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EUROSISTEMA

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# ITALY'S 'EMPLOYMENT-RICH' RECOVERY: A CLOSER LOOK

by Giulia Bovini\* and Eliana Viviano\*

## Abstract

We look at changes in employment in Italy after the double-dip recession. We show that since the end of 2014 the responsiveness to GDP of total employment and its payroll components (permanent and fixed-term) has risen significantly; the increase has been broad-based across sectors and it would have been larger if demographic factors had been netted out. These developments are not common to France, Spain and Germany. Therefore, we turn to Italy-specific determinants related to the recent labour market reforms. Using cell-level data drawn from the *Comunicazioni Obbligatorie* of the Veneto region, we find that gross permanent hires and conversions of fixed-term positions have temporarily, but significantly, benefited from the 2015-2016 hiring subsidies across all types of firms and, more smoothly, from the new regulation of dismissals introduced by the 2015 Jobs Act for medium-large firms. This latter result is clear in 2017, in the absence of subsidies to permanent hiring. Fixed-term employment has increased, likely favoured by the 2014 Poletti Decree, more strongly so when permanent hiring subsidies were lifted or weakened and among smaller firms.

**JEL Classification:** J6, J21, J23.

**Keywords:** employment responsiveness, job creation, firing costs, hiring subsidies, labour market reforms.

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## 1. Introduction <sup>§</sup>

After the double-dip recession of 2009 and 2011-12, in Italy real GDP and the employment headcount in 2014 stood at 7.6 and 3.5 percentage points below their pre-crisis level, respectively. After three years, in 2017, while GDP was still 4.5 percentage points lower than in 2008, employment had recovered. In this respect Italy is different from the other main European countries: in France and Germany both GDP and employment have surpassed their pre-crisis level; in Spain GDP has recovered the loss, but employment is still 8 percentage points lower than in 2008.

In this short paper we attempt to better understand the features and the possible drivers of Italy's 'employment-rich' recovery. As a first step, we harnessed a simple model with time-varying coefficients to study how the responsiveness of employment to real GDP has changed over time, in Italy as well as in the other main European countries. The exercise confirmed that in Italy the recovery period (2014-2017) was characterized by heightened responsiveness, significantly greater than its long-run average value over the period 2000-2017. Shifts in France, Germany and Spain were instead more muted.

We further show that the higher responsiveness of total employment reflects the higher reactivity of both components (open-ended and fixed-term) of payroll employment.<sup>1</sup> The responsiveness of permanent positions increased significantly in the 2015-2016 period and then declined slightly in 2017; the responsiveness of temporary positions instead remained substantially stable up to 2016, spiking in 2017. Self-employment, on the other hand, has been in decline since the early 2000s and continued to contract during the recovery, thus displaying a negative relationship with GDP developments in recent years.

What are the possible drivers of Italy's 'employment-rich' recovery? First we investigated the role of sectoral composition effects, since the heightened elasticity of total employment may stem from employment growth concentrated in more elastic sectors. To this end, we estimated the responsiveness of sectoral employment to GDP in 5 main sectors (agriculture, industry, construction, private services, and other services). Our exercise shows that the increase of the responsiveness of employment to GDP has been broad-based across sectors. In the largest sectors

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<sup>1</sup> Throughout the paper we use the words temporary/fixed-term and permanent/open-ended interchangeably.

employment has also become more responsive to changes in the sectoral gross value-added. Shifts in sectoral employment shares, therefore, play only a minor role in explaining the observed pattern.

We then turned to assess the role of demography. Italy is ageing and the most important demographic development of the last decade is the fact that, in 2009, the number of individuals aged 35-44 started to decline as did their share in the working-age population. This is relevant for employment levels because the labour force participation rate peaks in this age group. Moreover, it could also affect the composition of payroll employment, because temporary positions are mostly held by younger workers, while permanent positions are more prevalent in the 35-44 age group. We show that demography, if anything, has exerted a downward pressure on employment during the recovery period, more so for permanent positions. Demographics forces then are not behind the ‘employment-rich’ recovery which might have been even richer in their absence.

Lastly, we focus on the role of labour market policies. In recent years several policies have been enacted that modify the monetary and non-monetary costs of labour. These include the 2014 Poletti Decree, which liberalized the use of fixed-term contracts, and the 2015 Jobs Act, which reduced future firing costs for newly hired workers (*contratto a tutele crescenti*) in firms with more than 15 employees (‘15+ firms’ henceforth), as well as a series of hiring subsidies for permanent job positions introduced in 2015 and 2016 to foster the introduction of the *contratto a tutele crescenti* and support employment growth.<sup>2</sup> The trends of permanent and temporary employment over time, combined with the pattern of their responsiveness to GDP, suggest that subsidies strongly affected the level and composition of employment. We show, however, that changes in the rules that apply to the creation of temporary job positions and the destruction of permanent ones also influence firms’ labour demand. We use cell-level data from the northern region of Veneto to investigate in more detail the role of the 2015 reform of firing costs. To do so, we compare gross permanent hiring and contract conversions in 15+ firms, which are affected by the reform, and smaller firms, which are not. In 2017, the first post-reform year with no generalized hiring subsidies, gross permanent hiring and contract conversions were more frequent in 15+ firms than in smaller firms, differently from that recorded in 2014, the last pre-reform year. Moreover, the propensity to convert a fixed-term contract within 6 months increased over the period 2014-2017 in 15+ firms, whereas it did not in smaller ones. Temporary contracts increased in both types of firms, suggesting that the Poletti Decree may have encouraged their use once permanent hiring subsidies were phased-out. However, in percentage terms the increase was lower in medium-large firms, to

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<sup>2</sup> See Colonna and Viviano (2017) for a review of the various subsidy schemes.

whom the new rules for firing costs applies. While we cannot control for shocks that affect differentially bigger and smaller firms, our analysis adds to the literature documenting the predominant role of hiring subsidies in fostering permanent employment growth, but also the positive effect of lower firing costs. (Sestito and Viviano, 2018; Boeri and Garibaldi, 2018). It also highlights that the incidence of temporary contracts, which tends to be highly pro-cyclical, and of permanent positions is not a sufficiently accurate indicator to evaluate the effects of labour market reforms, an exercise that instead requires the use of more granular information.

Our paper confirms that the recovery in Italy has been ‘employment-rich’ and singles out labour market policies as a likely important driver. Firms appear to be responsive to both monetary and non-monetary costs of labour (i.e. constraints to temporary employment creation, firing costs, etc.). Reforms that reduce such costs can therefore be effective in fostering employment growth. However, against the backdrop of an ageing population and of declining shares of individuals in the age groups with the highest labour market attachment, policies that encourage the participation of all demographic groups are also needed.

## 2. Employment trends over the business cycle

To shed some light on possible changes in the responsiveness of employment and its components to GDP, we estimate the following simple model with time-varying parameters:

$$\Delta^4 \ln E_t = \alpha_t + \beta_t \times \Delta^4 \ln GDP_t + \varepsilon_t \quad (1)$$

where  $E$  is employment and  $GDP$  is real GDP. Equation (1) allows both the intercept coefficient  $\alpha$  and the slope coefficient  $\beta$  to vary over time. The coefficient  $\beta$  captures the responsiveness of employment to GDP, as it shows how much the growth rate of employment increases in response to a 1% change in the growth rate of GDP.<sup>3</sup> A kernel-based non-parametric estimation approach is used, which weights observations farther in time less than closer ones.<sup>4</sup> This method is particularly useful to detect structural breaks at the end of the sample period. The chosen kernel function is a one-sided Gaussian kernel which gives positive weights only to past and current observations. Hence, letting  $\ln E_t = y_t$  and  $\ln GDP_t = x_t$ :

$$\beta_t = [\sum_{j=1}^T w_{j,t} x_j x_j']^{-1} [\sum_{j=1}^T w_{j,t} x_j y_j] \quad (2)$$

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<sup>3</sup> The model in log-differences is preferred over the model in log-levels because raw time series display non-stationarity.

<sup>4</sup> In different contexts the same approach has been used for instance by Giraitis et al. (2013), Riggi and Venditti, (2015), and Bulligan and Viviano (2017).

$$w_{j,t} = \frac{1}{\sqrt{2\pi}} e^{-\frac{(t-j)^2}{2H}} \text{ if } j \leq t \text{ or } w_{j,t} = 0 \text{ if } j > t \quad (3)$$

The smoothing parameter  $H$  is set equal to  $T^{1/2}$ , where  $T$  is the number of observations.

Figure 1 plots the 16<sup>th</sup>, 50<sup>th</sup> and 84<sup>th</sup> percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$ , alongside the coefficient that is obtained from the estimation of a model with constant parameters (the horizontal line). The period of interest is 2010-2017. We compare Italy with France and Spain, since they are the other main European dual labour markets, and Germany. The estimation sample runs from 2000:Q1 to 2017:Q4 for Italy and Spain; due to data availability constraints, it only runs from 2005:Q1 to 2017:Q4 for France and from 2007:Q1 to 2017:Q4 for Germany.

In Italy, the responsiveness of total employment to GDP was around 0.5 during the recent recovery, a value significantly higher than its long-run average (0.32). In particular, it has gradually increased during the 2014-16 period and then stabilized (Figure 1). Total employment is more responsive to changing economic conditions in Spain (1.33 being the long-run average), although the parameter  $\beta$  has slightly declined since 2010. The constant parameter in France is more similar to the one recorded in Italy (0.28) and, given the confidence interval, the time-varying parameter displays no evident structural break at the start of the recovery period. Germany features the lowest long-run responsiveness (0.10) of the four countries. While the parameter seems to have increased in 2016, followed by a stronger decline in 2017, the confidence interval does not allow us to rule out substantial stability. This first piece of evidence confirms that the Italian recovery was ‘employment-rich’, whereas this is less the case for the other main European countries.

Figure 2 displays the same estimates for payroll employment, divided into permanent employment (left panel) and temporary employment (right panel). The responsiveness of permanent employment, which makes the largest share of total employment in all the four countries, displays in Italy a similar trend to that of total employment: after running parallel to, but below, its long-run average (0.11), it increased sharply in 2015 and 2016. It went on to decline gradually in 2017, reaching a level nonetheless higher than in the crisis period. The long-run responsiveness of temporary employment (1.56) is much higher than that of total and permanent employment. This result is in line with the common idea that temporary employment reacts earlier than permanent employment to GDP developments both during recessions, as there are lower or no firing costs, and during expansions, especially when uncertainty about the intensity of the recovery

remains high (e.g. Izquierdo et al., 2017). The time-varying model reveals the substantial stability of the responsiveness of temporary employment around this value up to 2016 and then a sharp increase in 2017. Since self-employment declined during the recession, we do not report its responsiveness. Nevertheless, Figure A1 in Appendix 1 plots the contributions of the responsiveness of self-employment, permanent and temporary positions to the responsiveness of total employment.<sup>5</sup> The contribution of self-employment diminished over time and turned negative in the last quarters considered, consistently with the fact that this group of workers continued to contract throughout the recovery phase.

In Spain the responsiveness of permanent employment was relatively stable at a value below its long-run average, while the responsiveness of temporary employment increased in the middle of the period and then fell back to its long-run average. These patterns are probably explained by the tendency to use fixed-term contracts during the initial phases of a recovery in a context of high macro-economic uncertainty. Similarly to what was observed for total employment, in France the responsiveness of permanent and temporary employment closely tracked their long-run averages for most of the period.<sup>6</sup> In Germany the time-varying pattern of the permanent employment coefficient is very similar to that of the total employment coefficient; the responsiveness of temporary employment appears to have decreased in 2017, probably because of constraints on the supply side, that increase the bargaining power of workers when making a claim for a permanent position.

