IMF Working Paper

Distributional Implications of Labor Market Reforms: Learning from Spain's Experience

by Ara Stepanyan and Jorge Salas

INTERNATIONAL MONETARY FUND

WP/20/29

IMF Working Paper

European Department

**Distributional Implications of Labor Market Reforms:
Learning from Spain's Experience[1]**

Prepared by Ara Stepanyan and Jorge Salas

Authorized for distribution by Andrea Schaechter

February 2020

Abstract

Spain's structural reforms, implemented around 2012, have arguably contributed to a faster and stronger economic recovery. In particular, there is strong evidence that the 2012 labor market reforms increased wage flexibility, which helped the Spanish economy to regain competitiveness and create jobs. But the impact of these labor reforms on income inequality and social inclusion has not been analyzed much. This paper aims to shed light on this issue by employing an econometric decomposition procedure combined with the synthetic control method. The results indicate that the 2012 labor reforms have helped improve employment and income equality outcomes with no substantial impact on the overall risk of poverty. Nevertheless, the reforms appear to have induced a deterioration of average hours worked, in-work poverty, and possibly also of involuntary part-time employment.

---

[1] Jai-Ryung (Jenny) Lee provided outstanding research assistance. The authors are grateful to Romain Duval and participants in an IMF seminar for their helpful comments and suggestions.

TABLE OF CONTENTS

Contents   Page

I. INTRODUCTION

A dramatic fall in employment, following the onset of the global financial crisis, worsened Spain's income distribution and social inclusion. Spanish income inequality, measured by the Gini coefficient, deteriorated by about 2 percentage points, while the risk of poverty increased by 4 percentage points between 2008 and 2013. Job losses affected disproportionally low-skilled and young workers, particularly those working under temporary contracts.

A comprehensive structural reform package was adopted in response to the crisis with emphasis on labor market reforms.[2] The 2012 labor reforms involved changes to the collective bargaining framework, employment protection regulation, and active labor market policies. While these measures have generally facilitated the recovery, as evidenced by a number of studies, the distributional impact of the labor market reforms remains an important topic of economic policy debate in Spain, though empirical analysis has been limited so far.

This paper attempts to contribute to the evidence on the distributional impact of labor market reforms by assessing Spain's 2012 reform experience. It considers the impact of reforms on absolute measures of living standards that "lift all boats", such as employment and average hours worked, as well as on relative measures of equality of the income distribution. The focus is mainly on labor market reforms, an area in which Spain implemented some far-reaching changes during the crisis.

Empirically it is difficult to disentangle the impact of structural reforms. One of the challenges is to identify proper counterfactuals. In particular, macro analyses of the impact of structural reforms often require cross-country data to construct a counterfactual. However, finding a pool of appropriate control countries that could be used for constructing counterfactuals is a challenge, especially for countries with relatively unique characteristics, which is the case for Spain regarding some indicators of labor market and social inclusion.

To address these challenges this paper adopts a new two-step approach to disentangle the impact of reforms from other factors. In the first step, original data are adjusted in a panel regression for time-invariant country-specific and time fixed effects, and then detrended using a country-specific time trend for the pre-reform period. This decomposition provides adjusted series that can easily be compared across countries and capture only policy and other idiosyncratic shocks. In addition, this adjustment increases the potential number of countries that could be used as controls for identifying counterfactuals. In the second step, the synthetic control method (see e.g. Abadie et al., 2010) is applied to the adjusted data to construct a counterfactual—a possible evolution of outcome variables in the absence of reforms—to estimate the impact of the 2012 reforms. Our methodological approach has the advantage of providing direct insights on aggregate effects of the labor reforms on several dimensions of social inclusion.

---

[2] The package also included banking sector and fiscal governance reforms, a few aspects of product market deregulation, and pension reforms, with the implementation of some key reform elements later being postponed.

We find evidence that the 2012 labor market reforms have improved employment and income equality outcomes with no substantial impact on the overall risk of poverty. The results suggest that employment growth was substantially higher after the 2012 labor reforms than the estimated employment growth if the reforms had not been implemented. Our analysis also provides evidence of a positive distributional impact of the reforms reflected by the estimated negative impact of the reforms on the Gini coefficient. Moreover, we do not find any significant impact of the labor reforms on the share of population at risk of poverty.

However, our findings suggest a reduction in average hours worked induced by the reforms and a deterioration of involuntary part-time employment (though the results in the latter case are statistically insignificant). The enhanced flexibility in using part-time contracts, which was supported by the reforms, may have incentivized employers to offer more part-time contracts despite employees' desire to work more hours. In addition, the structural shift in the economy from construction towards services—a sector with a much higher rate of part-time employment—may have contributed to less hours worked. We also observe a negative impact of the reforms on in-work poverty, which likely reflects the reduction in hours worked.

As summarized below, and in line with our findings, the existing literature shows that Spain's labor market reforms have contributed to faster job creation. But in contrast to previous cross-country studies, we do not find an adverse impact of labor reforms on income inequality. One likely explanation for this discrepancy with previous papers is the positive employment impact of the Spanish labor reforms since, as reported by Causa et al. (2016), faster job creation tends to benefit especially households in the bottom half of the income distribution. Furthermore, by grandfathering existing job contracts in the case of some reform measures, the potential negative impact of the labor reforms may have been at least partially avoided in Spain. That said, our results point to some possible adverse effects of the labor reforms, which connects this paper to other studies documenting growth-equity trade-offs associated with structural reforms (see e.g. Ostry et al., 2018).

Our findings must be interpreted with caution. A key limitation is that the estimated reform impacts could still be influenced by other idiosyncratic shocks that happened simultaneously with the labor market reforms.[3] In addition, because of potentially heterogeneous responses of countries to common shocks, some residual components of those shocks might still be present in the adjusted series.

The remainder of this paper is organized as follows. Section II provides a brief review of the literature. Section III displays some stylized facts, while section IV discusses our methodology and data. Section V presents the results and section VI concludes.

---

[3] Examples include the severe macroeconomic crisis, other structural reforms, or the 2012–14 Agreement for Employment and Collective Bargaining signed by Spanish social agents in early 2012.

II. LITERATURE REVIEW

This section briefly summarizes some recent studies on the impact of labor market reforms on inequality and macroeconomic performance. Given the scope of this paper, the literature review largely focuses on evidence for advanced economies or specifically for Spain.

Labor market reforms and inequality. Labor market institutions can affect inequality through different channels, although the sign of the impact is ambiguous and inconclusive in some cases (see e.g. Kierzenkowski and Koske, 2012; and Jamotte and Osorio Butron, 2015). These channels include the wage bargaining system (comprising the coverage of collective agreements, the strength of unions, the level at which bargaining takes place, and the degree of coordination); the effects on unemployment; and the influence on the determination of redistributive policies.

Using 30 years of OECD cross-country data, Causa et al. (2016) offer a comprehensive study of the distributional impact of structural reforms. An important finding underlying their results is that labor productivity growth is not by itself inclusive, whereas labor utilization growth is. They show that some labor market reforms tend to raise income inequality (e.g., reducing job protection for regular contracts, limiting the automatic extension of collective agreements to non-union members, and reducing the unionization rates), whereas increasing spending in well-targeted active labor market policies can help achieve labor market inclusiveness.[4] Importantly though, Causa et al. (2016) acknowledge potential shortcomings of their analysis, including data limitations and the inability to capture nonlinear effects.

Other studies find that deeper labor flexibility is associated with rising income inequality in OECD countries (Tridico, 2018), and that labor market reforms may lead to suboptimal distributional effects in the presence of product market rigidities (Roeger et al., 2019).[5] Meanwhile, Ostry et al. (2018) do not find conclusive evidence on the impact of collective bargaining reforms on income inequality.

For Spain, Anghel et al. (2018) document an increase in wage income inequality during the crisis, largely explained by drops in jobs and hours worked at the lower-income deciles. While Anghel et al. (2018) do not address the impact of labor reforms on inequality, they point out that the inability of firms to change working conditions in sector-wide agreements prior to the 2012 labor reform helped explain the strong labor market adjustment through quantities rather than prices.

---

[4] Similarly, Jaumotte and Osorio Buitron (2015) find that lower unionization rates are associated with higher top earners' income shares in advanced economies.

[5] Using a general equilibrium framework, Roeger et al. (2019) find that structural reforms aiming at increasing the employment rate of low-skilled workers are associated with a fall in wages relative to per-capita income.

Labor market reforms and macroeconomic performance. In a recent cross-country study focused on labor and product market reforms in advanced economies, IMF (2016) finds positive medium-term effects on output and employment.[6] However, that study also shows that employment protection reforms can become contractionary in periods of slack, mirroring the findings by Duval et al. (2017).

For Spain, the empirical evidence suggests that the 2012 labor market reforms, summarized in Box 1, have supported wage flexibility and contributed to job creation (OECD, 2014; IMF, 2015; Garcia-Perez, 2016; Doménech et al., 2018). Illustratively, Doménech et al. (2018) estimate that if the wage flexibility facilitated by the reforms had started in early 2008, the destruction of nearly 1.8 million full-time equivalent jobs could have been avoided over the following decade, and the unemployment rate at end-2017 would have been at around 9 percent instead of 17 percent. The reforms may have also helped to reduce labor market duality during the crisis and the early recovery, albeit modestly (OECD, 2014; Garcia-Perez, 2016). In other areas, however, the effects of the labor market reforms were less significant: the coverage of collective negotiations has not significantly declined (Bentolila and Jansen, 2016), the impact on individual dismissals was seemingly negligible (OECD, 2014), and weaknesses related to spending and efficiency in active labor market policies persist (IMF, 2017a).

In another study, Andrés et al. (2017) use a general equilibrium model calibrated for Spain and show that when countries are hit by a recessionary deleveraging shock (as was Spain in the aftermath of the Great Recession) labor market and especially product market reforms can stimulate output and employment even in the short run. This partly reflects the competitiveness effects of reductions in wages and prices.[7]

---

[6] In an empirical analysis of unemployment in the OECD since the 1960s, Nickell et al. (2005) find that shifts in labor market institutions, including employment protection, are linked to long-term shifts in unemployment.

