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## 3.2. How did the downward wage rigidity shape unemployment during the crisis?

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*“Thus, uniquely among the studies we survey, Portugal appears to be the canonical example of Keynes’s premise that nominal wages cannot be cut. “*

Elsby and Solon, Journal of Economic Perspectives

### 1. A paradigm of downward nominal wage rigidity

Nominal wage cuts are illegal in the Portuguese labour market. The prohibition of wage decreases is inserted in the 129th article of the labour code. This legal framework, which is unique among developed countries, makes Portugal a conspicuous case of downward nominal wage rigidity (DNWR).

The notion of downward nominal wage rigidity, which is at the center stage of Keynesian (or structural) unemployment, was seen as immaterial during the periods when inflation rates were relatively high. In essence, in high inflation regimes, employers have room of maneuver to adjust real wages without the need to press for nominal cuts. More recently, however, with inflation rates systematically below 2 percent in most developed countries, the importance of DNWR and, relatedly, the Phillips curve, reemerged quite vividly in the academic debate (Devicienti *et al.* (2007), Galí (2011), Blanchard (2016), and Fallick *et al.* (2016)). At the center stage of the debate are the economic consequences that arise from the inability to adjust real wages whenever the occurrence of negative economic shocks would require a nominal wage decline. The resistance to accept or to propose nominal wage cuts may be based on a number of factors: fairness considerations, the moral of the workforce, psychological distress, or, simply, legal prohibitions. Be that as it may, in the presence of DNWR, the inward displacement of the labour demand curve does not engender a wage decrease, generating a new employment equilibrium given by the short side of the market (the demand side) and, thus, involuntary unemployment.

Whereas the empirical evidence on the importance of DNWR is abundant but ambiguous, (Elsby and Solon (2018)) the connection between DNWR and unemployment is much scarcer (Fehr and Goette (2005)). The “canonical” Portuguese case was first explored in Carneiro *et al.* (2014) where it is shown that the high frequency of nominal wage freezes is associated with a dramatic job destruction. Nunes (2016) extends the statistical model of Fehr and Goette (2005) and uses a Portuguese matched employer-employee data set to show a strong relationship between the frequency of wage freezes and both the inflation rate and the unemployment rate. The author estimates that DNWR during the Portuguese economic crisis increased real labour costs by about 7 to 8 percent.

In the current exercise, we revisit the updated Portuguese data to characterize the evolution of the distribution of nominal wages and the corresponding distribution of nominal wage changes. We, then, discuss the connection between the incidence of wage freezes and the severity of unemployment and, by implication, the nature of the Phillips curve during the Portuguese economic crisis and recovery.

## 2. Wage setting

The Portuguese labour market is often regarded as an extreme case of downward wage rigidity (Elsby and Solon (2018), Behr and Pötter (2010), Holden and Wulfsberg (2008) and Dickens *et al.* (2007)). This rigidity stems above all from the fact that labour legislation forbids nominal wage cuts – a legal provision that was introduced in the 1950s and that was kept untouched until today. This restriction is idiosyncratic to the Portuguese labour market and it is one of its major singularities. Article 129 of the Labour Code states that “The employer is prohibited to decrease employees’ compensation, except for particular cases provided in this code or in regulation of collective bargaining instruments”. Article 258 clarifies that the concept of compensation includes not only base wages but also other monetary and non-monetary pay components that are paid on a regular basis. As a general rule, only travel and meal allowances as well as bonuses, commissions and benefits associated with workers’ performance may legally be reduced, unless they are included in collective agreements (Article 260).

In addition to this feature of the wage formation, the Portuguese labour market is also strongly driven by collective bargained outcomes which are mostly determined at the industry level. Even though these agreements are negotiated by labour unions and employers’ representatives with low representation their outcomes affect

the whole sector. This stems from the fact that even though by law the collective wage agreements are binding only for workers complying with the so-called double affiliation principle (workers that are simultaneously members of the subscribing union(s) and that are employed by firms that are members of the subscribing employer associations) they have been traditionally extended by the Ministry of Employment to all firms in each sector. These agreements typically establish wage floors for the most important job types and levels for all firms in a given sector so that their extension is equivalent to the setting of fully-binding minimum wages. These extensions, which also explain the large gap between union density and union coverage, promotes the levelling of working conditions, as they require that all firms in a sector irrespective of their situation have to comply with the same set of minimum standards determined jointly by a small subset of firms and workers in that sector. Once an extension is in force, the affected workers and employers have to follow the terms and conditions of the underpinning collective agreement, including the payment of possibly higher wages.<sup>13</sup>