Figure A2 in the Appendix reports the results of augmenting equation (1) with an autoregressive component, that account for the persistence of employment trends, and confirms in most cases the main patterns.<sup>7</sup>

### 3. What's behind Italy's 'employment-rich' recovery? The role of sectoral trends

The increased responsiveness of employment to GDP observed in Italy in recent years may be driven by changes in sector-specific parameters and/or composition effects, if employment

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<sup>5</sup> The decomposition exploits the fact that the elasticity of total employment can be written as the weighted average of the elasticities of permanent positions, temporary positions and self-employment, where weights are given by employment shares. Formally, denoting with  $j$  the type of employment,  $\varepsilon = \sum_{j=1}^N \varepsilon_j \times \frac{E_j}{E}$  (4). In our application, given that the estimated model is in log-differences rather than in log-levels and because of the presence of an error term in the regression, the decomposition holds as an approximation.

<sup>6</sup> The increase in the responsiveness of permanent employment that appears to emerge in 2017 is (as yet) too noisy to be significant, as the constant coefficient parameter lies between the 16<sup>th</sup> and the 84<sup>th</sup> percentiles of the distribution of the time-varying parameter.

<sup>7</sup> Specifically, the following equation is estimated:  $\Delta^4 \ln E_t = \alpha_t + \beta_t \times \Delta^4 \ln GDP_t + \delta_t \Delta^4 \ln E_{t-1} + \varepsilon_t$  (5)  
The main difference emerges for Spain, as there appears to be an increase in the elasticity of permanent employment when the autoregressive component is included in the model.

growth is concentrated in sectors that are more elastic. Indeed, given an economy made of  $N$  sectors  $1, \dots, N$ , the elasticity  $\varepsilon$  of total employment to real GDP can be decomposed as follows:

$$\varepsilon = \sum_{s=1}^N \varepsilon_s \times \frac{E_s}{E} \quad (6)$$

Equation (6) shows that the elasticity can be rewritten as the weighted average of the elasticities of sector-specific employment ( $\varepsilon_s$ ) to real GDP, where weights are given by sector employment shares ( $\frac{E_s}{E}$ ). It highlights that changes in the aggregate elasticity parameter may reflect both within-sector dynamics as well as a reallocation of employment across sectors.

In a regression framework with time-varying coefficients, equation (6) can be rewritten as:

$$\beta_t \approx \sum_{i=1}^N \beta_{s,t} \times \frac{E_{s,t}}{E_t} \quad (7)$$

where  $\beta_{s,t}$  is the time-varying coefficient of a regression of sector employment on real GDP. Because the model is specified in log-differences rather than in log-levels and given the presence of an error term, the decomposition outlined in (6) holds as an approximation. Notwithstanding this caveat, it is able to replicate the pattern of the aggregate elasticity parameter of interest almost perfectly.

Figure 3 displays the parameters  $\beta_{s,t}$  for the following 5 sectors: agriculture, industry, construction, private services and other services.<sup>8</sup> We cannot further decompose these sectors due to data constraints, as long time series for detailed sectors have a structural break in 2008 caused by the adoption of Nace Rev2 in official statistics. However, it clearly emerges that during the recovery phase the responsiveness of employment to GDP has increased in all sectors.<sup>9</sup> The same conclusion holds for permanent and temporary employment (Figure A3).

In the period 2007-2017, the share of workers in services increased from 66% to 70%, whereas the share of workers in the agriculture, industry and construction sectors declined. In order to provide a sense of the relative importance of within-sector and between-sector changes, Figure 4 plots the observed responsiveness of total employment, alongside: i) the counterfactual

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<sup>8</sup> Merging private services and other services into a unique service sector delivers very similar results.

<sup>9</sup> Some commentators impute the raise of temporary employment in Italy to the increase of the relative weight of tourism (e.g. Dell’Arling et al., 2018). Since we find that the responsiveness of temporary employment to GDP increases significantly also in construction and other service sectors (an aggregate which excludes tourism), we tend to believe that it is not the only cause.

responsiveness obtained when holding the distribution of employment across sectors fixed at its average value in 2007, to highlight the role of changing sectoral responsiveness; ii) the counterfactual responsiveness obtained when holding fixed sectoral responsiveness at its average value in 2007, to let the role played by employment reallocation across sectors emerge.<sup>10</sup> The exercise reveals that changes in sectoral-specific responsiveness to GDP were the most important driver of changes in aggregate responsiveness. In the absence of those changes, the reallocation of employment toward services would have led only to a very mild increase of responsiveness in the recovery period. The same holds true for permanent and temporary employment.

Figure A4 also plots the time-varying parameter that captures the responsiveness of sectoral employment to sectoral gross value added, rather than to aggregate real GDP. While changes are relatively more scattered and muted in the agriculture and construction sectors, employment in the two main sectors, services and industry, became more responsive during the recovery phase also to changes in sector-specific economic conditions.

#### 4. The impact of demographic factors

As participation rates differ across age groups, demography is an important determinant of a country's labour supply and employment levels. The age profile of the activity rate is inversely u-shaped in Italy, as it is in most European countries (De Philippis, 2017). Figure 5 displays the evolution of the working-age population by age group over the last decade. In 2007 individuals aged 25-44 made up the largest age group. During the following years, its size decreased considerably. This reflects the fact that the number of individuals aged 25-34 declined over the whole ten years, while the number of individuals aged 35-44 increased up to mid-2009 and contracted thereafter, falling below its initial level. Conversely, the relative weight of the 45-64 age class increased and, in 2017, it became the largest age group. Overall, the population aged 15-64 grew up to the end of 2014 and declined thereafter.

Demography can affect not only the evolution of total employment, but also its composition in terms of permanent and temporary positions. This is because fixed-term positions are particularly concentrated among young people and sharply declines after the age of 30, as shown by Figure 6.<sup>11</sup>

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<sup>10</sup> The exercise thus implies estimating the following counterfactual quantities:

$$\beta_t^1 \approx \sum_{i=1}^N \beta_{s,t} \times \frac{E_{s,2007}}{E_{2007}} \quad \text{and} \quad \beta_t^2 \approx \sum_{i=1}^N \beta_{s,2007} \times \frac{E_{s,t}}{E_t}, \text{ respectively.}$$

<sup>11</sup> The age-profile of temporary employment is very similar in Italy, France and Germany. The share of fixed-term positions over salaried positions is instead higher in Spain in all but the 15-19 and 60-64 age classes.

To take into account the role of the changing age structure of the population, we estimate the following equation for Italy.

$$E_t = \alpha + \beta Sh_t^{35/44} + \varepsilon_t \quad (8)$$

Equation (8) expresses the number of people employed at time  $t$  ( $E_t$ ) as a function of the share of individuals aged 35-44 in the working-age population ( $Sh_t^{35/44}$ ). The regressor captures the most relevant demographic development, as this is the age class that features the highest labour force participation rate. Based on the residual  $\varepsilon_t$  we can derive employment levels net of purely supply-side factors embedded in  $Sh^{35/44}$ .

Figure 7 plots the actual changes in employment alongside those that would have prevailed after netting out the effect of population trends. It emerges that demographic developments supported employment in the first part of the decade. Up to 2009 the working-age population was growing, including in the 35-44 age bracket. After 2009, the number of individuals aged 35-44 started to decrease. The decline was initially modest and counterbalanced by the expansion of other age groups (mainly the 45-54 one). These opposing forces still resulted in a positive, albeit more modest, net effect of demography. During the recovery period, instead, demographic shifts exerted a downward pressure on employment. In this period the continuing contraction of the 35-44 age class could no longer be counterbalanced by the slower expansion of the 45-54 age class. Moreover, the population grew at a faster pace in the 55-64 and 65-74 age groups, where participation and employment rates gradually decline, and after 2015 the overall working-age population started to shrink as well.<sup>12</sup> The majority of positions which are ‘missing’ due to demographic developments would have been permanent, as most individuals in the 35-44 age bracket hold this type of job.

Since demographic factors affect employment levels and growth, it is important to check the evolution of the responsiveness of employment and its payroll components after removing the effect of the age composition of the population. We replicate the exercise carried out in Section 2 on the series obtained after removing the supply-side effect captured by  $Sh^{35/44}$  (Figure 8). As expected, the responsiveness of employment to GDP during the recovery period would have increased more

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<sup>12</sup> An alternative exercise consists in comparing realized quarterly y-o-y changes in employment to those that would have been observed if holding the composition of population by age group at the level recorded at the beginning of the period, while letting age-specific employment rates vary. This exercise is similar to the one performed by the National Institute of Statistics (ISTAT) to provide, in their monthly flashes about the labour market, changes in the number of people who are active, employed and unemployed that net out demographic effects. It yields results in line with the regression-based exercise: the contribution of demographic developments to employment figures was positive in the first part of the last decade and became negative during the recovery period.

than that observed; the responsiveness of permanent employment would have been higher as well, in 2017 as well, reaching levels closer to those observed in Spain.

In the analysis presented above we only consider purely supply-side effects stemming from changes in the age composition of the population. In particular, we focus on the age bracket 35-44 because it features the highest labour market attachment and because after age 35 the share of temporary employees declines considerably. One may argue however that this strategy does not take into account the sharp increase in the employment rate of older workers following the 2011 pension reform that raised the full retirement age especially for 55+ workers. Since older workers hold mainly permanent positions, this reform has certainly sustained the evolution of permanent workers in total employment immediately after the reform. However, the contribution of older workers to employment growth progressively declined during the recovery period begun in 2015, as workers whose exit was delayed by the pension reform eventually retired. This is why we focus only on the supply effect exerted by individuals aged 35-44 and neglect the impact of other age groups.

## **5. The role of labour market policies**

The evidence presented so far is compatible with the assumption that the heightened responsiveness of employment to economic developments during the recovery period is probably the consequence of country-specific common factors, since almost all sectors were affected in a similar way. In the previous section we ruled out demographic developments as a driving factor, since, if anything, they exerted a negative pressure on employment growth during the recovery period. One possible explanation is that these trends were determined by some important policies implemented in Italy after the recession of 2011-12. Furthermore, estimating equation (1) for different age groups reveals that the heightened responsiveness of employment to GDP observed in the recovery period mostly reflects the higher responsiveness of employment in the 15-44 age bracket (for sake of space these results are available upon request). This suggests examining the role of labour market reforms implemented since 2014: as they targeted new contracts, they likely affected to a larger extent younger individuals.

Figure 9 provides a summary of these changes by plotting the contribution of permanent and temporary employment to the growth rate of payroll employment and the timeline of the main policies adopted since 2014. The first is the Poletti Decree, issued in March 2014, which regulates fixed-term job contracts. The Poletti Decree lifted the requirement of a justifying reason for the

temporary nature of all such contracts and increased the maximum number of contract extensions from 1 to 5. It also shortened the interruption period between one contract and another with the same employer, with the maximum duration for this type of contract being 36 months, further extendable by collective agreements.<sup>13</sup> Differently from Italy, the requirement of a justifying reason still holds in Spain and in France; in the latter a fixed-term contract in most cases can last as much as 18 months and can be renewed at most twice; in Spain the maximum duration is 36 months, as in Italy, with no limits to the number of renewals.<sup>14</sup> Figure 9 shows that after the Poletti Decree the growth of temporary contracts was significant, at least until mid-2015.

At the beginning of 2015 the rules for unfair dismissals were changed and firing costs were reduced, especially for firms with more than 15 employees. The new rules apply to all newly created permanent jobs signed after 7 March 2015. To boost its adoption and to foster permanent job creation, the new regulation of firing costs was accompanied by a generous hiring subsidy (equal to 100% of social security contributions for 3 years) for firms of any size hiring workers with a permanent contract. The subsidy was reduced in 2016 (to 40% of contributions for 2 years) and discontinued in 2017, when it applied only to young workers and to workers living in the southern part of the country (for 1 year).

It is worth mentioning that, while not directly targeting permanent and temporary contracts, changes in the regulation of parasubordinate employment implemented in 2012 and 2015 might also have fostered payroll employment. In particular, the restrictions on the use of parasubordinate workers (the so-called *parasubordinati*) implemented by the Fornero Reform (Law 92/2012) and the 2015 Jobs Act may have encouraged the adoption of temporary job contracts in place of parasubordinate job contracts.<sup>15</sup>

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<sup>13</sup> The more relaxed regulation was counterbalanced by the imposition of a 20% cap on the share of temporary employees in the workforce, excluding small firms (i.e. with less than 5 employees) and start-ups.

