

Assessing Labour-market Policies in the OECD. A difference-in-difference approach

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Abstract:

In this paper we assess the impact of labour-market policies on labour-market performance in the OECD over the last two decades. We examine long-run trends in employment rates and unemployment rates through a difference-in-difference approach over a sample of 24 OECD countries from 1994 to 2009. We consider the robustness of the claims made in OECD follow-up studies within a panel set-up, and highlight the impact of unobserved heterogeneity and non-random policy assignment. We find that complying with OECD policy recommendations had a favourable (but rather weak) impact, on employment growth in particular. The evidence in favour of other policy actions, such as the Lisbon Strategy, is much less conclusive. We also find that changes in labour-market performance are inversely linked to past performance.

1. Introduction

During the 1980s, the labour-market performance of most European countries showed clear signs of worsening vis-à-vis the US. This state of affairs prompted the OECD to publish its *Job Study* (1994), which was echoed by other important international organisations, such as the International Monetary Fund or the European Union (EU), and soon became very influential in the policy-making of its member countries. Indeed, soon after the publication of the *Jobs Study*, the OECD Economic and Development Review Committee (EDRC) began to make specific recommendations to member countries along its lines. Subsequent OECD studies (OECD, 1998, 1999; Brandt et al., 2005) assessed the progress made by OECD in this field, as well as the eventual improvements in labour-market performance.

The central message of the *Job Study* was that labour-market rigidities played a key role in the bad European unemployment performance of the 1980s and 1990s. This view has found some support in the academic literature dealing with labour-market performance in the OECD, mostly based on multivariate analyses that have become increasingly complex since the pioneering works of Layard et al. (1991) and Blanchard and Wolfers (2000). Empirical evidence along these lines is not however very robust and uniform, and suffers of various specification problems, among which the endogeneity of policy variables is arguably paramount. In this paper, we provide novel evidence on these matters by bringing some policy indicators (first proposed by OECD in cross-sectional set-ups) to a panel set-up, and highlight the impact of unobserved heterogeneity and non-random policy assignment on the policy estimates.

Arguably, the other important policy action having taken place in the last two decades is the Lisbon Strategy. In March 2000, the European Council met in Lisbon with a view to adopt a ten-year programme (the Lisbon Strategy) aimed at revitalising innovation, growth and labour-market performance across the EU. Urging member states to take action along the newly established European Employment Strategy guidelines, the Lisbon Strategy set some specific targets by 2010: a) an overall employment rate of 70%, b) a female employment rate over 60%, c) an employment rate of 50% among older workers (aged 55 to 64), d) an annual growth rate of 3%. Compliance with these targets had to be achieved through peer pressure and the so-called open method of coordination.

In 2005 the European Commission relaunched the Strategy, following a rather unfavourable assessment of its first five years. In order to create more jobs, the open method of coordination was more closely connected with the national action plans of member states. Yet, even prior to the current recession, only the female employment rate was any close to its target. In assessing the Strategy, however, one should not neglect either the decisive enlargement of the EU in the last decade, or the general evolution of economic conditions.

In this paper we also appraise the impact of the Strategy on labour-market performance (we do *not* deal with output growth). We focus on a subset of countries already belonging to the EU in 2000, contrasting them with a broadly comparable group of OECD countries, and ascertain the relevance of the 2005 reassessment. We model long-run employment and unemployment trends, leaving the current crisis, which arguably has very little to do with the influence of institutional changes upon labour markets, out of the picture. On the other hand, institutional changes are highly relevant for long-term employment performance, and there are, as yet, remarkably few independent studies about the impact of the Lisbon Strategy on this nexus.

The paper proceeds as follows. We first present short surveys of the literature about labour-market institutions, employment policies and labour-market performance. Then our empirical set-up and results are shown. We spell out the links between OECD and Lisbon Strategy, and provide some novel panel-type evidence for a reform-intensity indicator from the OECD. Some concluding remarks are finally offered.

2. Employment Policy and Labour-Market Performance

In the 1980s, the labour-market performance of most European countries showed clear signs of worsening vis-à-vis the US. This situation was all the more surprising as it went against the experience of the previous two decades, when the US unemployment rate was consistently higher than that of most European countries.

These trends captured the attention of citizens and policy-makers in several European countries. By and large, the rise in unemployment appeared to be related to long-run, structural factors rather than being the outcome of purely cyclical forces. In 1994 the OECD published its very influential Jobs Study. The main thesis of the Jobs Study was that high unemployment in Europe originated from the existence of rigidities in the labour market. Unreasonably stringent social norms and policy regulations were believed to hamper the efficient matching of labour supply and demand, implying that the countries most affected should implement institutional reforms fostering greater competition in the labour market.

