## APPENDIX

**Variable description and additional material**

***Labour market performance***

**Employment rate:** Employment-to-population ratio of persons aged 25-64.

**Incidence of temporary employment:** Number of temporary employees as a percentage of total employees aged 25-64. Further details on country-specific definitions of temporary employees can be found at: [www.oecd.org/els/emp/lfsnotes\_sources.pdf](https://portal.oecd.org/eshare/els/pc/Deliverables/EMO2018/Chapter%204%20-%20Collective%20bargaining%20and%20labour%20market%20performance/www.oecd.org/els/emp/lfsnotes_sources.pdf).

**Incidence of part-time employment:** Number of part-time workers (national definition) as a percentage of total employment of persons aged 25-64.

**Incidence of involuntary part-time employment**: Number of involuntary part-time workers defined as part-time workers (based on national definition) who could not find full-time work as a percentage of total employment of persons aged 25-64.

**Unemployment rate:** Number of unemployed persons as a percentage of the labour force of persons aged 25-64.

**Female unemployment rate:** Number of unemployed persons as a percentage of the labour force of women aged 25-64.

**Youth unemployment rate:** Number of unemployed persons as a percentage of the labour force of persons aged 15-24

*Source:* OECD Employment Database, <http://www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm>

**Low-skilled unemployment rate:** Number of unemployed persons as a percentage of the labour force of persons aged 25-64 having attained below upper secondary education.

*Source:* OECD (2018), "Education at a glance: Educational attainment and labour-force status", OECD Education Statistics (database), <http://dx.doi.org/10.1787/889e8641-en>

**Earning dispersion indicator:** Estimates of earnings used in the calculations refer to gross earnings of full-time wage and salary workers. However, this definition may slightly vary from one country to another. Further information on the national data sources and earnings concepts used in the calculations can be found at: [www.oecd.org/employment/outlook](https://portal.oecd.org/eshare/els/pc/Deliverables/EMO2018/Chapter%204%20-%20Collective%20bargaining%20and%20labour%20market%20performance/www.oecd.org/employment/outlook).

*Source:* OECD Earnings Distribution Database, [www.oecd.org/employment/emp/employmentdatabase-earningsandwages.htm](https://portal.oecd.org/eshare/els/pc/Deliverables/EMO2018/Chapter%204%20-%20Collective%20bargaining%20and%20labour%20market%20performance/www.oecd.org/employment/emp/employmentdatabase-earningsandwages.htm)

**Hourly labour productivity**: Hourly labour productivity refers to the ratio of real GDP over total hours worked.

*Source:* OECD (2018), "GDP per capita and productivity growth", OECD Productivity Statistics (database), <http://dx.doi.org/10.1787/data-00685-en>

***Collective bargaining system***

**Collective bargaining coverage rate:** Collective bargaining coverage rate corresponds to the ratio of employees covered by collective agreements, divided by all wage earners with the right to bargain.

*Source*: OECD <http://stats.oecd.org/Index.aspx?DataSetCode=CBC> and ICTWSS database (Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts), <http://www.uva-aias.net/en/ictwss/>

***Institutional controls***

**Tax wedge**: The tax wedge considered in this chapter is the wedge between the labour cost for the employer and the corresponding net take-home pay of the employee for single-earner couples with two children earning 100% of average worker earnings. It is expressed as the sum of personal income tax and all social security contributions as a percentage of total labour cost.

*Source*: OECD Taxing Wages Database.

**Product market regulation (PMR):** The aggregate indexes of anti-competitive product market regulation come from the OECD Regulatory Database. They vary from 0 to 6 from the least to the most restrictive.

*Source:* OECD Indicators of Product Market Regulation, <http://www.oecd.org/eco/growth/indicatorsofproductmarketregulationhomepage.htm>

**Employment protection legislation (EPL):** The aggregate indexes on regulations with respect to the dismissals of workers on open-ended contracts (including additional provisions for collective dismissals) and the use of temporary contracts Separate employment protection EP indicators come from the OECD Indicators of Employment Protection ([www.oecd.org/employment/protection](http://www.oecd.org/employment/protection)). Both indicators vary from 0 to 6 from the least to the most stringent.

