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THE DYNAMICS OF THE ITALIAN LABOUR FORCE PARTICIPATION RATE: DETERMINANTS AND IMPLICATIONS FOR THE EMPLOYMENT AND UNEMPLOYMENT RATE

by Marta De Philippis*

Abstract

This work analyzes the evolution of the labour force participation rate in Italy, as compared with the other main euro-area countries in the last decade. It breaks down the dynamics of the activity rate into the portion due to changes in the average socio-demographic characteristics of the population and that related to within socio-demographic group variations in the probability of participating. The results show that the main drivers of the increase in Italy's participation rate are structural and long-lasting: they are mostly related to the rise in the population's share of highly-educated individuals, who are more strongly attached to the labour market, and to the positive labour supply effects of the recent pension reforms. In the decade ahead, while socio-demographic forces are expected to stop providing a positive push to the aggregate activity rate, due to the ageing of the particularly numerous cohort of individuals born in the 1960s, the increase in the labour supply of women and of the elderly will continue to boost the overall labour force participation rate.

JEL Classification: J21, J11.
Keywords: labour supply, demographic changes, pension reforms.

Contents

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1. Introduction[1]

The labour force participation rate (LFPR), defined as the share of the working age population (conventionally identified as those aged 15-64) that is either employed or unemployed, stands in Italy at 64.9 per cent, a much lower level than in France (71.4), Germany (78), Spain (74.2) and the euro area average (72.8) (Figure 1 and Tables 1a-1d). On a rising trend in all main euro area countries at least since the early '90s, between 2011 and 2016 the LFPR recorded in Italy a sharp increase of 2.8 percentage points (against 1.3 in France, 1.2 in Germany and 0.3 in Spain).

Using the Italian and the European Labour Force Survey micro data, this note analyzes the recent developments of the Italian LFPR in comparison to the rest of the euro area to assess how much of the recent evolution is due to long-term socio-demographic changes (*composition effect*) against variations in the probability of participating of single socio-demographic groups (*coefficient effect*). The latter ones are then reconnected to cyclical factors and to structural reforms. Lastly, this note studies how much predicted future changes in the average socio-demographic characteristics of the population will affect the aggregate LFPR in the next decade.

Since labour supply is related to the current and potential output and to the unemployment rate, understanding what are the determinants of the LFPR developments and whether they are structural or cyclical is crucial because different policy implications follow. Figure 2 shows how Italy is indeed an interesting case to study: as compared to the other main euro area countries, in Italy variations in labour supply have largely contributed to increase the unemployment rate since 2011 (the employment rate performance has been only marginally worse than what recorded in the other countries while the unemployment rate has increased much more in Italy). When both employment and LFP are on the rise, it is essential to understand the nature of the changes in the latter: long-term changes in the LFPR would positively affect potential output and the ceteris paribus rise or the curtailed fall in unemployment would not be limiting the space for reflationary policies; purely cyclical positive changes in LFPR would on the contrary suggest that unemployment, albeit lifted up by the rise in participation, is already approaching its long run "natural" level.

The main results of the analysis are the following:

- in Italy, long-term trends shifting population shares towards socio-demographic characteristics associated with higher attachment to the labour market, the so-called *composition effect*, provided a constant

[1] I thank Matteo Bugamelli, Paolo Sestito and Eliana Viviano for their useful comments.

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upward push to the aggregate LFPR of about 0.2 points per year in the last decade and therefore explain almost entirely the 2.3 percentage points increase of the LFPR in the last twelve years. Most of the effect came from the increasing share of people with higher educational attainment in all age classes, including the particularly numerous 45-54 age class (*baby boomers*);

- more varied over time was the contribution coming from the average variations in LFPR within each specific socio-demographic group in the last decade, the so-called *coefficient effect:* overall, it reduced the activity rate till 2011 and boosted it afterwards; this latter effect was mostly due to the increased participation of the elderly after the recent pension reforms. While part of this variability over time may be connected to a pro-cyclical behavior of labor participation among men (paired with a slightly countercyclical behavior for women), the cyclical response appears not to be significant at conventional levels. There is instead evidence of a significant long term trend in participation which is positive for females and rather negative (apart from the already mentioned increase among elderly people) for males;
- projecting over the future decade the previously observed trends in the *coefficient* effect and taking account of the future evolution of the structure of the population due to cohort effects (*composition* effect), the future developments of the Italian LFPR are ambiguous. On the one hand the *composition* effect will stop providing a positive push to the aggregate participation in the next decade, because of the lower expected growth of the average educational level and because of the ageing of the particularly large cohort of individuals born in the late '60s, who will move from the 45-54 age class, highly attached to the labour market, to the 55-64 age class, less likely to participate in the labour market. On the other hand, assuming that the previously observed trends in the within group LFPR may continue, a positive contribution may still come from the *coefficient* effect, and in particular from the increasing participation among the elderly and among women;
- *composition* effects positively contributed to the aggregate LFPR also in Spain, mainly because of the increasing educational levels and, to a smaller extent in Germany and in France; in France the positive boost provided by the increasing weight of highly educated individuals was countervailed by the contemporaneous increase in the weight of older age classes, characterized by lower labour supply on average;
- changes in the *coefficient* effect were instead more positive in the other main euro area countries than in Italy especially till 2011, mostly because of the increase in the participation of the elderly started earlier (Germany and France) and because of the stronger increase in the number of women joining the labour force (Spain).

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All in all, it appears that the dynamics of the Italian LFPR went beyond cyclical responses and reflected instead structural/ long lasting variations in the socio-demographic composition and in the retirement rules. In the next decade the contribution of the *composition* effect is however expected to be null, as the particularly numerous cohort of those born in the '60s/early '70s will move from the 45-54 into the 55-64 age class, characterized by lower labour market attachment. The evolution of the aggregate LFPR will therefore depend on the development of the within groups LFPR (the *coefficient effect).* While the trend component for this effect is negative for the males, an overall positive outcome is still positive because the effect on participation of the elderly stemming from the recent pension reforms is adding up to the pre-existing upward trend for the females LFP, still showing a gap with respect to what prevails in the other developed countries.

2. The determinants of the LFPR dynamics

To detect the main drivers of the LFPR dynamics, I start from the following identity:

$$P_t = \sum_g w_{gt} P_{gt} \qquad (1)$$

where the aggregate participation rate (here denoted with P_t) is written as the weighted sum of P_{gt}, which are the participation rates for each socio-demographic group g=1,…,G, weighted by the population shares of each group (w_{gt}). The socio-demographic features available in the Labour Force Survey data and considered here are: age (5 classes), gender, education level (3 classes) and citizenship (whether native). Table 1a describes the main developments of P_{gt} (in columns 1-4) and w_{gt} (in columns 5-8) for Italy in four specific years (2004[2], 2008, 2011, 2016).

The level of the participation rate by age class displays an inverted U-shaped relationship: it is very low among the youth (26.6 per cent in 2016), who are reasonably at school; it is high in the three subsequent categories, reaching its highest value for people aged 35-44 (80.7 per cent); and it is low again in the 55-64 age class (at 53.4 per cent). Overtime, the main changes to these rates within groups have concerned the youngest, whose participation decreased, probably because they are more likely to remain at school, and the elderly, whose participation increased especially after the 2012 pension reform. In terms of population shares, there is a slow ageing trend: the fraction of people aged between 45 and 64 has increased from 38.0 per cent in 2004 to 44.8 per cent in 2016 (from 38.2 to 32.6 the share of those with 15-34 years).

[2] 2004 is the first year of the new version of the Labour Force Survey.

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Gender differences in participation are well known: in Italy women's LFPR is 20 percentage points below that of men (55.2 against 74.8 in 2016). Immigrants, whose population share has almost tripled in the last twelve years (from 3.8 per cent in 2004 to 10.3 in 2016), appear to be more attached to the labour market than natives: their participation rate is 70.4 per cent against 64.3. Finally, the LFPR increases sharply with education attainment levels: as of 2016, it goes from 51.2 per cent among people with less than a lower secondary degree to 83.3 among those with post-secondary education. Over the 2004-16 period, the population share moved towards a higher percentage of educated people: the share of individuals with tertiary education went from 10 per cent in 2004 to almost 16 in 2016.

Columns 1-8 of Tables 1b-1d provide the same figures for Germany[3], France and Spain, respectively. The trends towards a higher LFPR for the age class 55-64 and an increasing share of high educated people are common to all main euro area countries (Italy and Spain display much lower educational levels on average). In Italy and Spain, where the share of individuals with less than secondary education is higher (but decreasing), the decrease in the participation of the youth is relatively stronger, while Italy stands out for the low level of women LFPR (55 per cent against 70 per cent in the other three countries). Immigration turns out to be very heterogeneous across countries: as compared to natives, foreigners are more attached to the labour market in Italy and Spain, but less in France and Germany.