<sup>14</sup> However, in Spain a fixed-term contract is automatically converted into a permanent one if the employee works for the same firm for more than 24 months in any 30-month period under two or more fixed-term contracts.

<sup>15</sup> Specifically, the so-called ‘Contratti di collaborazione a progetto’ were abolished, while the so-called ‘Contratti di collaborazione coordinata e continuativa’ are still available. Furthermore, if a parasubordinate worker has a single client who chooses when and where tasks have to be performed, then the relationship is considered as regular dependent employment. Several commentators have argued that part of the increase in dependent employment is attributable to the restrictions on the use of parasubordinate employment. Bovini (2018) exploits the longitudinal component of the Italian Labour Force Survey and documents that the probability of switching from parasubordinate employment to dependent employment increased in the 2015-2016 period, mostly driven by the higher probability of transitioning toward permanent positions. Dell’Arling et al. (2018) conduct a similar analysis up to 2017 and find that in 2017, on the other hand, transitions toward permanent positions became much less frequent, while switches toward temporary jobs increased. Overall, the timing of subsidies seems also to have affected the composition of transitions from parasubordinate to dependent employment, which however continue to constitute a small percentage (less than 3%) of switches to dependent employment. On the other hand, estimates based on transitions from parasubordinate to

Following all these changes, from the last quarter of 2015 on, the contribution of permanent positions to employment growth rose significantly until the end of 2016. In 2017, on the other hand, continuing employment growth was increasingly and prevalently led by temporary positions. This evidence has been interpreted by many commentators as a proof of the failure of the Jobs Act and the reform of firing costs.

The effectiveness of a reform, however, cannot be assessed by looking at the evolution of aggregated figures (e.g., monthly employment by type of contract), since many confounding factors may be simultaneously at play (e.g. structural changes in labour supply such as those discussed in Section 4). By the use of detailed microdata on workers and firms in the northern region of Veneto, Sestito and Viviano (2018) carry out an empirical exercise on employment flows up until the first half of 2015 to evaluate the relative importance of the Jobs Act and hiring subsidies in determining permanent employment growth. They find that, aside from cyclical factors, hiring subsidies contributed the most to the creation of new permanent jobs. This is not surprising since the subsidies entailed a significant but temporary reduction of total labour cost. On top of that, the Jobs Act had a much smaller, but non-negligible, positive impact. Specifically, Sestito and Viviano estimate that 8% of gross permanent hires occurred because of lower firing costs, which also contributed to increasing the rate of conversion of fixed-term positions into permanent ones.

In this paper we look at semi-aggregated data for the private, non-agricultural, sector in Veneto until the end of 2017, divided by firm size, as the Jobs Act mainly applies to 15+ firms.<sup>16</sup> Figure 10 (left panel) plots the number of new hires with a permanent job contract and contract conversions in small firms (no more than 15 employees) and medium-large firms in 2014 and in 2017. We therefore compare the last pre-reform year with the first post-reform year for which no generalized hiring subsidies are available. In 2017, differently from 2014, 15+ firms contributed the most to the gross creation of permanent positions. The right panel reports the same statistics for temporary job contracts,<sup>17</sup> which grew considerably in firms of both size classes, but more intensively in percentage terms in firms with no more than 15 employees.

As an additional piece of evidence, Figure 11 shows the share of temporary contracts signed during the second quarter of 2014 and 2017 which were converted into permanent ones within a 6-

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dependent employment are probably underestimating the effect of the new rules insofar as they may also have hindered the creation of parasubordinate positions from the start.

<sup>16</sup> Data are provided by Veneto Lavoro.

<sup>17</sup> Temporary job contracts include apprentices, temporary agency workers, workers on training and jobs on call.

month period.<sup>18</sup> It splits firms by size (medium-large or small) and workers by age (below and above 30 years of age), to further exclude any confounding effects of expectations about structural permanent hiring subsidies targeting young workers starting from 2018.<sup>19</sup> From 2014 to 2017 in medium-large firms the share of temporary contracts converted within 6 months increased by 0.6 percentage points (from 2.5% to 3.1%) among adult and senior workers, whereas it remained stable in smaller firms.<sup>20</sup>

To control for both sector, size-class and time heterogeneity, an alternative exercise is based on estimating the following equation on cell-level data:

$$ph_{fdsqy} = f(\alpha + \varphi_q + \theta_y + \gamma_s + \pi_f + \beta \times \vartheta_d \theta_y + \epsilon_{fqsy}) \quad (9)$$

A cell is identified by the interaction of four dimensions:  $f$  indexes the type of firm, identified by its size (10 classes) observed at the end of the year;  $s$  indexes the sector (40 2-digit sectors);  $q$  and  $y$  index the quarter and the year, respectively. We further create a dummy  $d$  that distinguishes medium-large vs small firms. The interaction term  $\vartheta_d \theta_y$  between the firm size dummy and year fixed effects captures the evolution of permanent employment in 15+ firms, with respect to smaller firms, over time. It therefore shows whether and how the differential between small and medium-large firms changes over time. We adopt a Tobit model to take into account that in some cells flows are equal to zero. Standard errors are clustered by size-sector (480 clusters).

Table 1 reports the evolution of the differential between medium-large and small firms in terms of permanent hires and separations, as well as conversions from fixed-term to permanent positions. The differential in hiring, set to 0 in 2014 (which is taken as the reference year), became significantly negative in 2015, implying that smaller firms used permanent hiring subsidies disproportionately. After being only slightly negative and not statistically significant in 2016, the differential became positive and significant in 2017. This shows that the increase in permanent hires recorded in 2017 with respect to 2014 was mostly in the context of medium-large firms. The differential of separations and contract conversions follows a similar pattern, turning from negative in 2015 to positive in 2017. The coefficient that measures the increase in separations in medium-

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<sup>18</sup> The choice of the 6-month window is driven by the fact that data are only available up to the end of 2017.

<sup>19</sup> As mentioned above, in 2017 permanent hiring subsidies targeting young people enrolled into the program ‘Garanzia Giovani’ were in place. However, these subsidies were subject to the availability of funds, which were limited, and take-up appears to have been low (see Colonna and Viviano, 2017).

<sup>20</sup> Focusing our attention on new hires who had no previous working relationship with the firm yields similar conclusions.

large firms as opposed to small ones in 2017, however, is lower than the same coefficients for hiring and conversions.

## **Conclusions**

This paper has analysed the features and explored the possible drivers of Italy's 'employment-rich' recovery. A model with time-varying coefficients shows that the responsiveness of total employment to real GDP increased during the recovery phase in Italy, driven by the heightened elasticity of both the permanent and the temporary components, while self-employment continued to contract. Such a sharp change is detected neither in the other two main European dual labour markets – France and Spain – nor in Germany. Further analysis on Italy's recovery reveals that the increase was broad-based, spanning the main sectors, while a reallocation of employment toward more elastic sectors played a minor role. Demographic developments cannot explain the heightened responsiveness since, if anything, such developments negatively influenced employment growth, and especially permanent employment. This was mainly due to the falling share of individuals in the 35-44 age group, who display the highest degree of labour market attachment and who hold mostly permanent positions.

Labour market policies seem instead to be an important driver. Subsidies to permanent hiring provided an important contribution to employment growth in 2015 and 2016. Preliminary evidence based on the northern region of Veneto suggests that, once subsidies were phased-out, structurally lower firing costs for medium-large firms introduced in 2015 also encouraged permanent hiring and conversions of temporary contracts into permanent ones. To study their role we compare small and medium-large firms in 2014, the last pre-reform year, and 2017, the first post-reform year with no generalized subsidies. We document that the total of gross permanent hires and conversions of fixed-term contracts was higher in medium-large firms than in small ones in 2017, while the opposite was true in 2014. The probability of converting a fixed-term contract within 6 months also increased in 15+ firms, while remaining stable in other firms. Temporary employment increased in both types of firms, plausibly also favoured by the liberalization of fixed-term contracts following the 2014 Poletti Decree, but in percentage terms the growth was larger in smaller firms. All in all, our results suggest that policies reducing the cost of permanent positions can both increase employment and encourage the re-composition of employment toward more stable jobs. However, in the light of unfolding negative demographic trends due to population ageing, employment growth must also be supported by policies that foster labour market participation on the part of all socio-demographic groups.

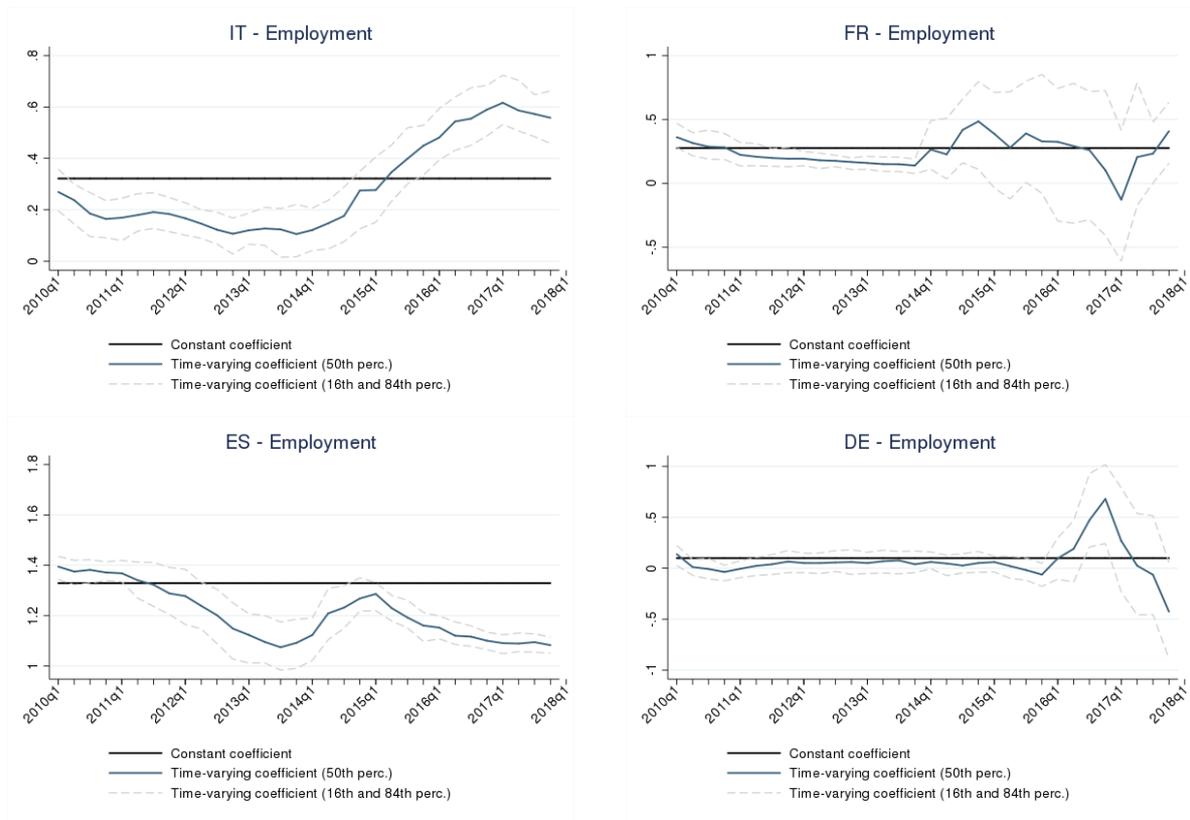
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## Tables and figures