*Source:* OECD Employment Database, <http://www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm>

**Minimum wage:** Minimum wages are measured as the ratio of the statutory minimum wage to median wage of full-time workers, in percent.

*Source:* OECD Employment Database, <http://www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm>

**Gross unemployment benefit (UB) replacement rate:** UB generosity is measured on the basis of average replacement rates, defined as average unemployment benefit replacement rate across two income situations (100% and 67% of average worker earnings), three family situations (single, with dependent spouse, with spouse in work) and three different unemployment durations (first year, second and third years, and fourth and fifth years of unemployment).

*Source:* OECD (2018), "Taxes and benefits", OECD Social and Welfare Statistics (database), <http://dx.doi.org/10.1787/data-00201-en>

***Demographic controls***

**Share of female employment:** Number of women employed as a percentage of total employment

*Source:* OECD Employment Database, <http://www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm>

**Average years of education:** Number of years spent in education of person aged 25-64.

*Source:* D.Cohen and M. Soto, Growth and human capital: good data, good results, completed with Barro-Lee Educational Attainment Data (2013 update); <http://www.barrolee.com/>.

***Control for the business cycle***

**Output gap:** Deviations of actual GDP from potential GDP as percentage of potential GDP

*Source*: OECD Economic Outlook,<https://stats.oecd.org/index.aspx?QueryId=51655>

**Robustness test using ICTWSS data**

In order to test the robustness of our results with respect to the choices made to build the taxonomy, we run the same regressions in Tables 3 and 5 using more traditional collective bargaining indicators for centralisation and co-ordination from the ICTWSS database. In particular, we use the following two indicators of centralisation and co-ordination:

1. *Centralisation*: Actual level of centralisation (CWB in ICTWSS) computed as:

*LEVEL - (fAEB+OCG)/4 + (Art+DR-1)/5*

where *LEVEL* is the predominant level at which wage bargaining takes place (from 1 for company-level bargaining to 5 for central/cross-industry-level bargaining), *fAEB* is the frequency or scope of additional enterprise bargaining (from 0 when not happening to 3 when frequent), Art is the articulation of enterprise bargaining (from 0 when absent to 3 when disarticulated) and DR is possibility of setting aside the favourability principle in higher-level agreements (from 0 when the favourability principle is inversed to 3 when the favourability is anchored in law and strictly applied without derogations.

1. *Co-ordination*: Degree of co-ordination of wage-setting derived from the variable *coord* in ICTWSS and recoded as no co-ordination (for values 1 and 2 of the variable *coord*), low co-ordination (for value 3 of the variable *coord*) and high co-ordination (for values 4 and 5 of the variable *coord*).

Descriptive statistics of the two variables are provided in Table A.1 while Tables A.2 and A.3 replicate the results in Tables 3 and 5. The results are qualitatively robust to the use of these more traditional collective bargaining indicators for centralisation and co-ordination. In particular, co-ordination is associated to higher employment rates and lower unemployment rates while the association between the degree of centralisation and the employment rate or earnings dispersion is not linear.

**Figure A1**: **A taxonomy of collective bargaining systems in OECD countries, 1980-2015**





RCW. Rather centralized and weakly coordinated

PCC. Predominantly centralized and coordinated

ODC. Organized decentralized and coordinated

LD. Largely decentralized

FD. Fully decentralized

*Source:* Author’s elaboration based on OECD (2017), ICTWSS, Eurofound, LABREF and related literature.

