# Technichal annex and supplementary material

## Technical Annex: Quantifying the Gazier model

*The vertical dimension*

To determine the position of countries in the vertical dimension of the Gazier (2008) model, three different data sets were used. First, Eurostat data on labour market policy (LMP) expenditure in euro per capita for each of the eleven member states was used as an indicator of state involvement (http://ec.europa.eu/eurostat/data/database). To make the data comparable, the LMP expenditure per capita value for each country was converted to a score on a 0-6 scale with higher values representing higher LMP expenditure. Second, the OECD employment protection legislation (EPL) index for each country was used to indicate the influence of labour market regulation (http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm). Third, Visser's (2016) indicator of collective bargaining levels (CBL) was used as a way to quantify the influence of social partners. Visser (2016) classifies the bargaining levels among European member states in 2007-8 and 2013-14, where 6 represents state controlled wage bargaining and 1 represents decentralised or enterprise bargaining. The three scales were summarised into an index, according to the following formula:

$$(1)\ V_{ct} = LMP_{ct} + EPL_{ct} + CBL_{ct}$$

Where $V_{ct}$ defines the country's position in the vertical dimension in a specific year. However, in order to make the index fit into the Gazier-model it was inverted, thus, higher scores indicating a market orientation and lower scores indicating more state intervention. Supplementary table 1.A and 1.B provides the calculated vertical index for each of the eleven member states in 2007 and 2013.

*The horisontal dimension*

Determining the position of each country in the horizontal dimension was made in three steps. The first step was to identify the dominant adjustment mechanism in each country. Data on LMP expenditures broken down on different types of interventions was derived from Eurostat for all EU member states for the period 2007 to 2013.[1] To ensure comparison between countries, expenditures for each type of policy was divided by the size of the population in each country. The complete data set is provided in table 2.A-D below. Data on the share of firms that have cut wages was taken from the survey conducted by Wage Dynamics Network (WDN) (see Izquierdo, et al., 2017).[2] To enable comparison of the different data sets a

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[1] The Eurostat database does not include data on collectively financed measures, such as the Swedish job security councils. The database was therefore supplemented with data from annual reports of the main job security councils in Sweden. Furthermore, expenses of Dutch STW-schemes were collected from (Chkalova, 2010).

[2] The survey include data on the share of firms that have cut wages in all of the eleven member states, except Sweden. Following Agell & Bennmarker, (2007), an assumption was made that the extremely low share of wage cuts in Sweden persisted over the studied time period. Furthermore, in Germany, the UK, and Bulgaria the survey was only conducted in 2014-2015 and could, thus, not provide data on the period

scale was created. Table 3 in the supplementary material describes the method used to convert raw data on each item (type of policy) into a score measured on a 0-6 scale, with higher values representing higher share of firms using wage cuts or higher expenditure per capita.

By comparing the scores for each type of adjustment in each country, the dominant adjustment mechanism could then be identified. For example, in France early retirement received the highest score among the five different types of policies in 2007. Quantitative adjustment was therefore identified as the dominant adjustment mechanism in France. France would then be positioned in the mid-column in the Gazier model.

The second step was to operationalise the positioning of each country in the model in quantitative terms. Since the relationship between different adjustment mechanisms (quantitative, qualitative and wage adjustment) is not linear, the horizontal axis was divided into a nominal scale with three different intervals ranging between 0-8, see table 4. Thus, a country with quantitative adjustment as the dominant adjustment mechanism would be placed in the range between 8 and 16. A fixed constant was therefore assigned to countries dependent on the dominant adjustment mechanism, according to table 4. France, would for example, be assigned 12 as a fixed constant because quantitative adjustment was identified as the dominant adjustment mechanism in 2007. At this stage of the analysis we have identified the dominant adjustment mechanism in each country, which thus determines to which of the three columns in the model the country should be placed.

The third step was to calculate the influence of other adjustment mechanisms within each square. Since restructuring regimes consist of the combination of adjustment mechanisms, we need to find a way to show the influence of other adjustment mechanisms, which then would be shown as a movement in one or the other direction. Thus, for example, a country dominated by quantitative adjustment, may also invest in measures that support qualitative adjustment. Within the square of "quantitative adjustment", the influence of quantitative adjustment mechanisms would be indicated by a movement of the position of the country towards the right. The benefit of this procedure is also that it is possible to show movements over time. If there is a change in the dominant adjustment mechanism, the position of the country would move to the neighbouring interval.