[7] The impact of the 2010 and 2012 labor reforms via competitiveness gains has been estimated to account for nearly one-tenth to above one-quarter of Spain's real export growth rate over 2010–13 (Salas, 2018).
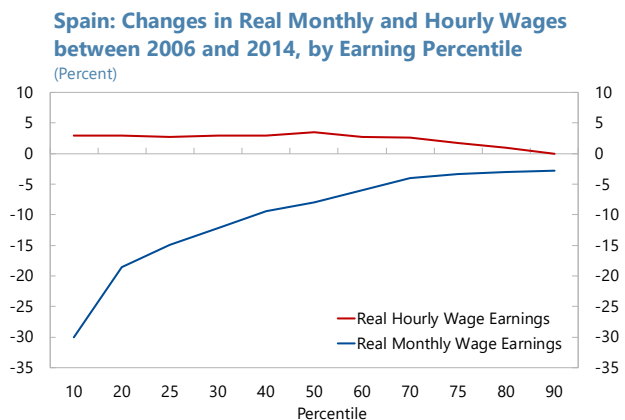

Box 1. Spain: Key Elements of the 2012 Labor Market Reforms

The reform package enacted in 2012 aimed to address several Spain's structural problems in the labor market. While most reforms took place in 2012, some adjustments were made until 2013. Most efforts focused on fostering firms' internal flexibility by giving priority to firm-level agreements, easing opt-outs from sectoral or regional agreements, and facilitating unilateral modifications to wages and other working conditions. The reform measures can be divided into three broad categories: (i) measures to enhance firms' flexibility; (ii) measures to reduce duality; and (iii) measures to improve active labor market policies, with some measures targeting several goals. It is worth noting that some of the policies were only applied to new contracts or for future years of service on existing contracts. The summary of measures below focuses on those reform aspects that were more likely to impact on social inclusion.

- *Firms' flexibility:* Firm-level agreements were prioritized over sector or region-level agreements in collective bargaining framework; opt-outs from collective agreements was eased; the period of ultra-activity of collective agreements was reduced; part-time contracts were made more flexible, including allowing overtime/complementary hours; the use of fair dismissals based on objective business criteria was extended and firm-level agreements on dismissals facilitated; requirement for administrative authorization of collective dismissals was eliminated; training requirement for dismissed workers was introduced; and a tax was imposed on profitable employers that implemented collective dismissals.

- *Duality:* On top of the measures to increase flexibility mentioned above, which aimed to offer alternatives to temporary-job shedding, the cost for unfair dismissals of permanent workers was reduced from 45 to 33 days' wages per year of seniority up to 24 months (down from 42 months); a special contract for small firms was introduced to incentivize hiring of permanent workers, particularly of unemployed youth; and the 2-year limit for extension of temporary contracts was re-instated.

- *Active labor market policies:* Training and apprenticeship contracts were introduced, providing firms with incentives to train and retrain uneducated youth; and a new activation program for the long-term unemployed was launched. A greater role was given to private agencies in training and job placement. A system of evaluation and results-oriented allocation of funds was introduced in 2013.

III.   Stylized Facts

After the global financial crisis, real GDP per capita in Spain was down by 10 percent in 2013 compared to 2008 and employment had dropped on average 3.5 percent annually during 2009–13 (Figure 1). The overall unemployment rate jumped to 27 percent during 2013, while the youth unemployment rate surpassed 55 percent. Against this background, the Gini coefficient increased by about 2 percentage points, and the share of population at risk of poverty rose by about 4 percentage points by 2013 (Figure 2). In addition, in-work poverty rate, while remaining largely stable throughout the recession years, jumped by 2 percentage

Spain: Changes in Real Monthly and Hourly Wages between 2006 and 2014, by Earning Percentile
(Percent)

Source: Bank of Spain.

points in 2014. According to Anghel et al. (2018), real monthly wage earnings of workers in the first and second lowest deciles adjusted most sharply downwards during the crisis, contributing to a significant increase in wage income inequality. These shifts in monthly wage earnings were linked predominantly to the drops in jobs and hours worked, as the distribution of real hourly wages was relatively stable during these years (text chart).

Figure 1. Selected Absolute Measures of Living Standards
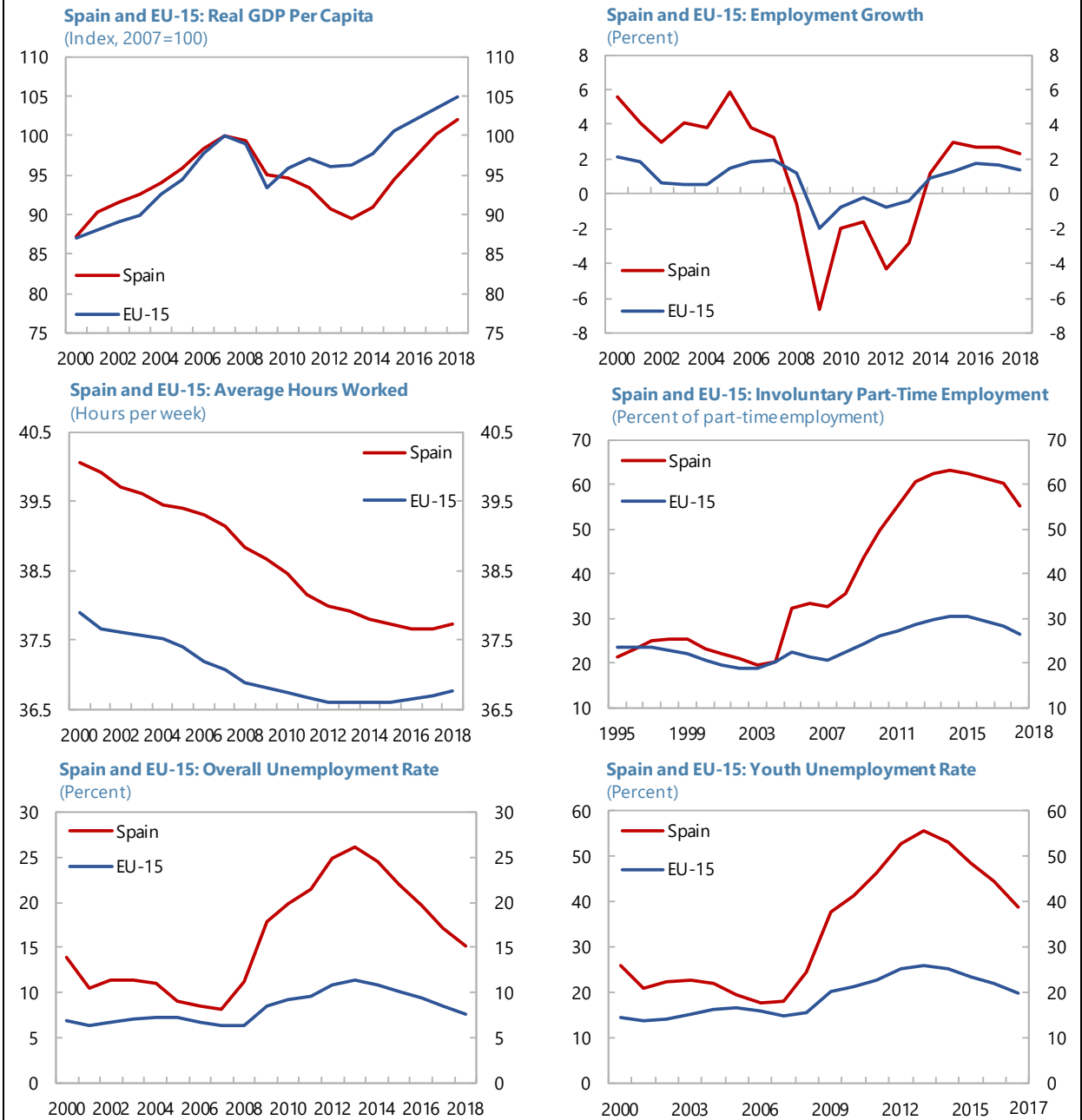
Sources: Eurostat, Haver Analytics, OECD, World Economic Outlook, and IMF staff calculations.

EU-15 includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

Figure 2. Selected Indicators of Relative Measures of Social Inclusion

Spain and EU-15: Gini Coefficient

Spain and EU-15: The Ratio of top 20 Percent Earners to Bottom 20 percent

Spain and EU-15: At Risk-of-Poverty Rate
(Percent of population)

Spain: At-Risk-of-Poverty Rate
(Percent of total)

Spain and EU-15: Overall In-Work Poverty
(Percent of employment)