To quantify how much of the overall aggregate LFPR dynamics can be attributed to changes in average socio-demographic characteristics (w_{gt}) as opposed to changes in the propensity to participate within demographic groups (P_{gt}), I decompose for each socio-demographic characteristics (age, gender, education, whether immigrant) the year-to-year changes in the aggregate participation rate of equation (1) as follows:

$$\Delta P_t = \sum_g [P_{gt-1}(w_{gt} - w_{gt-1}) + w_{gt}(P_{gt} - P_{gt-1})] \qquad (2)$$

where $P_{gt-1}(w_{gt} - w_{gt-1})$ represents the effect of changes in population composition (the *composition effect*) – i.e., computed as if each within group probability of participating P_{gt} were constant – and $w_{gt}(P_{gt} - P_{gt-1})$ represents the contribution given by the change in the participation rate in group g (the so-called *coefficient effect*) – i.e., computed as if each group's weight in total population w_{gt} were constant. The former term takes care of changes in the relative importance of socio-demographic characteristics associated

[3] In Germany between 2011-2013 there are many missing values for the educational level. Since most of them refer to individuals aged 15-19, when using the LFS microdata I consider these individuals as having achieved less than secondary school (the average educational level of individuals of that age group in the other years). In Table 1b I do not show the decomposition for education because I only use aggregate data and I cannot perform the imputation.

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to different levels of labour market attachment, while the latter one measures variations in the probability of participating within each demographic group.

The decomposition of equation (2) considers each demographic characteristic separately. To evaluate the contribution of all the socio-demographic dimensions together (for instance, so as to understand whether the increased in women's participation is due to a purely gender trend or to the contemporaneous increase in their education levels), I also perform a Blinder-Oaxaca (BO) decomposition for the entire working age population and for men and women separately. The BO decomposition is based on the following standard linear probability model:

$$P_{it} = \beta_t x_{it} + u_{it} \qquad (3)$$

where a dummy equal to 1 if individual *i* was active in year *t* (P_{it}) is regressed on a series of individual characteristics x_{it} (in our case: gender, age class, educational level, citizenship) whose coefficients β_t are allowed to change yearly. The mean outcome difference between year *t* and year *t-1* can be expressed as:

$$\begin{aligned} E[P_{it}] - E[P_{it-1}] &= [\beta_t E(x_{it})] - [\beta_{t-1} E(x_{it-1})] \\ &= \beta_{t-1}[E(x_{it}) - E(x_{it-1})] + E(x_{it})(\beta_t - \beta_{t-1}) \end{aligned} \qquad (4)$$

Again, the first term of equation (4) reflects the *composition effect*, while the second the *coefficient effect*.[4] This decomposition is analogous to that described in equation (2) but it allows to analyze all changes contemporaneously.

It must be acknowledged that these decompositions are just the result of an accounting identity that highlights the potential magnitude of various shifts in population groups and in participation rates within groups, but it is not a proper counterfactual comparison in that it does not take into account how movements along one dimension may endogenously affect other dimensions. For example, it may be the case that changing population shares could affect participation of other population groups through adjustments within the household or interaction between labour demand and supply.

The last six columns of Tables 1a-1d report the results of the decomposition described in equation (2), where I study the effects of each single determinant in isolation. I consider separately three periods: the pre-crisis 2004-08, the first part of the crisis (2008-11) and the very last period (2011-16); in the case of Italy the

[4]More formally, the term $(\beta_t - \beta_{t-1})E(x_{it}) = (\beta_t - \beta_{t-1})E(x_{it-1}) + interaction\ term$, where the first component is the actual *coefficient effect* and the second is the so-called *interaction term*. However, since the latter term, which measures the simultaneous effect of differences in composition and coefficients, is in this case always close to zero, I refer $(\beta_t - \beta_{t-1})E(x_{it})$ as the *coefficient effect*.

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latter combines the cyclical recovery and important structural reforms (above all, the Sacconi and Fornero pension reforms).

Let me start from Italy (table 1a, figure 3, 4 and 5). Abstracting from cyclical swings, there are some important structural factors boosting the LFPR. First, *the progressive shift of population shares towards higher educated groups*, which, as shown before, are more attached to the labour market, has boosted the aggregate LFPR by 1.2 percentage points in 2004-08, 0.6 in 2008-11 and 0.9 in 2011-16.

Second, LFPR increased by 2.7 percentage points in the last period as a consequence of *the increased participation of those aged 55-64 after the pension reforms*. Carta and De Philippis (2017) show that the pension reforms contributed to about half of the post 2011 LFPR increase for Italian women who did not retire before 2011 because still not eligible; the pension reform effect on men is instead smaller, both because of its slightly lower impact on their retirement age and because of men's lower labour supply elasticity.[5,6]

Third, a positive contribution comes from *the increasing share of immigrants* in the total population in that, being on average younger and predominantly men, they are more attached to the labour market than natives. Their LFPR, though, decreased after the burst of the crisis in 2008, probably because immigrants are more represented in jobs and sectors more hit by the adverse cyclical conditions.

Fourth, contrary to what has been occurring in many countries like the US (see Aaronson et al., 2012), in the last decade *population ageing has not put a strong downward pressure* on the activity rate in Italy. Even if the trend towards older age classes is clear, the largest increase in population share has been so far recorded in the 45-54 age class that comprises the large cohort born in the '60s. This implies, however, that population ageing will play a much larger role over the next years when those currently aged 45-54 will enter the 55-64 age class which is on average characterized by a weaker attachment to the labour market (see also Barbieri and Tangorra, 2001 and section 3).

Finally, *increasing women's participation* contributed to augment the aggregate LFPR by 0.4 percentage points in 2004-08 and by 1.9 in 2011-16. In the 2008-11 period the contribution of women LFPR was nil, but their LFPR dynamics was still much higher than that of men (whose contribution to the aggregate LFPR was -0.9 between 2008 and 2011). As far as cyclical changes are concerned, part of the

[5] By increasing the value of working, a longer working horizon may also affect the incentives to work or search for a job throughout the entire working life. Indeed, Carta and De Philippis (2017) show that the reforms had a positive effect of labour force participation not only for the elderly, but also for other age classes.

[6] This explains why the dynamic of the LFPR of the 15+ population is similar to that of the population 15-64 before 2012; the participation of the over 65 however increased less after 2012, because many of the above 65 individuals had already retired.

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acceleration in women LFPR may be due to cyclical factors. Nucci and Riggi (2016) show that, differently from the US where participation – if anything – is pro-cyclical, in the euro area participation has displayed a counter-cyclical profile since 2008, while it was substantially a-cyclical beforehand. Since during the crisis the increase was concentrated on married women, the dynamics of LFPR over the last ten years may be partly explained by the so-called *added worker effect*, according to which labour supply of married women increases when their husbands became unemployed. Franceschi (2014) discusses and provides evidence on the added worker effect for Italy.

While *the reduction in youth's labour force participation* is part of the long term shift towards longer educational careers, the decline slowed down after the hit of the crisis in Italy. On the one side, pension reforms implemented in that period seem to have increased youth labour demand at least in the short run, thanks to their labour market complementarities with the elderly (Carta et al., 2016); on the other side the behavior may be a cyclical response. Some recent works explore the cyclical properties of university enrollment and university dropout in Italy, which are likely to affect the cyclicality of youth labour supply. The results are mixed. Mariani et al. (2016) use administrative data from the Italian university register and suggest that the decline in university enrollment, particularly strong between 2009 and 2012, may be related to the adverse cyclical conditions combined with the existence of tighter household's budget constraints. Adamoupoulou and Tanzi (2017) estimate instead that university dropout decreased because of the 2009-10 recessionary period.

The results from the BO decomposition of equation (4), which takes into account all the determinants at the same time, are shown in a synthetic way in Figure 3: the black line plots the actual LFPR; the red dashed line plots the part of its dynamics driven by changes to the *coefficient* effect; the green dashed line plots the part driven by changes in the *composition* effect. Figures 4 and 5 show the contribution of each socio-demographic dimension to the overall *composition* and *coefficient effects* for the main euro area countries.

For Italy, I find that the *composition effect* (i.e., the green line) constantly sustained the aggregate LFPR and accounted almost entirely for its overall increase of 2 percentage points between 2004 and 2016 (Figure 3). Most of the effect came from the increased educational attainment (Figure 4), which, along with the contribution of immigration, more than offset the slightly negative effect of population ageing. The *coefficient effect*, instead, drove almost entirely the U shape development of the aggregate LFPR: it dampened activity rates till 2011 and boosted it afterwards. Figure 5 shows the contribution of the different demographic groups to the overall coefficient effect. Most of the effect came from increasing women

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participation and, after the recent pension reforms in 2012, the increased labour supply of the elderly. Moreover the constant, which combines the contribution of changes in participation of men, aged 25-54, natives, with secondary education (the omitted category) with that of changes common to all socio-demographic groups, provided a negative push to the aggregate LFPR, especially after 2008.

