concerns are much more important in white than in blue collar jobs. When displacement costs are driven by loss of firm-specific rents we should observe higher displacement costs for white than for blue collar workers. (Lazear, 1979)

The issue has not been resolved in the empirical literature: The authors of country chapters in the book by Kuhn (2002) compare displacement costs across a number of countries and find no difference for earnings losses across education categories. The displacement costs with respect to unemployment are mixed: In the U.S., Canada, France and Belgium, more educated workers (who are more frequently found in white collar jobs) tend to suffer less from joblessness after displacement, the reverse is true for Germany.[1]

We use exceptional administrative data, the Austrian Social Security Database (ASSD), to shed new light on the issue. This data set has three main advantages: First, it covers the universe of Austrian employees in the private sector. Second, it contains high-quality and high-frequency information on the individual workers' earnings and employment history over an extended period of time. Third, it contains an employer identifier that allows

[1] Podgursky and Swaim (1987) explicitly consider a white-blue collar comparison: they find lower earnings losses for white collars using the Displaced Worker Survey.

us to identify plant closures. Furthermore, as Austrian blue and white collar workers are subject to different social security rules measurement error in occupational status can be ruled out.

Taking plant closures as an indicator for exogenous job separations we are able to identify the causal effect of displacement on worker's future careers. Our empirical strategy exploits the rich nature of our data and applies exact matching techniques which makes treatment and control groups extremely well comparable.

Our findings point to large and persistent employment and earnings losses for white collar workers, but more transient and much smaller losses for blue collars. This is consistent with the idea that internal labor markets and firm-specific wage policies are more common among white collar workers compared to blue collars.

2 Data

Our data comprise all private sector workers in Austria covered by the social security system.[2] All employment records can be linked to establishment identifiers. We use quarterly information from 1978-98 for daily employment and wages. This information is highly reliable, because social security payments hinge on these data.

We use workers employed between 1982 and 1988 at risk of a plant closure. This allows to observe workers' earnings and employment histories 4 years prior to potential displacement up to 10 years afterwards. We restrict the analysis to prime-age workers (age 35 - 50) with at least one year of tenure, who were employed in firms with more than 5 employees at least in one quarter during the period 1982-88, excluding the construction or tourism industry.

In the ASSD, each establishment has an identifier. Exits of establishments occur when the employer identifier ceases to exist. Some of these cases might not be true closures and (most of the) employees just continue under a new identifier. Therfore, we impose a further restriction: If more than 50% of the

[2]See Zweimüller et al. (2008) for a description of the data.

employees continue under a new employer identifier we do not consider this to be a closure.

Our treatment group comprises 9,656 workers who experienced a plant closure between 1982 and 1988. Our control group comprises about 1 million workers from establishments not going bust during this period. To increase the comparability between treated and controls, we perform exact matching between treated and control subjects on the following criteria: sex, age, broad occupation (blue or white collar), location of firm (9 provinces), industry (30 industries), employment history in the eight quarters before plant closure.[3] We do almost exact matching on continuous variables: average daily wages in the quarters 8, 9, 10 and 11 before plant closure are matched by decile group[4] and plant size two years before plant closure is matched by quartile groups. Applying this matching procedure allows us to identify at least one control subject for 5,570 treated subjects, which are matched to 30,156 controls.

3 Econometric Strategy

To estimate the effect of an involuntary job loss on earnings and employment prospects we specify the following model

$$\begin{aligned} Y_{i,t} &= \alpha + \beta_{1,20} BLUE_i PC_i Q^{1,20}_{i,t} + \beta_{21,40} BLUE_i PC_i Q^{21,40}_{i,t} \\ &+ \gamma_{1,20} BLUE_i Q^{1,20}_{i,t} + \gamma_{21,40} BLUE_i Q^{21,40}_{i,t} \\ &+ \delta_{1,20} PC_i Q^{1,20}_{i,t} + \delta_{21,40} PC_i Q^{21,40}_{i,t} \\ &+ \lambda_{1,20} Q^{1,20}_{i,t} + \lambda_{21,40} Q^{21,40}_{i,t} + \mu_i + \theta_t + \epsilon_{i,t}; \end{aligned} \quad (1)$$

$Y_{i,t}$ denotes the outcome variable (employment status or earnings) of individual i at quarter t, $BLUE_i$ is a dummy variable indicating whether individual i is a blue collar worker, PC_i is another dummy variable indicating whether individual i got displaced due to a plant closure and the $Q_{i,t}$'s are two dummies indicating the time period relative to plant closure (actual or potential).

[3] See Ichino et al. (2007) for a detailed description of the matching algorithm.

[4] We do not match earnings close to closure, because of anticipatory wage effects. See Jacobson et al. (1993) for evidence on such effects.

To keep the problem manageable and results easily interpretable, we focus on two post-displacement periods: the "short-run", defined as the first five years (20 quarters, $Q_{i,t}^{1,20}$) after potential displacement; and the "long-run" as years 6-10 after potential displacement ($Q_{i,t}^{21,40}$). Moreover, specification (1) includes a constant term, α, individual fixed effects, μ_i, calendar time effects, θ_t and an error term, $\epsilon_{i,t}$.

