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Did the Economic Adjustment Programmes Deliver Wage Flexibility in Greece?

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LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

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ABSTRACT

After a period of sequential economic adjustment programmes, recent data show that wages remain irresponsive to local labour market conditions in Greece. Although there is evidence of a weak cross-sectional wage curve, it disappears when individual fixed effects are introduced. Despite the extensive labour market reforms, more emphasis to the decentralisation of the wage setting process is needed.

Keywords: Wage Curve; Reforms; Greece

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1. Introduction

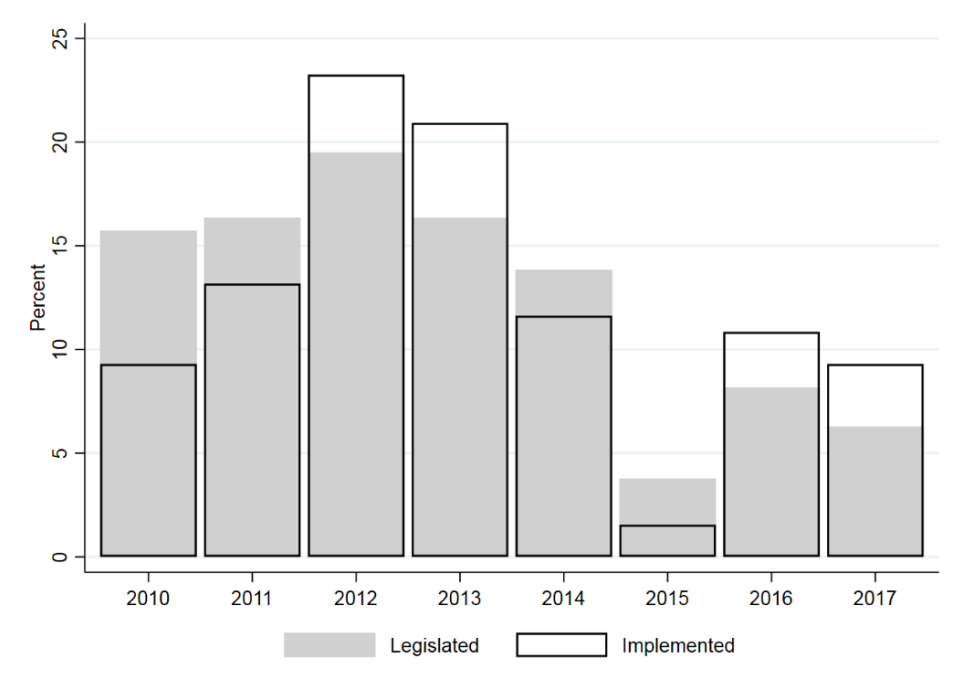
The relationship between wages and unemployment has been extensively studied, both theoretically and empirically. One of the strongest empirical regularities is the wage curve, i.e. the negative relationship between individual wages and local unemployment rates (Blanchflower and Oswald, 1994), that predicts a 1 percent fall in the level of wages if local unemployment rises by 10 percent, *ceteris paribus*. Efficiency wage and bargaining theory models have been proposed to explain this inverse relationship.

However, the level of wage flexibility in a country is also a function of its labour market institutions (Freeman and Nickell, 1988). Greece has been a heavily regulated economy with allocative inefficiency and limited capacity to absorb external shocks. Since 2010, several adjustment programmes have been implemented in the country in response to the economic crisis. All of them emphasised the need of reforming the labour market in order to reduce labour costs, align wages with productivity and increase wage flexibility. According to the LABREF database of the European Commission, 159 labour market reforms were introduced between 2010 and 2017. Some of them were fundamental, e.g. National Minimum Wage cut, decentralisation of collective bargaining, increased working time flexibility, weakening employment protection laws, deregulation of occupational licensing etc.

However, the effectiveness of those reforms in terms of delivering the desired level of wage flexibility remains unanswered. Using pre-2014 data, two studies provided evidence of a short-lived wage curve *circa* 2011 (Daouli *et al.*, 2017; Cholezas and Kanellopoulos, 2015). Both studies attributed their findings to wage setting reforms, e.g. the collective bargaining framework restructuring and the National Minimum Wage cut. However, the strong recessionary trends of that period, the numerous reforms being concurrently implemented and the time needed before they bite did not allow for a clear answer to whether economic adjustment programmes delivered the desired wage flexibility. From a more technical perspective, both studies relied on cross-sectional data with wages being either reported in bands or imputed from other sources, still as band midpoints.

This paper uses post-2016 data from the longitudinal Labour Force Survey (LFS) in which wages are reported continuously. According to the LABREF database, since the beginning of the economic adjustment programmes period, 86 percent and 80 percent of all labour market reforms (2010-2017) had been legislated and implemented before 2016, respectively (Figure 1). Hence, using better quality data after most of the major reforms have been implemented will provide a first picture regarding their effectiveness in terms of regional wage flexibility.