The Jobs Study gave some explicit guidelines for institutional reform that were basically upheld in subsequent studies (see, for instance, OECD, 1999; OECD, 2006). Five guidelines were related to factors not strictly within the province of the labour market: enacting growth-oriented, non-inflationary, *macroeconomic policies*; enhancing the creation and diffusion of *technological know-how*; eliminating impediments to the *creation of enterprises*; promoting *product market competition*; and improving *education and training systems*. There was also a guideline endorsing *active labour market policies*, and four guidelines calling for labour-market deregulation: increasing *flexibility of working time* (both short-term and lifetime); removing *restrictions that prevent wages from reflecting local and individual productivity*; reforming *employment security provisions* that inhibit the expansion of employment; and reforming *unemployment and related benefit systems* - and their interactions with *the tax system* - in order to improve labour-market efficiency.

In fact, the Jobs Study carefully singled out for modification the institutions, regulations and policies that were thought to be most responsible for the slow adjustment of wages and employment to external shocks. Macroeconomic and structural policies fostering innovation and firm creation played a secondary role. The US economy, deemed as having implemented the most effective institutional reforms and having obtained the best performance in terms of growth and employment, was explicitly taken as a benchmark. This is interesting, since no labour-market policy document with the scope and clarity of the Jobs Study (or, for that matter, of the European Union's (EU) White Papers and Reports) was ever published by a US administration prior to or during the period of US resurgence.

The OECD jobs strategy has been very influential and its basic tenets have been echoed by some important international organisations. Simultaneously with the publication of the OECD Jobs Study, the EU produced a similar document, the White Paper, under the influence of the President of the European Commission, Jacques Delors. In that document, the unsatisfactory performance of European labour markets was linked to a set of structural factors not wholly congruent with those singled out in the OECD Jobs Study. The White Paper laid more emphasis on the need to change an industrial structure that is biased in favour of declining sectors and to sustain job creation through appropriate industrial and growth-oriented, macroeconomic policies. In subsequent years, the process of creating a single currency centred around the implementation of the so-called Stability and Growth Pact (adopted at the EU Amsterdam Summit in June 1997) that drastically reduced the autonomy of member countries in the field of fiscal policy. Moreover, a single currency prevents the use of purely national monetary policies. Finally, the paramount aim of the European Central Bank is to maintain a low and stable rate of inflation. All of this created an environment where idiosyncratic, adverse shocks could not be countered by domestic demand-management policies. Instead, only by enhancing labour-market flexibility could one hope to offset the impact of such shocks on employment (Allsopp and Vines, 1998; Artis, 1998).

Macroeconomic considerations were not mentioned in the European Employment Strategy (EES), which was launched by the Luxembourg Jobs Summit in November 1997. Macroeconomic policy became the object of the Broad Economic Policy Guidelines set by the European Commission, and was geared toward low inflation and sound fiscal policy rather than to the support of public and private investment. It is also worth noting that the emphasis on the labour market percolated to these Guidelines as well, since they repeatedly stressed the requirement for wage growth to be aligned with the growth in productivity.

The four pillars of the EES were:

- (i) *employability*: in particular, long-term unemployment was to be prevented, the school-to-work transition facilitated, and active labour market policies preferred to passive policies;
- (ii) *entrepreneurship*: administrative obstacles to the setting up and management of businesses and taxes (including social security contributions) were to be reduced;
- (iii) *adaptability of firms and workers*: obstacles to temporary work agencies, part-time work and other forms of flexible work organisation were to be removed and investment in physical and human capital were to be promoted;
- (iv) *equal opportunities*: equal access to jobs for women and men and equal treatment at work were to be ensured.

The Lisbon European Council (March 2000) signalled a new strategic goal for the EU for the next decade: *to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*. The Council also stipulated that the overall aim of this strategy is to raise the EU employment rate to 70% and to increase the proportion of women in employment to more than 60% by 2010. The Stockholm European Council (March 2001) added two intermediate goals and one additional target: the overall employment rate should be raised to 67% by 2005, to 57% for women by 2005, and to 50% for older workers by 2010.

At the Brussels European Council in March 2003, the member states established an Employment Taskforce, chaired by the Netherlands' former prime minister, Wim Kok, in response to concerns that the EES was failing to tackle effectively Europe's labour-market problems. The Taskforce set out four key requirements for the improvement of labour-market performance:

(i) *Increasing adaptability of workers and enterprises*: this merges the former *entrepreneurship* and *adaptability* pillars. More flexible wage-setting is required and no unemployment and inactivity traps must persist.

