WEB APPENDIX

Real Wages and the Business Cycle: Accounting for Worker, Firm, and Job Title Heterogeneity

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1   The Architecture of the Portuguese Wage Setting System

1.1   Collective Bargaining

The Portuguese Constitution provides the juridical principles of collective bargaining, and grants unions the right to negotiate. The effects of the agreements are formally recognized and considered valid sources of labor law.

Concerning the bargaining mechanisms, a distinction should be made between the *conventional* regime and the *mandatory* regime. Conventional bargaining results from direct negotiation between employers' and workers' representatives. A mandatory regime, on the other hand, does not result from direct bargaining between workers and employers, but is instead dictated by the Ministry of Labor. The Ministry can extend an existing collective agreement to other workers initially not covered by it or it can create a new one if it is not viable to extend the application of an existing

document. A mandatory regime is applied when workers are not covered by unions, when one of the parties involved refuses to negotiate, or bargaining is obstructed in any other way.[1] Therefore, the impact of collective bargaining goes far beyond union membership and the distinction between union and non-union workers or firms becomes largely meaningless.

Usually collective negotiations are conducted at the industry or, to a lesser extent, occupation level. Firm-level negotiation, which for a time was a common practice in large public enterprises, has lost importance. The law does not establish mechanisms of coordination between agreements reached in different negotiations; however, preference is given to vertical over horizontal agreements, and the principle of the most favorable condition to the worker generally applies.

Since most collective agreements are industry-wide, covering companies with very different sizes and economic conditions, their contents tend to be general, setting minimum working conditions, in particular the base monthly wage for each category of worker, overtime pay, and the normal duration of work. Moreover, only a narrow set of topics is updated annually, and therefore the content of collective agreements is often pointed out as being too immobile and containing little innovation.

Whatever the wage floor agreed upon for each category of worker at the collective bargaining table, firms are free to pay higher wages, and they often deviate from that benchmark, adjusting to firm-specific conditions [see Cardoso and Portugal (2005)].[2]

1.2 Minimum Wages

A mandatory minimum monthly wage was set for the first time in Portugal in 1974, covering workers aged 20 or older and excluding agriculture and domestic servants. Currently, there is a single legal minimum wage that applies to all workers. Workers formally classified as apprentices receive just 80 percent of the full rate.

The minimum wage is updated annually by the parliament, under government proposal.[3] Decisions on the level of the minimum wage are taken on a discretionary basis, usually taking into

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[1] Beyond the existence of compulsive extension mechanisms, voluntary extensions are also possible, when one economic partner (workers' representative or employer) decides to subscribe to an agreement that it had initially not signed.

[2] It should be noted that in Portugal nominal wage reductions in the private sector are forbidden by law. Periods of high inflation favor, of course, larger downward real wage adjustments.

[3] The only exceptions are 1982, when it was not updated, and 1989, when it was updated twice.

account past and predicted inflation and after consulting the union representatives.

In 2007, the minimum monthly wage level was 403 €, representing 47 percent of the average monthly base wage in the private sector. In this same year the proportion of full-time workers that received the minimum legal wage was about 6 percent.[4]

2 Robustness Checks

2.1 Alternative Time Periods

One decade on from the change in the monetary regime in Portugal, with the emergence of the Euro Area, in the presence of historically high rates of unemployment, it is important to revisit the relationship between wages and the unemployment rate. To address this issue, we run equation (1) including a dummy variable that takes the value one for the 1997-2007 period (Y9707) and two interaction terms between the latter and the unemployment rate coefficients. The results are reported in Table 1.

The estimates presented in Table 1 show evidence of wage flexibility in the period between 1986 and 1996, above all for newly hired workers. Even though the estimates of the unemployment rate coefficients for the 1997 to 2007 period are not statistically significant, there is an indication that the cyclical sensitivity of wages may have fallen significantly over the past 10 years, a decade characterized by low inflation.

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[4]Source: Ministry of Labor and Social Solidarity (GEP) - Earnings Survey, April 2009.

Table 1—Real Wage Sensitivity to the Unemployment Rate

Portugal, 1986-2007 (N=31,631,954)

Alternative time periods

OLS solution with worker, firm, and job title fixed effects

Dependent variable: log real hourly earnings

	Stayers	Incremental Effect for New Hires
1. Cycle variable: Unemployment Rate	−2.89***	−0.67***
	(0.90)	(0.14)
2. Cycle variable: Unemployment Rate*Y9707	1.10	0.31
	(0.95)	(0.21)

Notes: a. cluster-robust standard errors in parentheses;

b. ***,** ,* significantly different from 0 at the 1, 5, and 10 percent level, respectively.

References

[1] **Cardoso, Ana Rute, and Pedro Portugal.** 2005. "Contractual Wages and the Wage Cushion under Different Bargaining Settings." *Journal of Labor Economics*, 23(4): 875−902.

[2] **Ministério do Trabalho e Solidariedade Social - Gabinete de Estratégia e Planeamento.** 2009. *Inquérito aos Ganhos* (Earnings Survey) - April 2009.