Finally, underlying the bargaining process there is a mandatory national minimum wage that sets the floor for wage negotiations for all workers in the economy.<sup>14</sup> The national legal minimum wage and the pervasive setting of wage floors set by collective bargaining through the systematic extension of industry-wide agreements coupled with the legal prohibition of nominal wage cuts, which survives since the 1950s, creates a *de facto* situation of extreme downward nominal wage rigidity in Portugal.

### 3. Data

The empirical analysis uses a longitudinal matched employer-employee dataset known as Personnel Tables (*Quadros de Pessoal*) for the period between 2004 and 2017. It is constructed on the basis of a mandatory annual survey addressed to all Portuguese firms with wage earners. Being compulsory, the dataset does not suffer the typical non-response biases that are often associated with standard household and firm surveys.

One of the characteristics of the data that makes it so valuable is the richness of the information, including characteristics on the establishment (establishment identifier, location, industry and employment),

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<sup>13</sup> To make matters worse, when the agreements are extended, the corresponding wage clauses are often applied retrospectively, forcing employers affected to pay the resulting wages arrears.

<sup>14</sup> The minimum for workers formally classified as apprentices is 80% of the full rate.

firm (firm identifier, location, industry, legal form, ownership, year of start-up, employment, sales and capital), and its workers (social security identifier, gender, age, education, occupation, employment status, education, professional level, seniority, earnings, normal and overtime hours, time elapsed since the last promotion and the type of classification in the collective wage agreement).

A number of restrictions were imposed before the major were the exclusion of individuals who were not working full time, who were aged less than 16 years and more than 65 years, who earned a nominal wage less than the legal minimum wage in each year. Wage changes are computed only for workers who remained employed at least in two consecutive years. Individuals employed in agriculture, hunting, forestry, and fishing industries were also excluded.

#### 4. The wage distribution

Figure 25 illustrates the wage distribution in Portugal in 2017.<sup>15</sup> We observe that the share of workers receiving wages close to the minimum wage is very significant. This is particularly noticeable since 2014. The national minimum wage was kept frozen between 2011 and 2014 but it has increased sharply ever since. Between 2014 and 2019, it increased by 24%. According to the Minimum Wage Report released by the Ministry of Employment (based on the Social Security registers) the share of workers earning the minimum wage in June 2018 stood at 22% (40% for the new hires) which compares to 13% four years before. The Figure also shows that the gap between the median and minimum wage is small. All in all, this suggests that the minimum wage has been gaining importance in the structure of wages in Portugal and its increases are becoming more and more binding for firms.

#### 5. Wage freezes

The level of downward wage rigidity observed in Portugal can be particularly harmful at times of crisis with low inflation: if firms cannot adapt to the worsening conditions by lowering (real) wages, the only adjustment channel that is left is to reduce employment or simply shutting down.<sup>16</sup> This is indeed what was observed during

<sup>15</sup> Wage analysis uses base wages as the reference. Unlike total wages, base wages are less sensitive to quantity variations since it is not affected by changes in extra hours, shift payments or other payments that depend on the number of working days.

<sup>16</sup> Dias *et al.* (2013) show that when Portuguese firms were asked how they cut labour costs in response to the negative shocks they faced during the Great Recession, 72%

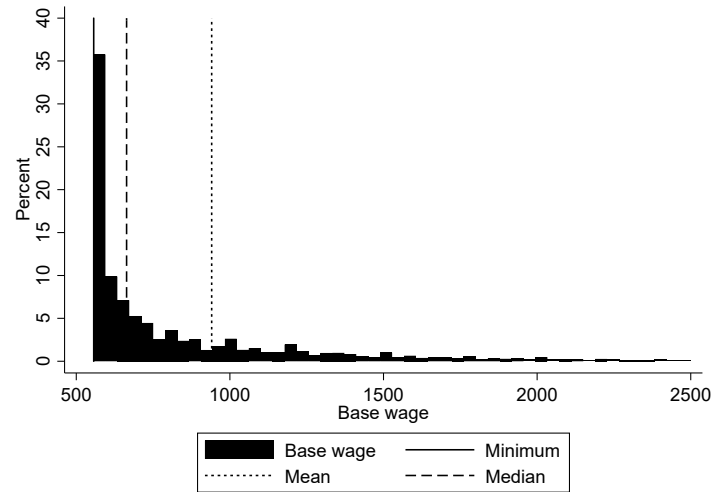


Figure 25: Distribution of base wages in Portugal in 2017  
 Note: Private sector excluding agriculture, hunting, forestry and fishing.

