

Additional File 3 to Labor market regulation and the cyclicalcy of involuntary part-time work

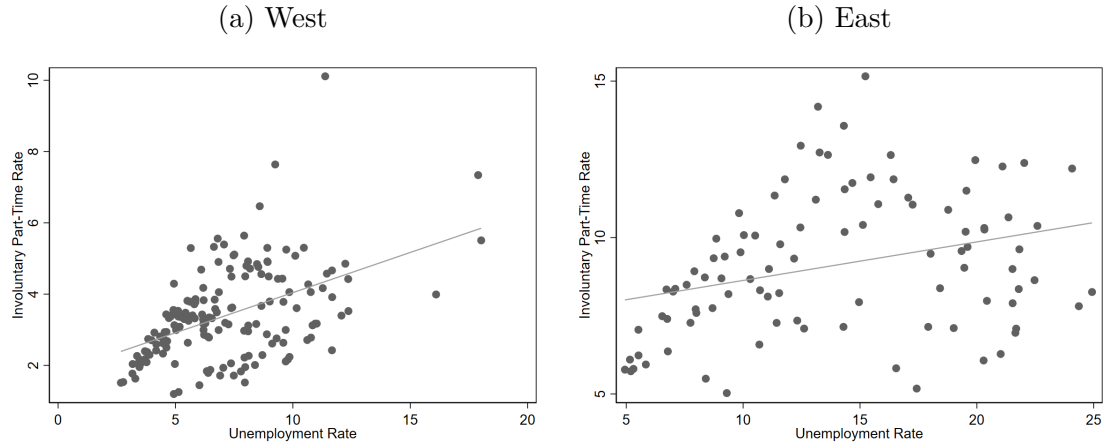
Heterogeneity Analysis

In this additional file, we analyze whether the effect of unemployment on the incidence of involuntary part-time work varies in relevant macro dimensions: between Eastern and Western Germany, before and after the Great Recession or after the Hartz reforms. We find that the marginal unemployment effect is larger in Western Germany and that it has been larger since the Great Recession. Contrary to common belief, *it appears that* the Hartz reforms *apparently* did not increase the effect of unemployment on IPT.

In Table 1, we report the results from different exercises that we further describe in the following. In each specification, we include year and state fixed effects and control for demographic group and industry shares as well as GDP growth. The first column of Table 1 shows the main results from Section 4.1 (specification (3) of Table 2) for a convenient comparison.

First, we investigate whether the association between IPT and unemployment differs between Eastern and Western Germany. This is motivated by the observation that there are substantial differences in the incidence of (involuntary) part-time work between the two regions. The share of IPT is higher in Eastern Federal States, although the share of part-time work is generally lower. These differences have often been highlighted in the literature and are mainly attributed to different working time preferences of women: Not only is the labor market participation rate of women in Eastern Germany higher than in Western Germany, women in the East are also more likely to work full-time and are less likely to be content with part-time hours than women in the West (see for example Wanger 2011).

Figure 1: Correlation Between Involuntary Part-Time Employment and Unemployment in Eastern and Western German Federal States



Notes: Correlation within German federal states between the involuntary part-time rate and the unemployment rate in West Germany and East Germany for the sample period 2002 to 2017. Data sources: European Labour Force Survey and Eurostat, own calculations using sampling weights of the Labour Force Survey.

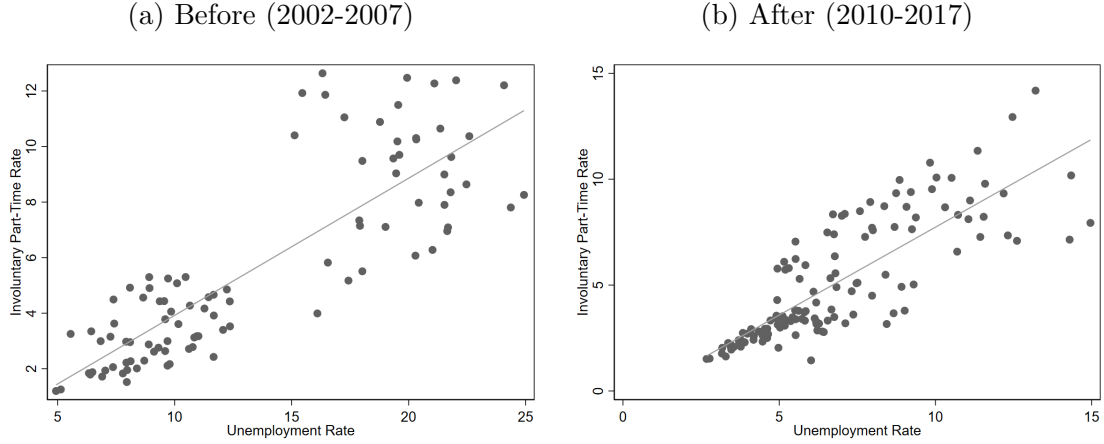
To inspect whether there are regional differences regarding the relationship between cyclical indicators and the incidence of IPT we present some descriptive evidence in Figure 1. It shows the correlation between IPT and unemployment separately for Eastern and Western German states. For both regions, there is a positive correlation between unemployment and IPT, with the slope in Western Germany being steeper than in the East.

