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The spatial Polish wage curve with gender effects: Evidence from the Polish Labor Survey

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ABSTRACT

This paper reconsiders the Polish wage curve using individual data from the Polish Labor Force Survey (LFS) at the 16 NUTS2 level allowing for spatial spillovers between regions. In addition it estimates the total and gender-specific regional unemployment rate elasticities on individual wages. The paper finds significant spatial unemployment spillovers across Polish regions. In addition, it finds that the results for the Polish wage curve are sensitive to gender-specific regional unemployment rates. This is especially true for women.

1. Introduction

The negative relationship between individual wages and regional unemployment rates, known as a wage curve, has been investigated in a number of papers since the pioneering studies by Blanchflower and Oswald (1990, 2005). The estimates for the unemployment elasticities vary across countries but lie mostly in the neighborhood of −0.1 (e.g. Blanchflower and Oswald, 2005). While most papers include regional fixed effects to control for unobserved heterogeneity, only few account for spatial spillovers between different regions (see for example, Longhi et al., 2006; Baltagi et al., 2012). Also, very few papers apply gender specific unemployment rates (see Boushey, 2002; Konyali, 2012).

Controlling for region heterogeneity as well as spatial spillovers are important for these wage curve studies. Ignoring them may cause estimation bias and misleading inference. Longhi et al. (2006) argue that once we assume the wage curve to be the result of local monopsonistic competition, we would expect employers to be aware of the employment opportunities not only in the local labor market but also in surrounding areas. Hence, in the absence of spatial spillovers, the local unemployment elasticity is likely to be overestimated. In their study for 327 NUTS3 regions of Western Germany over the period 1990–1997, Longhi et al. (2006) average wage data to confirm the importance of spatial spillovers. They find that the unemployment elasticity is lower in regions strongly interacting with other locations and higher in the ones that are more isolated. This corroborates earlier results by Buettner (1999) who used the same 327 NUTS3 regions of Western Germany over the period 1987–1994 and showed the existence of spatial contiguity effects in wages and unemployment. Elhorst et al. (2007) estimate the wage curve for 114 Eastern German administrative districts over the period 1993–1999. They show that the introduction of spatially correlated error terms, in order to correct for region-invariant unobserved differences among time periods, highly influences the estimated unemployment elasticity but only when the time period fixed effects are not included in the specification.

Baltagi et al. (2012) also use individual wage data for the 326 German NUTS3 regions over the period 1980–2004 and find spatial unemployment to be insignificant in a dynamic wage curve. They explain that this result may be due to employees being myopic and not caring about the labor market conditions in surrounding areas. Another explanation is the existence of high migration and commuting costs. The dynamic approach to the German wage curve was also used by Pannenberg and Schwarze (2000) who used data for 74 Western German regions over the period 1985–1994. They tried to verify the robustness of their results with respect to spatial correlation of the unemployment rates, but could not properly identify their effects due to multicollinearity problems.

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The evidence for other countries is rather scarce. Fingleton and Palombi (2013) examine the wage curve with spatial effects for the 408 local authorities in the UK over the period 1998–2010. They find that the unemployment rate within commuting distance exerts the most influence on wages, while the local unemployment rate accounts for a small fraction of the total impact. Falk and Leoni (2008) estimate a wage curve using grouped data based on 121 districts in Austria for the year 2001. They find that the elasticity of unemployment becomes statistically insignificant once the spatial correlation is ignored. Finally, Ramos et al. (forthcoming) confirm the importance of spatial spillovers for the wage curve results in the case of the Spanish provinces over the period 2000–2010.

It should be noted that the results based on average unemployment rates can be biased for particular subsamples. Hence, Card (1995) suggests applying subsample specific unemployment rates. Though, due to problems with the data representativeness, for the existing studies the only common specification is based on the gender specific unemployment rates. Boushey (2002) examines individual earnings data for the US Metropolitan Statistical Areas and states over the period 1986–1996. She shows that the unemployment elasticity for subsamples of male and female workers changes significantly once group specific unemployment rate is used instead of the aggregate one. Sanroma and Ramos (2005) apply regional data for Spain at the NUTS3 level for 1991. They find that the unemployment elasticities for men and women are significantly higher when the estimation is based on aggregate unemployment rates as compared to gender specific unemployment rates. Konyali (2012) uses individual data for the 12 NUTS1 regions of Turkey over the period 2007–2009. He finds evidence for the wage curve for men based on gender specific estimation only. In the case of women, the unemployment elasticity is statistically insignificant. It should be emphasized though that none of the above gender specific studies use spatial econometric techniques in order to control for spatial spillovers in the unemployment effects. This paper extends the existing literature on the wage curve in a number of ways. First, to the best of our knowledge, it estimates for the first time spatial spillovers using group specific unemployment rates. Second, it focuses on Poland and verifies the existence of different wage curves for difference population groups (young versus old, low skilled versus high skilled, etc.). Here, in accordance with Blanchflower and Oswald (1994) and Card (1995), it verifies that wages for groups with lower bargaining power are more affected by changes in regional unemployment rates than groups with higher bargaining power. Last but not the least, this is the first paper on the Polish wage curve that includes observations far beyond the EU accession date.