**Table A.1: Collective bargaining systems and employment and unemployment rates using ICTWSS indicators**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mean** | **Standard**  **deviation** | **Minimum** | **Maximum** |
| Centralisation of wage bargaining | 2.5 | 1.4 | 1.0 | 5.8 |
| Centralisation of wage bargaining (squared) | 8.3 | 7.9 | 1.0 | 33.1 |
| Co-ordination | 1.9 | 0.9 | 1.0 | 3.0 |

**Table A.2: Collective bargaining systems and employment and unemployment rates using ICTWSS indicators of centralisation and co-ordination**

OLS regressions using centralisation and co-ordination variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Employment rate | | Unemployment rate | |
|  | [1] | [2] | [1] | [2] |
| Bargaining coverage rate | -0.077\*\*\* |  | 0.018 |  |
| (0.013) |  | (0.014) |  |
| Centralisation of wage bargaining | 3.015\*\*\* | 1.775\*\*\* | -0.249 | 0.036 |
| (0.489) | (0.552) | (0.449) | (0.440) |
| Centralisation of wage bargaining (squared) | -0.311\*\*\* | -0.165\*\* | -0.043 | -0.076 |
| (0.066) | (0.074) | (0.064) | (0.062) |
| Co-ordination | 0.673\*\*\* | 0.495\*\* | -1.149\*\*\* | -1.108\*\*\* |
| (0.187) | (0.194) | (0.196) | (0.198) |
| Observations | 931 | 931 | 931 | 931 |
| R-squared | 0.947 | 0.944 | 0.827 | 0.827 |

*Note*: \*\*\*, \*\*, \*: statistically significant at the 1, 5 and 10% levels, respectively. Robust standard errors in parentheses. OLS regressions including country and time dummies, institutional variables (Tax wedges, PMR in seven sectors, EPL (both temporary and permanent), minimum wage/median wage and gross replacement rate) log of average years of education and female employment share.

**Table A.3: Collective bargaining systems and earnings inequality using ICTWSS indicators of centralisation and co-ordination**

OLS regressions using centralisation and co-ordination variables

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Earnings inequality: D9/D1 | | Earnings inequality: D9/D5 | | Earnings inequality: D5/D1 | |
|  | [1] | [2] | [1] | [1] | [2] | [1] |
| Bargaining coverage rate | -0.004\*\*\* |  | -0.002\*\*\* | -0.004\*\*\* |  | -0.002\*\*\* |
| (0.002) |  | (0.001) | (0.002) |  | (0.001) |
| Centralisation of wage bargaining | -0.121\*\* | -0.204\*\*\* | -0.03 | -0.121\*\* | -0.204\*\*\* | -0.03 |
| (0.061) | (0.052) | (0.02) | (0.061) | (0.052) | (0.02) |
| Centralisation of wage bargaining (squared) | 0.017\* | 0.027\*\*\* | 0.005\* | 0.017\* | 0.027\*\*\* | 0.005\* |
| (0.009) | (0.007) | (0.003) | (0.009) | (0.007) | (0.003) |
| Co-ordination | -0.004 | -0.02 | 0.001 | -0.004 | -0.02 | 0.001 |
| (0.025) | (0.023) | (0.006) | (0.025) | (0.023) | (0.006) |
| Observations | 747 | 747 | 747 | 747 | 747 | 747 |
| R-squared | 0.957 | 0.957 | 0.970 | 0.970 | 0.940 | 0.940 |

*Note*: \*\*\*, \*\*, \*: statistically significant at the 1, 5 and 10% levels, respectively. Robust standard errors in parentheses. OLS regressions including country and time dummies, institutional variables (Tax wedges, PMR in seven sectors, EPL (both temporary and permanent), minimum wage/median wage and gross replacement rate) log of average years of education and female employment share.

**Table A.4: Collective bargaining systems and employment and unemployment rates: country tournament**OLS regressions using taxonomy of collective bargaining systems