The parameters of interest are $\beta_{1,20}$ and $\beta_{21,40}$. They identify, for short- and long-run labor market outcomes, whether blue collar workers suffer more ($\beta_{1,20} < 0$, $\beta_{21,40} < 0$) or less from a plant closure than white collars.

4 Results

Figure 1 visualizes the evolution of earnings and employment by broad occupation and displacement status. Panel A shows employment profiles for displaced (treated) and non-displaced (control) white collar workers. The graph shows mean employment rates per quarter over 14 years – 4 years before and 10 years after potential displacement. By construction, employment rates are equal to unity in the year prior to potential displacement. Employment rates at earlier dates show that our matching procedure works well: During quarters -16 to -5 employment rates of treated and controls are identical. Immediately after displacement employment rates for the treated white collar workers decrease sharply. Only about 50 percent find a new job during the first quarter after displacement. Employment rates catch up during the first two years and decrease thereafter but never reach the level of the non-displaced.

Panel B shows the corresponding picture for blue collar workers. The immediate loss in employment rates after displacement is somewhat higher for displaced blue collars. However, displaced blue collars recover much faster and, about 6 years after displacement, reach a level only slightly below the employment of non-displaced blue collars. In sum, the graphical analysis shows that employment losses of displaced white collar workers are permanent and strong. In contrast, employment losses for displaced blue collars are more temporary and small in the long run.

Panels C and D portray the analogous phenomenon for the evolution of workers' earnings. The numbers show mean nominal daily earnings, conditional on employment. Obviously, this measure changes over time due to increases in real earnings, in inflation and because the set of employed workers changes. As in panels A and B, we see a remarkable difference between white and blue collar workers. Wages for displaced blue collar workers are only slightly below those of non-displaced blue collars throughout the post-plant closure period. In contrast, earnings profiles of displaced white collar workers are substantially below those of their non-displaced colleagues and remain so throughout the post-plant closure period.

Table 1 presents regression results from equation (1), both for employment and daily wages. Columns (1) and (2) use employment status and the wage as dependent variables. Individual fixed effects and dummies for calendar time are included.

Displaced white collar workers face substantial employment losses equal to a .231 reduction in the employment probability (coefficient of $PC_iQ_{i,t}^{1,20}$) in the short-run and a .137 reduction ($PC_iQ_{i,t}^{21,40}$) in the long-run. Displacement effects for blue collars are much more moderate: employment probabilities decrease by .149 (-.231 + .082) in the short-run and by .046 (-.137 + .091) in the long-run.

Blue-white collar differences in earnings losses are even more striking. Column (2) shows that earnings losses for displaced white collar are large both in the short-run (-.079 log points, coefficient of $PC_iQ_{i,t}^{1,20}$) and in the long-run (-.078 log points, $PC_iQ_{i,t}^{21,40}$). In contrast, blue collar workers' earnings drop by only .023 log-points (-.079 + .056) in the short-run and by negligible .006 log-points (-.078 + .072) in the long-run.

5 Conclusion

We investigated whether costs of job displacement differ by the nature of the job. Our findings suggest that both white and blue collar workers experience a decrease in employment rates and earnings in the short-run (the first five years after displacement). However, for white collar workers these detrimental short-run effects are much stronger. Moreover, for blue collar workers employment losses are modest and earnings reductions are negligible in the long-run (years 6-10 after displacement). In contrast, white collar workers experience strongly negative employment and earnings effects also in the long run.

Arguably, in white collar jobs career concerns, firm-specific human capital, and internal labor markets are more important than in blue collar jobs. Blue collar workers do mostly manual work and are frequently paid piece rates. Hence our results are consistent with the idea that displacement costs are higher for workers displaced from jobs associated with more job-specific rents. Individuals losing such jobs are confronted with a worse position on the labor market and experience a major disruption of their career path, not only temporarily but also in the long run.

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Table 1: Estimation results

	Employment	Earnings
	(1)	(2)
BLUE*PC*$Q_{01,20}$	.082	.056
	(.01)**	(.01)**
BLUE*PC*$Q_{21,40}$	.091	.072
	(.014)**	(.012)**
PC*$Q_{01,20}$	-.231	-.079
	(.006)**	(.007)**
PC*$Q_{21,40}$	-.137	-.078
	(.008)**	(.008)**
BLUE*$Q_{01,20}$	-.019	-.031
	(.004)**	(.004)**
BLUE*$Q_{21,40}$	-.056	-.041
	(.008)**	(.006)**
$Q_{01,20}$	-.033	.023
	(.003)**	(.003)**
$Q_{21,40}$	-.12	.027
	(.005)**	(.004)**
Const.	.96	5.678
	(.015)**	(.012)**
Obs.	2033304	1748184
R^2	.453	.883
F statistic	104.854	561.717

**All regressions include individual fixed effects and dummies for calendar time. Dependent variables are an employment dummy in column 1 and log daily earnings in column 2. Clustered standard errors reported in parenthesis.*

Figure 1: Employment and Earnings