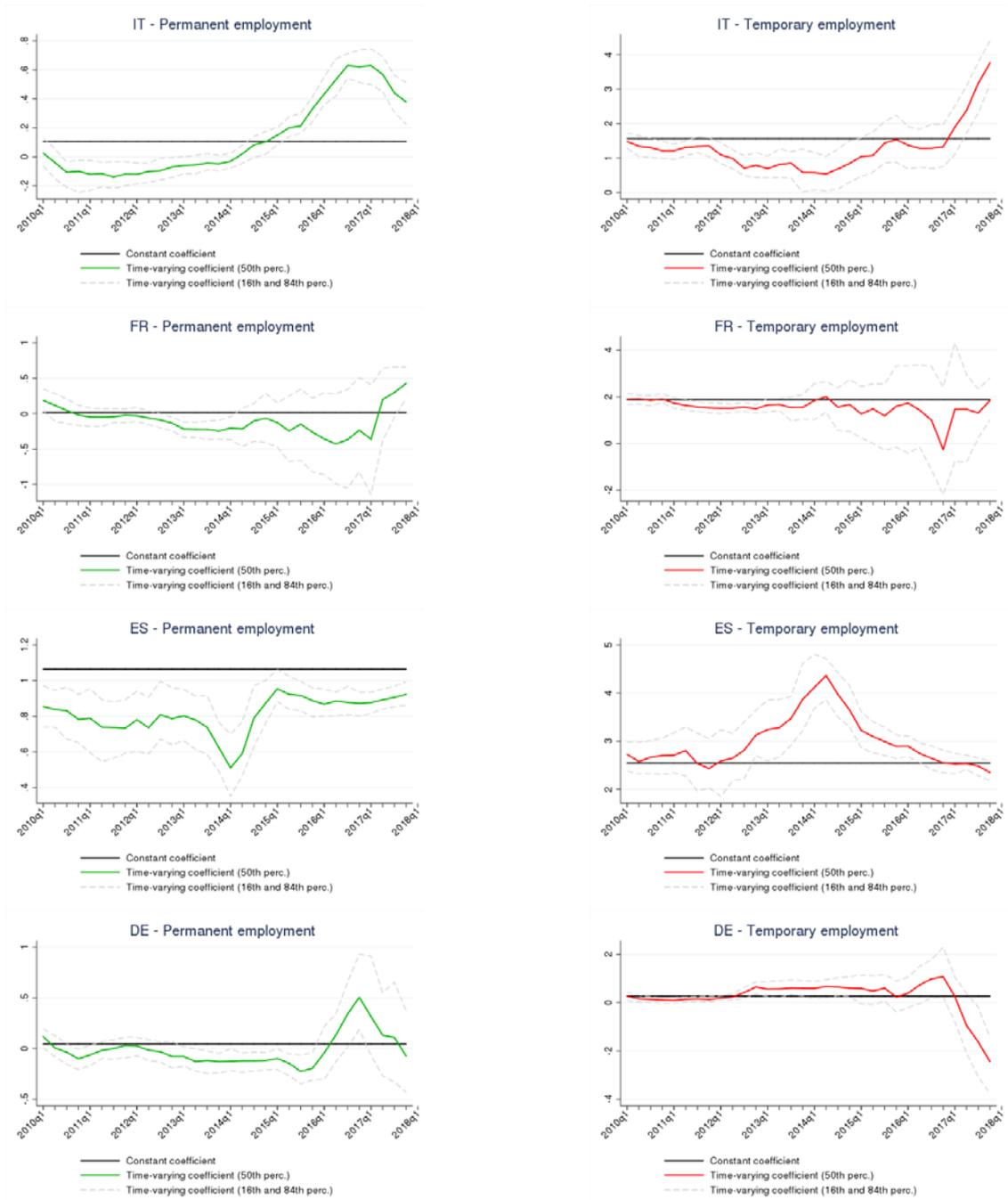
Figure 1: The responsiveness of total employment to GDP



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

Note: The figure plots the 16<sup>th</sup>, 50<sup>th</sup> and 84<sup>th</sup> percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$  in equation (1), which measures the responsiveness of total employment to real GDP. It also plots the coefficient that is obtained from a model with constant parameters. The estimation sample runs from 2000:Q1 to 2017:Q4 for Italy and Spain; due to data availability constraints, it runs from 2005:Q1 to 2017:Q4 for France and from 2007:Q1 to 2017:Q4 for Germany.

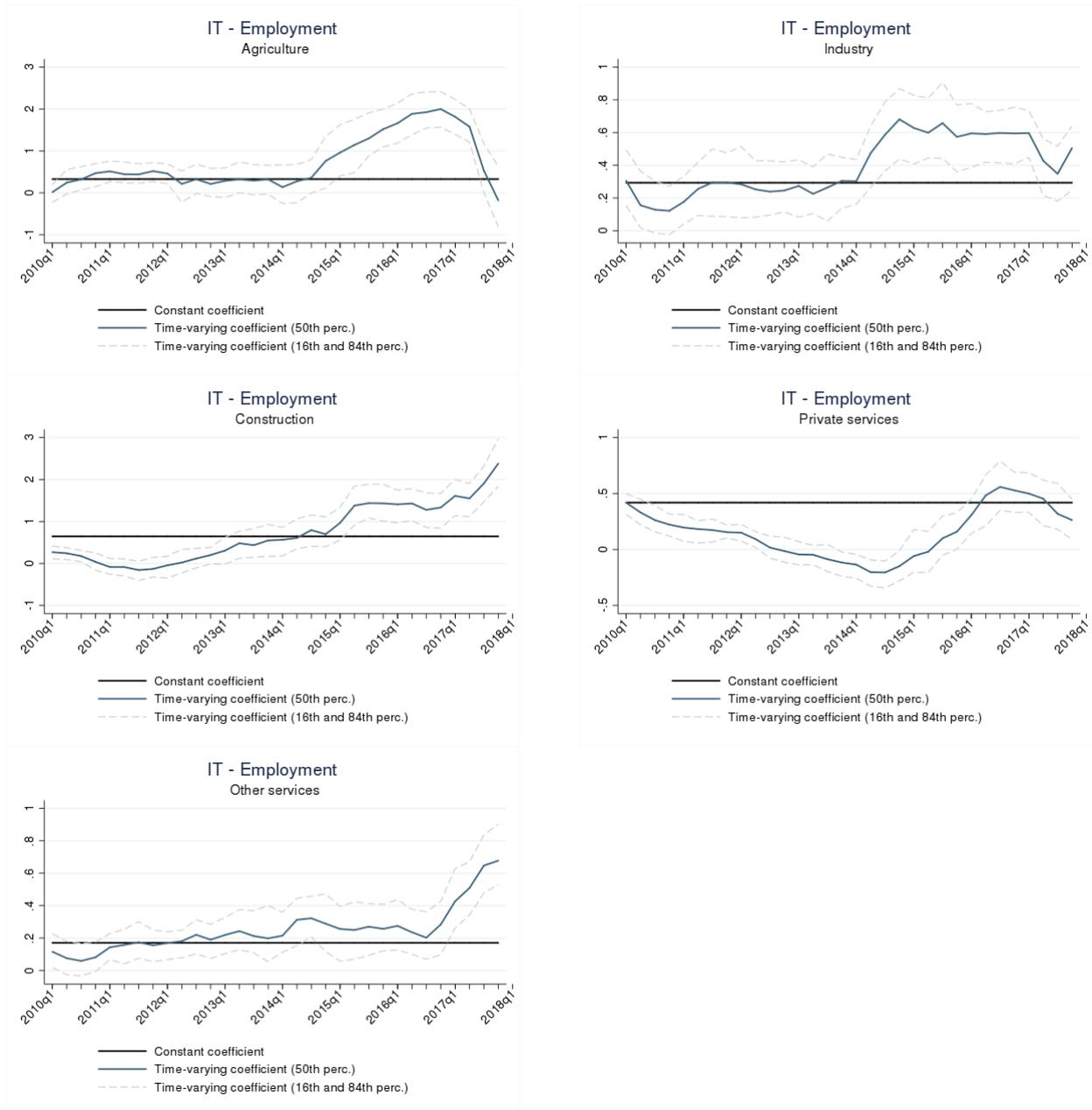
Figure 2: The responsiveness of permanent and temporary employment to GDP



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

Note: see note to Figure 1.

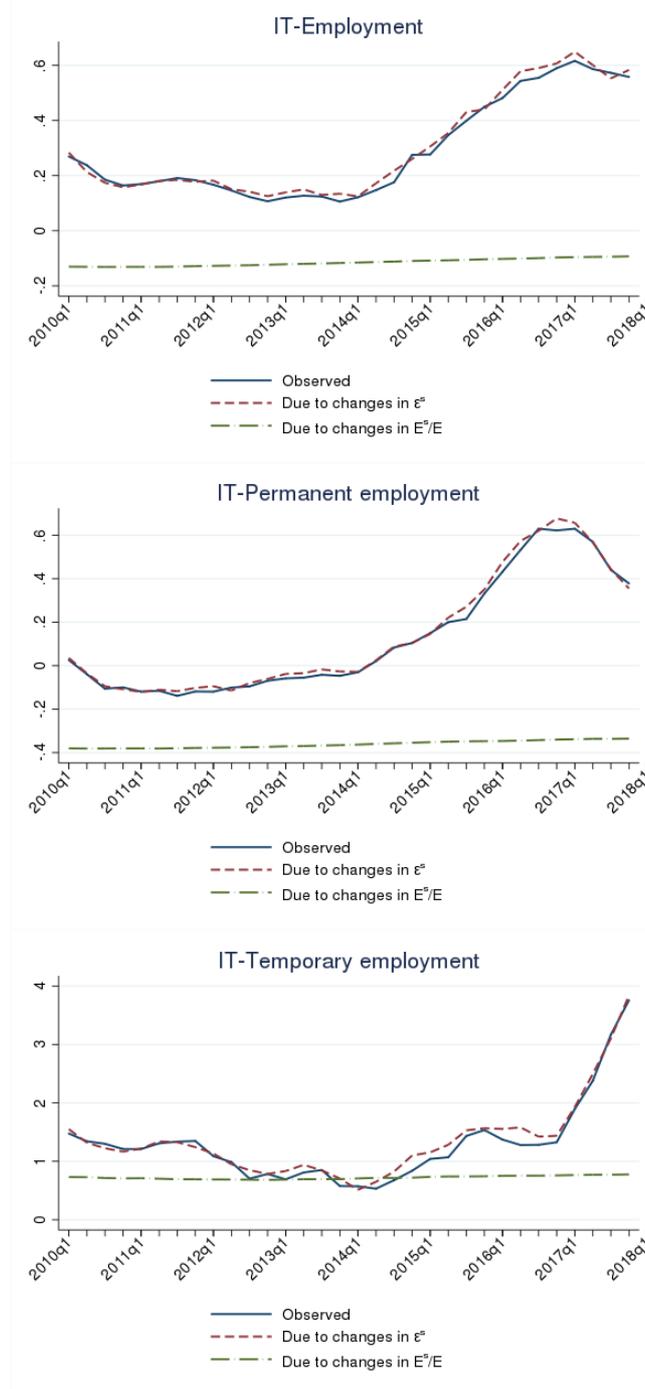
Figure 3: The responsiveness of sectoral employment to GDP



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

Note: The figure plots the 16th, 50th and 84th percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$  in equation (1), which measures the responsiveness of total sectoral employment to real GDP in Italy. It also plots the coefficient that is obtained from a model with constant parameters. The estimation sample runs from 2000:Q1 to 2017:Q4.