Spain and EU-15: Youth In-Work Poverty
(Percent of employment)
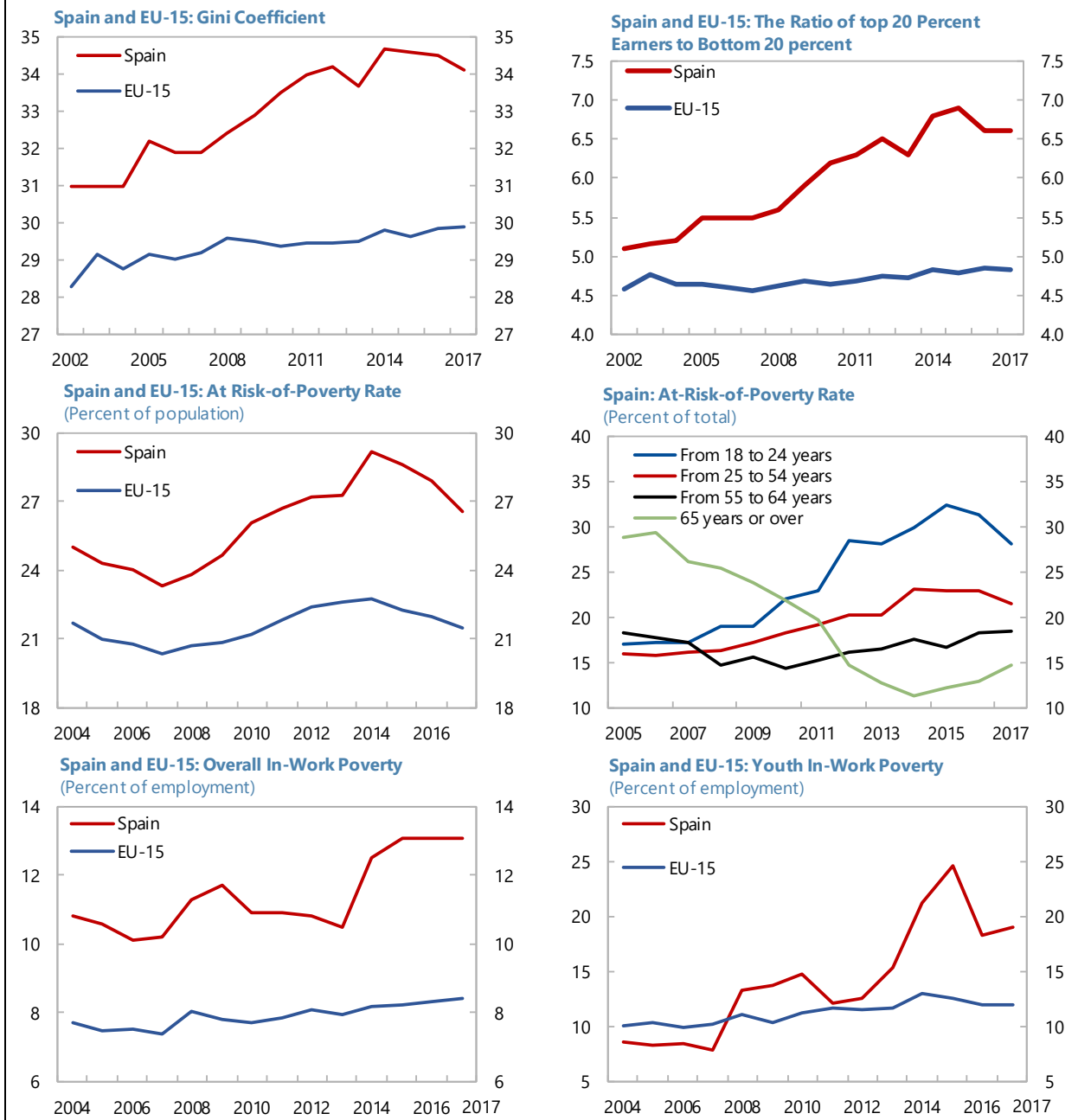
Sources: Bank of Spain, Eurostat, World Economic Outlook, and IMF staff calculations.

EU-15 includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

In 2018—five years into the recovery—real GDP per capita exceeded its 2007 level by 2 percent. The turnaround was accompanied by strong job creation with employment growth averaging about 2.5 percent during 2014–18. The growth in GDP per capita was largely driven by greater labor utilization, while the contribution from labor productivity growth was marginal (text chart). The unemployment rate in 2018 was down by more than 10 percentage points from its 2013

pick, though still far above the EU-15 average (Figure 1).[8] Youth and long-term unemployment rates also recorded significant improvements. The Gini coefficient and poverty indicators also improved after 2014, although at more modest rates (Figure 2).

Exceptions to these improvements are involuntary part-time employment, which despite some decline is still substantially above the pre-crisis rate, and in-work poverty, which continues to be elevated.[9] In

Spain: GDP Per Capita Growth Decomposition
(Percentage points)

- Labor Utilization growth
- Labor Productivity growth
- ◇ Real GDP per capita growth

Sources: Eurostat; World Economic Outlook; and IMF staff calculations.

addition, Spain's average hours worked maintained its declining trend after the crisis and during the recovery phase. In contrast, EU-15 average hours worked largely stopped falling since 2012 and started to rise in 2015. These exceptions could reflect in part the structural change in the economy and the collapse of the unsustainable construction boom. In 2018, the share of construction in employment was down by more than 6 percentage points compared to 2008. Most of the employment was replaced by jobs in the services sector, particularly hospitality, education, and health and social services (see IMF, 2017b). The average rate of part-time employment in hospitality, education, and health and social services is more than four times the rate of part-time employment in construction. Thus, out of three percentage points increase in the rate of part-time employment during 2008–18, one percentage point was due to the structural change in the economy (Table 1).

Table 1. Spain: Employment Composition and the Share of Part-Time Employment						
(Percent)						
	The Share of Employment in Total			The Share of Part-Time in Employment		
	2008	2018	Difference	2008	2018	Difference
Total	100.0	100.0	0.0	11.8	14.6	2.9
Agriculture	4.0	4.2	0.2	9.9	6.2	-3.7
Manufacturing	14.6	12.6	-1.9	4.2	5.1	0.9
Construction	12.0	6.3	-5.7	2.8	4.5	1.7
Services	68.1	75.5	7.3	15.2	17.7	2.5
Wholesale and retail trade	15.7	15.6	-0.2	13.0	16.0	3.0
Hospitality	7.1	8.8	1.7	17.6	24.8	7.2
Education	5.7	6.8	1.2	18.7	19.4	0.7
Health and social services activities	6.3	8.4	2.1	11.4	15.7	4.4
Other Services	33.3	35.9	2.6	15.9	16.9	1.0
Sources: Instituto Nacional de Estadística and IMF staff calculation.						

---

[8] EU-15 refers to long-standing European Union countries, which include: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
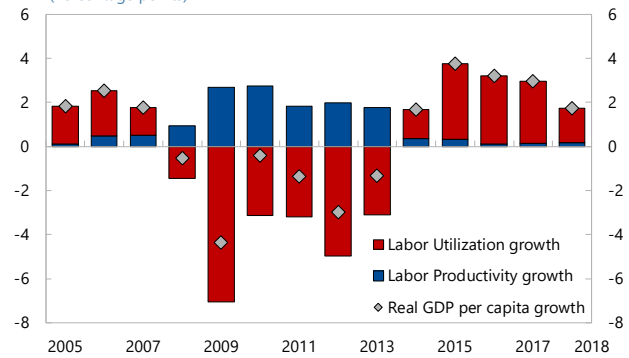
[9] In-work poverty rate refers to the percentage of persons in the total population who declared to be at work (employed or self-employed) with an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 percent of the national median equivalized disposable income.

IV. METHODOLOGY AND DATA

Disentangling empirically the impact of structural reforms is difficult. A key challenge is the identification of appropriate counterfactuals—the evolution of the variable of interest in the absence of reforms. Macro analysis usually rely on cross-country data to construct counterfactuals. In these settings, identifying counterfactuals becomes even more challenging if the behavior of the country of interest exhibits a considerable departure from the patterns observed in peer countries, as is the case of Spain. In many dimensions of labor market and income inequality that we are interested in, outcomes for Spain usually fall outside the 25th to 75th percentile range of the distribution for advanced European countries (Annex I, Figure I.1).

Attempting to address that challenge, we combine a panel regression analysis with the synthetic control method.[10] To the best of our knowledge, this two-step approach is novel in the literature. In the first stage, panel regressions are used to isolate the impact of common shocks, country-specific fixed effects, and country-specific trend. This allows us to extract a time-variant country-specific component from the data, which captures policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. By eliminating country-specific differences between countries, we expand the pool of countries that could potentially serve as controls. The panel regression analysis can be represented by the following equations:

$$y_{it} = a + \mu_i + \delta_t + v_{it} \qquad (1)$$

$$v_{it} = \beta_i * T12_t + \varepsilon_{it} \qquad (2)$$

Where y_{it} is a variable of interest for country i at time t; a is a scalar; μ_i is a country-specific fixed effect, which captures time-invariant structural differences between countries; δ_t is a time effect that captures common shocks, such as the global financial crisis; and v_{it} is the residual of the regression. The residual from equation 1, which is cleaned from country-specific and common time effects, is then regressed against a linear time trend, $T12$, as shown in equation 2. Importantly, the trend is fitted up to the reform date, which is 2012, and then the estimated trend is extended for the post-reform period. This aims to capture ongoing structural developments predating the reforms, which were not altered by the reforms. As a result, for each country we obtain ε_{it}, which is a time-variant country-specific component.

In the second stage, the synthetic control method is applied to the time-variant country-specific component ε_{it} obtained from the panel regression analysis to construct counterfactuals. Thus, we use a generalized difference-in-difference estimation to assess the impact of labor market reforms in Spain. The synthetic control method constructs counterfactuals as a weighted average of all available control units (i.e., countries) by minimizing the difference between pre-reform outcomes and covariates of the synthetic control unit and the outcomes and covariates of the treated unit (for more details see Abadie et al., 2010 and Annex II). The method explicitly provides the relative contribution of each control unit to the constructed counterfactual. This

---

[10] While the synthetic control method more commonly is used in microeconometric analysis, it has been also used in macroeconometric studies to assess the impact of structural reforms (for example, Adhikari et al., 2016).

approach also substantially reduces any potential endogeneity problem caused by omitted variables.

In addition, through placebo experiments, the synthetic control method allows to draw a valid inference in the presence of correlated errors. The placebo experiment, which iteratively applies the synthetic control method to all countries in our control group that have not implemented reforms, provides us with the distribution of the estimated impact of reforms for countries that have not implemented reforms. Thus, it allows us to assess whether the effect estimated by the synthetic control method for a country that implemented reforms is large relative to the effect estimated for a country chosen at random. In the results, we presented the outcomes of placebo experiments only for countries that have a pre-reform root mean squared predictive error not more than twice as large as that of Spain to ensure a relatively good fit of synthetic control measures for the pre-2012 period.

The approach adopted in the paper provides several benefits, though some limitations remain. In terms of benefits, it identifies the weights of control units based on the similarities of shocks that countries have experienced and minimizes the impact of common shocks. The approach also expands the potential pool of control units for outlier countries that otherwise would not have enough control units with similar characteristics to construct an appropriate counterfactual.[11] However, the methodology used cannot control for other idiosyncratic shocks (for example, other structural reforms) that may have occurred around the labor market reform date and it does not address the endogeneity bias caused by reverse causality. Also, some control units may have undertaken minor reforms that could have notable impact on the variables of interest. This limitation, however, suggests that the estimated reform impact would be biased downward. In addition, the decomposition exercise could be sensitive to our choice of a linear trend; and because of the potentially heterogeneous responses of countries to common shocks (for example, ECB monetary stimulus or oil price shocks), some residual components of common shocks might be present in the time-variant country-specific component. That said, a good fit of synthetic control units for the pre-reform period should provide some assurance that a country's heterogeneous response to common shocks does not have a substantial influence on the estimated reform impact.