In figure 4 and 5, I also show the results obtained by performing the OB decomposition *for men and women separately*. The figures show that in Italy the trend towards higher women labour supply is almost entirely explained by the more intense increase in women's educational levels. Moreover, while the constant provides a negative contribution for men's participation after 2008, its contribution is null for women.

While the *composition effect* is mostly ascribable to long term demographic changes, the interpretation of the *coefficient effect* is more ambiguous. Indeed it combines the effect of structural reforms and trends that modify the participation within groups in the long run, like the pension reforms and the increasing women's probability of joining the labour force, with the effect of the economic cycle. In an attempt to separate how much of the observed variation in the LFPR within group for Italy is ascribable to cyclical conditions and how much to long term trends, I perform two exercises. First I regress the yearly changes in the *coefficient effect* for each demographic group on a linear trend and on the overtime variations in gdp in the considered years. In particular, I run the following regressions for each socio-demographic group *g*:

$$\Delta\hat{\beta}_{gt} = \alpha_g + \delta_g \Delta gdp\ growth_t + u_{gt} \qquad (5)$$

where $\Delta\hat{\beta}_{gt}$ is the difference over time the coefficients β_{gt} estimated in equation (3) and α_g and δ_g estimate the extent to which variations in the *coefficient effect* depend on a linear trend and on the economic cycle, respectively. u_{gt} is an error term.

Column 4 of Table 2 shows the coefficients α_g (the linear trend) and δ_g (the cyclical effect) for each socio-demographic group in Italy. Even acknowledging the data limitations and the small power of this empirical exercise, mainly because of the small number of observations since I only rely on a 10-year panel (from 2005 to 2015), it seems that most of the within-group variation in the probability of participating is related to long term trends rather than to cyclical conditions. The Table confirms the negative trend provided by the constant and the positive one coming from the increased participation of the elderly.

Second, I consider all the socio-demographic dimensions together and I estimate at the socio-demographic group- country- time level, the following equation:

$$P_{gt} = \beta_1 t_t + \beta_2 gdp_t + \beta_3 t_t * x_{gt} + \beta_4 gdp_t * x_{gt} + \alpha_g + v_{gt} \qquad (6)$$

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Where P_{gt} is the activity rate of group g in year t in each country, t_t and gdp_t are a linear time trend and the growth rate of the gdp in year t, respectively, and x_{gt} are dummies identifying each socio-demographic group separately, α_g are fixed effects for each combination of socio-demographic characteristics; finally, $v_{gt}$is an error term. β_3 and β_4 evaluate how each characteristics evolves over time depending on a linear time trend or on the business cycle conditions.

Table 3 displays the results, which confirm what shown in Table 2: there is limited evidence of cyclicality and most of the overtime variation of the Italian LFPR seems to depend on trends towards higher participation of the elderly and of women.

The decomposition based on equation (2) and (4) for the other countries (Tables 1b-1d, figures 3, 4 and 5 and A1 A2 by gender) shows some trends that are similar to Italy: i) the increasingly positive contribution of the elderly, probably related to the widespread implementation of the pension reforms in the last ten years, for all countries but Spain;[7] ii) the positive dynamics of women LFPR, even if the level of Italian women LFPR remains much lower; iii) most importantly, the increasing level of educational attainment which largely contributed to boost the aggregate activity rate in all countries. Moreover, iv) from Tables 2 and 3 it appears that, as in Italy, most of the overtime variation in the *coefficient effect* for the other main European countries depends on a linear trend rather than to the cyclical conditions.

Beside the level of women's LFPR, the main differences between Italy and the other countries considered concerns the impact of immigration: in the other three main euro area countries, its contribution to the increase of the aggregate LFPR is much lower or even slightly negative, either because immigrants' LFPR is on average lower than that of natives (like in France and Germany) or because the share of immigrants in the population decreased sharply after the hit of the crisis (Spain).

Overall, considering all dimensions together, changes in average socio-demographic characteristics did not affect much the aggregate LFPR dynamics in Germany, while they affected it negatively in France till 2012 - due to the age component - , and positively afterwards - as a result of increasing educational levels. Spain behaves more similarly to Italy, especially with respect to the large positive contribution coming from the composition effect, which raised the aggregate LFPR by about two percentage points between 2004 and 2015. However, in Spain the trend towards higher women LFP sustained the aggregate LFPR more than in Italy (the raising trend in participation for Spanish women is common to all demographic groups: the constant for women has increased by almost 5 ppt. between 2004 and 2015 in Spain, see Figure 5).

[7] In Germany, for instance, the 55-64 LFPR increased considerably between 2004 and 2010, after the implementation of the Hartz reforms and the phasing-out of early retirement options.

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3. Projecting the contribution of the *composition effect* in the next decade

The positive contribution provided by the composition effect to the aggregate labour supply till 2015 was mostly explained by the increased average educational levels in the working age population, combined with the fact that the particularly large cohort of those born in the '60s/early '70s (*baby boomers*) still belonged to age class 45-54 - highly attached to the labour market. A natural question is therefore whether and how these factors will contribute to the aggregate LFPR in the next decade, since soon the growth in the average educational level may reach a plateau and the *baby boomers* cohort will move towards the 55-64 age group, characterized by lower probability of participating in the labour market.

This section evaluates how socio-demographic trends will affect the Italian LFPR in the next decade, through the *composition* effect. Note that I do not consider here the future contribution of the *coefficient effect*, since in the projection I will show I keep the within group participation fixed at the 2015 level. However, since the *coefficient effect* provided a positive contribution to the LFPR in the last five years, mostly because of long term trends, it is likely it will continue to positively contribute the aggregate LFPR in the next decade.

To estimate the future developments of the *composition* effect, I use population projections about changes in the population by age and gender in the next decade, as provided by the Italian national statistical office (ISTAT)[8], together with my own estimates on the evolution of the average educational levels by age class and gender.[9] In this way, I obtain estimates of population weights (w_{gt}) by socio-demographic groups between 2016 and 2025.

According to ISTAT, the share of population aged 55-64 out of the total 15-64 population will increase by 5 ppt. between 2015 and 2025, from about 20% to about 25% (it increased by less than 2 ppt. between 2005 and 2015). This is mainly driven by the fact that the *baby boomers* cohort will move into the 55-64 age class. My projections show moreover that the increase in the share of tertiary educated individuals among the 15-64 population will instead be lower in the next future: it will rise by 3 ppt. between 2015 and 2025 (from about 15% to about 18%), while it increased by more than 5 ppt. in the previous decade. The growth will still be mostly concentrated on women.

[8] Available at http://demo.istat.it/

[9] Since ISTAT does not provide population projections based on educational groups, I estimated the evolution of the share of less than secondary, secondary and post-secondary educated individuals by age class and gender fitting a quadratic trend between 2005 and 2015 and estimating the predicted shares for the years 2016-2025. I then combined this information with projections provided by ISTAT. The estimating error is very low: the mean absolute deviation between the actual and the estimated value in the sample is 0.004.

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Figure 7 shows the contribution of the composition effect to the aggregate LFPR between 2015 and 2025, based on the estimated $\widehat{w}_{gt}$ for the years after 2015. I find that the *composition effect* will stop providing the previously observed positive boost to the aggregate LFPR in the next future. Overall, it will reduce the aggregate LFPR for men (-1 ppt. between 2015 and 2025) and it will continue to enhance the LFPR for women, even if to a smaller extent (+0.5 ppt. between 2015 and 2025).

The difference between men and women is explained both by the more pronounced trend towards higher educational levels for women than for men and by the higher labour supply elasticity of women with respect to education.

Finally, note again that this section looks at the future evolution of the composition effect, fixing the within group probability of participating at 2015. Therefore, it does not take into account for instance that the increasing trend in the LFP among the elderly, caused by the recent pension reforms, is likely to keep the aggregate LFPR up, as it did after 2011.

4. Conclusions

The positive dynamics of the Italian labour force participation rate in the last decade is mostly driven by some long-term socio-demographic trends towards population groups associated with higher labour market attachment, mainly the rise in average educational level, and by the widespread labour supply effect of the recently implemented pension reforms. The cyclical response appeared instead to be limited.

In the next future, while the ageing of the particularly large cohort of individuals born in the ‘60s and in the early ‘70s, the so-called *baby boomers*, will start dampening the aggregate labour force participation rate in Italy, there is still large potential to be drawn from the activation of the elderly, thanks to the recently implemented pension reforms, and of women, as Italy ranks much lower than the other main advanced countries in terms of women LFPR.