(ii) *Attracting more women and older workers to the labour market* by providing the appropriate legal and financial incentives and by improving childcare and eldercare.

(iii) *Investing more, and more effectively, in human capital*: vicious circles of low investment by businesses and workers in training must be broken through cost-sharing schemes.

(iv) *Ensuring effective implementation of reforms through better governance*: European targets must be translated into national policies, using strategically the National Action Plans for Employment and the EU budget.

In early 2005 the European Commission proceeded to assess the first five years of the Lisbon Strategy, finding a rather bleak picture. The Commission responded by relaunching a streamlined Strategy, under the label of “more and better jobs”, through stronger involvement of stakeholders and more rigorous focus on labour-market performance. As of 2008, however, only female employment rate was any close to the Lisbon target. Around 2006, the OECD jobs strategy underwent a process of reassessment in 2006 (OECD, 2006), giving more emphasis to non free-market options such as wage bargaining coordination and active labour-market policies. At much the same time, the notion of flexicurity began to pervade the EU discourse on the labour markets (European Commission, 2007). Arguably, however, the main gist of both strategies was still that many European institutions impaired labour-market performance).

The attempt to assess the policy impact of the OECD 1994 Jobs Study and of the EES guidelines has prompted several studies, some of which (Elmeskov et al., 1998; Nickell, 2003; Saint-Paul, 2004; Belot and Van Ours, 2004) suggest that the OECD Jobs Strategy is fundamentally sound and that countries which have made the most progress in labour-market performance are those that complied with its recommendations most comprehensively. This point of view has come under strong criticism, however. For instance, Baker et al. (2004), Freeman (2005) and Howell et al. (2007) argue that the aggregate empirical results supporting the OECD strategy are not very robust to small changes in the models or data used (variables, countries, time-periods). The endogeneity of policy variables is also a substantial worry. In the following section we provide a short survey of the influence of institutions and policies on labour-market performance.

3. *Labour-market Institutions and Outcomes. A Short Survey*

The institutions most often mentioned in the literature as contributing to poor labour-market performance in Europe are: generous social-safety nets, restrictive employment legislation, high taxes and strong unions. Empirical evidence on the labour-market rigidity view mostly comes from multivariate analyses that have become increasingly complex since the pioneering work of Layard et al. (1991).¹ While these studies tend to conclude that institutions are a key part of the story, their results are less robust and uniform than is commonly believed. According to Baker et al. (2004), the literature turns up little evidence for performance-worsening effects of union density and mixed evidence for unemployment insurance and employment protection legislation. At the same time, performance-enhancing effects of collective-bargaining coordination and (to a smaller extent) active-labour-market policies tend to emerge. An important part of the explanatory power of labour-market institutions derives in fact from these two institutions’ ability to enhance performance. After a very thorough analysis, Bassanini and Duval (2006) end up with not-too-dissimilar conclusions, even if they are at pains to emphasise the performance-enhancing role of well designed unemployment-benefit reforms. On the whole, there is pretty convincing empirical evidence to the effect that there are strong interactions

¹ See for instance the accounts in Layard et al. (1991), Nickell (2003), Saint-Paul (2004), Freeman (2005). The paper by Blanchard and Wolfers (2000), although fairly controversial, is also very important inasmuch as it first introduced the role of shocks. An important critical contribution was provided by Baker et al. (2004), and a very thorough empirical analysis can be found in Bassanini and Duval (2006).

between labour-market performance and welfare reforms. Properly designed welfare-to-work policies have been able to deliver more jobs without large wage penalties, both in Nordic countries and in the US (de Koning et al., 2004; Fischer and Matthiessen, 2005). Furthermore, Kluve and Schmidt (2002) report that in Europe training and job-search policies are on average effective (significantly more than employment subsidies) in improving the job prospects of the unemployed. On the other hand, empirical support for the influence of strict labour-market regulations on unemployment appears to be weak. The existing evidence (OECD 2004) suggests that stricter employment protection does not raise aggregate unemployment, while increasing the duration of unemployment and reducing worker turnover. Autor et al. (2006), after a careful consideration of cross-state evidence in the USA, conclude that only one of the common-law exceptions to employment at will, the implied-contract doctrine of not terminating a contract without good cause, has a negative (albeit modest) impact on employment rates. Similar results are found for temporary jobs, whose development equally favours both job creation and job destruction (Cahuc and Postel-Vinay, 2002). There is no consistent evidence either of an association between aggregate employment rates and the incidence of part-time work (Garibaldi and Mauro, 2002).