The cross-country panel dataset covers the period between around 2000 and either 2017 or 2018, depending on data availability. The outcome variables of interest include the Gini coefficient, the income ratio of top 20 percent earners to the bottom 20 percent, employment growth, youth unemployment rate, involuntary part-time employment, average hours worked, risk of poverty, and in-work poverty. The vector of covariates used in the synthetic control approach are selected following the literature.[12] A comparable control group is selected from EU

---

[11] An exception is the share of temporary employment, which in Spain is not only very high but also very volatile. Therefore, even after the adjustments done to the data, Spain remains an outlier among European countries limiting the potential pool of appropriate control units to construct a counterfactual.

[12] The covariates vary across models depending on the outcome variable of interest. They include: employment growth, overall and youth unemployment rate, wage growth, old age dependency ratio, share of population by

and non-EU OECD advanced countries based on data availability.[13] Countries that have implemented major labor market reforms have been excluded from the synthetic-control-method sample. Also, we dropped any country from the control group that has missing values in the outcome variables for the period considered in the sample. We identified reform episodes based on two criteria: a country has implemented major labor market reforms according to the narrative database of reforms developed by Duval et al. (2018), and in the five years following the reform the country experienced a substantial improvement in the wage flexibility index from the Global Competitiveness Report (GCR).[14,15] We limited our reform episodes to post-crisis reforms to allow about ten pre-reform years to calibrate the synthetic control and five post-reform years to assess the impact of reforms. The primary data sources include Eurostat, Haver Analytics, and OECD (see Annex III).

V. RESULTS

The analysis provides evidence that the 2012 reforms lowered income inequality and boosted employment creation with little impact on the overall risk of poverty. However, the reforms appear to have deteriorated the outcomes for involuntary part-time, average hours worked, and in-work poverty.[16]

- *Employment—extensive margin:* We find supporting evidence of a positive impact of the labor market reforms on job creation. Spain's time-variant country-specific component of employment growth on average was close to zero before 2012 but increased substantially after the reforms (Figure 3, first panel). The measure of synthetic control closely mimics the behavior of the actual indicator during the pre-reform period, making it a good counterfactual. While after 2012 the measure of synthetic control also increases somewhat, its increase is much smaller than the actual outcome for Spain, resulting in a substantial gap between Spain's actual and synthetic measure for post-reform period (Figure 3, first panel).

---

education, part-time employment, average hours worked, trade union density, GDP per capita, real GDP growth, and social spending to GDP ratio. See Annex III for more details.

[13] Countries used in the analysis are Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Latvia, Luxembourg, Netherlands, Norway, Portugal, Slovakia, Slovenia, Sweden, Switzerland, and the United Kingdom.

[14] The choice of the wage flexibility index from the GCR in addition to the narrative database of reforms is aimed at identifying reform episodes that were not only adopted de jure but also largely de facto implemented. The narrative database of reforms identifies reform episodes based on the de jure adoption of reforms but not necessarily its de facto implementation. The wage flexibility index from GCR, despite being a perception-based indicator, can still give an indication of whether the adopted reform was implemented or its implementation was delayed/incomplete.

[15] Countries in the control group often include all the countries listed in footnote 13 excluding the Czech Republic and Portugal, which also implemented major labor market reforms after the crisis.

[16] Applying the synthetic control method to Spanish data without adjustments, as anticipated, does not produce reasonable counterfactuals for most of the variables of interest (Annex I, Figure I.2). A notable exception is "average hours worked", for which the results based on raw data confirm the baseline results reported below.
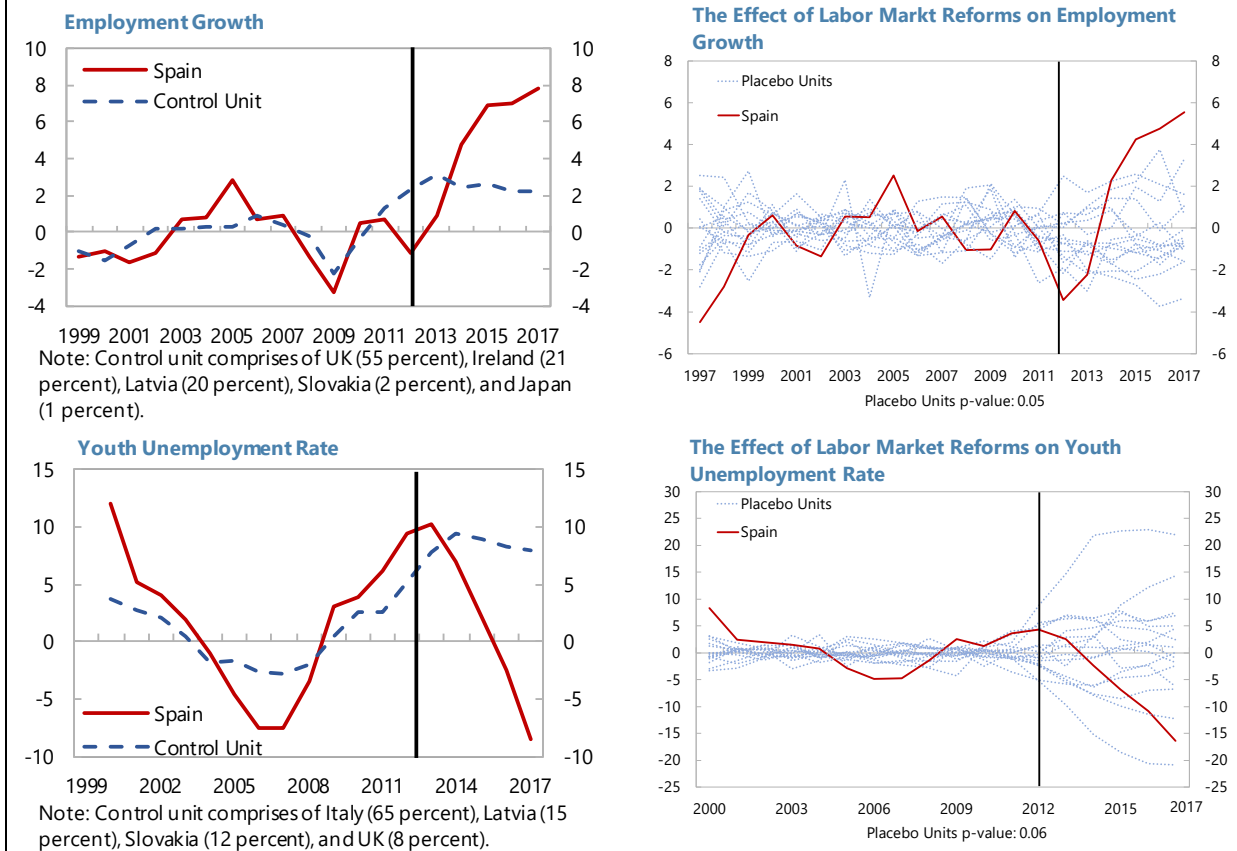
This suggest a significant positive impact of the Spanish labor market reforms on employment growth, which is consistent with other studies (Doménech et al., 2018). The placebo experiment confirms that the estimated impact is statistically significant at the 5 percent level (Figure 3, second panel).[17]

A similar picture emerges in the case of the youth unemployment rate, suggesting that this group, which is more vulnerable to downturns, has benefited from the reforms as well. Although the goodness of fit of the synthetic measure for the youth unemployment rate for the pre-reform period is not as good as it is for other indicators, it still tracks reasonably well the movement of the actual outcome before 2012, while both measures diverge substantially from each other afterwards (Figure 3, third panel). A placebo experiment shows that the estimated impact of reforms on youth unemployment rate for Spain is unusually large five years after the reforms compared with the placebo estimates for other countries (Figure 3, fourth panel). A robustness check focusing on the overall unemployment rate yields broadly similar results (Annex IV, Figure IV.1).

- ***Employment—intensive margin:*** Our results indicate some negative, though not always statistically significant, impact of labor market reforms on indicators linked to the intensive margin of employment. The results for the impact of labor market reforms on average hours worked show a significant divergence between Spain's actual and synthetic measure (Figure 4, first panel). This impact is statistically significant as the p-value associated with the placebo experiment is close to zero (Figure 4, second panel). However, the large magnitude of the estimated impact is mainly driven by a considerable increase in the average hours worked for the control unit. To confirm this finding, we conducted several robustness checks: (i) Spain's actual outcome was compared with the Euro Area average; (ii) the synthetic control method was estimated after excluding Italy—the country with the largest weight in the control unit—from the sample; (iii) the synthetic control method was estimated after excluding Ireland—the country with the second largest weight in the control unit—from the sample; and (iv) the synthetic control method was estimated after excluding both Italy and Ireland from the sample. The results from the robustness analysis confirm our baseline finding by indicating a substantial negative deviation of Spain's average hours worked after 2012 (Annex IV, Figure IV.2).

---

[17] Given the relatively small number of placebo countries, the statistical significance of the results should be interpreted with caution. Note also that the weights for each country in the synthetic control groups are reported in Figures 3–6.

Figure 3. Results: Employment Growth and Youth Unemployment Rate
(Time-variant country-specific component, percentage points)1/

Employment Growth

Note: Control unit comprises of UK (55 percent), Ireland (21 percent), Latvia (20 percent), Slovakia (2 percent), and Japan (1 percent).

The Effect of Labor Markt Reforms on Employment Growth

Placebo Units p-value: 0.05

Youth Unemployment Rate

Note: Control unit comprises of Italy (65 percent), Latvia (15 percent), Slovakia (12 percent), and UK (8 percent).