Overall, the long term increase in participation, which may continue in the next decade, will probably increase potential output and Italy’s long term growth. This may entail a temporary higher level of unemployment in the labour market, at least till labour demand adjusts, and subsequently an higher level of overall employment.

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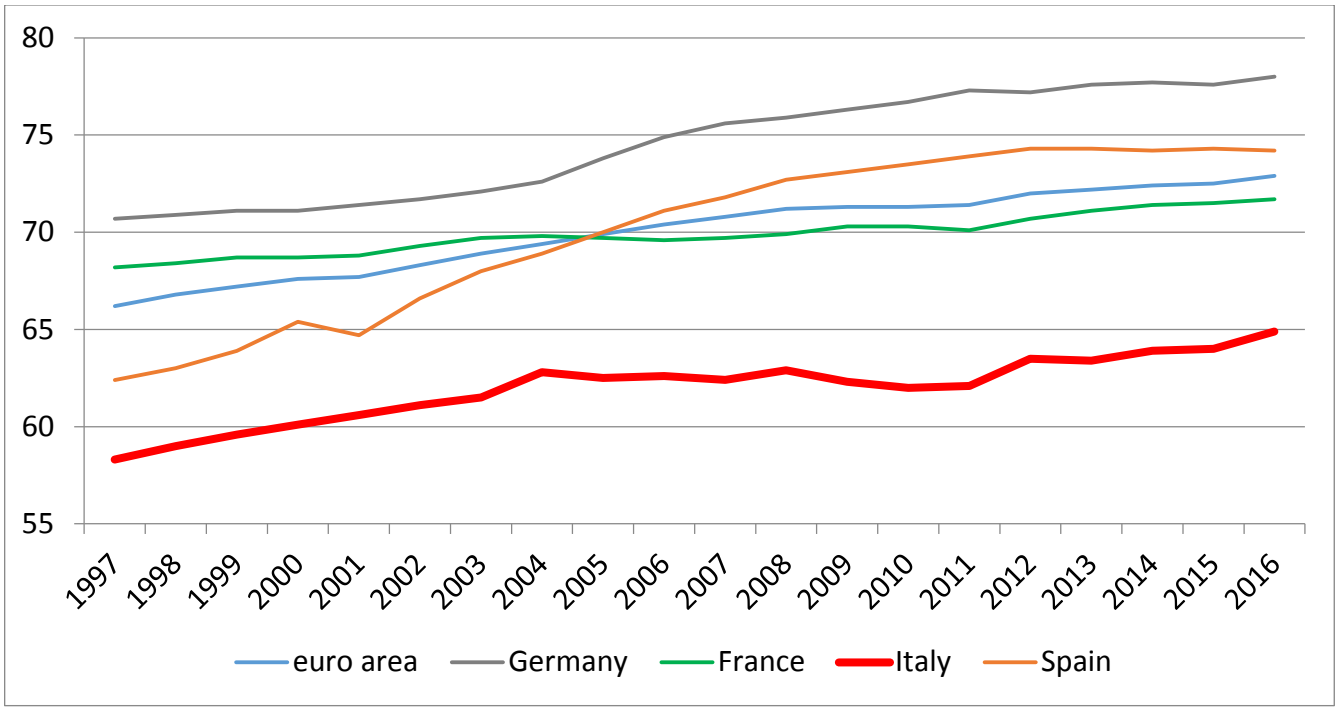
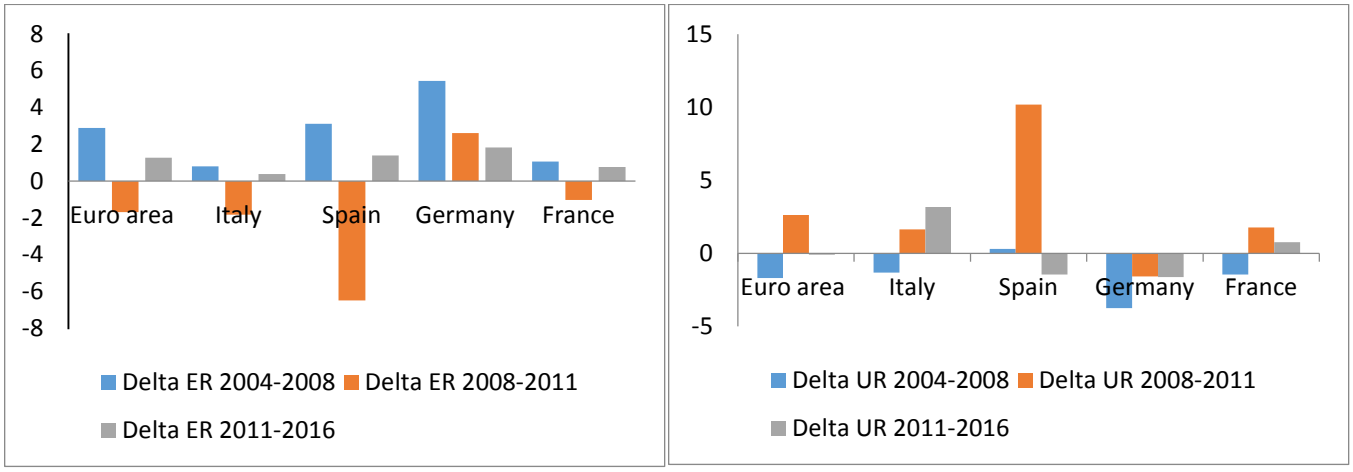
Figures and Tables

Figure 1: Participation rates across the main euro area countries



Note: author's calculation from the European LFS, seasonally adjusted data, not calendar adjusted. Euro area includes 19 countries.

Figure 2: Relative variation in the unemployment rate (UR) and employment rate (ER), 2004-2008, 2008-2011, 2012-2016



Note: author's calculation from the European LFS. Euro area includes 19 countries. Percentage points difference.

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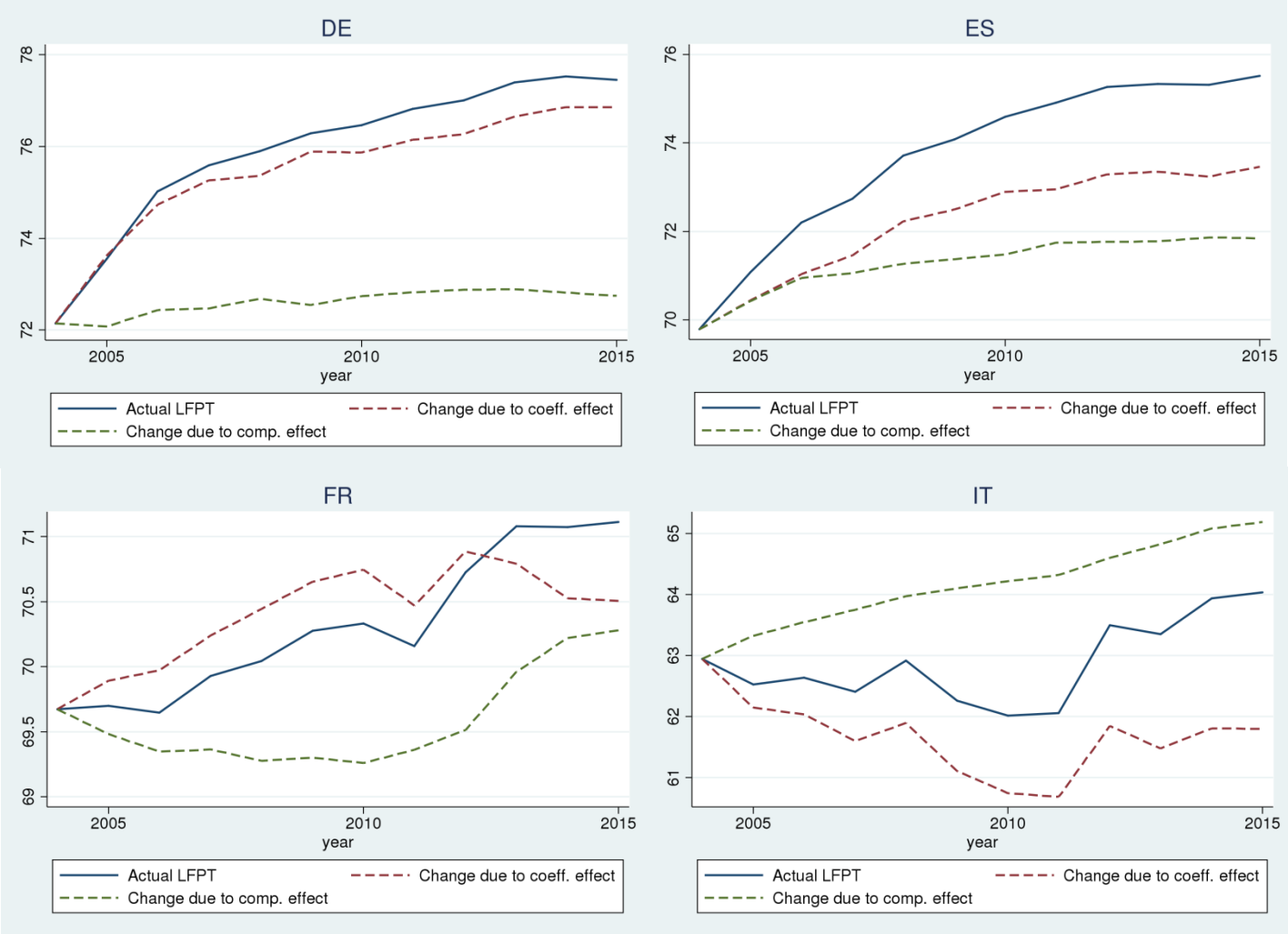
Figure 3: Blinder-Oaxaca decomposition: counterfactual LFPR, keeping population composition fixed and keeping within group participation (coefficients) fixed



