

# **The contribution of wage developments to labour market performance**

April 2005

**Anàlisi Quantitativa Regional (AQR) Universitat de Barcelona**

**Halle Institute for Economic Research (IWH)**

**Coordinator:** Jordi Suriñach

**Researchers:** Manuel Artís  
Herbert Buscher  
Miquel Clar  
Christian Dreger  
Raúl Ramos

# Contents

|   |    |
|---|----|
| <b>Executive summary</b> .....  | 7  |
| <b>Part One — Introduction and objectives</b> .....   | 13 |
| 1. Introduction and objectives .....  | 15 |
| <b>Part Two — Labour market developments</b> .....  | 17 |
| 2. Introduction .....   | 19 |
| 3. The evolution of employment and unemployment .....   | 20 |
| 4. Wages, productivity and unit labour costs .....  | 28 |
| 5. Labour market institutions .....   | 36 |
| 5.1. Relevance of the institutional framework .....   | 36 |
| 5.2. Institutional trends for EU countries .....  | 37 |
| 5.3. Effects of institutions on labour market performance .....   | 44 |
| <b>Part Three — Empirical analysis</b> .....  | 47 |
| 6. Theoretical models used in the analysis .....  | 49 |
| 6.1. Wage and Phillips curves .....   | 49 |
| 6.2. Labour demand specification and employment .....   | 50 |
| 6.3. Implications for the empirical analysis .....  | 51 |
| 7. Overview of the statistical tools applied in the study .....   | 52 |
| 7.1. Time series properties and cointegration .....   | 52 |
| 7.2. Vector autoregressive models (VAR models) .....  | 54 |
| 7.3. The structural approach .....  | 56 |
| 8. Analysis of real wage response to unemployment and productivity shocks .....                               | 57 |
| 8.1. A meta-analysis of real wage flexibility .....   | 58 |
| 8.2. Empirical results of the VAR approach .....  | 70 |
| 8.3. Empirical results of the structural approach .....   | 73 |
| 8.4. The role of institutions to explain real wage responses to unemployment<br>and productivity shocks ..... | 75 |
| Annex 8.1. List of studies included in the meta-analysis .....  | 81 |
| Annex 8.2. Accumulated impulse responses for real wages from VAR analysis .....                               | 83 |
| Annex 8.3. Variance decomposition from VAR analysis for real wages .....                                      | 85 |
| Annex 8.4. Institutional impact on the variance decomposition of real wages .....                             | 87 |
| Annex 8.5. Alternative results for structural equations for real wages using OECD data .....                  | 90 |

|   |  |            |
|---|--|------------|
| 9.  | Analysis of employment response to output and real wage shocks .....   | 92         |
| 9.1.  | Impulse responses of employment.....   | 92         |
| 9.2.  | Structural employment equations .....  | 94         |
| 9.3.  | Institutional impact on employment .....   | 94         |
| Annex 9.1.  | Accumulated impulse responses for employment from VAR analysis .....   | 104        |
| Annex 9.2.  | Variance decomposition from VAR analysis for employment .....  | 107        |
| Annex 9.3.  | Institutional impact on the variance decomposition of employment .....   | 110        |
| <b>Part Four — Conclusions and policy implications.....</b> |  | <b>113</b> |
| 10.   | Conclusions.....   | 115        |
| Annex 10.1.   | Overview of the empirical evidence regarding labour market flexibility<br>in the European Union .....              | 117        |
| Annex 10.2.   | Overview of the institutional impact on labour market variables .....  | 118        |
| <b>References .....</b>                                     |  | <b>121</b> |
| <b>Graphs</b>   |  |            |
| 1.  | Development of unemployment rates .....  | 21         |
| 2.  | Evolution of national unemployment rates .....   | 21         |
| 3.  | Unemployment rates as a multiple of the EU (EU = 1) .....  | 22         |
| 4.  | Development of activity rates .....  | 24         |
| 5.  | Development of employment rates .....  | 25         |
| 6.  | Evolution of national employment rates .....   | 25         |
| 7.  | Growth rates of nominal compensation per employee .....  | 30         |
| 8.  | Growth rates of real compensation per employee.....  | 30         |
| 9.  | Growth rates of real unit labour costs per employee.....   | 31         |
| 10.   | Evolution of real unit labour costs per employee (1970 = 1) .....  | 31         |
| 11.   | Nominal compensation per employee as a multiple of the EU level (EU = 1) .....                                     | 34         |
| 12.   | Real compensation per employee as a multiple of the EU level (EU = 1).....   | 34         |
| 13.   | Real unit labour costs per employee as a multiple of the EU level (EU = 1) .....                                   | 35         |
| 14.   | Trade union densities in the large EU countries .....  | 38         |
| 15.   | Coverage of unionised bargained wages in the large EU countries .....  | 39         |
| 16.   | Centralisation of bargaining in the large EU countries .....   | 39         |
| 17.   | Coordination of bargaining in the large EU countries .....   | 40         |
| 18.   | Employment protection legislation in the large EU countries .....  | 41         |
| 19.   | Employment protection legislation for temporary working contracts in the large EU countries ...                    | 41         |
| 20.   | Benefit replacement rates in the large EU countries .....  | 42         |
| 21.   | Active labour market policies in the large EU countries .....  | 43         |
| 22.   | Active labour market policies (public employment services) in the large EU countries.....                          | 43         |
| 23.   | Active labour market policies (training programmes) in the large EU countries .....                                | 44         |
| 24.   | Tax wedge in the large EU countries .....  | 45         |
| 25.   | Comparison of the estimates of real wage flexibility by country with the summary<br>analysis by Heylen (1993)..... | 63         |
| 26.   | Time evolution of the real wage flexibility by publication year of the study<br>in selected countries .....        | 64         |