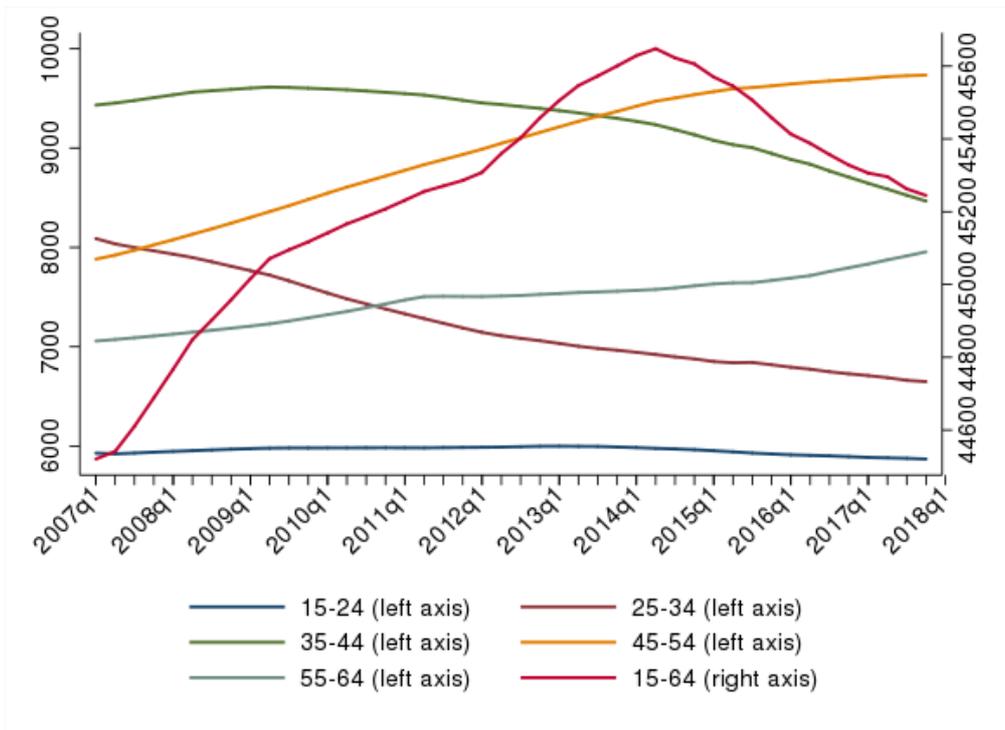
Figure 4: Observed and counterfactual responsiveness of total and payroll employment to GDP



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

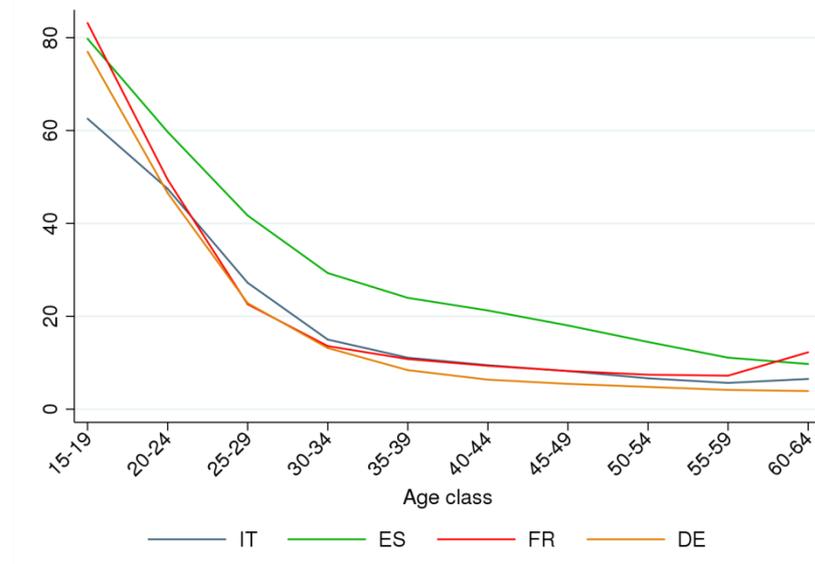
Note: The figure plots the observed responsiveness of total, permanent and temporary employment to GDP (blue lines) in Italy, alongside: i) the counterfactual responsiveness that would have been observed when holding the distribution of employment across sectors fixed at its average value in 2007 (red lines); ii) the counterfactual responsiveness that would have been observed when holding sector elasticities fixed at their average value in 2007 (green lines).

Figure 5: Italy's population by age class



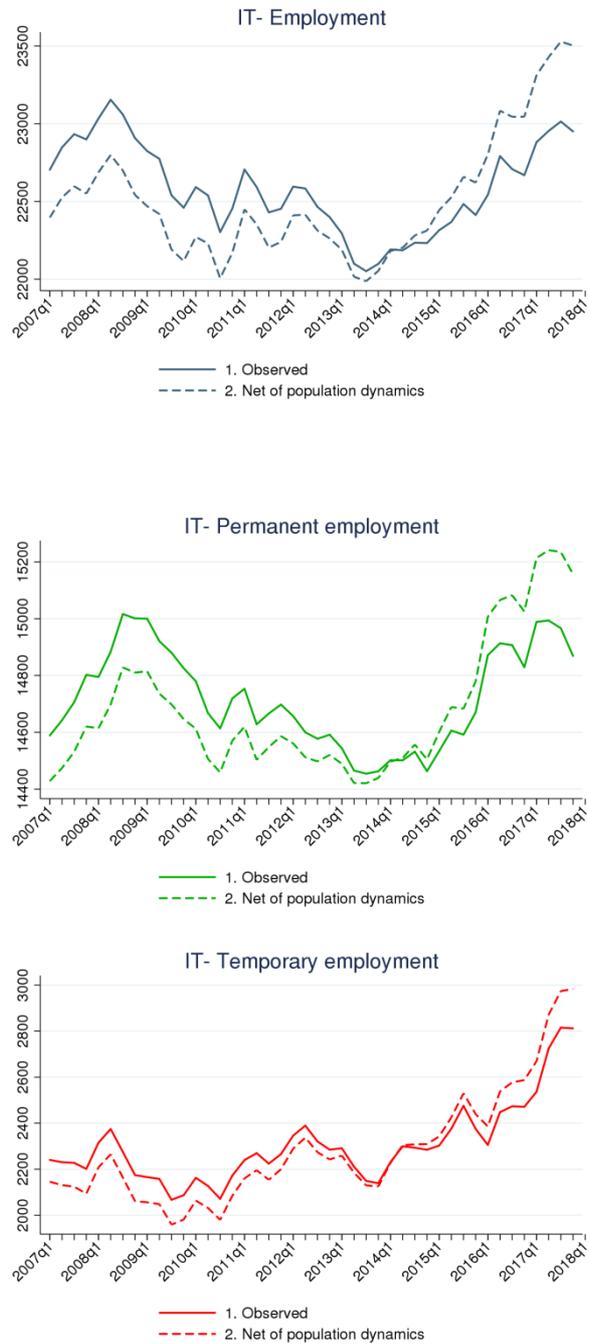
Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey).  
 Note: The figure displays Italy's population by age class (thousands of people, left axis) as well as the evolution of the working-age population (thousands of people, right axis).

Figure 6: The share of temporary employment across age groups



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey).  
 Note: The figure shows the share of temporary workers among employees by 5-year age groups.

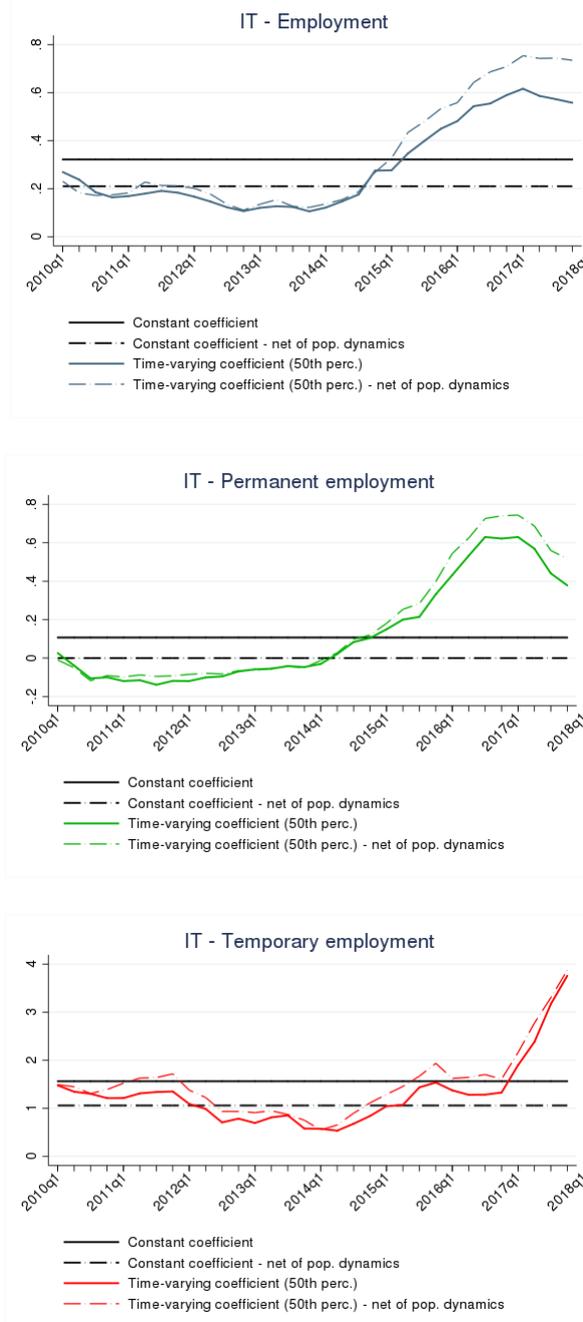
Figure 7: The effect of demographic trends on total and payroll employment



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey).

Note: The figure displays the actual pattern of total, permanent and temporary employment (solid lines), alongside the pattern that would have been observed after netting out population dynamics (dashed lines), as captured by the share of individuals aged 35-44 in the working-age population. The series are deseasonalized.

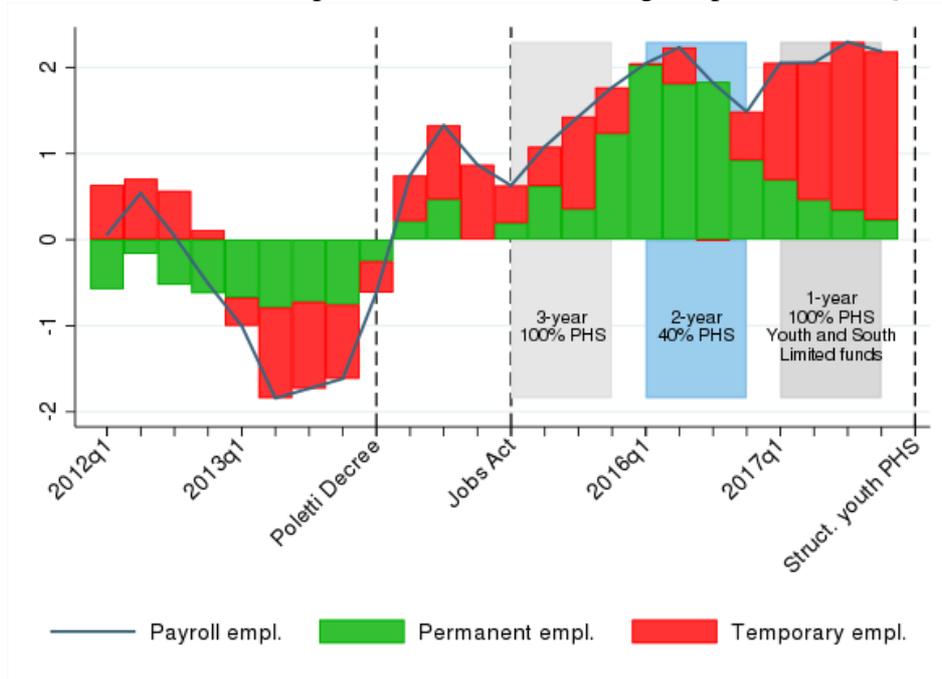
Figure 8: Responsiveness of total and payroll employment to GDP net of population shifts



Source: Based on the authors' calculations using Eurostat data (European Labour Force Survey and Quarterly National Accounts).

Note: The figure plots the 16th, 50th and 84th percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$  in equation (1), which measures the responsiveness of employment to GDP, both gross (solid lines) and net (dashed lines) of population shifts. The estimation sample runs from 2000:Q1 to 2017:Q4.