Note: author's calculations from the European LFS, estimates obtained from the Blinder-Oaxaca decomposition (equation (4)). Change due to coefficient effect is the cumulated change due to variations in the probability of participating within groups; change due to composition effect is the cumulated change due to variations in the average socio-demographic characteristics of the population.

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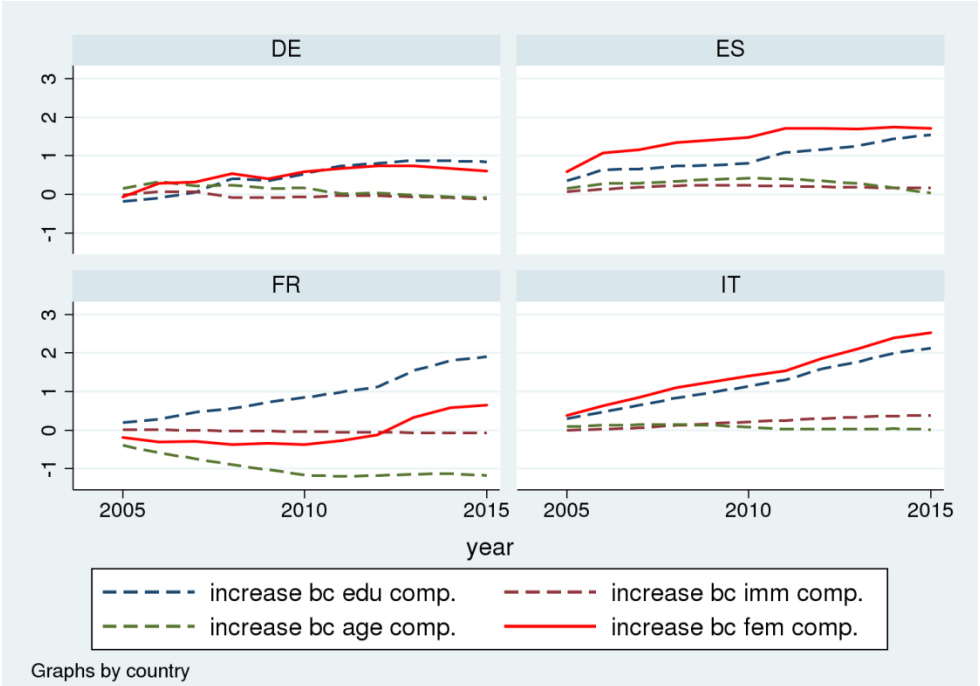
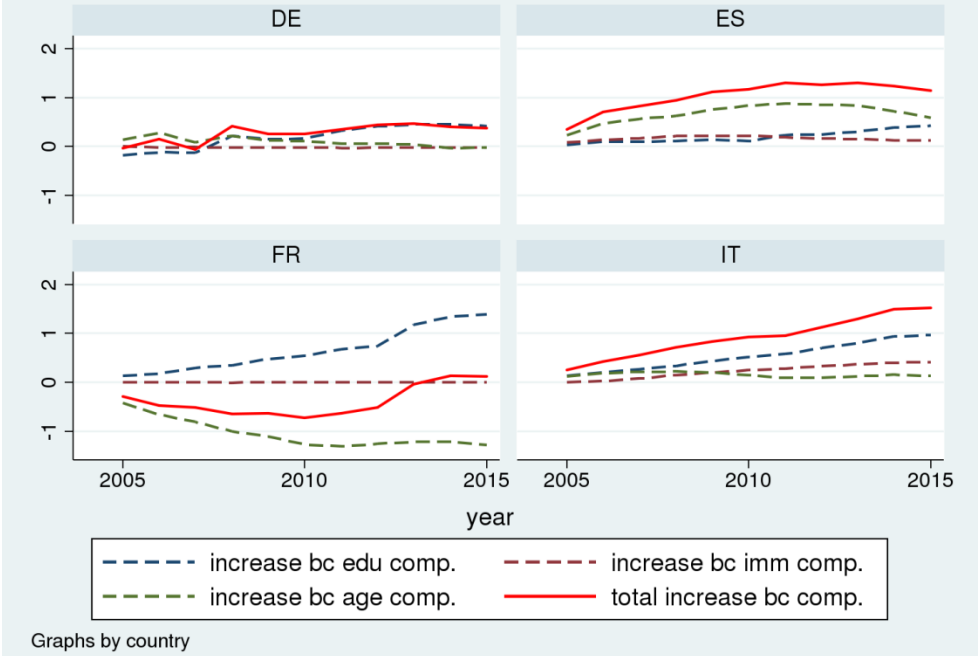
Figure 4: Cumulated *composition effects* - Blinder-Oaxaca decomposition

Everybody



Men only



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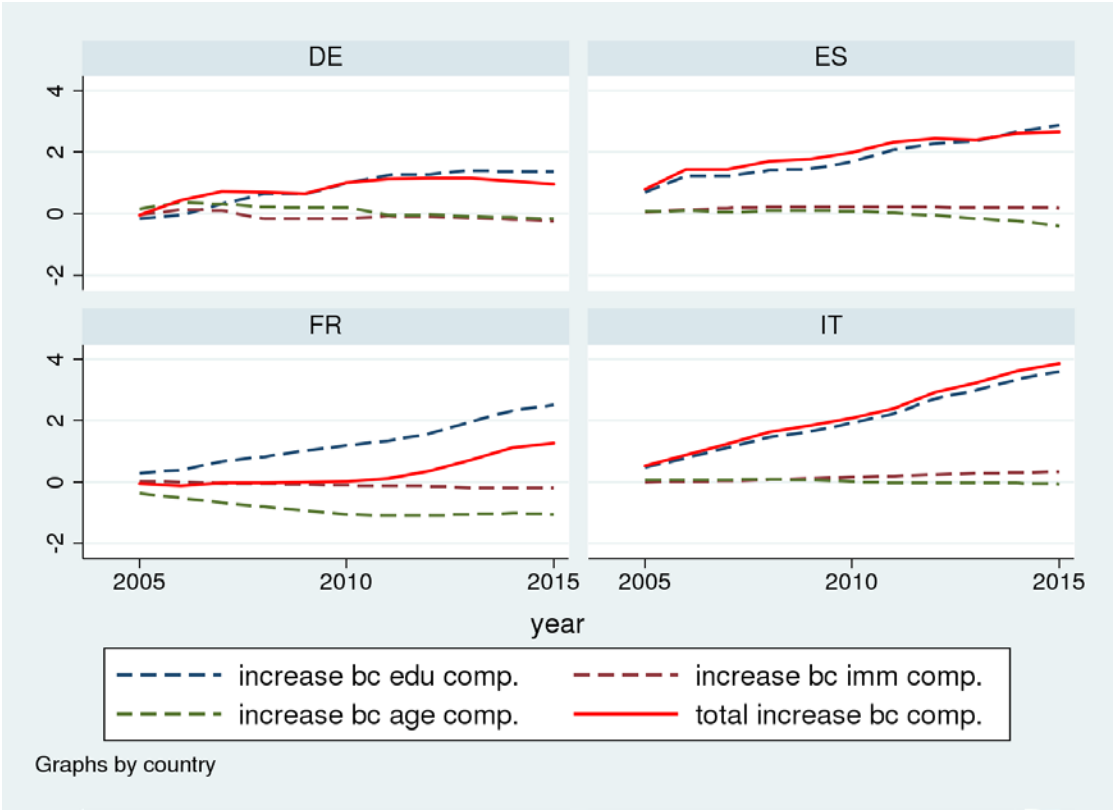
Women only



Note: author's calculation from the European LFS, estimates obtained from the Blinder Oaxaca decomposition described in equation (4).