|   |    |
|---|----|
| 27. Relationship between the absolute value of wage flexibility and the standard error of the estimates ..... | 66 |
| 28. Evolution of real wage in response to various shocks: level specification .....                           | 72 |
| 29. Accumulated evolution of real wage in response to various shocks: level specification .....               | 73 |
| 30. Evolution of employment in response to various shocks: level specification .....                          | 95 |
| 31. Aggregated evolution of employment in response to various shocks: level specification .....               | 96 |

## Tables

|  |    |
|--|----|
| 1. Evolution of long-term unemployment rates .....   | 23 |
| 2. Unemployment rates for specific groups, 2003 .....  | 23 |
| 3. Specific employment/population ratios, 2003 .....   | 26 |
| 4. Evolution of part-time employment rates .....   | 27 |
| 5. Evolution of annual working hours per employee .....  | 27 |
| 6. Nominal wage inflation per employee in the largest EU economies .....   | 32 |
| 7. Real wage inflation per employee in the largest EU economies .....  | 32 |
| 8. Growth of real unit labour costs per employee in the largest EU economies .....   | 32 |
| 9. Panel cointegration tests: real wage model .....  | 53 |
| 10. Panel cointegration tests: employment model .....  | 53 |
| 11. Summary of the different studies included in the meta-analysis .....   | 59 |
| 12. Summary of the data set for the meta-analysis .....  | 60 |
| 13. Descriptive statistics of the real wage flexibility estimates .....  | 62 |
| 14. Results of the meta-regression .....   | 68 |
| 15. Elasticity of real wages to unemployment and labour market institutions .....  | 69 |
| 16. Specification of the VAR models for real wages, 1970–2003 .....  | 71 |
| 17. Constant structural elasticities for real wages: OLS estimates .....   | 74 |
| 18. Constant structural elasticities for real wages: TSLS estimates .....  | 75 |
| 19. Cross-section analysis of accumulated impulse responses: level specification —<br>Response of real wages to an unemployment shock .....                    | 76 |
| 20. Cross-section analysis of accumulated impulse responses: level specification —<br>Response of real wages to a productivity shock .....                     | 76 |
| 21. Cross-section analysis of accumulated impulse responses: difference specification —<br>Response of real wages to an unemployment shock .....               | 77 |
| 22. Cross-section analysis of accumulated impulse responses: difference specification —<br>Response of real wages to a productivity shock .....                | 77 |
| 23. Cross-section analysis of constant structural elasticities: level specification —<br>OLS (left) or TSLS (right) .....                                      | 78 |
| 24. Cross-section analysis of constant structural elasticities: difference specification —<br>OLS (left) or TSLS (right) .....                                 | 79 |
| 25. Panel fixed-effects analysis of varying structural elasticities for the real wage equation:<br>level specification — OLS (left) or TSLS (right) .....      | 80 |
| 26. Panel fixed-effects analysis of varying structural elasticities for the real wage equation:<br>difference specification — OLS (left) or TSLS (right) ..... | 80 |
| 27. Specification of the VAR models for employment in persons (left) or hours (right):<br>level specification .....  | 93 |