In order to show the influence of other adjustment mechanisms within the respective restructuring regime, the score for other measures were added or subtracted from the fixed constant according to table 4. Thus, in a country where the dominant measure is transition services, the following calculation was made for each year:

$$\text{(2) } H_{ct}=20 - W_{ct} - STW_{ct} + ER_{ct} + \text{Train}_{ct}$$

Where $H_{ct}$ defines the country's position in the horizontal dimension in a specific year. The same procedure was repeated for all studied member states for each year between 2007-2013. In this way, it was possible to identify movements within and between restructuring regimes during and after the crisis. Consequently, a movement between restructuring regimes is defined as a shift of the dominant adjustment mechanism. Table 5.A and 5.B shows the data and calculations of the horizontal index for all countries in 2007 and 2013. The development of restructuring regimes between 2007 and 2013 are shown in figure 2 and 3.

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2007-2009. Based on (Radowski & Bonin, 2008), (Elsby, et al., 2016) and (Maiväli, & Stierle, 2015), an assumption was therefore made that the incidence of wage cuts was consistent during the studied period.

# References

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Izquierdo, M., Jimeno, J. F., Kosma, T., Lamo, A., Millard, S., Rõõm, T., & Viviano, E. (2017). *Labour market adjustment in Europe during the crisis: microeconomic evidence from the Wage Dynamics Network survey*. Banco de Espana, Documentos Ocasionales No 1704.

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# Supplementary material

## Table 1.A Vertical index, 2007

|  | LMP | CBL | EPL | Sum | $V_{ct}$ |
|---|---|---|---|---|---|
| Belgium | 5 | 4,2 | 2,9 | 12,1 | 2,9 |
| Bulgaria | 1 | 2,2 | 2,75 | 5,95 | 9,05 |
| Czech Republic | 1 | 1 | 2,75 | 4,75 | 10,25 |
| Germany | 4 | 2,9 | 2,84 | 9,74 | 5,26 |
| Spain | 3 | 3,3 | 2,66 | 8,96 | 6,04 |
| France | 4 | 2,3 | 2,87 | 9,17 | 5,83 |
| Netherlands | 5 | 2,9 | 2,93 | 10,83 | 4,17 |
| Portugal | 2 | 3,8 | 3,51 | 9,31 | 5,69 |
| Slovenia | 1 | 4,3 | 2,7 | 8 | 7 |
| Sweden | 4 | 2,4 | 2,52 | 8,92 | 6,08 |
| United Kingdom | 1 | 1 | 1,76 | 3,76 | 11,24 |

## Table 1.B Vertical index, 2013

|  | LMP | CBL | EPL | Sum | $V_{ct}$ |
|---|---|---|---|---|---|
| Belgium | 5 | 4,6 | 2,99 | 12,59 | 2,41 |
| Bulgaria | 1 | 2,2 | 2,75 | 5,95 | 9,05 |
| Czech Republic | 1 | 1 | 2,66 | 4,66 | 10,34 |
| Germany | 3 | 2,9 | 2,84 | 8,74 | 6,26 |
| Spain | 4 | 2,7 | 2,36 | 9,06 | 5,94 |
| France | 5 | 2,3 | 2,82 | 10,12 | 4,88 |
| Netherlands | 6 | 2,9 | 2,94 | 11,84 | 3,16 |
| Portugal | 2 | 2,5 | 2,69 | 7,19 | 7,81 |
| Slovenia | 2 | 3,3 | 2,67 | 7,97 | 7,03 |
| Sweden | 5 | 2,4 | 2,52 | 9,92 | 5,08 |
| United Kingdom | 1 | 1 | 1,66 | 3,66 | 11,34 |