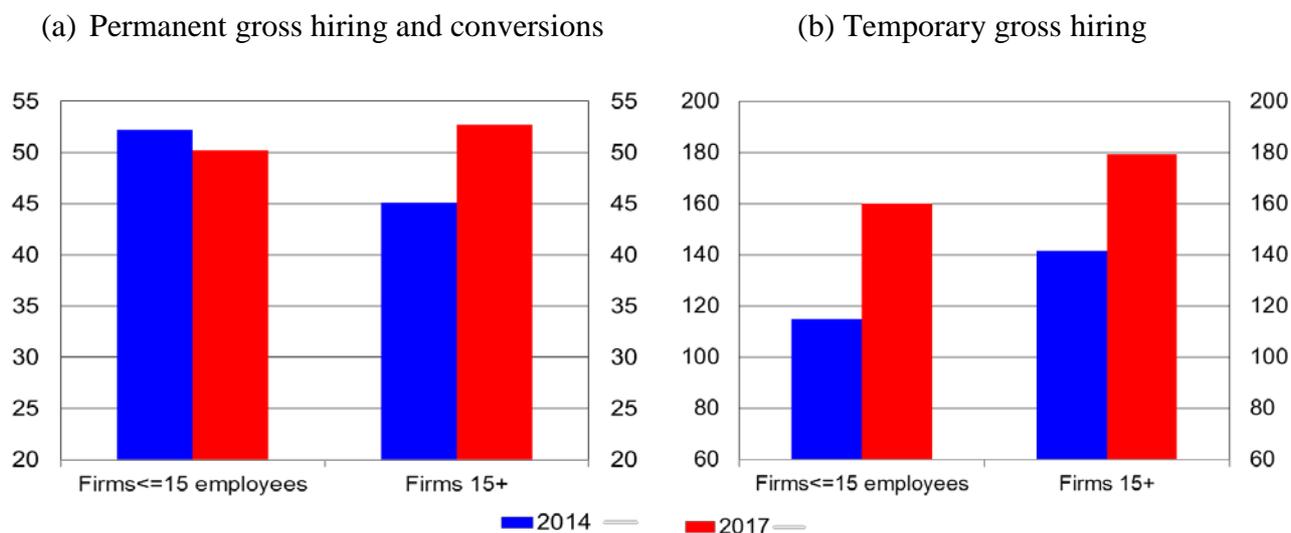
Figure 9: Contribution of permanent and temporary employment to payroll employment growth in Italy and timeline of the main policies undertaken during the period 2012:Q1-2018:Q1



Source: Based on the authors' calculations using Eurostat data (European Labour Force Survey).

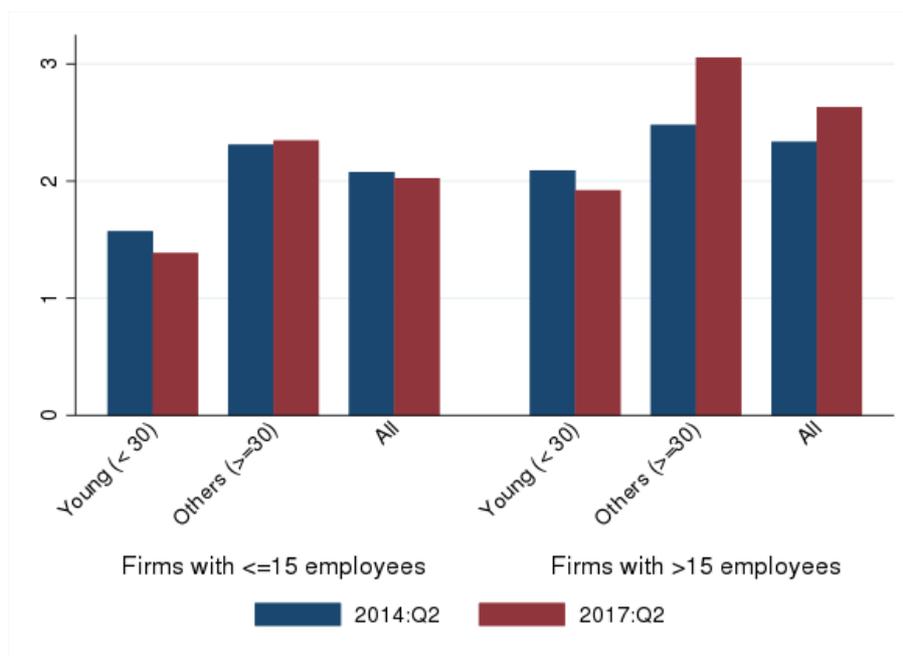
Note: The figure plots the contribution of permanent and temporary positions to the y-o-y change of payroll employment. The vertical dashed lines flag the implementation of the main structural labour market policies during the period 2014:Q1-2018:Q1. The shaded areas indicate the period during which temporary subsidies to permanent hiring (PHS) were in place.

Figure 10: The evolution of gross hires and contract conversions in small ( $\leq 15$  employees) and medium-large firms ( $15+$  employees)



Source: Based on the authors' calculations using data from Veneto Lavoro (Comunicazioni Obbligatorie).  
 Note: The figure plots the cumulative number (thousands of people) of gross permanent hires and conversions (panel a) and gross temporary hires (panel b) in the private non-agricultural sector of the northern region of Veneto.

Figure 11: The percentage of fixed-term contracts converted into permanent contracts within a 6-month period



Source: Based on the authors' calculations using data from Veneto Lavoro (Comunicazioni Obbligatorie).  
 Note: The figure plots the share of fixed-term contracts signed in the second quarter of 2014 and 2017 which are converted into permanent ones within a 6-month period, by size of the firm and age of the worker, in the private non-agricultural sector in the northern region of Veneto.

Table 1: Estimates of the differential in permanent hires, job separations and contract conversions between medium-large and small firms.

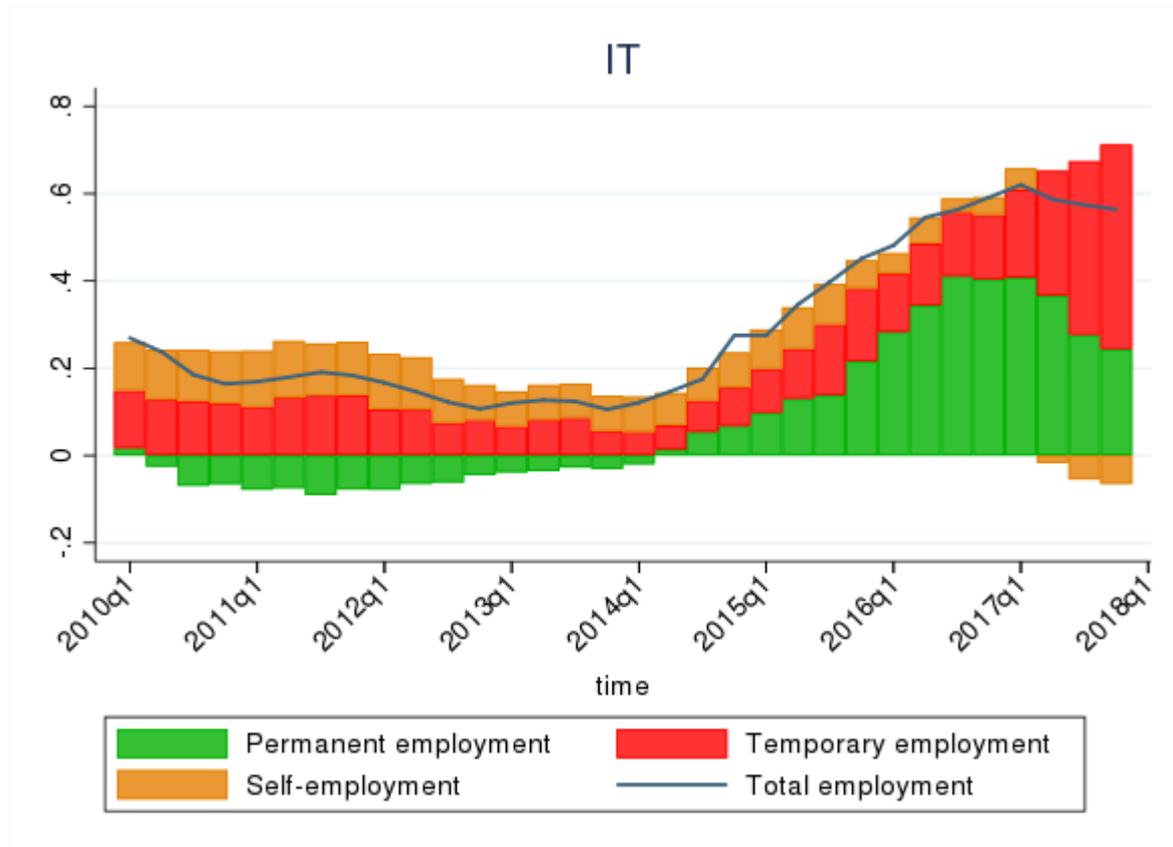
	Hires	Transformations	Separations
2010* firm 15+	-1.145 (0.830)	-2.845 (0.272)	-3.956 (0.436)
2011* firm 15+	1.352 (0.775)	-3.84 (0.183)	-0.329 (0.933)
2012* firm 15+	-11.325 (0.051)*	-4.723 (0.070)*	-10.409 (0.013)**
2013* firm 15+	-4.900 (0.261)	-2.923 (0.118)	-9.358 (0.008)***
2015* firm 15+	-39.773 (0.001)***	-0.621 (0.839)	-5.29 (0.118)
2016* firm 15+	-1.212 (0.789)	5.752 (0.007)***	3.697 (0.31)
2017* firm 15+	11.232 (0.023)**	13.249 (0.000)***	7.719 (0.051)*
Size class FE	yes	yes	yes
Sector FE	yes	yes	yes
Year FE	yes	yes	yes
Quarter FE	yes	yes	yes
Uncensored	10,568	9,257	11,942
Left-censored	4,792	6,103	3,418
Observations	15,360	15,360	15,360

Source: Based on the authors' calculations using data from Veneto Lavoro (Comunicazioni Obbligatorie).

Note: The table shows selected coefficients from the Tobit model estimated in (9). Specifically, it reports the interaction between year fixed effects, with 2014 as the reference year, and a dummy that takes value 1 if the firm is medium-large (i.e. the size of the firm is 15+ at the end of the year). Standard errors are clustered at the sector-size level. P-value are reported in brackets. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% level, respectively.