Figure 1. Labour market reforms during the economic adjustment programmes period in Greece.



Source: LABREF database, European Commission

2. Data and Methodology

The data source is the Greek quarterly LFS covering the period between 2016Q1 and 2018Q4. Although a relatively short period (12 quarters), there is adequate local labour market variation as regional unemployment fell by nearly 4 percentage points during that period, on average. Unlike previous Greek studies, the longitudinal version of the LFS is available, allowing to follow individuals over time. The sample consists of non-agricultural private sector employees, aged between 15 and 65 years old and not enrolled in education. Wage curves are estimated using variants of the following model specification:

$$\log w_{irt} = \alpha_i + \beta \log U_{rt} + X_{irt} + \lambda_r + \lambda_t + u_{irt} \quad (1)$$

where w_{irt} is a continuous measure of the net hourly pay of individual *i* observed in region *r* at period *t*. Regional unemployment rate is measured by U_{rt}. The X_{irt} vector contains individual determinants of pay, i.e. gender, a second order polynomial in age, nationality, marital status, education, industry, occupation and work characteristics (part time, temporary job and workplace size). The terms α_i, λ_r and λ_t capture individual, region and time fixed effects, respectively. Finally u_{irt} is an idiosyncratic error component. Equation (1) can be modified to omit individual fixed effects, or to control for lagged regional unemployment rates. Region refers to the 13 NUTS-2 regions. However, finer breakdowns are possible by splitting two major conurbations in Attica and Northern Greece (15 regions) and by distinguishing between urban and rural areas within each geographical entity (28 regions).

Because it is difficult to control adequately for individual characteristics and regional wage pressure (migration, unobserved labour quality, amenities etc.) individual-level models are coupled with regional-level estimates obtained from a two-step analysis (Bell *et al.*, 2002). In the first step, a valid wage measure that has been adjusted for individual composition effects is constructed. This can be done in two ways. The first one estimates a first-stage cross-section model for each time period, pooling together individuals across regions and controlling for region fixed effects:

$$\log w_{irt} = \alpha_{0t} + X_{irt} + \lambda_r + \lambda_{rt} + e_{irt} \quad (2)$$

In this case, parameters associated with individual characteristics are the same across regions but vary over time. However, they will be biased by any correlation between those characteristics and the unobserved individual heterogeneity. As an alternative, the second way makes use of the longitudinal nature of the LFS and estimates a first-stage panel model for each region:

$$\log w_{irt} = \alpha_i + X_{irt} + \lambda_{rt} + v_{irt} \quad (3)$$

where α_i is the individual fixed-effect. In this case parameters are constant over time but vary with region. Also, they are not biased due to correlation between observed characteristics and individual effects. After estimating Equations (2) and (3), $\hat{\lambda}_{rt}$ are used as dependent variables, i.e. the composition corrected regional wages, in the second stage:

$$\hat{\lambda}_{rt} = \gamma \log U_{rt} + \hat{\lambda}_{rt-1} + \varphi_t + \varphi_r + t\varphi_r + \eta_{rt} \quad (4)$$

where region-time cells are the units of observation. Models control for logged regional unemployment rates (or their past realisation), time and region fixed effects, regional time trends and they can be extended to include wage dynamics.

3. Results

Table 1 presents individual-level results from Equation (1). Contemporaneous and one year (4 quarters) lagged regional unemployment rates are used. In IV estimates, current unemployment is instrumented with its one year lag (4 quarters). Panels A, B, and C report results using 13, 15 and 28 regions, respectively. All models are weighted using the survey weights and standard errors are clustered by region.

Columns 1-3 do not account for individual fixed effects. They suggest the existence of a wage curve which, however, is flatter than the empirical law of -0.1; all estimates range between -.034 and -.054. Moreover, individual wages seem responsive to past rather than contemporaneous economic conditions.

However, controlling for individual fixed effects (columns 4-6) suggests that the cross-sectional wage curve slopes are overestimated. All parameters remain negative, but they are considerable lower and more precisely estimated. They imply a negative correlation between regional unemployment and unobserved labour quality and indicate that cross-sectional relationships between wages and business cycle indicators are likely to suffer from composition bias.

Table 1. The wage curve elasticity: Individual-level results.