Higher European income and payroll tax rates have often been evoked as a key determinant of poorer labour-market performance in Europe. However, according to Layard and Nickell (1999), a reasonable estimate would imply that a 5% reduction in the tax wedge (including income, consumption and payroll taxes) lowers the unemployment rate from 8% to 7%. These conclusions are often believed to depend crucially on the values assumed to hold for the elasticity of labour supply (Prescott, 2004; Alesina et al., 2005). Yet there seems to exist at least another key factor. Taxes on labour seem to matter less in countries where bargaining is either highly decentralised (as in the US and the UK) or highly centralised and coordinated (as in the Scandinavian countries and Austria). In the latter higher taxes are (partially) absorbed by a decline in gross wages. In continental European countries, however, where bargaining is carried out at the industry level, the tax wedge is likely to have a larger influence on labour costs and employment. More generally, strong unions need not impair labour-market performance, if unions and firms can coordinate centrally over wage bargaining (Aidt and Tzannatos, 2003; Belot and Van Ours, 2004).

The pre-eminence of recommendations related to labour-market institutions that has characterised the OECD employment strategy has drawn much of the analytical attention on the evolution of labour-market performance on changes in labour-market policies. On the other hand, it is clear that European labour-market performance has been hampered by generally sluggish output growth in recent years. The surge in growth that was expected to show up after the inception of the Single European Market has not materialised. More broadly, the evaluation of structural changes in the US and European labour markets is not wholly accurate, in our opinion, without examining the role of other factors, such as industrial structure, financial markets, and the housing sector. Industrial composition matters for labour-market performance (Vivarelli and Pianta, 1998), and is likely to respond favourably to reduced product-market regulation (Freeman and Schettkat, 2001a, 2001b; Messina, 2005a, 2005b). An independent impact of financial structure on labour-market performance has not yet been convincingly demonstrated, but there seem to exist interactions between financial-market and labour-market imperfections (Rajan and Zingales, 1998; Acemoglu, 2001; Wasmer and Weil, 2004). Finally, the structure of the housing market appears to impact strongly upon the geographical mobility of labour. Barriers to geographical mobility are clearly an obstacle to the efficient functioning of the labour market, and homeowners are relatively immobile, presumably because they find it much more costly than private renters to move in search of new jobs. Hence a higher homeownership rate can be expected to be associated with a higher aggregate unemployment rate (Oswald, 1997; Belot and van Ours, 2004).

On the whole, there seems to be ample room for new evidence about the relationships between institutional set-up and labour-market performance. In this paper, we endeavour to do this within a simple panel set-up, developing upon the research strategy adopted in a follow-up study from the OECD (Brandt et al., 2005). Furthermore we will assess whether the EES, or, better, the Lisbon Strategy had any additional impact for EU countries.

4. The Empirical Set-Up

Since the OECD's *Job Study* (1994), labour-market rigidities are held to play a key role in the relatively bad European labour-market performance. OECD's follow-up reports (OECD, 1998, 1999; Brandt et al., 2005) reiterate this view. They also provide evidence, mostly based on bivariate relationships between some policy reform indicators and unemployment and employment rates, suggesting a direct link between structural reform and labour-market outcomes.

The most recent OECD follow-up report (Brandt et al., 2005) considers an index of the intensity of reform policy measuring the magnitude and comprehensiveness of the labour-market reforms broadly linked to the OECD Jobs Strategy which were undertaken between 1994 and 1999.² Their concern is to detect the extent to which these reforms had an effect on employment and unemployment rates during subsequent years. Believing that some time is needed before the benefits of reform materialise, Brandt et al. (2005), introduce a five-year time lag between the implementation of policy reforms and the measurement of their labour-market consequences. In accordance with previous follow-up reports, they find empirical support for the hypothesis that OECD-inspired policy reforms improve labour-market performance. In particular, they report significant Spearman correlation coefficients among the reform policy index and the rates of employment and unemployment (respectively of 0.48 and -0.50). Such unequivocal empirical support rarely stems leading academic papers.