Table 2.A Short time working expenses, € per capita, 2006-2015

| geo\time | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 38 | 36 | 42 | 99 | 83 | 55 | 69 | 71 | 52 | 42 |
| Bulgaria | 0 | 0 | 0 | 0,4 | 0,3 | 0,1 | 0,2 | 0,1 | 0,1 | 0,1 |
| Czech Republic | 0,006 | 0,006 | 0,004 | 0,005 | 0,001 | 0,002 | 0 | 0,001 | 0 | 0 |
| Germany | 8 | 8 | 67 | 52 | 19 | 12 | 15 | 11 | 11 | 6 |
| Spain | 16 | 17 | 20 | 34 | 35 | 36 | 34 | 17 | 10 | 5 |
| France | 0 | 0 | 0 | 5 | 5 | 1 | 2 | 3 | 4 | 3 |
| Netherlands | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| Portugal | 1 | 1 | 1 | 3 | 2 | 3 | 5 | 6 | 5 | 4 |
| Slovenia | 0 | 0 | 0 | 16 | 22 | 4 | 0 | 0 | 0 | 0 |
| Sweden | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| United Kingdom | 0 | 0 | 0 | 0 | 0 | n.a. | n.a. | n.a. | n.a. | n.a. |

Source: Eurostat
Note: Eurostat does not provide LMP expenditure data for the UK after 2010.

Table 2.B Early retirement expenses, € per capita, 2006-2015

| geo\time | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 124 | 128 | 135 | 140 | 147 | 149 | 147 | 144 | 138 | 131 |
| Bulgaria | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Czech Republic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Germany | 17 | 17 | 16 | 16 | 16 | 16 | 17 | 14 | 8 | 26 |
| Spain | 12 | 14 | 16 | 13 | 9 | 9 | 9 | 5 | 6 | 6 |
| France | 45 | 47 | 41 | 40 | 41 | 39 | 38 | 40 | 40 | 36 |
| Netherlands | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Portugal | 17 | 16 | 15 | 16 | 17 | 14 | 10 | 7 | 6 | 4 |
| Slovenia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sweden | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| United Kingdom | 0 | 0 | 0 | 0 | 0 | n.a. | n.a. | n.a. | n.a. | n.a. |

Source: Eurostat
Note: Eurostat does not provide LMP expenditure data for the UK after 2010.

Table 2.C Transition service expenses, € per capita, 2006-2015

| geo\time | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 9 | 11 | 14 | 16 | 17 | 18 | 16 | 19 | 19 | 15 |
| Bulgaria | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2,0 | 2 | 2 |
| Czech Republic | 14 | 17 | 17 | 17 | 16 | 14 | 17 | 15,5 | 18 | 20 |
| Germany | 19 | 19 | 18 | 20 | 15 | 12 | 13 | 16,0 | 16 | 2 |
| Spain | 3 | 3 | 4 | 6 | 6 | 5 | 6 | 4,7 | 7 | 14 |
| France | 37 | 43 | 40 | 67 | 75 | 74 | 73 | 74,7 | 76 | 75 |
| Netherlands | 125 | 118 | 110 | 132 | 139 | 134 | 105 | 98,9 | 109 | 98 |
| Portugal | 5 | 5 | 9 | 8 | 8 | 8 | 6 | 1,0 | 1 | 4 |
| Slovenia | 6 | 7 | 7 | 8 | 9 | 9 | 7 | 7,3 | 7 | 7 |
| Sweden | 45 | 42 | 50 | 68 | 69 | 65 | 74 | 78,6 | 65 | 67 |
| United Kingdom | 24 | 25 | 28 | 36 | 31 | n.a. | n.a. | n.a. | n.a. | n.a. |

Source: Eurostat
Note: Eurostat does not provide LMP expenditure data for the UK after 2010.