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Employment rate | | Unemployment rate | |
|  | Predominantly centralized and co-ordinated | Organised decentralized and co-ordinated | Predominantly centralized and co-ordinated | Organised decentralized and co-ordinated |
| All sample | 4.598\*\*\* | 4.618\*\*\* | -2.187\*\*\* | -1.105\* |
| Excluding |  |  |  |  |
| Australia | 4.813\*\*\* | 4.838\*\*\* | -2.671\*\*\* | -1.519\*\* |
| Austria | 4.494\*\*\* | 4.666\*\*\* | -2.163\*\*\* | -1.121\* |
| Belgium | 4.584\*\*\* | 4.806\*\*\* | -2.124\*\*\* | -1.095\* |
| Canada | 4.565\*\*\* | 4.687\*\*\* | -2.051\*\*\* | -1.149\* |
| Chile | 4.584\*\*\* | 4.606\*\*\* | -2.103\*\*\* | -1.036 |
| Czech Republic | 4.589\*\*\* | 4.604\*\*\* | -2.139\*\*\* | -1.035 |
| Denmark | 4.560\*\*\* | 4.390\*\*\* | -2.186\*\*\* | -1.048 |
| Estonia | 4.573\*\*\* | 4.630\*\*\* | -2.229\*\*\* | -1.133\* |
| Finland | 4.695\*\*\* | 4.556\*\*\* | -2.525\*\*\* | -1.241\* |
| France | 4.550\*\*\* | 4.568\*\*\* | -2.245\*\*\* | -1.231\* |
| Germany | 4.110\*\*\* | 3.819\*\*\* | -2.258\*\*\* | -1.501\*\* |
| Greece | 4.853\*\*\* | 4.922\*\*\* | -2.621\*\*\* | -1.624\*\*\* |
| Hungary | 4.521\*\*\* | 4.572\*\*\* | -2.399\*\*\* | -1.284\* |
| Ireland | 2.915\*\*\* | 3.109\*\*\* | -0.453 | 0.451 |
| Israel | 4.839\*\*\* | 4.888\*\*\* | -2.488\*\*\* | -1.447\*\* |
| Italy | 4.551\*\*\* | 4.686\*\*\* | -2.056\*\*\* | -1.139\* |
| Japan | 4.464\*\*\* | 4.562\*\*\* | -2.177\*\*\* | -1.083 |
| Korea | 5.095\*\*\* | 5.160\*\*\* | -2.450\*\*\* | -1.381\*\* |
| Latvia | 4.669\*\*\* | 4.557\*\*\* | -2.206\*\*\* | -1.050 |
| Luxembourg | 4.437\*\*\* | 4.621\*\*\* | -2.107\*\*\* | -1.068 |
| Mexico | 4.598\*\*\* | 4.618\*\*\* | -2.187\*\*\* | -1.105\* |
| Netherlands | 4.679\*\*\* | 4.594\*\*\* | -2.211\*\*\* | -1.098 |
| New Zealand | 4.909\*\*\* | 4.896\*\*\* | -2.589\*\*\* | -0.011 |
| Norway | 3.289\*\*\* | 2.302\*\*\* | -1.704\*\* | -0.579 |
| Poland | 4.584\*\*\* | 4.571\*\*\* | -2.061\*\*\* | -0.915 |
| Portugal | 4.934\*\*\* | 4.792\*\*\* | -2.339\*\*\* | -1.224\* |
| Slovak Republic | 4.693\*\*\* | 4.703\*\*\* | -2.186\*\*\* | -1.089 |
| Slovenia | 4.944\*\*\* | 5.047\*\*\* | -2.415\*\*\* | -1.355\*\* |
| Spain | 4.220\*\*\* | 4.492\*\*\* | -1.224\* | -0.627 |
| Sweden | 4.379\*\*\* | 4.842\*\*\* | -2.096\*\*\* | -1.372\*\* |
| Switzerland | 4.584\*\*\* | 4.515\*\*\* | -2.167\*\*\* | -0.995 |
| Turkey | 4.425\*\*\* | 4.562\*\*\* | -1.882\*\*\* | -0.919 |
| United Kingdom | 5.217\*\*\* | 5.327\*\*\* | -3.545\*\*\* | -2.663\*\*\* |
| United States | 4.776\*\*\* | 4.658\*\*\* | -2.220\*\*\* | -1.086\* |
| Ireland and United Kingdom | 2.907\*\* | 3.127\*\* | -2.303\*\* | -1.481 |

*Note*: \*\*\*, \*\*, \*: statistically significant at the 1, 5 and 10% levels, respectively. Robust standard errors in parentheses. OLS regressions including country and time dummies, institutional variables (Tax wedges, PMR in seven sectors, EPL (both temporary and permanent), minimum wage/median wage and gross replacement rate) log of average years of education and female employment share.