Empirical evidence on the labour-market rigidity view mostly comes from multivariate analyses that have become increasingly complex since the pioneering work of Layard et al. (1991). While these studies tend to conclude that institutions (welfare safety nets, unions, taxation, employment protection) are a key part of the story, their results are less robust and uniform than is commonly believed. According to Baker et al. (2003), the literature turns up little evidence for performance-worsening effects of union density and mixed evidence for unemployment insurance and employment protection legislation. At the same time, performance-enhancing effects of collective-bargaining coordination and (to a smaller extent) active-labour-market policies tend to emerge. An important part of the explanatory power of labour-market institutions derives in fact from these two institutions' ability to enhance performance.

In this paper we evaluate the OECD view through a different approach. Instead of relying on complex multivariate models, where possible misspecifications are hard to detect, we assess the robustness of the claims made in Brandt et al. (2005) within a panel set-up, and suggest some ways in which the impact of unobserved heterogeneity and outliers on policy estimates can be detected and modelled in this framework. To the best of our knowledge, no panel data tests have been carried out so far upon OECD reform-intensity indexes. Yet, adopting a single comprehensive measure of this kind has some advantages over more traditional policy indicators. Measurement methods for the latter have considerably changed over time (Howell et al., 2007). Furthermore, the reform-intensity index is built to work with a 4-5 year lag, which in a panel data set-up greatly attenuates the well-known endogeneity problems of policy indicators (results from Wooldridge's strict exogeneity test, available on request, validate this point).

This is also interesting inasmuch as there is a fairly widespread consensus that the EES has taken its cue from the OECD Jobs Study.³ Hence our approach can also shed light on whether the ESS and the Lisbon Strategy implied higher employment growth than could be expected from implementation of OECD labour-market related recommendations. To measure compliance with those, we chiefly rely upon the reform intensity indicators computed by Brandt et al. (2005) for the 1994-1999 and the 1999-2004 periods. These indicators assign to policy actions a score reflecting their conformity with the OECD recommendations and aggregate them into a single measure through a simple weighting procedure. As suggested by Brandt et al. (2005), in order to characterise a country's reform stance we take into account all the reforms implemented in the areas

² For details about its calculation, see Annexes 2 and 3 in Brandt et al. (2005).

³ See Dostal (2004). Inklaar and Timmer (2006) make a similar assumption when examining labour market deregulation in Europe. Casey (2004) provides a very articulated analysis, coming much to the same conclusions.

singled out by the OECD Jobs Study, regardless of whether they correspond to specific recommendations from the OECD Economic and Development Review Committee (EDRC). Indeed, important reforms were carried out before the EDRC review period (1995 to present) and allowing for them is crucial for our purposes. These policies are supposed to affect employment performance with a 4-5 year lag. Hence, in order to assess employment growth before and after Lisbon, we must include pre-1995 policy reforms in our analysis, making sure that this information is comparable with the Brandt et al. (2005) indicators. To this purpose, we rely on the 1990-95 reform indicators calculated in OECD (1999, pp. 180-184). Those indicators, although broadly comparable with the Brandt et al. (2005) ones, are based on a different scoring and weighting scheme. We thus normalised both sets of indicators through their respective standard errors. A further problem is that the reform-intensity index is only readily available at a multiannual frequency. However, in OECD (1999) and in Brandt et al. (2005), there are very clear indications on which policy changes should be singled out for measuring policy compliance. Hence we use this information to build an annual reform-intensity indicator. We carry out our estimates on 1994-2009 data for 24 OECD countries (EU: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK; non-EU: Australia, Canada, Iceland, Japan, Korea, Norway, New Zealand, Switzerland, USA). Considering this period straightforwardly allows to deal with the possible existence of a break in the Lisbon Strategy around 2005.

Due to our focus on long-term performance, our outcome variables are changes in trend employment and unemployment rates. We take the OECD measures for trend employment rate (potential employment of the total economy) and the NAIRU. Abstracting from cyclical fluctuations should also make our equations less affected by unobserved heterogeneity (see Bassanini and Duval, 2006, pp. 120-121). All data come from the OECD Statistics Portal.

Our baseline regression format, adapting the set-up in Brandt et al. (2005) to panel data,⁴ is:

$$(1) \Delta r_{it} = a_i + a_t + f(\Delta r_{it-1}) + a_1 \text{reform-intensity}_{it} + \text{Shocks}_{it} + e_{it}$$

Δr_{it} stands for the change of trend employment or unemployment rate of country i in period t and $\text{reform-intensity}_{it}$ for the above described OECD reform-intensity indicator. Inclusion of $f(\Delta r_{it-1})$ in (1) captures the possible existence of inertial effects in labour-market performance. The OECD reform-intensity indicator is included in the equation with a four-year lag.