Table 2.D Training expenses, € per capita, 2006-2015

| geo\time | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 26 | 27 | 30 | 29 | 26 | 25 | 23 | 24 | 22 | 24 |
| Bulgaria | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Czech Republic | 1 | 1 | 1 | 4 | 6 | 2 | 2 | 2 | 2 | 4 |
| Germany | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spain | 1 | 2 | 4 | 4 | 8 | 10 | 3 | 3 | 2 | 1 |
| France | 19 | 14 | 11 | 23 | 33 | 25 | 29 | 35 | 35 | 33 |
| Netherlands | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 0 | 0 | 0 |
| Portugal | 5 | 8 | 16 | 49 | 46 | 22 | 13 | 16 | 16 | 16 |
| Slovenia | 4 | 4 | 2 | 7 | 5 | 6 | 4 | 4 | 4 | 3 |
| Sweden | 39 | 26 | 15 | 14 | 20 | 13 | 16 | 17 | 13 | 13 |
| United Kingdom | 0 | 0 | 1 | 1 | 1 | n.a. | n.a. | n.a. | n.a. | n.a. |

Source: Eurostat
Note: Eurostat does not provide LMP expenditure data for the UK after 2010.

Table 3: Procedure to convert data to comparable scores

| Adjustment | Type of policy | Measure | Assigned Scores | | | | | | | | Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | |
| Wage | Wage cuts | % firms | | 0 | $\leq 2$ | $\leq 4$ | $\leq 6$ | $\leq 8$ | <10 | > 10 | W |
| Quant | STW-scheme | € per capita | | 0 | $\leq 20$ | $\leq 40$ | $\leq 60$ | $\leq 80$ | <100 | > 100 | STW |
| | Early retirement | € per capita | | 0 | $\leq 20$ | $\leq 40$ | $\leq 60$ | $\leq 80$ | <100 | > 100 | ER |
| Qual | Transition | € per capita | | 0 | $\leq 20$ | $\leq 40$ | $\leq 60$ | $\leq 80$ | <100 | > 100 | Trans |
| | Training | € per capita | | 0 | $\leq 20$ | $\leq 40$ | $\leq 60$ | $\leq 80$ | <100 | > 100 | Train |

Table 4: Calculating the position in the horizontal dimension

| | Wage adjustment | Quantitative adjustment | Qualitative adjustment |
|---|---|---|---|
| **Interval** | >0 – < 8 | > 8 – < 16 | > 16 – < 24 |
| **Constant for dominant adjustment mechanism** | 4 | 12 | 20 |
| **$H_{ct}$** | + $STW_{ct}$ + $ER_{ct}$ + $Trans_{ct}$ + $Train_{ct}$ | - $W_{ct}$ + $Trans_{ct}$ + $Train_{ct}$ - secondary $Quant_{ct}$ | - $W_{ct}$ - $STW_{ct}$ – $ER_{ct}$ + secondary $Qual_{ct}$ |

## Table 5.A Horisontal index, 2007

|  | W | STW | ER | Trans | Train | C | $H_{ct}$ |
|---|---|---|---|---|---|---|---|
| Belgium | 1 | 2 | 6 | 1 | 2 | 12 | 12 |
| Bulgaria | 4 | 1 | 0 | 1 | 1 | 4 | 7 |
| Czech Republic | 5 | 1 | 0 | 1 | 1 | 4 | 7 |
| Germany | 2 | 1 | 1 | 1 | 1 | 12 | 11 |
| Spain | 1 | 1 | 1 | 1 | 1 | 12 | 12 |
| France | 2 | 0 | 3 | 3 | 1 | 12 | 14 |
| Netherlands | 1 | 0 | 0 | 6 | 1 | 20 | 20 |
| Portugal | 1 | 1 | 1 | 1 | 1 | 12 | 12 |
| Slovenia | 2 | 0 | 0 | 1 | 1 | 4 | 6 |
| Sweden | 1 | 0 | 0 | 3 | 2 | 20 | 21 |
| United Kingdom | 3 | 0 | 0 | 2 | 0 | 4 | 6 |

Note: C is the constant for the dominant policy measure

## Table 5.B Horisontal index, 2013

| 2013 | W | STW | ER | Trans | Train | C | $H_{ct}$ |
|---|---|---|---|---|---|---|---|
| Belgium | 1 | 4 | 6 | 1 | 2 | 12 | 10 |
| Bulgaria | 4 | 1 | 0 | 1 | 1 | 4 | 7 |
| Czech Republic | 4 | 1 | 0 | 1 | 1 | 4 | 7 |
| Germany | 2 | 1 | 1 | 1 | 1 | 12 | 11 |
| Spain | 4 | 1 | 1 | 1 | 1 | 4 | 8 |
| France | 1 | 1 | 3 | 4 | 2 | 20 | 17 |
| Netherlands | 1 | 0 | 0 | 5 | 0 | 20 | 19 |
| Portugal | 4 | 1 | 1 | 1 | 1 | 4 | 8 |
| Slovenia | 2 | 0 | 0 | 1 | 1 | 4 | 6 |
| Sweden | 1 | 0 | 0 | 3 | 2 | 20 | 21 |
| United Kingdom | 3 | 0 | 0 | 2 | 0 | 4 | 6 |