The Effect of Labor Market Reforms on Youth Unemployment Rate

Placebo Units p-value: 0.06

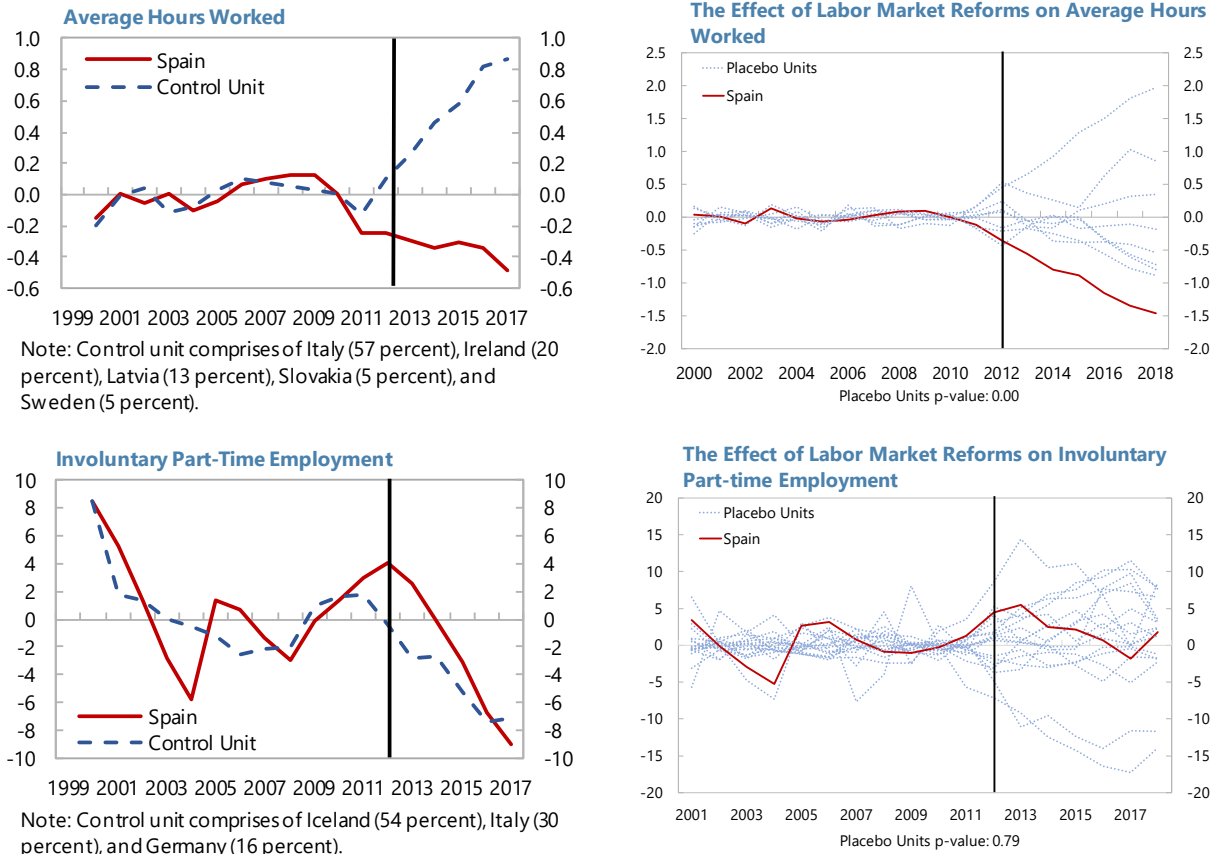*Sources:* Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.
1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.

While the time-variant country-specific component of involuntary part-time employment shows a declining trend after 2012, it remains above its synthetic measure, suggesting that labor market reforms might have increased the share of involuntary part-time employment in Spain (Figure 4, third panel). However, the placebo experiment suggests that this impact is not statistically significant (Figure 4, fourth panel). In addition, this result is not robust to the selection of covariates.[18] The 2012 labor market reforms that made part-time contracts more flexible and introduced the possibility of complementary hours for part-time contracts may have possibly increased the attractiveness of part-time contracts for employers. The changes enable employers to easily increase working hours under the same contract conditions in response to increased demand, while in the case of full-time contracts this could entail additional costs. Moreover, the structural change that the Spanish economy experienced after the crisis—with a reduction of the

---

[18] The results for other indicators are largely robust to the selection of covariates, which are used to identify the weights of synthetic control measures.

share of the construction sector in favor of services—might have played an important role as well.

Figure 4. Results: Average Hours Worked and Involuntary Part-Time Employment
(Time-variant country-specific component, percentage points) 1/

Average Hours Worked

Note: Control unit comprises of Italy (57 percent), Ireland (20 percent), Latvia (13 percent), Slovakia (5 percent), and Sweden (5 percent).

The Effect of Labor Market Reforms on Average Hours Worked

Placebo Units p-value: 0.00

Involuntary Part-Time Employment

Note: Control unit comprises of Iceland (54 percent), Italy (30 percent), and Germany (16 percent).

The Effect of Labor Market Reforms on Involuntary Part-time Employment
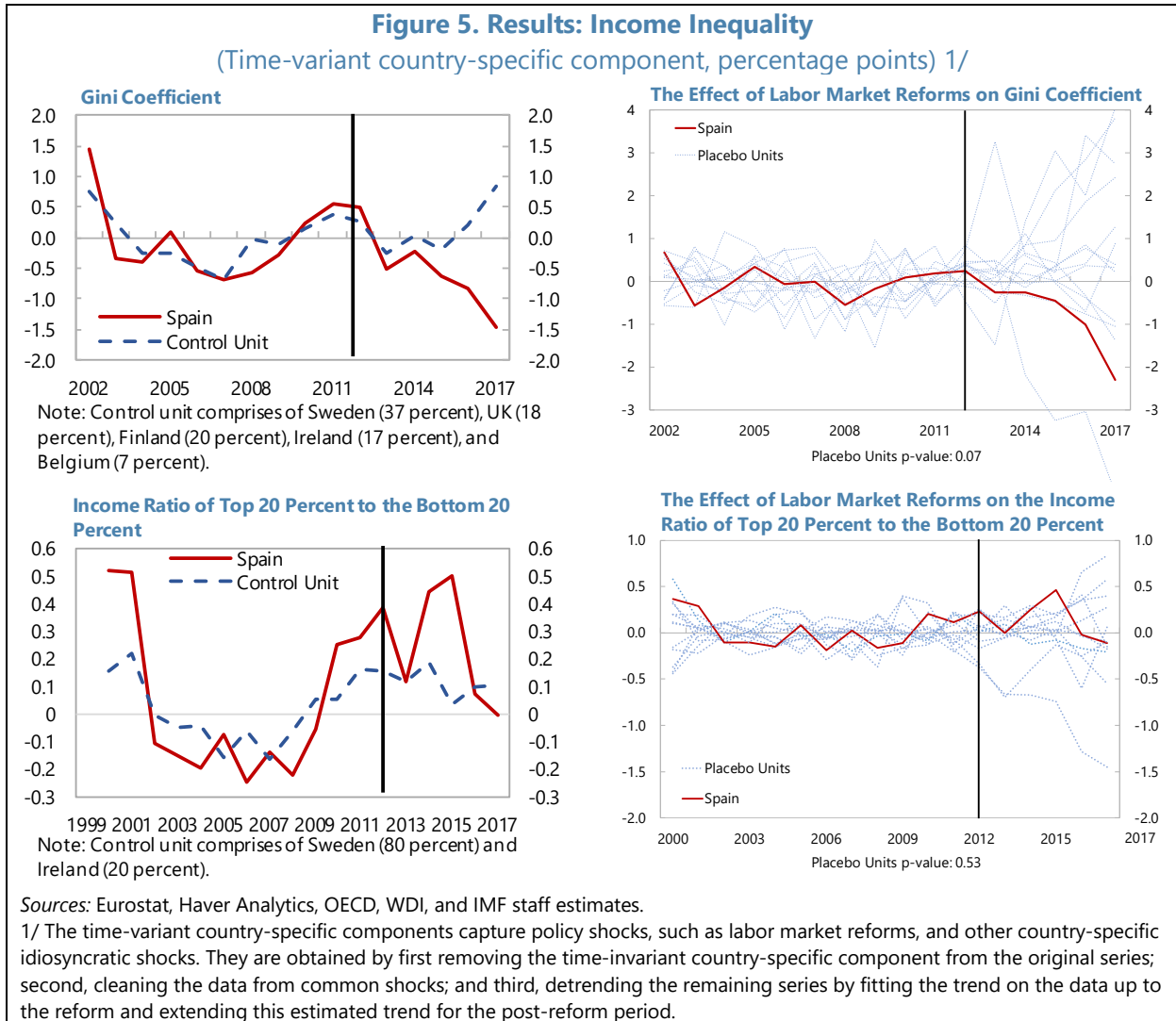
Placebo Units p-value: 0.79

Sources: Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.
1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.

- *Income inequality:* The analysis suggests a reform-induced improvement in income equality. Spain's time-variant country-specific component of the Gini coefficient exhibits a substantial decline since 2012 (Figure 5, first panel). The synthetic control measure of the time-variant country-specific component of the Gini coefficient closely tracks the actual evolution of that indicator prior to 2012, while they diverge significantly after that year. The estimated impact of labor market reforms on the Gini coefficient—the difference between Spain's actual outcome and the measure of synthetic control—is substantial. The results of the placebo experiment suggest that the estimated negative impact of labor market reforms on the Gini coefficient for Spain is statistically significant at the 10 percent level (Figure 5, second panel). The estimated positive distributional effect of the labor market reforms could

possibly be explained by the positive impact of the labor market reforms on labor utilization (as measured by job creation), which benefits more the lower half of the income distribution (Causa et al., 2016).

Figure 5. Results: Income Inequality
(Time-variant country-specific component, percentage points) 1/

Gini Coefficient

Note: Control unit comprises of Sweden (37 percent), UK (18 percent), Finland (20 percent), Ireland (17 percent), and Belgium (7 percent).

The Effect of Labor Market Reforms on Gini Coefficient

Placebo Units p-value: 0.07

Income Ratio of Top 20 Percent to the Bottom 20 Percent

Note: Control unit comprises of Sweden (80 percent) and Ireland (20 percent).