Previous literature on the wage curve for Poland include Blanchflower (2001), Iara and Traistaru (2004), Duffy and Walsh (2000, 2001), Rogut (2007) and Yamaguchi (2008). The first two papers focus on estimating wage curves for a group of transition countries rather than Poland per se. More specifically, Iara and Traistaru (2004) use annual regional labor market data at the NUTS 3 level for Bulgaria, Hungary, Poland and Romania for the period 1992 to 1999. They find that average earnings were negatively and significantly associated with regional unemployment rates in Bulgaria and Poland as suggested by the wage curve literature. For the period 1995–1998, for 49 regions (voivodships) in Poland, they find an unemployment elasticity of −0.07 based on 196 observations. On the other hand, Duffy and Walsh (2000) explore the determinants of average monthly wage levels across the same 49 (voivodships) regions of Poland over the period 1991–96. They find an unemployment elasticity of pay for Poland of −0.12. In their second paper, Duffy and Walsh (2001) use the Polish Force Survey for the years 1994 to 1996. They exclude females arguing that they are more affected by short-term supply side considerations than their male counterparts. The total number of males in their panel was 14,203. They find an estimated unemployment elasticity of pay of −0.11.

Since the 1999 territorial reform, these 49 voivodhips no longer exist. This is why we use the 16 NUTS2 level regions over the period 1999–2010. Therefore, our results can be directly comparable to the ones obtained by Rogut (2007) who also studies the Polish wage curve with the NUTS2 level data over the period 1995–2005 and reports an unemployment elasticity of −0.12. To a lesser extent, our results can be compared with the results obtained by Yamaguchi (2008) who uses the Polish Labor Force Survey data over the period 1995–2002[2] and finds an elasticity of about −0.06.

Fig. 1 gives the unemployment rate across these 16 NUTS2 regions over this period.

Using average wages across regions and over time to estimate a wage curve has been criticized by Card (1995). Hence, in our study we use individual data from the Polish Labor Force Survey over the period 1999–2010. This rich micro-level data set allows us to control for a large number of individual characteristics affecting individuals' wage responses to variations in regional unemployment rates. The sample used includes 102,924 observations of whom 53,886 are males and 49,038 are females. This data set allows us also to control for region effects and spatial spillovers across these regions.

The remainder of the paper is organized as follows. Section 2 describes the model and the data. Section 3 reports the results of the traditional wage curve estimation over the period 1999–2010. Section 4 reports the results of the spatial wage curve. Section 5 reports results of the spatial wage curve with gender-specific unemployment rates. While Section 6 concludes.

2. The model and data

The wage curve is simply an inverse relationship between wages and local unemployment rate observed by Blanchflower and Oswald (1990) in their study of the U.S. and British labor markets. The existence of this wage curve was verified for many countries and was even reported to be an empirical law finding this unemployment elasticity to be around −0.1. (For detailed surveys on the wage curve, see Blanchflower and Oswald, 2005; Nijkamp and Poot, 2005).

Initial explanations of the wage curve proposed by Blanchflower and Oswald (1994) include a labor contract model, an efficiency wage model and a bargaining model. Still, the labor contract model has been criticized by Card (1995) for its inconsistency with the compensating differentials model, which assumes positive correlation between wages and unemployment rate in the long run. More recently, the theory of monopsonistic competition in local labor markets emerged as another possible explanation of the wage curve phenomenon.

The efficiency wage approach by Shapiro and Stiglitz (1984) assumes that employers will offer a premium to the workers in order to avoid shirking. This way they minimize costs related to monitoring of workers' productivity. The higher the unemployment rate the higher are the probabilities of losing one's job. Hence, firms will offer lower wage premiums when the unemployment rate is higher.

In the labor turnover model, see Campbell and Orszag (1998), employers use higher wages as a measure to keep current employees and discourage them to quit. This allows them to minimize costs associated with hiring new workers at the times of tight labor markets.

Finally, contrary to previous approaches, the theory of monopsonistic competition relies on the assumption that the local labor markets should not be considered as 'isolated islands' in the national economy. Here, firms entering a local market face start-up costs linked to the recruitment and training process. At the same time workers are exposed to costs related to job searching, commuting or migration. This results in the inverse relationship between wages and unemployment rate. Still, the unemployment elasticity is likely to depend on the employment opportunities in the surrounding areas (for more details see Longhi et al., 2006).

[2] The latter study includes uniform series for the individuals' region of residence for the periods before and after the Polish administrative reform of 1999.