Note: C is the constant for the dominant policy measure

Table 1. Workforce adjustment regimes and restructuring measures

| Regime type | *Wage and labour cost adjustment* | *Quantitative adjustment* | *Qualitative adjustment* |
|---|---|---|---|
| Market | Unilateral wage cuts or freezes | Employer-financed early retirement or STW schemes | Employer-financed training or placement services |
| Negotiated | Collectively agreed wage cuts or freezes | Collectively funded STW schemes | Collectively funded training or placement services |
| State | Wage subsidies | Publicly financed early retirement or STW schemes | Publicly funded training and placement services |

*Source*: adapted from Gazier (2008)

Figure 1a: Restructuring regimes in 2007

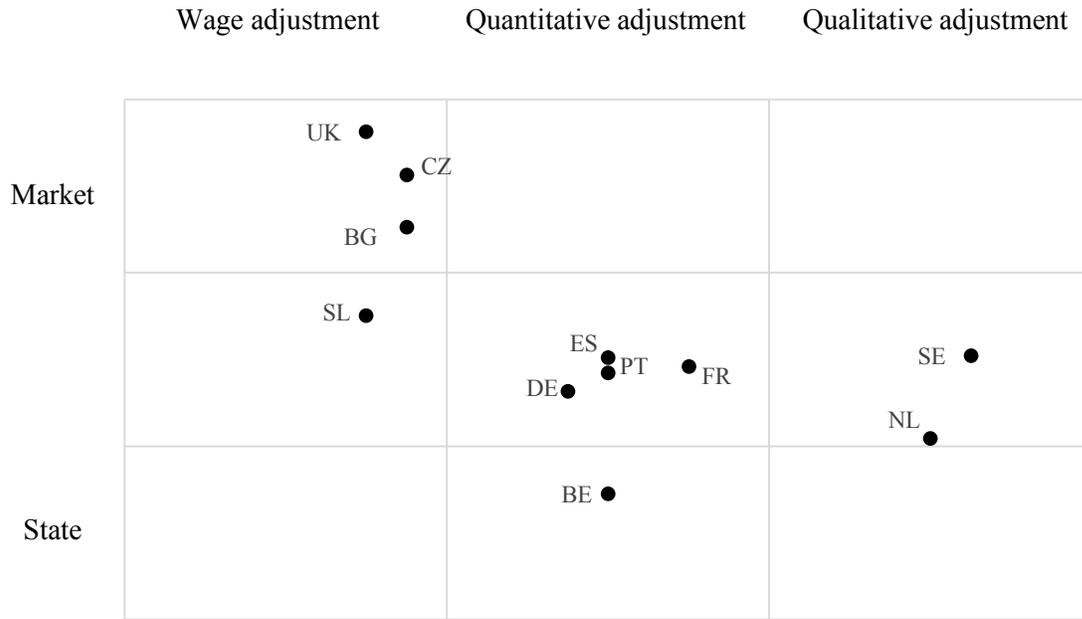|  | Wage adjustment | Quantitative adjustment | Qualitative adjustment |
|---|---|---|---|
| Market | UK ● <br> ● CZ <br> BG ● | | |
| | SL ● | ES ●PT ● FR <br> DE● | SE ● <br> NL ● |
| State | | BE ● | |

# Figure 1b: Restructuring regimes in 2013

|  | Wage adjustment | Quantitative adjustment | Qualitative adjustment |
|---|---|---|---|
| Market | UK ● <br> ● CZ <br> BG ● | | |
| | PT ● <br> SL ● <br> ES ● | DE ● | FR ●     ● SE |
| State | | BE ● | ● NL |