The Effect of Labor Market Reforms on the Income Ratio of Top 20 Percent to the Bottom 20 Percent

Placebo Units p-value: 0.53

Sources: Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.
1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.
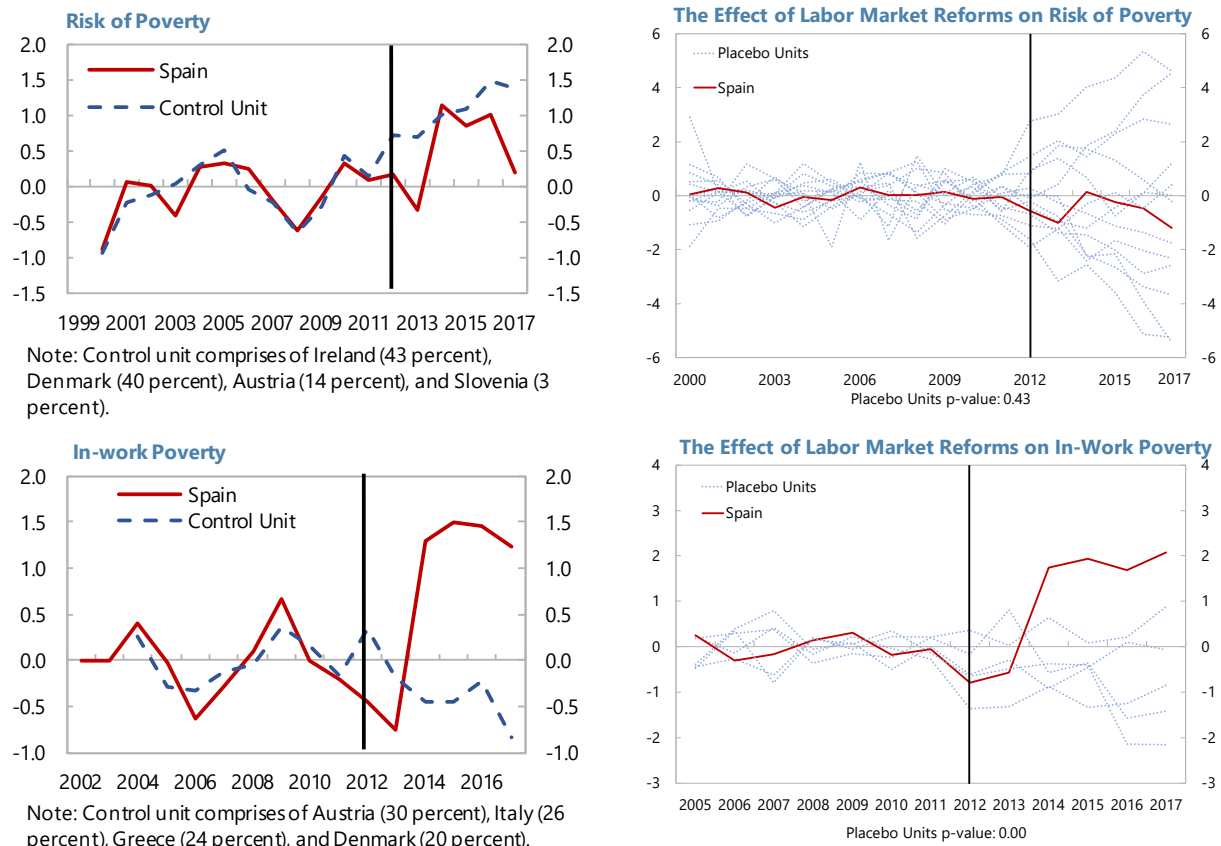
As an alternative measure of income inequality, we also conducted a similar analysis on the income ratio of the top 20 percent earners to the bottom 20 percent (Figure 5, third and fourth panels). However, the results do not suggest any systematic impact of the reforms on this indicator.

- ***Risk of poverty:*** Our analysis provides evidence that the overall risk of poverty rate has not deteriorated due to the reforms. The measure of synthetic control for population at risk of poverty has very good fit prior to the reforms (Figure 6, first panel). While this fit deteriorates somewhat after the reform, we do not observe any systematic divergence between actual and synthetic measure of the population at risk of poverty. If anything, the actual outcome for Spain tends to be below the measure of the synthetic control. However, the placebo analysis suggests that the deviation of Spain's actual time-variant country-specific component for the population at risk of poverty from its synthetic control measure is not statistically different from the results obtained for other countries (Figure 6, second panel).

- ***In-work poverty:*** In the case of in-work poverty, however, we observe considerable divergence between the actual outcome of the time-invariant country-specific component and its synthetic control measure after 2012 (Figure 6, third and fourth panels). This suggests that the 2012 labor market reforms might have contributed to an increase of the in-work poverty rate. This could partly reflect the impact of reforms on involuntary part-time employment and average hours worked.[19] In addition, as previously mentioned, the structural change in the economy towards sectors with higher demand for part-time employment could have played an important role. However, the results for in-work poverty should be interpreted with even more care, because the data available for the pre-reform period is shorter than for the other outcome variables, which could undermine the accuracy of our results.

---

[19] In addition, the 2012 reforms did not significantly dampen the high degree of duality in the Spanish labor market, which in general contributes to lower working hours.

Figure 6. Results: Population at Risk of Poverty and In-Work Poverty Rate
(Time-variant country-specific component, percentage points) 1/

Note: Control unit comprises of Ireland (43 percent), Denmark (40 percent), Austria (14 percent), and Slovenia (3 percent).

Note: Control unit comprises of Austria (30 percent), Italy (26 percent), Greece (24 percent), and Denmark (20 percent).

Sources: Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.
1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.

VI. CONCLUSIONS

In this paper, we aim to disentangle the impact of Spain's 2012 labor reforms on absolute and relative measures of leaving standards using a two-stage approach. In the first stage, we adjust the original data for country-specific and comment effects in a cross-country-panel regression, and then remove the pre-reform trend to obtain a time-variant country-specific component that captures only policy and other idiosyncratic shocks. In the second stage, using time-variant country-specific components, we construct synthetic control measures as counterfactuals to assess the impact of the 2012 reforms. The key findings are:
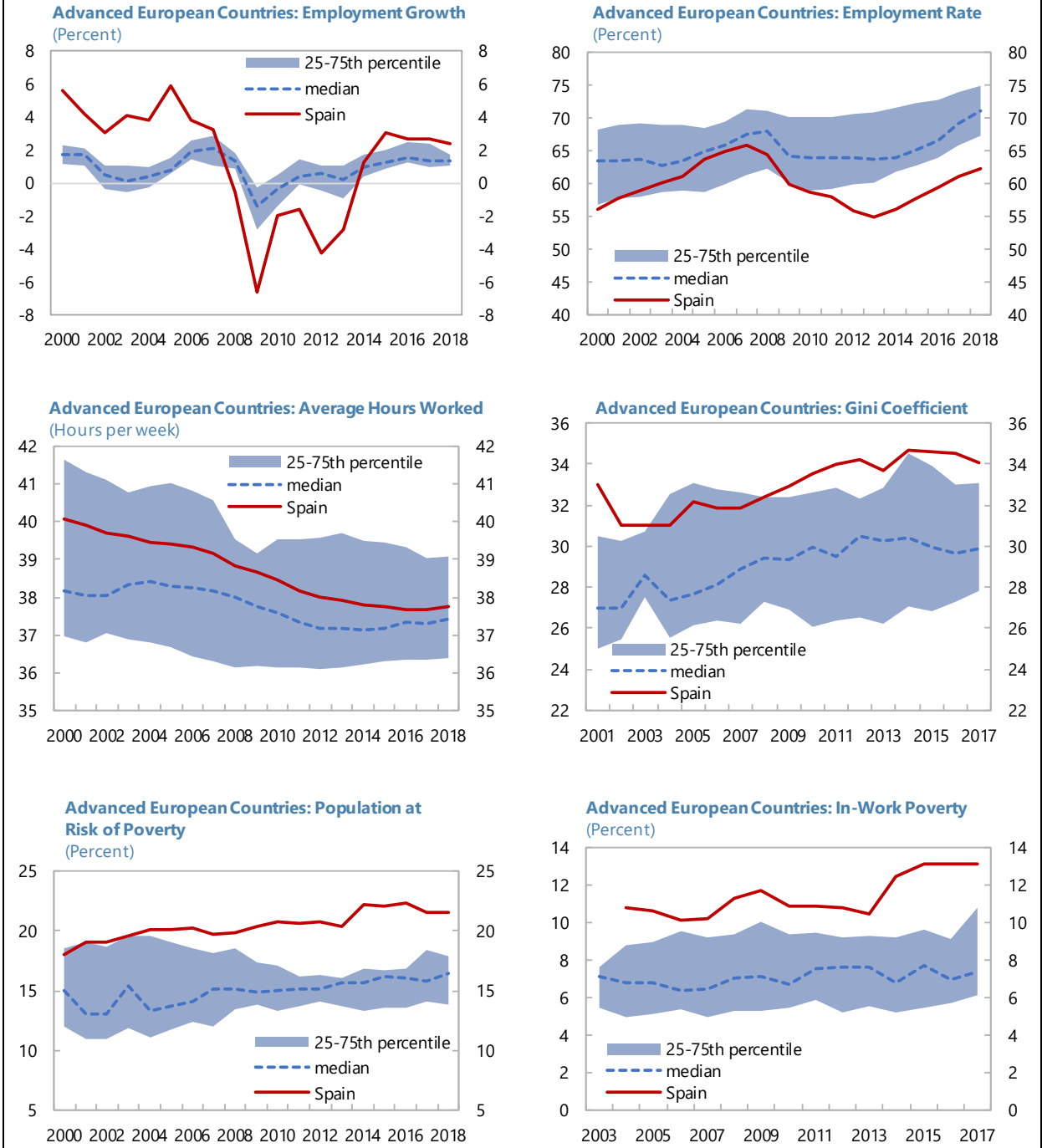
- The 2012 reforms improved employment outcomes, including for youth. Post reform growth of employment was systematically higher and youth unemployment lower compared with a possible evolution of employment growth and youth unemployment in the absence of reforms.

- However, the impact of reforms appears to be negative on the intensive margin of employment. The findings suggest that the reforms contributed to a reduction in average hours worked and an increase in involuntary part-time employment (though the results for the latter are not conclusive as they are statistically insignificant). Enhanced flexibility of part-time contracts, owing to the reforms, could possibly be one factor that drive these results. Another factor is the structural shift in the economy from construction, that largely employs full-time workers, towards services, where about 18 percent of employees are on part-time contracts.

- The strong job creation, helped by the reforms, has improved income distribution after 2012. Our findings provide supporting evidence that the 2012 labor reforms contributed to a significant reduction in the Gini coefficient five years after the reforms. Our results are less conclusive on the impact of the reforms on the income ratio of the top 20 percent earners to the bottom 20 percent.

- We did not find any systematic impact of the 2012 labor reforms on the overall rate of population at risk of poverty. However, our analysis suggests a deterioration in the rate of in-work poverty following the reforms. This could be a consequence of the increased share of involuntary part-time employment and lower working hours as the distribution of hourly wages across income deciles did not change much over time.