Shocks_{it} gather some influences not strictly linked to labour-market reforms. First of all, following Blanchard and Giavazzi (2003), it is important to allow for an indicator of product market regulation (we rely on the indicators described in OECD Economics Department Working Paper No. 530). Changes in industrial structure, not wholly amenable themselves to policy changes, could also have an impact of their own on labour-market performance. In order to allow for this possibility, we rely in (1) on changes in the share of construction or service workers over total employment. In order to allow for macroeconomic shocks that can influence employment and unemployment (independently from policy changes) we also include rates of change in GDP in (1). The lack of appropriate data makes it impossible to allow for a richer array of shocks. Results from (1) will be commented in the following section, but it may be appropriate to point out here that the *prima facie* evidence is, like in Brandt et al. (2005), favourable to the OECD view. This suggests that the basic result obtained in the OECD follow-up reports is not affected by our sample choice. There are various misgivings, however, that can be aired about this kind of evidence. Perhaps the most obvious one, in the light of the modern econometric literature about policy evaluation, is that policy changes are not randomly distributed across countries. When the labour-market performance is bad, governments may be more willing to implement OECD-recommended labour-market policies, just as suggested in Brandt et al. (2005, p. 58), that succeed in raising employment growth. On the other hand, for example, in response to bad labour-market performance governments may enact other types of policies not contemplated in Brandt et al., 2005, such as incomes

⁴ We adopt a linear specification: hence changes are absolute differences in employment or unemployment rates, and levels are not logged. This specification yields more readily interpretable results than its loglinear counterpart. Non-nested testing of the two specifications suggests that their goodness of fit is virtually equal.

policies or wage agreements. Thus, the positive correlation between the 1994-1999 intensity of policy reforms and improvements in labour-market performance may be spurious, arising from their correlations with policy initiatives that have little to do with the OECD strategy, or with other unobserved phenomena. In order to control for these factors, we could include in the estimates the 1994 (initial-year) rates, a strategy similar to the inclusion of past history variables in microeconomic policy evaluation analysis.

$$(1') D r_{it} = a_i + a_t + f(D r_{it-1}) + a_1 \text{reform-intensity}_{it} + r_{i1994} + \text{Shocks}_{it} + e_{it}$$

The 1994-rates would however be collinear with the country fixed effects, making estimation of (1') impossible. A slightly different tack to the same issue can however be taken along the following lines. Consider first that, to see whether the Lisbon Strategy made any difference with respect to the already ongoing institutional changes, we can pose EU against highly comparable non-EU countries through a difference-in-difference approach. Following Wooldridge (2002, p. 278) we adopt a two-way generalisation of this approach, with country fixed effects standing for persistent national characteristics (possibly related to policy inclusion) and time-period dummies picking up systematic differences across time periods. We distinguish two policy-on periods (*I*, 2000-2004, and *II*, 2005-2009, before and after the Strategy reassessment):

$$(2) D r_{it} = a_i + a_t + a_t + f(D r_{it-1}) + a_1 \text{reform-intensity}_{it} + a_{21} \text{LISBON} * \text{PON}_I + a_{22} \text{LISBON} * \text{PON}_{II} + \text{Shocks}_{it} + e_{it}$$

The effectiveness of the Strategy is assessed through the significance of the terms interacting LISBON, a binary variable equal to one for EU countries, with PON_I and PON_{II} , binary variables for the two policy-on periods. Now, there is a further twist which can be given to the difference-in-difference set-up. Only governments far off from their policy targets are likely to have invested resources and political consensus in striving for these targets; countries already close to them probably exerted themselves much less. To model this, we multiply the policy interactive terms by the gap between the target and initial-year employment rates

$$(3) D r_{it} = a_i + a_t + a_t + f(D r_{it-1}) + a_1 \text{reform-intensity}_{it} + a_{21} (r_{\text{target}} - r_{i1999}) * \text{LISBON} * \text{PON}_I + a_{22} (r_{\text{target}} - r_{i2004}) * \text{LISBON} * \text{PON}_{II} + \text{Shocks}_{it} + e_{it}$$

The larger the gap, the greater the effort we expect along the Strategy lines.⁵ This also allow to test for the possibility that the significance of policy variables may simply arise out of their correlations with past history, as was already suggested above.

5. The Estimates

Our main results are reported in Tables 1 and 2. All equations have been estimated through first-differencing, which performed much better than alternative methods serial correlation-wise (Wooldridge, 2002, pp. 282-285). We report both estimates without and with structural shock proxies.