## Appendix A: additional figures

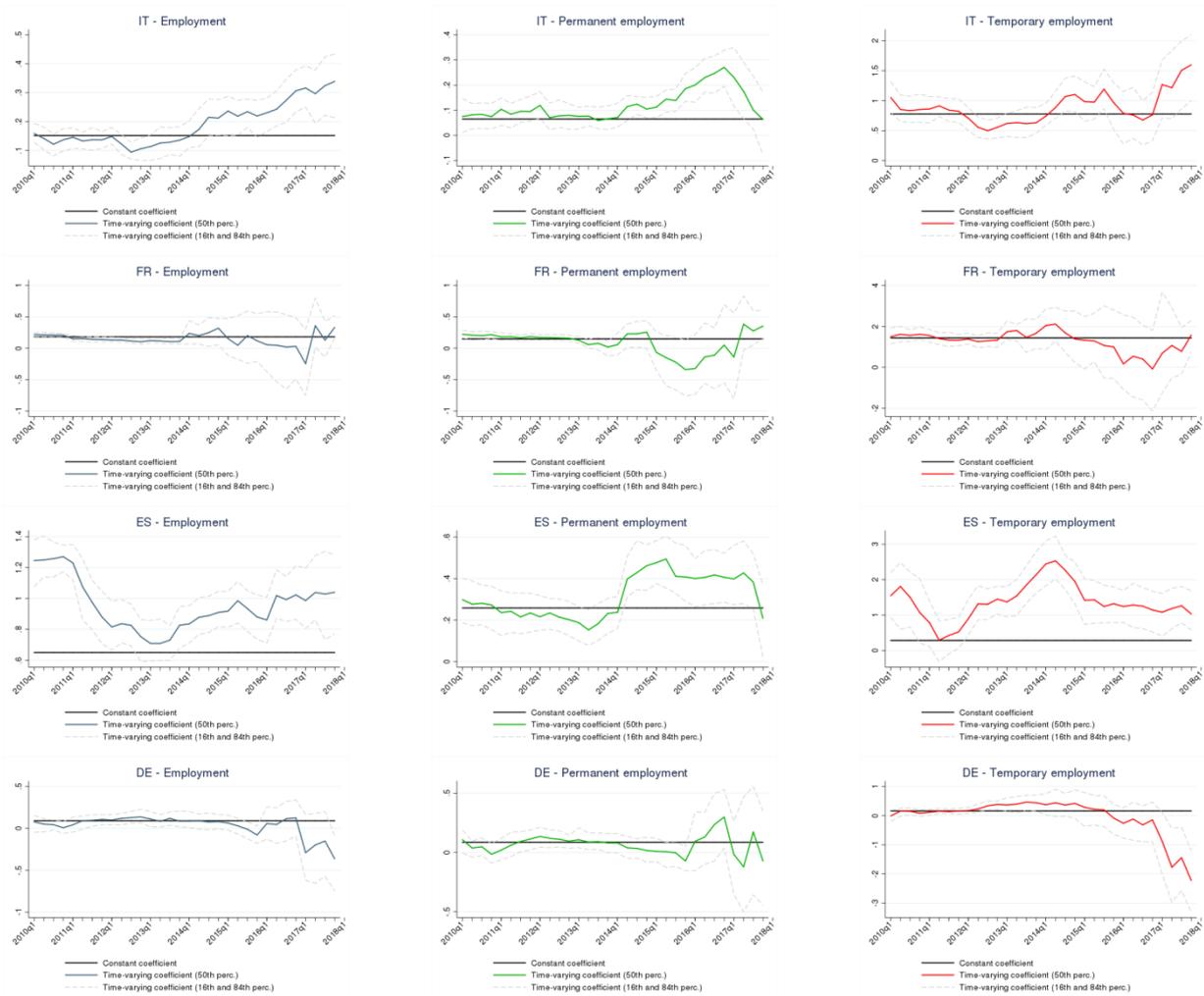
Figure A1: The contribution of permanent, temporary and self-employment to the responsiveness of total employment



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

Note: The figure plots the contributions of permanent employment, temporary employment and self-employment to the time-varying responsiveness of total employment. The contribution of a given component is computed based on the decomposition outlined in (4). The estimation sample runs from 2000:Q1 to 2017:Q4.

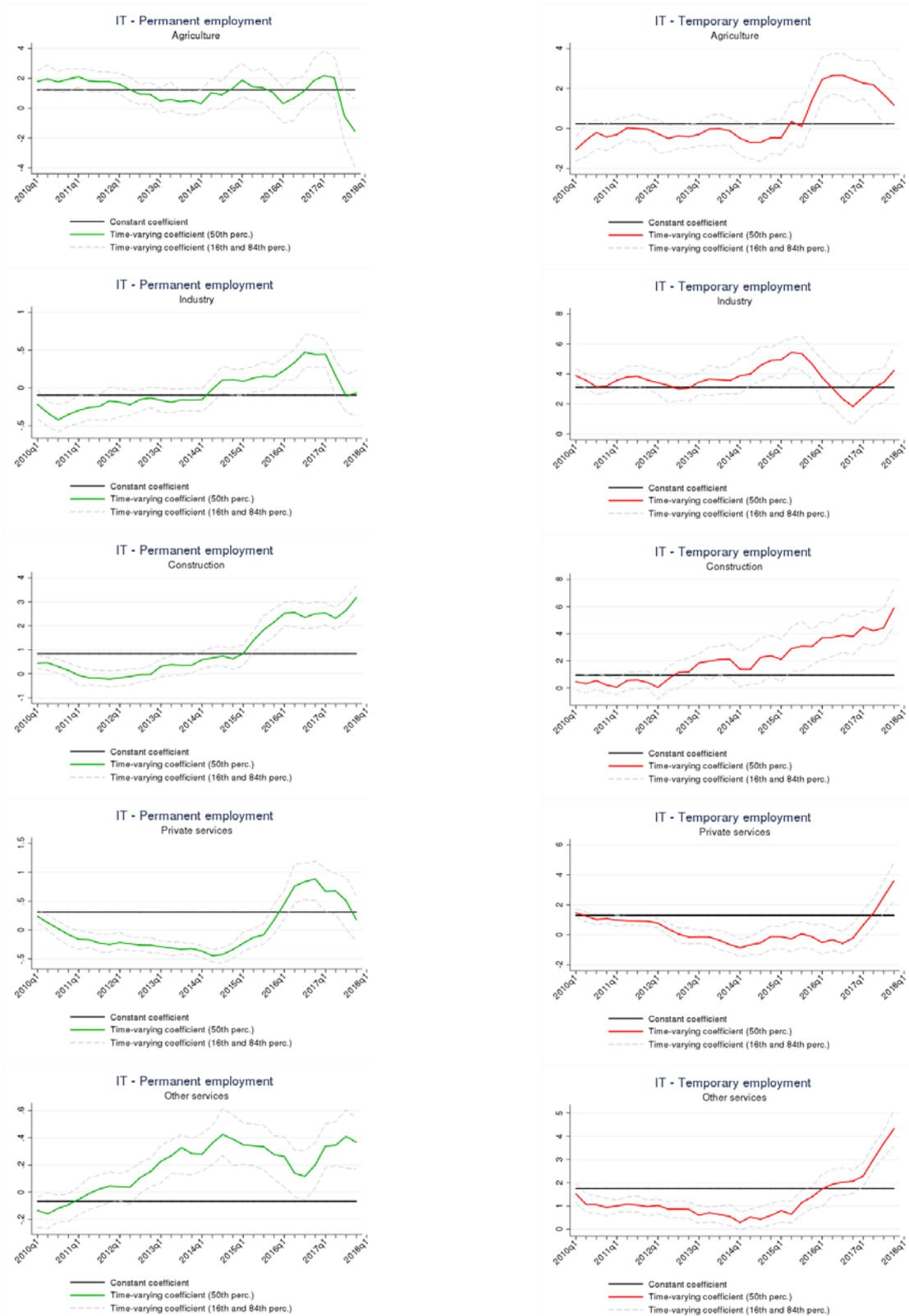
Figure A2: The elasticity of total and payroll employment to GDP, including the lagged dependent variable



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

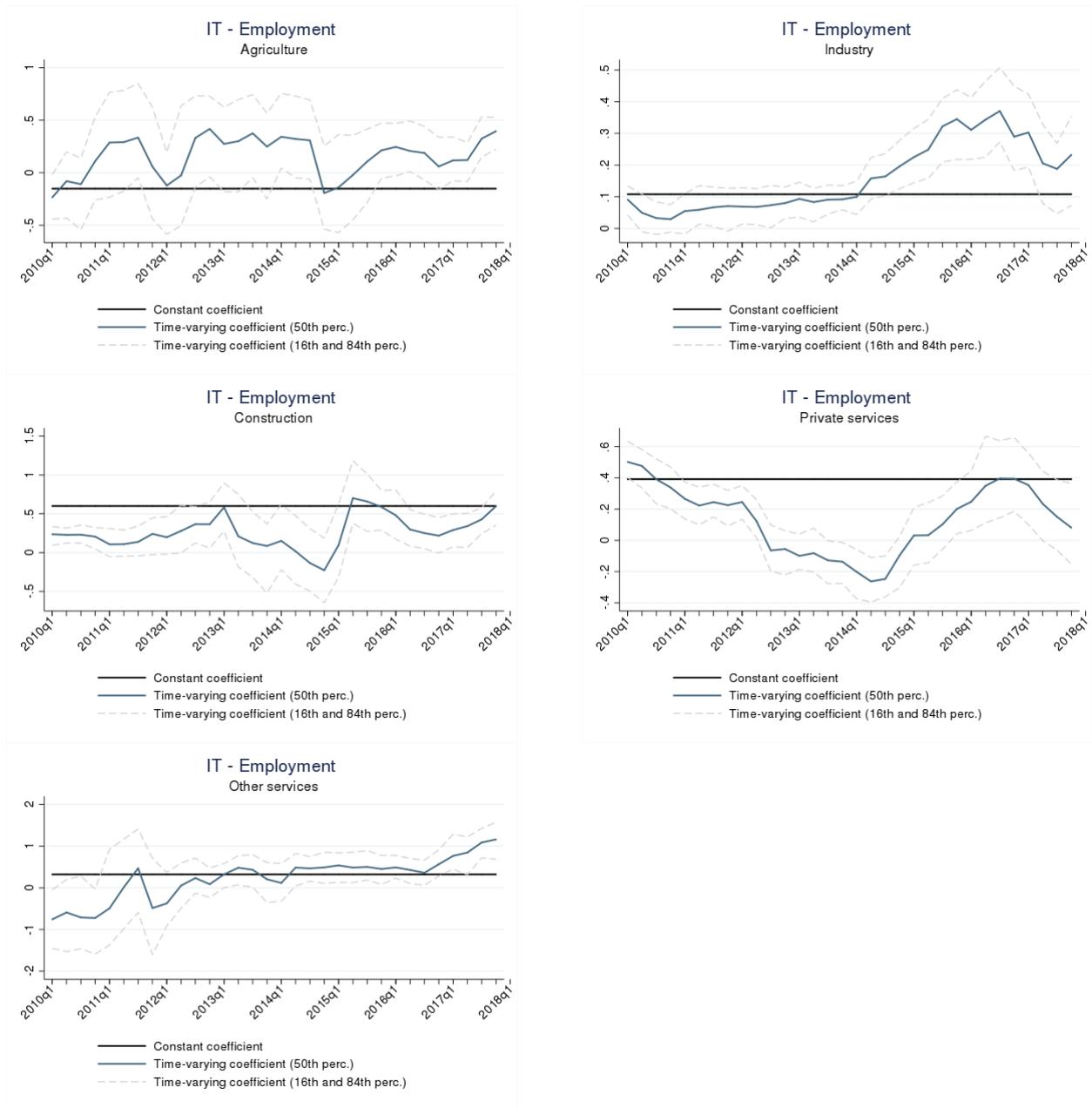
Note: The figure plots the 16th, 50th and 84th percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$  in equation (5), which measures the (short-run) responsiveness of total, permanent and temporary employment to GDP when the lagged dependent variable is included in the model. It also plots the coefficient that is obtained from a model with constant parameters. The estimation sample runs from 2000:Q1 to 2017:Q4 for Italy and Spain; due to data availability constraints, it runs from 2005:Q1 to 2017:Q4 for France and from 2007:Q1 to 2017:Q4 for Germany.

Figure A3: The responsiveness of sectoral payroll employment to GDP



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts). Note: See note to Figure 3.

Figure A4: The responsiveness of sectoral total employment to sectoral gross value added



Source: Based on the authors' calculations using data from Eurostat (European Labour Force Survey and Quarterly National Accounts).

Note: The figure plots the 16<sup>th</sup>, 50<sup>th</sup> and 84<sup>th</sup> percentiles of the bootstrapped distribution of the time-varying parameter  $\beta$  in equation (1), which measures the responsiveness of total sectoral employment to gross sectoral value added. It also plots the coefficient that is obtained from a model with constant parameters. The estimation sample runs from 2000:Q1 to 2017:Q4.

## Appendix B: the regulation of permanent and temporary employment

This Appendix provides a concise overview of the main regulatory features of permanent and temporary contracts in Italy, Spain and France, the main European dual labour markets. It describes the main changes to regulation in recent years, which are also summarized in Table B1.