The analysis in this paper does not shed light on the role of specific reforms or channels behind our findings. However, the results from other studies on the impact of the 2012 labor reform suggest that probably the measures aimed at enhancing wage flexibility were mainly at play. Finally, caution is needed when interpreting our results. In particular, because the identified impact of the labor market reforms might still be influenced by other idiosyncratic shocks that happened simultaneously with the reforms, including other structural policies.

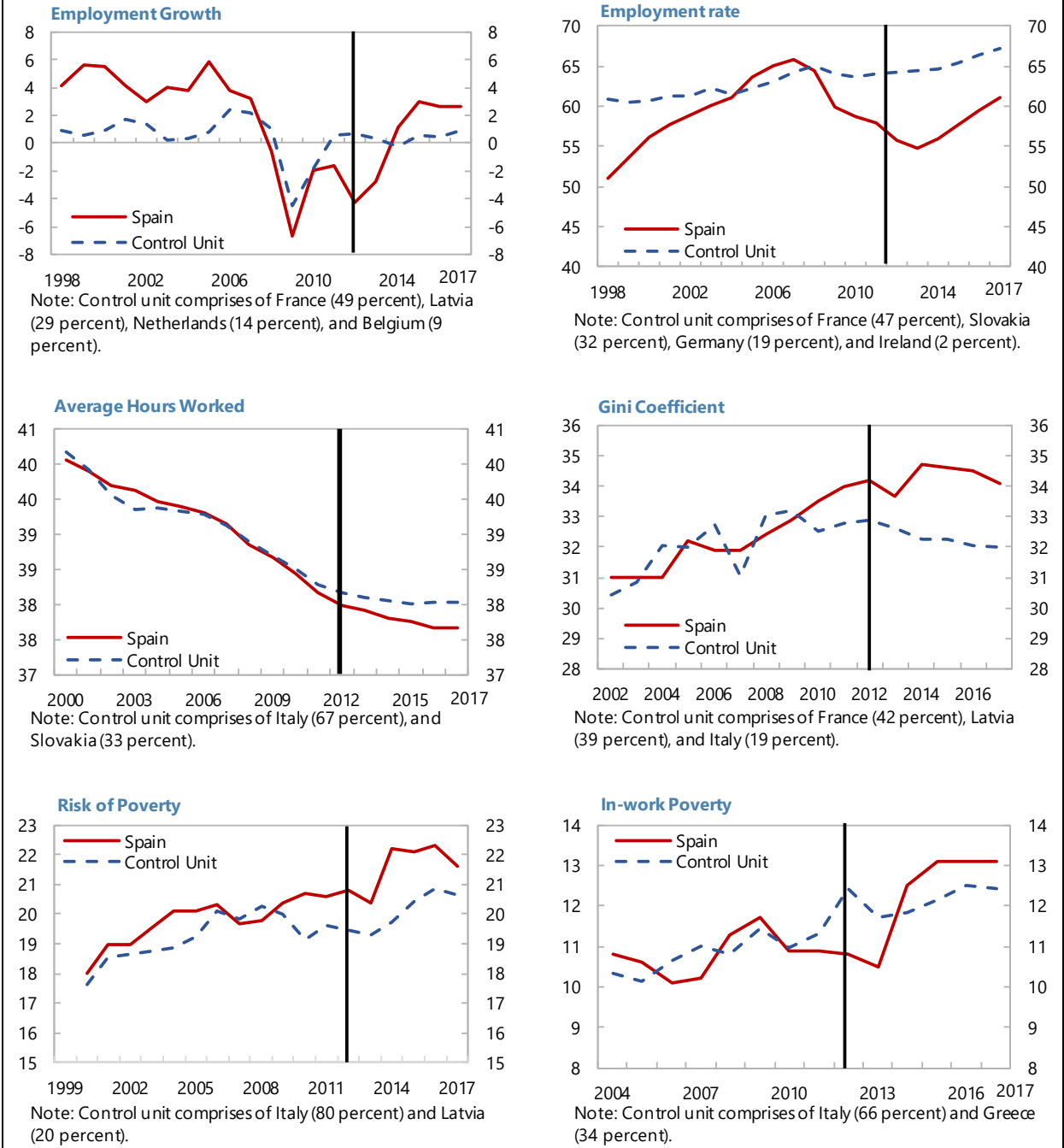**Annex I. Spain's Comparison with Advanced European Countries**

Figure I.1: Spain and Advanced European Countries: Absolute and Relative Measures of Living Standards

Advanced European Countries: Employment Growth
(Percent)

Advanced European Countries: Employment Rate
(Percent)

Advanced European Countries: Average Hours Worked
(Hours per week)

Advanced European Countries: Gini Coefficient

Advanced European Countries: Population at Risk of Poverty
(Percent)

Advanced European Countries: In-Work Poverty
(Percent)

Sources: Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.
Advanced Europe includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Figure I.2: Results of Synthetic Control Analysis Based on Raw Data

Employment Growth

Note: Control unit comprises of France (49 percent), Latvia (29 percent), Netherlands (14 percent), and Belgium (9 percent).

Employment rate

Note: Control unit comprises of France (47 percent), Slovakia (32 percent), Germany (19 percent), and Ireland (2 percent).

Average Hours Worked

Note: Control unit comprises of Italy (67 percent), and Slovakia (33 percent).

Gini Coefficient

Note: Control unit comprises of France (42 percent), Latvia (39 percent), and Italy (19 percent).

Risk of Poverty

Note: Control unit comprises of Italy (80 percent) and Latvia (20 percent).

In-work Poverty

Note: Control unit comprises of Italy (66 percent) and Greece (34 percent).

Sources: Eurostat, Haver Analytics, OECD, WDI, and IMF staff estimates.

Annex II. Synthetic Control Method: Technical Details

Consider *J+1* countries, where only country 1 has implemented structural reforms at time T_0*+1* (i.e., a "treated country"), while the remaining *J* countries act as potential controls. If T_0 is the number of pre-reform periods, with $1 \leq T_0 \leq T$, Y_{it}^{NR} is the outcome variable observed for country i that has not implemented reforms at time t, and Y_{it}^{R} is the outcome variable for country i that has implemented reforms at time t, we can write the following: [20]

$$Y_{it} = \begin{cases} Y_{it}^{NR} & in\ the\ absence\ of\ reforms \\ Y_{it}^{R} \equiv Y_{it}^{NR} + a_{it}D_{it} & in\ the\ presence\ of\ reforms \end{cases}$$

Where $a_{it} = \left(Y_{it}^{R} - Y_{it}^{NR}\right)$ is the effect of the reform for country i at time t and $D_{it} = 1\ if\ t > T_0\ and\ D_{it} = 0\ otherwise$.

For a country that has implemented reforms Y_{it}^{R} is observable, however, Y_{it}^{NR}, which is the outcome variable of the country that implemented reforms in the absence of reforms (counterfactual), is not observable. The following linear factor model is used to estimate the counterfactual:

$$Y_{it}^{NR} = \delta_t + \theta_t Z_i + \varphi_t \mu_i + \varepsilon_{it}$$

Where δ_t is an unknown common factor with constant factor loadings across countries, Z_i is a vector of observed covariates with coefficients θ_t, μ_i is a (F X 1) vector of unknown parameters, φ_t is a (1 X F) vector of unobserved common factors, and ε_{it} are idiosyncratic error terms with zero mean.

A synthetic control, defined as a weighted average of control countries, can be represented by J X 1 vector of weights, $W = \left(w_1, \dots, w_{j+1}\right)'$ such that $w_j \geq 0\ for\ j = 2, \dots, J+1\ and\ w_2 + \dots + w_{j+1} = 1$. The potential synthetic control unit for the outcome variable is given by:

$$\sum_{j=2}^{j+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{j+1} w_j Z_j + \varphi_t \sum_{j=2}^{j+1} w_j \mu_i + \sum_{j=2}^{j+1} w_j \varepsilon_{it}$$

Now suppose that there are $\left(w_2^*, \dots, w_{j+1}^*\right)'$, such that the following holds.

$$\sum_{j=2}^{j+1} w_j^* Y_{j1} = Y_{11}, \dots, \sum_{j=2}^{j+1} w_j^* Y_{jT_0} = Y_{1T_0}, \sum_{j=2}^{j+1} w_j^* Z_j = Z_1$$

Thus, the treatment effect at time $t \in \{T_0+1, \dots, T\}$ can be estimated by:

$$\widehat{a_{1t}} = Y_{1t} - \sum_{j=2}^{j+1} w_j^* Y_{jt}$$

---

[20] For further technical details see Abadie, Diamond, Hainmueller (2014) and Adhikari et al. (2016).

To find the optimal weights, the synthetic control algorithm chooses W* to minimize the distance

$$\|X_1 - X_0 W\| \, V = \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)}$$

Where, X_1 is a vector of pre-reform characteristics for the country that implemented reforms, X_0 is a matrix that contains the same variable for the countries that have not implemented reforms, and V is a symmetric, positive semidefinite and diagonal matrix such that the mean square prediction error of the outcome variable is minimized for the pre-intervention periods.