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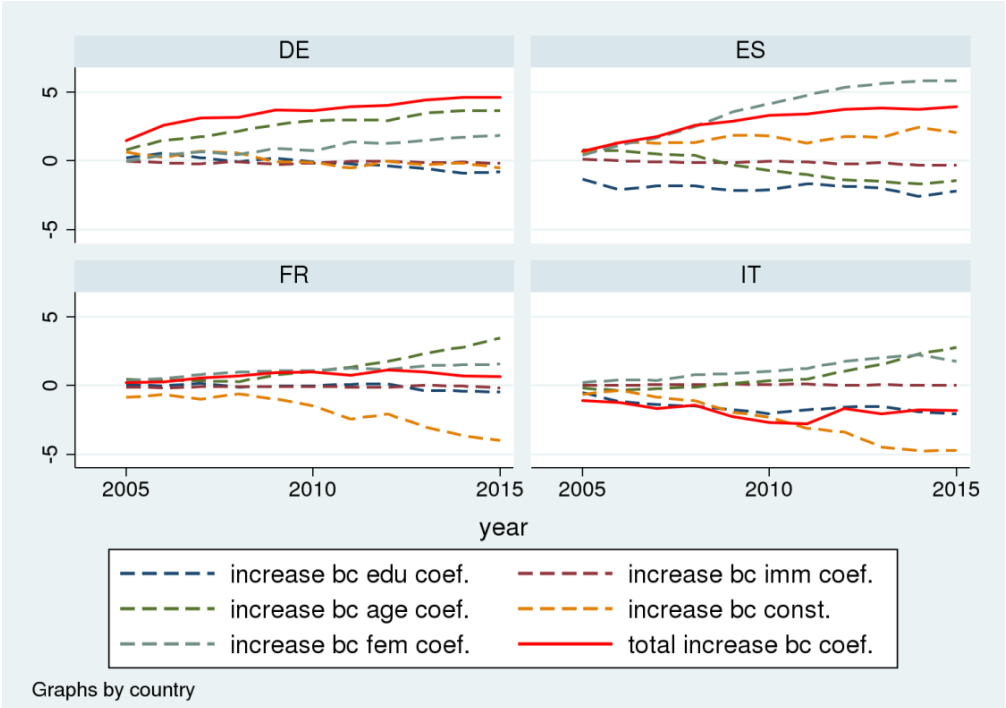
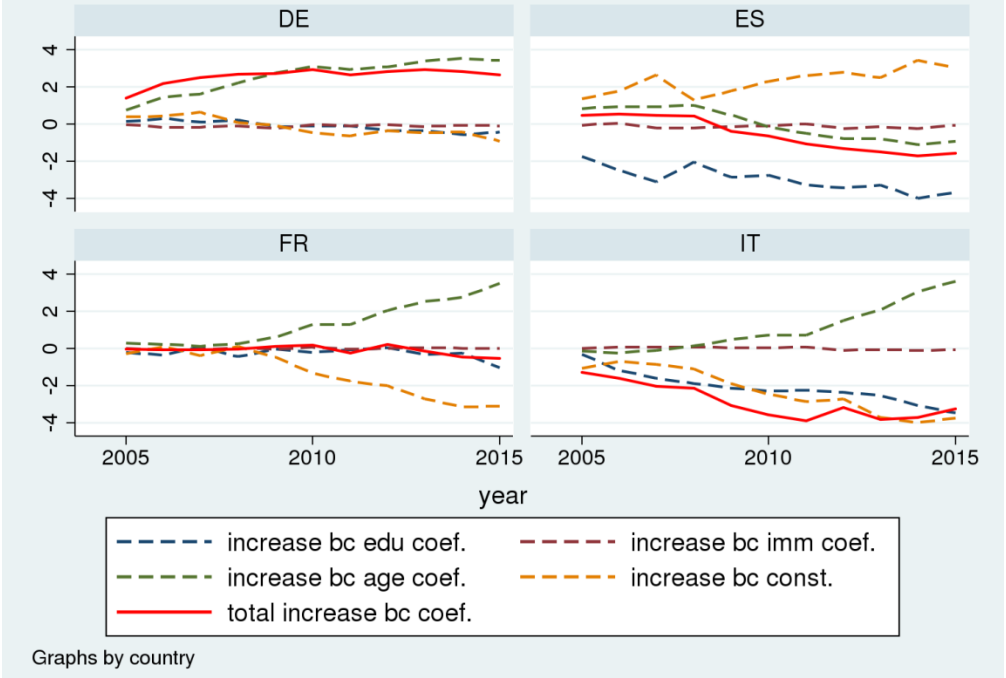
Figure 5: Cumulated *coefficient effects* - Blinder-Oaxaca decomposition

Everybody



Men only



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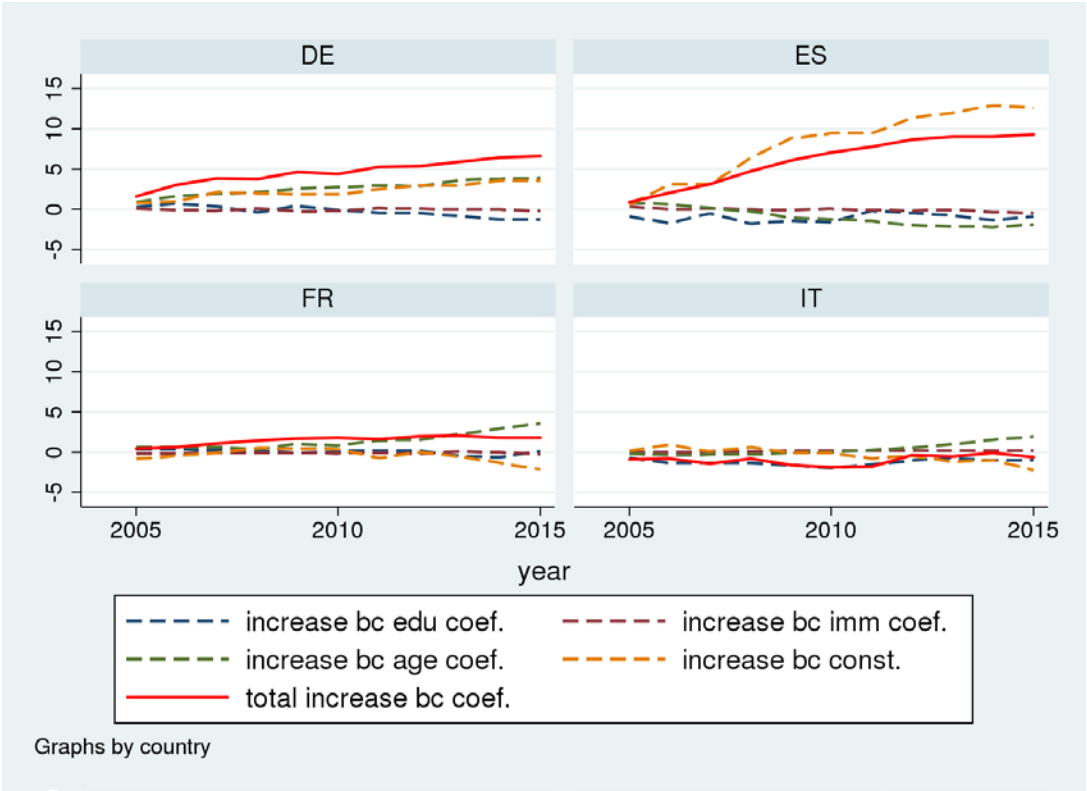
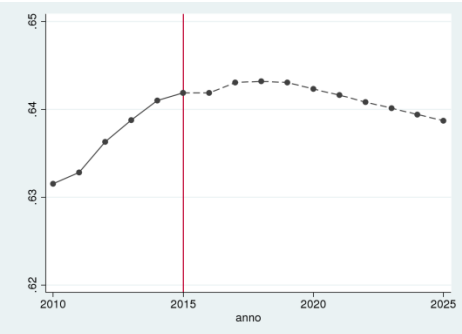
Women only



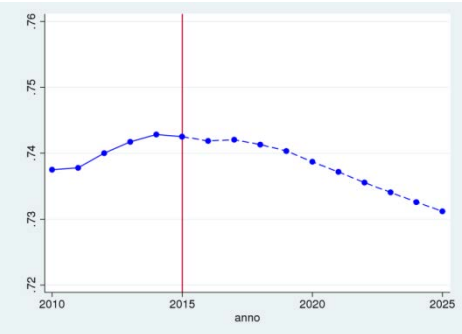
Note: author's calculation from the European LFS, estimates obtained from the Blinder Oaxaca decomposition described in equation (4). Increase because of the constant refers to the increase participation of the chosen reference group, that is: man, aged 25-54, native, with secondary education.