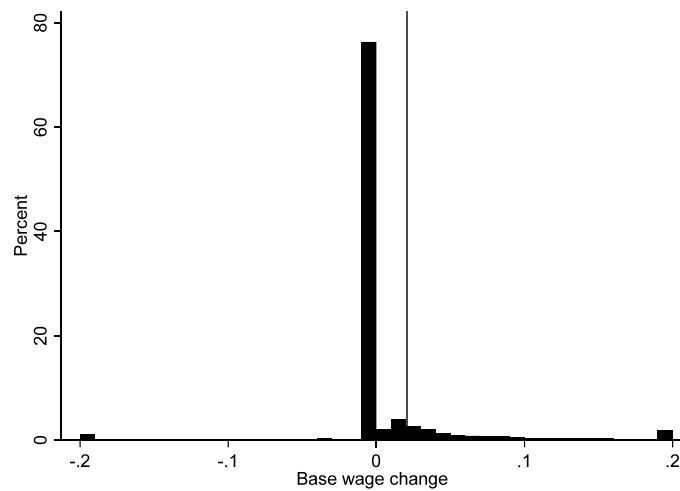


Figure 26: Distribution of base wage growth in Portugal in 2012

the recent crisis: a large number of workers had their wages frozen, but low inflation meant that real wages moved little and large employment losses ensued (Carneiro *et al.* (2014)).

Figure 26 reveals that despite the severity of the crisis, the average nominal base of almost all workers who kept their job in consecutive

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reported that they reduced their workforce, which was by far their most common strategy.

years did not fall.<sup>17</sup> As we mentioned, such cuts are in fact forbidden. Given this constraint, firms still have the option to freeze base wages in the hope that inflation will bring real wages down. This was in fact a very common strategy used by employers in Portugal during the crisis. Figure 26 shows that 75% of workers had their base wage frozen in 2012. Despite the recent decline, the share of base freezes in Portugal is considerably larger than what is observed in countries like the United States and the United Kingdom (Elsby *et al.* (2016)).<sup>18</sup> This indicates a substantial element of nominal wage rigidity in the Portuguese labour market.

## 6. Are wage freezes associated with real effects?

The frequency of wage freezes is often used as a close proxy for the relevance of DNWR. Whereas for low values of the incidence of wage freezes it can be argued that menu cost rather than wage rigidity may be at play, for the values that we exhibited above there is no doubt that proportion of wage freezes overwhelming reflects DNWR. Nevertheless, the wage rigidity per se may not have real impacts in the economy if employers adjust future wage increases to compensate for the hike in real labour costs associated with the inability to cut nominal wages. In this case, DNWR would not be associated with higher unemployment. Figure 27 distinctly suggests that this is not the case. Over the period under consideration, 2004 until 2017, the incidence of wage freezes and the unemployment rate are strongly co-move, suggesting that DNWR may generate higher unemployment. Firm level evidence reported by Carneiro *et al.* (2014) shows that the incidence of nominal wage freezes is associated with lower hiring rates and higher firm mortality rates. In sum, the striking evidence depicted in Figure 27 suggests that Keynesian unemployment may well be at play, at least during economic downturns that occur in low inflation regimes.

<sup>17</sup> In 2012, the percentage of private sector workers whose base was reduced stood around 3%, a figure reflecting possible measurement errors but also the wage reduction agreed between the administration and the workers of a major financial institution. If we had considered a broader concept of pay, covering for example bonuses and other performance-related monetary payments, the share of wage cuts would have been 21%. It should be noted that these non-base wage are relatively small in Portugal, particularly in smaller firms.

<sup>18</sup> The share of base wage freezes is somewhat blurred by the significant increases observed in the national minimum wage since 2014. If we exclude this effect the share of base wages freezes would be higher.