Let us begin with Table 1, relating to the results for the NAIRU. The significance of the OECD reform-intensity indicator clearly emerges from the baseline specification in column A, suggesting that the basic results obtained in the OECD follow-up reports are not affected by either sample choice or the use of panel techniques. Things change little in columns B and C for the reform-intensity coefficient, where we compare EU with non-EU countries through a difference-in-difference set-up. These columns also evidence very little value for employment growth from the Lisbon Strategy, as modelled in (2). We distinguish two policy-on periods (*I*, 2000-2004, and *II*, 2005-2009, before and after the Strategy reassessment), and the Strategy is assessed

⁵ A related way to model this mechanism, yielding much the same results, is to multiply the interactive terms by a dummy equal to one when the gap between the target and actual rates is positive.

through the significance of the terms interacting LISBON, a binary variable equal to one for EU countries, with PON_t and PON_{it} , binary variables for the two policy-on periods.

Yet we have already remarked that only governments far off from the Lisbon targets are likely to have invested resources and political consensus in striving for them. To model this asymmetric behaviour, we multiply in each period the policy terms by the gap between the target and initial-year employment rates, obtaining $(r_{target} - r_{i1999}) * LISBON * PON_t$ and $(r_{target} - r_{i2004}) * LISBON * PON_{it}$, conditionally on the gap being positive (negative gaps are put equal to zero). Things change however if one considers equation (3). In this case (see columns E and F) there is significant extra employment growth for the Lisbon countries, at least until 2004. The Strategy seems indeed to *loose* strength after the 2005 reassessment. However, as the Lisbon Strategy (modelled in(3)) gathers significance, compliance with the tenets of the OECD Jobs Strategy becomes less significant. In columns (D) and (G) we ascertain whether the effectiveness of the Lisbon Strategy derives from a time- or country-varying impact for the reform-intensity index. No support is found for this hypothesis.⁶ Hence the additional employment growth in the Lisbon countries cannot come from more numerous or effective OECD-recommended policies.⁷ Finally, no decisive impact of the inclusion of structural shocks upon the estimates can be found.

Evidence from Table 2 (for the trend employment rate) is pretty similar to the above, with a significant difference. Here too, equation (3) provides the insight that a catch-up mechanism is at work, favouring employment growth in those countries where initially the rate of employment was below target. For the employment rate, however, significance of the reform-intensity coefficient is less decisively wiped out. Complying with OECD recommendations maintains some impact regardless of the fact that initially lagging countries have an extra impulse.

As far as economic significance is concerned, when we calculated the partial R^2 's for the coefficients of interest they ranged for the reform-intensity indicator from 3% for the unemployment rate equation to 11% for the employment rate equation. They were consistently higher for the Lisbon-cum-catch-up terms: 11 to 35%. A final remark about robustness. Problems of data availability do not allow inclusion of a wide array of control variables in our estimates. However, from our tests it appears unlikely that variable omission should decisively drive our results. From Ramsey's RESET and Wooldridge's strict exogeneity tests we do not find any evidence of misspecification. Further robustness analysis is given in columns D and G. There is little evidence of changing effects of the reform-intensity indicator through time or across EU and non-EU countries.

Furthermore, these more flexible specifications have no significant qualitative consequences as far as the Strategy assessment is concerned. Finally, we also adopted the procedure recently suggested in Verardi and Croux (2009) to look for influential outliers. None was found.

At a time when decisive action is needed in the European labour markets, this evidence clearly indicates that the Lisbon Strategy's review process needs a deeper reappraisal than done so far. Further research is also needed about the channels through which the Strategy initially delivered its extra kick to employment growth (OECD indicators of product market deregulation have been tried without success).

6. Concluding Remarks

In this paper we consider the evidence provided by the OECD follow-up reports, mostly in Brandt et al. (2005), and evaluate their results in a panel set-up. We suggest a manner to model the impact of non-random policy assignment on the policy estimates, make allowance for some structural shocks, and carefully assess the existence of outliers, providing robust regression estimates. Our results support on the whole the hypothesis

⁶ Stability of the reform-intensity coefficients over time also vouches for the appropriateness of merging the indicators from Brandt et al. (2005) and OECD (1999).