Figure 7: Predicted contribution of the *composition effect* to the aggregate participation rate, Italy

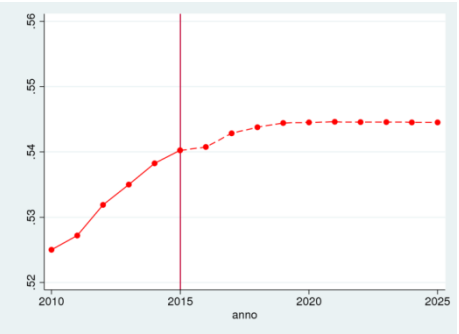
All



Men



Women



Note: author's calculations using the Italian LFS and the population projections by age and gender provided by ISTAT and future educational levels estimated by the author. Composition effect estimated keeping probabilities to participate within groups (P*gt) fixed at the 2015 level and letting the share of the population by age, gender and education change over time.

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Table 1a: Labour force participation by demographic groups, Italy

	2004	2008	2011	2016	2004	2008	2011	2016	Change 2004-2008		Change 2008-2011		Change 2016-2011	
	Participation rate (P_gt)				Share population (w_gt)				Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt
Total	**62.6**	**62.9**	**62.1**	**64.9**	**100.0**	**100.0**	**100.0**	**100.0**						
Age classes														
15-24	35.7	30.7	27.1	26.6	15.9	15.4	15.3	15.2	-0.8	-0.2	-0.6	0.0	-0.1	0.0
25-34	78.0	76.9	73.9	73.2	22.3	20.3	18.6	17.4	-0.2	-1.5	-0.6	-1.3	-0.1	-0.8
35-44	81.1	80.8	79.9	80.7	23.8	24.7	24.3	22.6	-0.1	0.7	-0.2	-0.3	0.2	-1.4
45-54	72.8	76.0	76.0	77.5	19.8	21.1	22.6	24.9	0.6	1.0	0.0	1.2	0.3	1.7
55-64	31.9	35.4	39.3	53.4	18.2	18.5	19.2	19.9	0.6	0.1	0.7	0.3	2.7	0.4
Total									**0.1**	**0.1**	**-0.7**	**-0.1**	**3.0**	**-0.1**
Gender														
Men	74.5	74.3	72.8	74.8	49.8	49.8	49.6	49.8	-0.1	0.0	-0.7	-0.1	1.0	0.1
Women	50.8	51.6	51.4	55.2	50.2	50.2	50.4	50.2	0.4	0.0	-0.1	0.1	1.9	-0.1
Total									**0.3**	**0.0**	**-0.8**	**0.0**	**2.9**	**0.0**
Citizenship														
Native	62.2	62.2	61.3	64.3	96.2	93.5	91.7	89.7	0.0	-1.7	-0.9	-1.1	2.8	-1.3
Migrant	74.2	73.2	70.9	70.4	3.8	6.5	8.3	10.3	0.0	2.0	-0.1	1.3	0.0	1.4
Total									**0.0**	**0.3**	**-1.0**	**0.2**	**2.8**	**0.1**
Education														
Less than secondary	51.7	50.0	48.6	51.2	52.2	47.9	45.5	42.0	-0.9	-2.2	-0.7	-1.2	1.2	-1.8
Secondary	71.8	72.3	70.6	71.8	37.8	39.5	41.4	42.4	0.2	1.2	-0.7	1.4	0.5	0.7
Post-secondary	85.0	82.3	81.5	83.3	10.0	12.7	13.2	15.6	-0.3	2.2	-0.1	0.4	0.2	2.0
Total									**-1.0**	**1.2**	**-1.5**	**0.6**	**1.9**	**0.9**

Source: Italian LFS. Due to some rounding effects and for some missing values in the questionnaire (due to non-response) the numbers on bold do not always exactly sum up to the LFPR change in the considered periods.

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Table 1b: Labour force participation, by demographic groups, Germany

	2004	2008	2011	2016	2004	2008	2011	2016	Change 2004-2008		Change 2008-2011		Change 2016-2011	
	Participation rate (P_gt)				Share population (w_gt)				Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt
Total	**71.8**	**75.9**	**76.8**	**78.0**	**100.0**	**100.0**	**100.0**	**100.0**						
Age classes														
15-24	48.0 [a]	52.4	51.5	49.3	17.5	17.7	17.0	16.3	0.8	0.1	-0.2	-0.3	-0.4	-0.4
25-34	82.4 [a]	83.4	85.2	84.4	17.8	17.8	18.2	19.6	0.2	0.0	0.3	0.3	-0.1	1.2
35-44	88.1 [a]	89.0	89.0	88.4	24.5	23.8	21.2	18.4	0.2	-0.6	0.0	-2.3	-0.1	-2.5
45-54	85.6 [a]	87.6	88.0	89.0	21.3	22.8	24.2	25.0	0.4	1.3	0.1	1.3	0.2	0.7
55-64	47.5 [a]	59.2	63.7	71.3	18.9	18.0	19.4	20.7	2.2	-0.6	0.8	0.9	1.5	1.0
Total									**3.8**	**0.2**	**1.0**	**-0.1**	**1.1**	**0.0**
Gender														
Men	78.7	82.0	81.8	82.2	50.7	50.5	50.3	50.8	1.7	-0.1	-0.1	-0.2	0.2	0.4
Women	64.8	69.6	71.6	73.6	49.3	49.5	49.7	49.2	2.3	0.1	1.0	0.2	1.0	-0.4
Total									**4.0**	**0.0**	**0.9**	**0.0**	**1.2**	**0.0**
Citizenship														
Native	72.7	76.8	77.6	79.4	90.0	89.5	90.4	88.9	3.7	-0.4	0.8	0.7	1.6	-1.2
Migrant	64.1	68.2	68.4	68.2	10.0	10.5	9.6	11.1	0.4	0.4	0.0	-0.6	0.0	1.0
Total									**4.1**	**0.0**	**0.8**	**0.1**	**1.6**	**-0.2**
Education														
Less than secondary	49.6 [a]	54.0	60.5	52.3	22.5	22.2	17.5	19.7	*b*		*b*		*b*	
Secondary	76.5 [a]	79.6	80.1	81.9	52.7	56.2	55.9	55.7						
Post-secondary	87.3 [a]	88.1	89.8	90.0	20.1	21.3	23.6	24.4						
Non response					4.6	0.3	3.0	0.2						
Total														

Note: author's calculation from the European LFS. Due to some rounding effects and for some missing values in the questionnaire (due to non-response) the numbers on bold do not always exactly sum up to the LFPR change in the considered periods. *a* indicates that data of LFPR refer to q2 2004. *b* I do not display the contribution of education for Germany because of the many missing values in 2004 and in 2011.

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Table 1c: Labour force participation, by demographic groups, France

	2004	2008	2011	2016	2004	2008	2011	2016	Change 2004-2008		Change 2008-2011		Change 2016-2011	
	Participation rate (P_gt)				Share population (w_gt)				Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt
Total	**69.7**	**70.0**	**70.2**	**71.5**	**100.0**	**100.0**	**100.0**	**100.0**						
Age classes														
15-24	36.7	39.5	38.9	36.9	19.4	18.8	18.4	18.8	0.5	-0.2	-0.1	-0.2	-0.4	0.1
25-34	87.5	88.2	87.2	85.9	20.5	19.3	19.1	19.3	0.2	-1.1	-0.2	-0.2	-0.3	0.2
35-44	89.0	90.2	89.5	89.3	22.3	21.9	21.2	20.5	0.3	-0.4	-0.2	-0.6	-0.1	-0.6
45-54	85.0	87.0	87.7	87.2	21.5	21.1	21.3	21.5	0.4	-0.4	0.1	0.2	-0.1	0.2
55-64	39.7	39.7	43.5	53.7	16.2	18.9	20.0	19.9	0.0	1.1	0.7	0.5	2.0	-0.1
Total									**1.4**	**-1.0**	**0.3**	**-0.3**	**1.3**	**-0.2**
Gender														
Men	75.5	74.8	74.6	75.4	49.3	49.2	49.2	49.4	-0.3	-0.1	-0.1	0.0	0.4	0.2
Women	64.0	65.5	65.8	67.6	50.7	50.8	50.8	50.6	0.7	0.1	0.2	0.0	0.9	-0.1
Total									**0.4**	**0.0**	**0.1**	**0.0**	**1.3**	**0.0**
Citizenship														
Native	70.0	70.4	70.5	72.0	94.1	93.9	93.5	93.8	0.4	-0.1	0.1	-0.3	1.4	0.2
Migrant	65.2	64.8	64.7	64.1	5.9	6.1	6.5	6.2	0.0	0.1	0.0	0.3	0.0	-0.2
Total									**0.4**	**0.0**	**0.1**	**0.0**	**1.3**	**0.0**
Education														
Less than secondary	54.8	53.3	52.7	47.5	36.8	33.3	31.1	25.6	-0.6	-1.8	-0.2	-1.2	-1.6	-2.6
Secondary	75.6	74.8	73.7	74.1	40.8	41.9	42.0	43.6	-0.3	0.8	-0.4	0.1	0.2	1.2
Post-secondary	83.4	84.6	84.9	87.4	22.4	24.8	26.9	30.8	0.3	2.0	0.1	1.8	0.7	3.4
Total									**-0.6**	**1.0**	**-0.5**	**0.7**	**-0.7**	**2.0**

Note: author's calculation from the European LFS. Due to some rounding effects and for some missing values in the questionnaire (due to non-response) the numbers on bold do not always exactly sum up to the LFPR change in the considered periods.