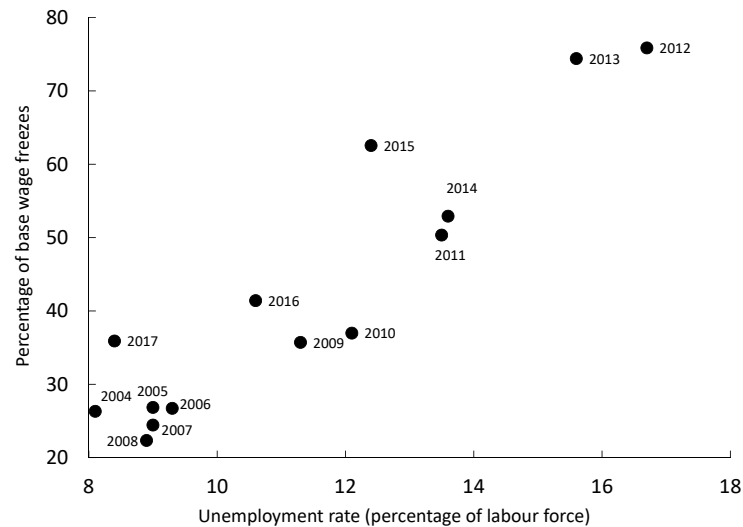


Figure 27: Share of base wage freezes and the unemployment rate in Portugal (2004-2017)

## 7. The resurrection of the Phillips curve

The indication of high values for the proportion of nominal wage freezes suggests that aggregate nominal wage changes are to a large extent determined the fraction of zero nominal wage changes. This is indeed the case, the linear correlation between the aggregate nominal wage changes (for workers that stay in the same firm during two consecutive years) and the incidence of wage freezes is  $-0.97$ . Not surprisingly, when we plot nominal wage changes against the unemployment rate we observe a sharp relationship (Figure 28). The Phillips curve exhibited corresponds faithfully to the stylized handbook version, where wage inflation (not the change in wage inflation) is contrasted with the unemployment rate. This result is in line with the indication that the US Phillips curve is alive and well (Blanchard (2016)) and suggests that reemergence of the trade-off between unemployment and inflation, namely the notion that inflation may “grease the wheels” of the labour market ((Schmitt-Grohé and Uribe, 2013)).

## 8. When DNWR bites

The drama of contemporary wage adjustment was graphically illustrated. At the heart of the slump, the wage change distribution nearly collapsed at zero percent nominal wage change. Because the inflation rate was very low, the margin to cut real wages without cutting minimal wages was highly limited. In these circumstances, an incredible large fraction of workers experienced nominal wage freezes, an

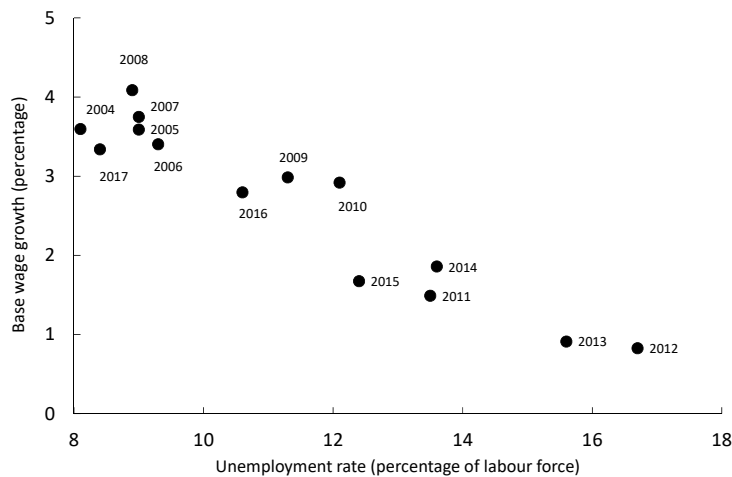


Figure 28: Base wage growth and the unemployment rate in Portugal (2004-2017)

outcome without parallel in other developed economies. Meantime, the unemployment rates increased to unprecedented levels raising the possibility that DNWR may have real effects. In this vein, we have shown that the severity of DNWR lends itself naturally to stylized old-fashioned Phillips curve. In short, the Portuguese economic crisis was a time in which the previous incipient downward nominal wage rigidity became truly binding, the full consequences of which could only be felt afterwards. These consequences included job destruction, severe unemployment, pent-up wage deflation, and, possibly, a crisis in industrial relations.

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