⁷ A similar hypothesis is that extra unemployment decline stems from higher values of the reform-intensity index in the Lisbon countries. There is no evidence in favour of that either (estimates are available upon request).

according to which, in recent OECD cross-country data, changes in labour-market performance are inversely linked to their past levels. Complying with OECD policy recommendations yet had a favourable and stable effect, especially as far as employment (vs. unemployment) is concerned. The labour-market outcomes of the Lisbon Strategy were also assessed, finding that the Strategy had a significant impact. However, this extra impact mostly faded out after the 2005 mid-term reassessment, calling for further research on the Strategy's modus operandi. At a time when strong action is needed in the European labour markets, this evidence decisively indicates that the EU's policy reassessment procedures need a profound rethinking.

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Legend of the equations

As reported in the text, the sample includes 24 countries for the 1994-2009 period. All equations include time-unit dummies, the autoregressive terms $f(D r_{it-1})$ and are estimated through first-differencing. The significance levels of reported coefficients are based on robust standard errors: *, **, *** denote respectively significance at 10, 5, 1%. $Adj. R^2$ is the coefficient of determination adjusted for degrees of freedom, *Reset* is Ramsey's RESET test, *Wooldridge* is Wooldridge's strict exogeneity test: p-values are reported in brackets. The binary variable PON equals $PON_i + PON_{it}$.

Table 1a – D Unemployment Rate (NAIRU) (no shocks)

	"A"	"B"	"C"	"D"	"E"	"F"	"G"
reform-intensity	0,13**		0,13*	0,01		0,17*	0,02
LISBON*PON _I		0,52	0,41	0,52			
LISBON*PON _{II}		0,03	-0,12	-0,12			
reform-intensity* LISBON				0,80*			0,67
reform-intensity* PON				0,27			0,13
reform-intensity* LISBON*PON				-0,46			-0,73
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _I					0,03*	0,03*	0,06
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _{II}					0,04*	0,05	0,05
<i>Adj, R²</i>	<i>0,31</i>	<i>0,28</i>	<i>0,29</i>	<i>0,29</i>	<i>0,32</i>	<i>0,32</i>	<i>0,29</i>
<i>Reset</i>	<i>0,91</i>	<i>0,97</i>	<i>0,8</i>		<i>0,15</i>	<i>0,82</i>	
<i>Wooldridge</i>			<i>0,58</i>			<i>0,5</i>	

Table 1b – D Unemployment Rate (NAIRU)

	"A"	"B"	"C"	"D"	"E"	"F"	"G"
reform-intensity	0,09**		0,12*	0,01		0,14	0,02
LISBON*PON _I		0,42	0,37	0,51			
LISBON*PON _{II}		0,11	-0,17	-0,1			
reform-intensity* LISBON				0,68*			0,65
reform-intensity* PON				0,28			0,14
reform-intensity* LISBON*PON				-1,01*			-0,71
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _I					0,06**	0,06*	0,05
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _{II}					0,06	0,05	0,05
<i>Adj, R²</i>	0,32	0,29	0,31	0,31	0,32	0,31	0,29
<i>Reset</i>	0,92	0,95	0,81		0,13	0,52	
<i>Wooldridge</i>			0,47			0,52	

Table 2a – D Trend Employment Rate (no shocks)

	"A"	"B"	"C"	"D"	"E"	"F"	"G"
reform-intensity	0,18*		0,18**	-0,22		0,24**	-0,11
LISBON*PON _I		0,83	0,66	0,49			
LISBON*PON _{II}		-0,22	-0,48	-0,69			
reform-intensity* LISBON				0,94*			0,77
reform-intensity* PON				0,53*			0,38*
reform-intensity* LISBON*PON				-0,79			-0,49
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _I					0,07***	0,06**	0,07**
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _{II}					0,03	0,02	0,01
Adj, R ²	0,25	0,25	0,29	0,28	0,38	0,42	0,41
Reset	0,91	0,77	0,3		0,45	0,22	
Wooldridge			0,32			0,82	

Table 2b – D Trend Employment Rate

	"A"	"B"	"C"	"D"	"E"	"F"	"G"
reform-intensity	0,17*		0,17**	-0,21		0,14**	-0,13
LISBON*PON _I		0,81	0,62	0,46			
LISBON*PON _{II}		-0,26	-0,52	-0,62			
reform-intensity* LISBON				0,75*			0,73
reform-intensity* PON				0,45*			0,40*
reform-intensity* LISBON*PON				-0,8			-0,52
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _I					0,07***	0,07**	0,07**
LISBON* ($r_{\text{target}} - r_{i1999}$)* PON _{II}					0,01	0,01	0,01
Adj, R ²	0,26	0,26	0,31	0,32	0,38	0,45	0,44
Reset	0,92	0,07	0,64		0,01	0,12	
Wooldridge			0,73			0,39	