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Table 1d: Labour force participation, by demographic groups, Spain

	2004	2008	2011	2016	2004	2008	2011	2016	Change 2004-2008		Change 2008-2011		Change 2016-2011	
	Participation rate (P_gt)				Share population (w_gt)				Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt	Effect ΔP_gt	Effect Δw_gt
Total	**68.7**	**72.6**	**73.9**	**74.2**	**100.0**	**100.0**	**100.0**	**100.0**						
Age classes														
15-24	44.9	47.7	40.9	33.0	18.3	16.2	15.0	14.5	0.5	-1.0	-1.1	-0.5	-1.2	-0.2
25-34	85.4	87.8	88.7	87.8	25.1	24.5	22.4	18.4	0.6	-0.6	0.2	-1.9	-0.2	-3.4
35-44	82.0	85.1	88.2	90.3	23.2	24.0	25.0	25.4	0.7	0.7	0.7	0.8	0.5	0.4
45-54	72.9	78.0	81.4	84.1	18.4	19.7	21.4	23.4	0.9	1.0	0.7	1.4	0.6	1.7
55-64	44.3	48.8	52.4	59.2	15.0	15.7	16.3	18.3	0.7	0.3	0.6	0.3	1.1	1.2
Total									**3.4**	**0.4**	**1.1**	**0.1**	**0.8**	**-0.4**
Gender														
Men	80.1	81.5	80.5	79.2	50.4	50.6	50.3	50.3	0.7	0.2	-0.5	-0.2	-0.7	-0.1
Women	57.1	63.5	67.2	69.2	49.6	49.4	49.7	49.7	3.2	-0.2	1.8	0.2	1.0	0.1
Total									**3.9**	**0.0**	**1.3**	**0.0**	**0.3**	**0.0**
Citizenship														
Native	67.9[a]	71.7	73.0	73.8	91.7	86.4	86.5	88.1	3.5	-3.8	1.1	0.1	0.7	1.2
Migrant	77.8 [a]	78.3	79.5	77.2	8.3	13.6	13.5	11.9	0.0	4.1	0.2	-0.1	-0.3	-1.3
Total									**3.5**	**0.3**	**1.3**	**0.0**	**0.4**	**-0.1**
Education														
Less than secondary	62.2	65.1	66.4	67.0	54.6	48.6	46.0	42.8	1.6	-3.9	0.6	-1.7	0.3	-2.2
Secondary	69.9	75.4	75.1	72.7	21.1	23.6	24.1	24.7	1.2	1.9	-0.1	0.4	-0.6	0.5
Post-secondary	86.6	87.3	87.8	88.3	24.3	27.8	29.9	32.6	0.2	3.0	0.2	1.9	0.1	2.4
Total									**3.0**	**1.0**	**0.7**	**0.6**	**-0.2**	**0.7**

Note: author's calculation from the European LFS. Due to some rounding effects and for some missing values in the questionnaire (due to non-response) the numbers on bold do not always exactly sum up to the LFPR change in the considered periods. *a* indicates that data of LFPR refer to q2 2004.

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Table 2: Disentangling how much of the overtime variation in the *coefficient effect* depends on the cycle or on long term trends: one dimension at the time

	DE	ES	FR	IT
		Dep var: $\Delta\hat{\beta}_{gt}$		
female				
cycle	-0.035	-0.068	0.043	-0.057
	(0.066)	(0.078)	(0.052)	(0.077)
trend	0.427*	1.128***	0.192*	0.294
	(0.213)	(0.202)	(0.088)	(0.175)
		Education		
less than secondary edu				
cycle	-0.004	-0.026	0.011	-0.044
	(0.058)	(0.078)	(0.169)	(0.069)
trend	0.417*	-0.012	0.527	0.317*
	(0.186)	(-0.201)	(0.286)	(0.158)
post secondary edu				
cycle	-0.097	0.059	0.032	-0.062
	(0.074)	(0.121)	(0.219)	(0.055)
trend	0.471*	-0.298	0.807*	0.193
	(0.237)	(0.313)	(0.370)	(0.126)
		Age		
age 15-25				
cycle	-0.07	0.382***	-0.118	-0.092
	(0.089)	(0.099)	(0.151)	(0.113)
trend	0.063	-2.182***	0.368	-0.548*
	(0.288)	(0.255)	(0.255)	(0.258)
age 25-34				
cycle	-0.057	0.024	0.153	0.029
	(0.053)	(0.048)	(0.167)	(0.085)
trend	0.339*	-0.255*	-0.223	-0.367*
	(0.170)	(0.124)	(0.282)	(0.194)
age 45-54				
cycle	-0.012	0.071**	-0.014	0.070
	(0.036)	(0.025)	(0.091)	(0.044)
trend	0.19	0.183**	0.105	0.551***
	(0.115)	(0.065)	(0.155)	(0.101)
age 55-64				
cycle	-0.027	0.05	-0.291	-0.132
	(0.114)	(0.099)	(0.311)	(0.147)
trend	1.667***	0.365	1.575**	1.865***
	(0.366)	(0.257)	(0.526)	(0.335)
constant				
cycle	0.070	-0.007	-0.025	0.084
	(0.041)	(0.058)	(0.116)	(0.053)
trend	-0.259*	0.101	-0.308	-0.324**
	(0.130)	(0.149)	(0.196)	(0.120)
N	10	10	10	10

Source: European LFS, years 2005-2015. The table displays the average increase over time in the $\Delta\hat{\beta}_{gt}$ estimated in equation (3) and their correlation with the gdp growth for each country and socio-demographic characteristics.

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Table 3: Disentangling how much of the overtime variation in the *coefficient effect* depends on the cycle or on long term trends: all dimensions together

	DE	ES	FR	IT
	Dep Var : P_{gt}			
gdp	0.203	-0.044	0.090	0.030
	(0.162)	(0.264)	(0.098)	(0.149)
t	-0.123	-0.212	0.138	-0.062
	(0.125)	(0.240)	(0.097)	(0.203)
gdp*female	-0.097	0.205	-0.009	-0.029
	(0.115)	(0.187)	(0.069)	(0.105)
gdp*edu2	0.154	-0.013	0.128	-0.078
	(0.140)	(0.229)	(0.085)	(0.129)
gdp*edu3	-0.303**	0.021	-0.073	-0.032
	(0.140)	(0.229)	(0.085)	(0.129)
gdp*eta1	-0.757***	0.04	0.508***	0.227
	(0.181)	(0.296)	(0.110)	(0.167)
gdp*eta2	0.024	-0.015	0.071	0.014
	(0.181)	(0.296)	(0.110)	(0.167)
gdp*eta4	0.162	-0.012	0.053	-0.013
	(0.181)	(0.296)	(0.110)	(0.167)
gdp*eta5	-0.237	-0.464	0.039	0.027
	(0.181)	(0.296)	(0.110)	(0.167)
t*female	0.161*	-0.095	0.973***	0.341**
	(0.089)	(0.169)	(0.069)	(0.143)
t*edu2	0.299***	0.433**	-0.06	0.585***
	(0.109)	(0.207)	(0.084)	(0.175)
t*edu3	-0.216**	0.774***	-0.253***	0.180
	(0.109)	(0.207)	(0.084)	(0.175)
t*eta1	-1.180***	0.288	-1.693***	-0.661***
	(0.140)	(0.268)	(0.109)	(0.227)
t*eta2	-0.344**	-0.066	-0.205*	0.121
	(0.140)	(0.268)	(0.109)	(0.227)
t*eta4	0.427***	0.212	0.040	0.200
	(0.140)	(0.268)	(0.109)	(0.227)
t*eta5	1.522***	1.577***	0.220**	1.696***
	(0.140)	(0.268)	(0.109)	(0.227)
N	360	360	360	360

Source: European LFS, years 2005-2015. The unit of observation are cells by gender-age classes- education levels-country- time. The regression includes controls for gender, education and age. Age classes: 1=15-24, age 2=25-34, age 4=45-54, age 5=55-64; Educational levels: edu1=less than secondary school, edu 3=post-secondary school

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