

Additional File 2 to Labor market regulation and the cyclicalcy of involuntary part-time work

Different Cyclical Indicators

In this subsection, we separately consider different specifications of the model in order to gain some additional insights and to evaluate the robustness of our results. Specifically, we use different indicators to describe the state of the labor market and estimate different variants in each case. In summary, this exercise provides some interesting findings but does not produce any conflicting results.

Table 1 shows the results. Again, state and year fixed effects are included in all specifications. Apart from that, we first only include the unemployment rate (column 1). Column (2) repeats the first specification of the analysis in Section 4.1 of our paper. Comparing the first two columns shows that adding squared unemployment improves the model fit with regard to R^2 . As mentioned before, we thereby account for non-linear effects of unemployment. Controlling for demographic group and industry shares in column (3) does not change the estimated effects much but again increases the overall model fit substantially. Additionally adding GDP growth (column 4) also does not bring about any relevant changes. These findings could be expected given the comparison between the different specifications in Table 2 in Section 4.1 of our paper.

We consider the lagged unemployment rate as a potential alternative explanatory variable in specifications (5)-(8). It is conceivable that certain effects of high unemployment will only become apparent in the following year. We find a significant positive effect of lagged unemployment once we account for its non-linearity in column (6). The negative effect of the squared term suggests a decreasing effect of lagged unemployment on the incidence of IPT. Again, not much changes when controlling for demographic group and industry shares (column 7) and GDP growth (column 8). The positive effect of lagged unemployment suggests that unemployment is not only relevant for the incidence of IPT as an indicator of current business conditions but that it also determines labor market outcomes in terms of IPT in subsequent periods (for various possible effects of unemployment on the incidence of IPT see Section 4.2 of our paper).

In the literature, the employment-to-population ratio has been highlighted as an interesting alternative measure to the unemployment rate, because when the US

economy recovered from the Great Recession, the decline in unemployment did not go along with a correspondingly large increase in the employment-to-population ratio (see for example Bitler and Hoynes 2016). As emphasized above, the German unemployment rate barely responded to the crisis. This is similarly true for the German employment-to-population ratio. We nevertheless consider this ratio as an alternative explanatory variable in specifications (9)-(12). It does not have any significant effect.

Overall, considering different cyclical indicators provides some interesting insights. In particular, note that the connection of none of the indicators considered here to IPT depends on GDP growth which supports our focus on unemployment as the main cyclical indicator.

Table 1: Different Cyclical Indicators, Regression Results

Share IPT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Unemployment Rate	0.0645** (0.0318)	0.273*** (0.0659)	0.254*** (0.0594)	0.254*** (0.0639)								
Unemployment Rate Sq.		-0.592*** (0.201)	-0.546*** (0.154)	-0.545*** (0.162)								
Lag. Unemployment Rate					0.0361 (0.0334)	0.320*** (0.0613)	0.336*** (0.0660)	0.329*** (0.0686)				
Lag. Unemployment Rate Sq.						-0.785*** (0.166)	-0.797*** (0.182)	-0.783*** (0.187)				
Empl.-to-Pop. Ratio									-0.0450 (0.0761)	0.228 (0.631)	0.615 (0.477)	0.661 (0.476)
Empl.-to-Pop. Ratio Sq.										-0.338 (0.776)	-0.855 (0.594)	-0.906 (0.597)
Demographic Group Shares			Yes	Yes			Yes	Yes			Yes	Yes
Industry Shares			Yes	Yes			Yes	Yes			Yes	Yes
GDP Growth				Yes				Yes				Yes
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 within	0.70	0.82	0.94	0.94	0.72	0.84	0.94	0.94	0.21	0.22	0.89	0.90
N= 256												

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, Eurostat, the Federal Employment Agency and the Socio-Economic Panel, own calculations.