	OLS	OLS	OLS-IV	OLS-FE	OLS-FE	FE-IV
Panel A: 13 regions	[1]	[2]	[3]	[4]	[5]	[6]
$\log U_{rt}$	-.003 (.012)	-	-.037*** (.013)	-.001 (.005)	-	-.004 (.003)
$\log U_{rt-4}$	-	-.034** (.014)	-	-	-.003 (.004)	-
F-test of excl. instr.	-	-	130.30	-	-	114.14
Panel B: 15 regions						
$\log U_{rt}$	-.004 (.013)	-	-.040** (.016)	-.004 (.005)	-	-.004 (.003)
$\log U_{rt-4}$	-	-.037** (.016)	-	-	-.003 (.004)	-
F-test of excl. instr.	-	-	133.01	-	-	127.47
Panel C: 28 regions						
$\log U_{rt}$	-.007 (.011)	-	-.054** (.025)	-.005 (.005)	-	-.002 (.004)
$\log U_{rt-4}$	-	-.044** (.019)	-	-	-.001 (.004)	-
F-test of excl. instr.	-	-	94.49	-	-	202.59
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	No	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	71,568	46,977	46,977	71,658	46,977	46,977

Source: Labour Force Survey (LFS), Hellenic Statistical Authority (EL.STAT).

Notes: Logged individual hourly wage is the dependent variable. Individual variables control for gender, age, nationality, marital status, education, industry, occupation, job and workplace characteristics. Time fixed effects contain year and quarter fixed effects. In IV models, $\log U_{rt}$ is instrumented with its one year lag ($\log U_{rt-4}$). Models are weighted using survey weights. Standard errors in parentheses are clustered by region. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.

Table 2 shows the results from the regional analysis. All models are weighted by the local population and include regional time trends in order to control for time-varying regional heterogeneity. In columns 1-4 the dependent variable is the composition-corrected wage from the first-stage cross-section model. The results are nearly identical with the individual-level models indicating a weak wage curve relationship. However, the relationship disappears once the composition corrected wages from the first-stage panel are used (columns 5-8). Similar to Daouli *et al.* (2017) wages have a weak autoregressive nature (columns 4 and 8) but this is mostly due to the inclusion of the region-specific linear time trends.

Despite the extensive institutional reforms, wages in Greece remain inflexible. The diffusion of decentralised bargaining remained rather limited and most firms that engage tend to adopt the National Minimum Wage provisions without much room for performance related

pay (Giannakopoulos and Laliotis, 2017). However, more emphasis on decentralised bargaining that fully incorporates firm-specific and local labour market conditions has been shown to generate locally flexible wages (Devicienti *et al.*, 2008).

Table 2. The wage curve elasticity: Regional-level results

	Dependent variable: First-stage cross-section				Dependent variable: First-stage panel			
	OLS-FE	OLS-FE	FE-IV	FE-IV	OLS-FE	OLS-FE	FE-IV	FE-IV
Panel A: 13 regions	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
$\log U_{rt}$	-.005	-	-.034***	-.031***	-.004	-	-.004	-.004
	(.011)		(.010)	(.010)	(.006)		(.004)	(.005)
$\log U_{rt-4}$	-	-.035**	-	-	-	-.004	-	-
		(.013)				(.005)		
Lagged dependent			-	.236**	-	-	-	.102
				(.111)				(.247)
F-test of excl. instr.	-	-	128.97	136.18	-	-	128.97	125.05
Observations	156	104	104	104	156	104	104	104
Panel B: 15 regions								
$\log U_{rt}$	-.006	-	-.034***	-.031***	-.004	-	-.004	-.005
	(.011)		(.009)	(.009)	(.007)		(.004)	(.004)
$\log U_{rt-4}$	-	-.035**	-	-	-	-.004	-	-
		(.012)				(.004)		
Lagged dependent	-	-	-	.254***	-	-	-	.080
				(.091)				(.184)
F-test excl. instr.	-	-	137.08	142.54	-	-	137.08	135.52
Observations	180	120	120	120	180	120	120	120
Panel C: 28 regions								
$\log U_{rt}$	-.001	-	-.048***	-.041***	-.009	-	-.006	-.006
	(.012)		(.012)	(.012)	(.005)		(.005)	(.005)
$\log U_{rt-4}$	-	-.044***	-	-	-	-.006	-	-
		(.012)				(.005)		
Lagged dependent	-	-	-	.259***	-	-	-	.192**
				(.107)				(.096)
F-test of excl. instr.	-	-	158.50	165.33	-	-	158.50	157.80
Observations	336	224	224	224	336	224	224	224
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Labour Force Survey (LFS), Hellenic Statistical Authority (EL.STAT).
Notes: Composition-corrected regional wages from Equations (2) and (3) are the dependent variables. Time fixed effects contain year and quarter fixed effects. In IV models, $\log U_{rt}$ is instrumented with its one year lag ($\log U_{rt-4}$). Models are weighted using the local population. Standard errors in parentheses are clustered by region. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level respectively.

4. Conclusions

Using recent longitudinal LFS data (2016Q1-2018Q4) does not support the existence of a Greek wage curve. Any statistically significant cross-sectional estimates disappear once individual unobserved heterogeneity is taken into account. After several waves of labour market reforms since 2010, wages in Greece remain irresponsive to local labour market conditions. If regional wage flexibility is the target, more emphasis on a decentralised wage setting process is needed.

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