Column (2) of Table 1 confirms that there is a stronger relationship between unemployment and IPT in Western Germany. In this specification, we interact unemployment with the distinction between Eastern and Western states. Calculated at the respective sample means, the marginal effect of unemployment on the incidence of IPT is about twice as large in Western Germany [asthan](#) it is in Eastern Germany. This suggests that the relevant labor market mechanisms discussed in Section 4.2 affect the Western labor market more strongly. The result furthermore reflects the finding that the marginal effect of unemployment is generally decreasing: As the level of the unemployment rate is usually higher in Eastern Germany (see Figure 1), differences in the unemployment rates are less relevant for the incidence of IPT. In other words, it seems that in view of Eastern German employees' poorer situation, it does not matter as much how bad the situation actually is.

We now turn to potential differences between the periods before and after the Great [R](#)ecession. This distinction seems particularly relevant with regard to the litera-

ture: For the US labor market, Valletta et al. (2020) show that while the level of IPT used to behave strongly countercyclically until the Great Recession, its recent development can be increasingly explained by structural factors. Here, we investigate whether there are differences in the cyclical dynamics of IPT before and after the Great Recession in Germany as well.

Figure 2: Correlation Between Involuntary Part-Time Employment and Unemployment Before and After the Great Recession



Notes: Correlation within German federal states between the involuntary part-time rate and the unemployment rate rate for the period 2002-2007 and the period 2010-2017. Data sources: European Labour Force Survey and Eurostat, own calculations using sampling weights of the Labour Force Survey.

Similar to Figure 1, Figure 2 shows the correlation between IPT and unemployment separately for the periods before (2002-2007) and after (2010-2017) the Great Recession. The correlation appears to be slightly stronger after the Great Recession. Column (3) of Table 1 confirms that the impact of unemployment on the incidence of IPT has actually been much stronger in recent years. In this specification, we interact the cyclical indicators with the distinction between the periods before and after the Great Recession. The marginal effect of the latter is more than twice as large (0.19 compared to 0.07 before the recession). This could hint [at to](#) a regime change in employers' hiring behavior after the recession. With the experience of the crisis, the same unemployment rate now leads to a higher rate of IPT, implying either a shift in the bargaining positions or in workers preferences regarding full-time hours.

We furthermore examine whether our findings regarding the relationship between IPT and unemployment depend on the Hartz reforms. These major reforms had various implications for the German labor market. As briefly outlined in Section 5 of our paper, the Hartz reforms expanded, among other things, the opportunities

Table 1: Heterogeneity of Cyclical and Structural Determinants of Involuntary Part-Time Work, Regression Results

	(1)	(2)	(3)	(4)
Share IPT	FS from Section 4.1	Eastern/Western Ger.	Before/After GR	After Hartz Reforms
Unemployment Rate	0.253*** (0.0695)			0.186** (0.0779)
Unemployment Rate Sq.	-0.550*** (0.167)			-0.433** (0.206)
GDP Growth	0.0693** (0.0314)			0.0895** (0.0402)
Unemployment Rate West		0.578*** (0.124)		
Unemployment Rate Sq. West		-2.117*** (0.643)		
Unemployment Rate East		0.276*** (0.0759)		
Unemployment Rate Sq. East		-0.506** (0.210)		
Unemployment Rate Before			0.167*** (0.0324)	
Unemployment Rate Sq. Before			-0.444*** (0.110)	
Unemployment Rate After			0.466*** (0.114)	
Unemployment Rate Sq. After			-2.231*** (0.622)	
Demographic Group Shares	Yes	Yes	Yes	Yes
Industry Shares	Yes	Yes	Yes	Yes
GDP growth	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
N	256	256	256	208

Notes: Dependent variable is the share of IPT at federal state level in the years 2002-2017. Marginal effects at the mean reported. Mean of state employment used for regression weights. Standard errors in parentheses clustered at federal states, $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data sources: European Labour Force Survey and Eurostat, own calculations.

for marginal employment ("minijobs"). However, the incidence of minijobs has no significant impact on IPT, as shown in the same section. Another relevant change was the reduction in unemployment benefits generosity: the payment period of income-dependent benefits was shortened, making unemployment a much worse option for employees since then. Theoretically, this suggests that unemployment has had a stronger influence on the incidence of IPT since the implementation of the Hartz Reforms.

We do not show separate scatter plots and do not use interaction terms to investigate this dimension, because there are too few observations before the Hartz reforms in our sample for them to be analyzed separately. Instead, we consider a separate sample that contains only observations after the Hartz reforms, that is from 2005-2017. The results are shown in column (4) of Table 1. In comparison to column (1), there are no qualitative differences. Contrary to the theoretical prediction, the effect is smaller when restricting the analysis to the period after the Hartz reforms.¹

References

- Valletta, Robert, Leila Bengali, and Catherine Van der List (2020). "Cyclical and market determinants of involuntary part-time employment". In: *Journal of Labor Economics* 38.1, pp. 67–93.
- Walwei, Ulrich et al. (2017). *Beschäftigungsformen*.
- Wanger, Susanne (2011). "Viele Frauen würden gerne länger arbeiten". In: *IAB-Kurzbericht 9/2011*.

¹This result is consistent with other findings in the literature which show that the Hartz reforms did not have a the expected clear cut effect on atypical employment, including part-time, but rather reinforced the positive trend in a short transitory period right after the reforms, see for example Walwei et al. 2017