### *Permanent contracts*

All three countries have recently reformed the regulation of permanent contracts.

Italy has progressively reduced the protection afforded to permanent workers. The 2012 Fornero Reform (Law 92/2012) and the 2015 Jobs Act (Decree Law 23/2015) have substantially revised the discipline of unfair dismissals, to increase the predictability of court-settled disputes and to lower the mean and the variance of expected costs. They have restricted the circumstances under which medium-large firms (i.e. with more than 15 employees) have to reinstate workers and bounded judicial discretion in setting severance payments.<sup>21</sup> As a result, unjustified economic dismissals currently entitle the worker to a severance payment that is a smooth function of tenure (2 months of the last salary per year of service), capped at 24 months.<sup>22</sup> This form of graded job security (*tutela crescente*) was phased-in on a flow basis, as it applies to all open-ended contracts signed or converted after 7 March 2015.<sup>23</sup> Its introduction was accompanied by subsidies to permanent new hiring as well as contract conversions.<sup>24</sup> Those signed in 2015 benefited from a non-targeted and unconditional incentive to permanent hiring, consisting in a three-year exemption from social security contributions up to a threshold that for most cases resulted in full relief.<sup>25</sup> The subsidy was lowered in 2016, reducing the duration to two years and the exemption to 40% of contributions. In 2017 incentives targeting permanent hiring of young workers and unemployed individuals in southern Italy were put in place. In autumn 2017 the government announced, starting from 2018, the phasing-in of structural, nationwide subsidies – amounting to a 3-year 50% reduction in contributions - to permanent hiring and contract conversions for younger workers (aged below 35 in 2018 and below 30 from 2019 onward) who have never held a permanent contract before. Moreover, firms' eligibility to the subsidy is conditional upon not dismissing workers in the previous 6 months.

Following the major reform of the labour market in 2012 (Law 3/2012), Spain also reduced severance payments, in the case of unfair dismissals, from 45 to 33 days of salary per year of service, capped at 24 rather than at 42 months. Lower severance payments apply to all contracts signed after 12 February 2012 and *pro-rata* to pre-existing ones.<sup>26</sup> Fair dismissals continue to be

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<sup>21</sup> There continues to be no entitlement to severance payments for fair dismissals.

<sup>22</sup> The transitory discipline envisioned by the 2012 Fornero Reform gave more leeway to judges, who could order reinstatement of the worker in the case of an outright lack of economic grounds for dismissals and could set severances at any level between 12 and 24 months of the last salary.

Reinstatement currently occurs only when dismissals are deemed discriminatory, null or illegal, or if they lack a just cause or a personal reason.

<sup>23</sup> Graded job security also applies to the entire stock of workers in firms that employ more than 15 employees following hires after 7 March 2015.

<sup>24</sup> During the 2012-2014 period there were different sets of subsidies for permanent new hiring and contract conversions targeting specific categories: long-term unemployed women (all) and men (only if aged above 50, this subsidy is still in place); all women and men aged below 30 under ongoing or recently expired fixed-term contracts (see Ciani and de Blasio (2015) for a policy evaluation); unemployed and low-educated younger individuals aged below 30.

<sup>25</sup> The only restriction to workers' eligibility for the subsidy was not holding a permanent contract in the six months prior to the hiring or the transformation.

<sup>26</sup> In 1997 Spain first introduced a permanent contract with a lower severance payment in case of unfair dismissal (33 rather than 45 days of salary per year of service). Its coverage was however limited to long-term unemployed workers aged below 30 or above 45. The categories that could be hired under this contract were then extended in 2002 and 2006,

entitled to a severance payment equal to 20 days of salary per year of service, capped at 12 months. Furthermore, the reform designed a new permanent contract featuring a one-year probation period during which firms can terminate the relationship at no cost. The contract can be used only by small firms (i.e. with fewer than 50 employees). Similarly to Italy, the introduction of the new contract was accompanied by social security contribution and tax cuts (available until the unemployment rate exceeds the 15% threshold).

The French labour market reform enacted in 2017 (Law 1340/2017) contains mixed provisions concerning dismissals of permanent workers. On the one hand, it increased the amount of the indemnity in the case of fair dismissals,<sup>27</sup> on the other, similarly to Italy, judicial discretion in setting compensation in the case of unfair dismissals was limited: the severance payment is a smooth function of tenure, bounded between 1 and 20 months of the reference salary.<sup>28</sup> Moreover, it extended the possibility to agree on an amicable termination by mutual consent also in case of collective dismissals. Since the onset of the Great Recession France has also made extensive use of hiring subsidies, although they do not explicitly target permanent employment and, similarly to Spain, the subsidies apply to small and medium-sized firms only.<sup>29</sup>

### *Temporary contracts*

Starting from the mid-1990s Italy has progressively liberalized the use of fixed-term contracts. The Treu package (Law 196/1997) legalized temporary work agencies and softened sanctions in the case of job relationships continuing past the expiration of the contract. In 2001 the specific list of circumstances to justify the use of temporary contracts was replaced with a generic clause.<sup>30</sup> Several changes to the regulation subsequently took place. On the one hand, the 2012 Fornero Reform introduced temporary contracts that do not require a justification for their temporary nature, but limited their application to the first job relationship and their duration to 12 months. On the other hand, it extended the interruption period between subsequent contract renewals and it levied additional social security contributions on fixed-term contracts, earmarked to fund unemployment insurance and partly redeemable in case of conversion to permanent relationships. Following the 2014 Poletti Decree (Decree Law 34/2014), Italy lifted the requirement of a justifying reason for all temporary contracts and increased the maximum number of contract extensions from 1 to 5. Moreover, it shortened the interruption period between subsequent contracts with the same employer, back to the pre-2012 duration.<sup>31</sup> The more relaxed regulation in this area was counterbalanced by the imposition of a 20% cap on the share of temporary employees in the

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to include workers unemployed for more than 6 months and workers aged 31-44 hired under temporary contracts, respectively.

<sup>27</sup> Before 27 September 2017, the indemnity was conditional upon having one year of tenure and consisted in 1/5 of the reference monthly salary per year of service, topped by an extra-compensation equal to 2/15 of the reference monthly salary per year of service beyond the tenth. After that date, the indemnity is conditional upon having 8 months of tenure and consists in 1/4 of the reference monthly salary per year of service up to the tenth, which is raised to 1/3 of the reference monthly salary per year of service beyond the tenth.

<sup>28</sup> If the unfairly dismissed worker has at least two years of tenure and the firm has at least 11 employees, the judge can still order to reinstate the worker if both the employer and the employee agree upon that.

<sup>29</sup> Only temporary contracts of very short duration are not eligible for hiring subsidies.

<sup>30</sup> According to Law 368/2001 temporary contracts could be signed for any 'technical, production, organizational and substitution reason'.

<sup>31</sup> From 60 to 10 days and from 90 to 20 days depending on whether the duration of the contract is less or more than 6 months, respectively.

workforce, excluding small firms (i.e. with fewer than 5 employees).<sup>32</sup> The maximum duration of a fixed-term contract remains 36 months, extendable by collective agreements.<sup>33</sup>

After significantly deregulating fixed-term contracts as early as 1984 by lifting the requirement of a justifying reason, Spain's subsequent labour market reforms attempted to tighten the regulations. The requirement of a justifying reason was restored in 1994 and temporary contracts can currently only be offered in the following circumstances: to carry out a specific and limited job or service; to accommodate extraordinary production requirements; to replace employees on leave or fill a vacancy during the recruitment process. The 2012 labour market reform also intervened as regards temporary contracts. First, it gradually phased-in a larger severance payment upon contract expiration, from 8 to 12 days of salary per year of service. Second, it reintroduced the provision automatically converting a fixed-term contract into a permanent one if the employee worked for the same firm for more than 24 months in any 30-month period under two or more fixed-term contracts, which was suspended between August 2011 and December 2012. The maximum duration depends on the type of temporary contract, but it cannot exceed 36 months, extendable to 48 months by collective agreements.<sup>34</sup>

After introducing fixed-term contracts in 1979, France progressively tightened their regulation up to the mid-2000s. In the last ten years, their scope was instead broadened. Whilst preserving the requirement of a justifying reason, specific temporary contracts to hire older workers and skilled workers were introduced. Moreover, from August 2015 the maximum number of contracts renewals was increased from 1 to 2. On the other hand, similarly to Italy, since 2013 additional social security contributions were levied on short-term temporary contracts. The maximum duration for most contracts is 18 months and the conversion to a permanent position is automatic if the relationship continues past the expiration. The recent 2017 labour market reform introduced the possibility of negotiating the conditions of a fixed-term contract at industry level.<sup>35</sup>

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<sup>32</sup> A breach of the cap entails an administrative sanction, but does not lead to the conversion of temporary contracts exceeding the threshold.

<sup>33</sup> Information about temporary and permanent contracts in Italy is drawn from multiple sources: <https://www.cliclavoro.gov.it/NormeContratti/Contratti>; <http://www.jobsact.lavoro.gov.it>; Cappellari et al. (2012); Sestito and Viviano (2018).

<sup>34</sup> Information about permanent and temporary contracts in Spain is drawn from multiple sources: Bentolila et al. (2008); OECD (2014); Gamberoni et al. (2016).

<sup>35</sup> Information about permanent and temporary contracts in France is drawn from multiple sources: <https://www.service-public.fr/>; Le Barbanchon and Malherbet (2013).

**Table B1: Main revisions to permanent and temporary contract law since 2012 in Italy, France and Spain**

	Permanent	Temporary
<b>Italy</b>	Fornero Reform (Law 92/2012): reduction of judicial discretion in setting the compensation for unfair dismissals of workers in 15+ firms.	Fornero Reform (Law 92/2012): 1) no justifying reason for the temporary nature of the contract, but only for the first job relationship and for a max. duration of 12 months; 2) extension of the interruption period between subsequent contract renewals; 3) additional social security contributions on fixed-term contracts, earmarked to fund unemployment insurance and partly redeemable in case of conversions to permanent relationships.
	Jobs Act (Decree Law 23/2015): further reduction of judicial discretion and introduction of pre-determined rules for firing costs in the case of unfair dismissal ( <i>graded job security</i> ) of newly hired workers in 15+ firms.	Poletti Decree ( Decree Law 34/2014): 1) no requisite of a justifying reason for all temporary contracts; 2) the maximum number of contract extensions is increased from 1 to 5; 3) shorter interruption period between subsequent contracts with the same employer, back to the pre-2012 duration; 4) 20% cap on the share of temporary employees in the workforce.
	Hiring subsidies for newly hired or workers with converted contracts in 2015 (100% 3-year social security contribution reduction), 2016 (40% 2-year reduction), 2017 (only young people and workers in southern Italy, 1-year reduction); from 2018 onward there is a 50% 3-year contributions reduction for workers aged under 30.	
<b>Spain</b>	2012 labour market reform (Law 3/2012): 1) broader definition of fair economic dismissals; 2) lower severance payments in the case of unfair dismissals; 3) introduction of a new contract with a 1-year probation period during which the relationship can be terminated at no cost (only for firms with fewer than 50 employees); 4) incentives to job creation via subsidies for new hires.	2012 labour market reform (Law 3/2012): 1) larger severance payment upon contract expiration; 2) reintroduction of automatic conversion of fixed-term contracts into permanent contracts if the employee works for the same firm for more than 24 months in any 30-month period under two or more fixed-term contracts (this was suspended between August 2011 and December 2012).
<b>France</b>	Since 2013: 1) ease firm-level negotiations on wages and working hours; 2) subsidies for hiring younger workers under permanent contracts.	Since 2013 additional social security contributions are levied on short-term temporary contracts. In 2015 the maximum number of contracts renewals was increased from 1 to 2.
	2017 labour market reform: 1) reduction of judicial discretion in setting the compensation in the case of unfair dismissals; 2) higher firing costs in the case of fair dismissals.	2017 labour market reform: possibility of negotiating conditions of fixed-term contracts at industry level.