Annex III. Main Variables and Data Sources

Table III.1: Data Sources and Definitions

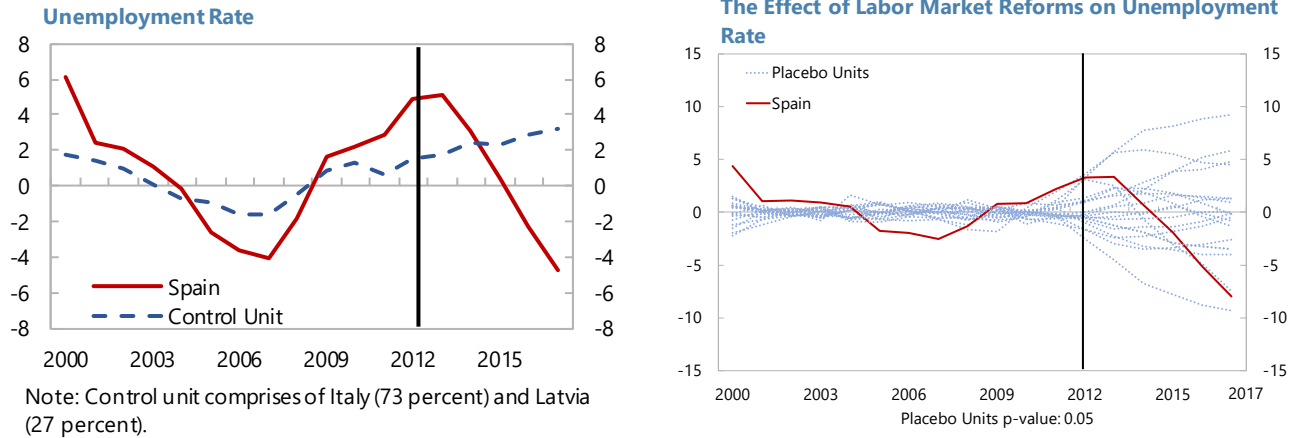| Variables	Sources	Details, if applicable
Employment Growth	OECD	Growth of total employment based on labor force surveys.
Youth Unemployment Rate	OECD	Unemployment rate, aged 15-24.
Involuntary Part-Time Employment	Eurostat	Share of part-time workers who want to have a full-time job but could not find it.
Average Hours Worked	OECD	Average usual weekly hours worked on the main job.
Gini Coefficient	World Bank World Development Indicators	
Ratio of Top 20 Percent Earners to Bottom 20 percent	Eurostat	S80/S20 income quintile share ratio.
At Risk-of-Poverty Rate	Eurostat	Share of people with an equivalised disposable income (after social transfers) below the at-risk-of-poverty threshold, which is set at 60 percent of the national median equivalized disposable income after social transfers.
In-Work Poverty	Eurostat	In-work at-risk of poverty rate, 18 years or over: Share of people who declared to be at work with an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 percent of the national median equivalized disposable income after social transfers.
Real GDP per Capita	WEO	
Overall Unemployment Rate	OECD	
Youth In-Work Poverty	Eurostat	In-work at-risk of poverty rate, 16-24 years. See details for "in-work poverty" above.

Table III.2: Covariates for the Synthetic Control Method

Dependent Variables	Covariates
Gini Coefficient	GDP per capita, old age dependency ratio, rate of underemployment, youth unemployment rate, employment growth, share of population with secondary education, part-time employment, trade union density, social spending to GDP ratio,
Ratio of Top 20 Percent Earners to Bottom 20 percent	GDP per capita, old age dependency ratio, rate of underemployment, youth unemployment rate, employment growth, share of population with secondary education, part-time employment, trade union density, social spending to GDP ratio,
Employment Growth	GDP per capita, GDP growth, wage growth
At Risk-of-Poverty Rate	GDP per capita, rate of underemployment, average hours worked, employment growth, share of population with primary education, part-time employment
In-Work Poverty	GDP per capita, rate of underemployment, average hours worked, employment growth, share of population with primary education, part-time employment
Overall Unemployment Rate	GDP per capita, GDP growth, wage growth, employment growth, trade union density
Youth Unemployment Rate	GDP per capita, GDP growth, wage growth, employment growth, trade union density
Involuntary Part-Time Employment	GDP per capita, employment growth, trade union density, share of population with primary education, unemployment rate
Average Hours Worked	GDP per capita, old age dependency ratio, unemployment rate, employment growth, share of population with primary education, trade union density

Annex IV. Robustness Analysis

Figure IV.1. Unemployment Rate
### (Time-variant country-specific component, hours per week) 1/

Unemployment Rate

The Effect of Labor Market Reforms on Unemployment Rate

- Spain
- Control Unit

Placebo Units
Spain

Note: Control unit comprises of Italy (73 percent) and Latvia (27 percent).

Placebo Units p-value: 0.05

Sources: Eurostat and IMF staff estimates.

1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.

Figure IV.2: Average Hours Worked
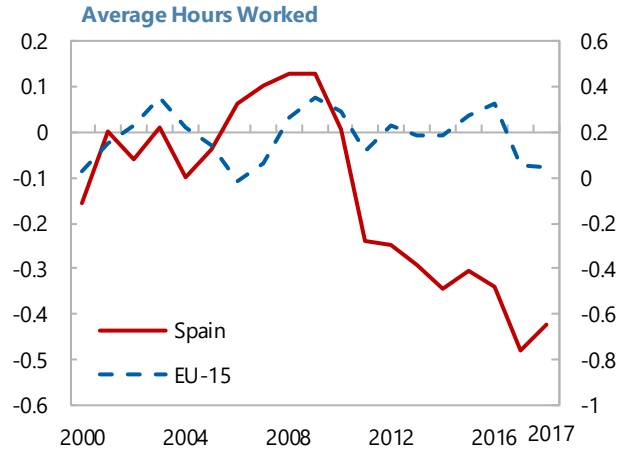### (Time-variant country-specific component, hours per week) 1/

Average Hours Worked (Excluding Italy)
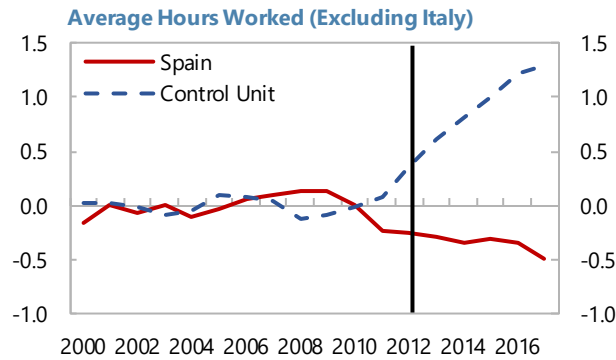
Note: Synthetic Spain comprises of Ireland (44 percent), Netherlands (25 percent), Latvia (18 percent), Sweden (12percent), and France (1 percent).

Average Hours Worked (Excluding Ireland)
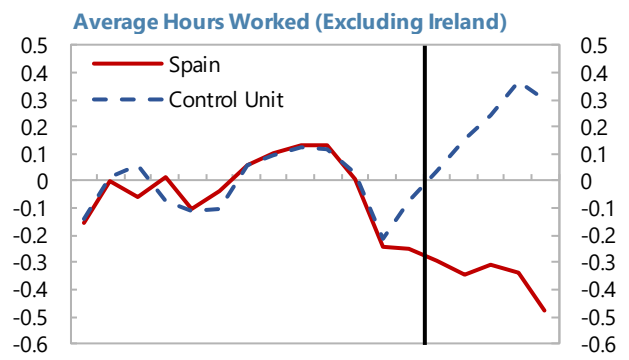
Note: Synthetic Spain comprises of Italy (60 percent), UK (39 percent), and Latvia (1 percent).

Average Hours Worked (Excluding Italy and Ireland)
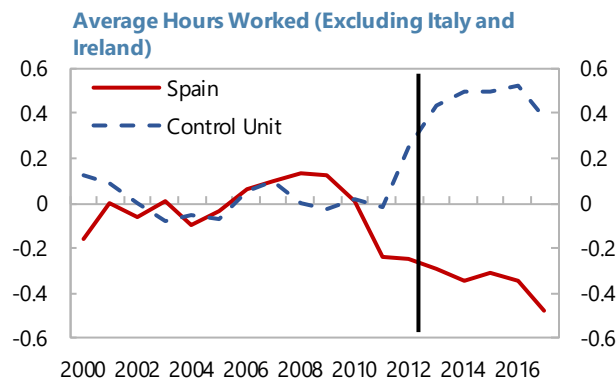
Note: Synthetic Spain comprises of UK (87 percent), Latvia (9 percent), and Denmark (4 percent).

Average Hours Worked

Sources: OECD and IMF staff estimations.

1/ The time-variant country-specific components capture policy shocks, such as labor market reforms, and other country-specific idiosyncratic shocks. They are obtained by first removing the time-invariant country-specific component from the original series; second, cleaning the data from common shocks; and third, detrending the remaining series by fitting the trend on the data up to the reform and extending this estimated trend for the post-reform period.

Note: EU-15 is simple average for the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, and UK.

References

Abadie, A., A. Diamond, and J. Hainmueller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," *Journal of the American Statistical Association*, 105 (490): 493-505.

Abadie, A., A. Diamond, and J. Hainmueller. 2014. "Comparative Politics and the Synthetic Control Method." *American Journal of Political Science*, 59(2): 495-510.

Adhikari, B., Duval, R., Hu, B., and P., Loungani. 2016. "Can Reform Waves Turn the Tide? Some Case Studies Using the Synthetic Control Method," IMF Working Paper, WP/16/171.

Andrés, J., O. Arce, and C. Thomas, 2017, "Structural Reforms in a Debt Overhang," *Journal of Monetary Economics*, 88: 15–34.

Anghel, B., H. Basso, O. Bover, J.M. Casado, L. Hospido, M. Izquierdo, I. Kataryniuk, A. Lacuesta, J.M. Montero, and E. Vozmediano, 2018, "Income, Consumption, and Wealth Inequality in Spain," Bank of Spain, Documentos Ocasionales No. 1806.

Bentolila, S. and M. Jansen, 2016, "El Impacto de la reforma laboral de 2012 sobre la negociación colectiva," www.nadaesgratis.es, 03/17/2016.

Causa, O., M. Hermansen, and N. Ruiz, 2016, "The Distributional Impact of Structural Reforms," OECD Economics Department Working Paper No. 1342.

Doménech, R., J.M. García, and C. Ulloa, 2018, "The Effects of Wage Flexibility on Activity and Employment in Spain," *Journal of Policy Modeling*, 40: 1200–1220.

Duval, R., D. Furceri, and J. Joalles, 2017, "Job Protection Deregulation in Good and Bad Times," IMF Working Paper 17/277.

Duval, R., D. Furceri, Hu, B., Jalle, J., and H., Nguyen, 2018, "A Narrative Database of Major Labor and Product Market Reforms in Advanced Economies," IMF Working Paper 18/19.

García-Perez, I., 2016, "El Efecto de la Reforma Laboral de 2012 Sobre la Dualidad y el Empleo: Cambios en la Contratación y el Despido por Tipo de Contrato," Fedea Policy Papers 2016/06.

International Monetary Fund, 2015, Spain: Selected Issues, IMF Country Report No. 15/233.

___, 2016 World Economic Outlook, April.

___, 2017a, Spain: 2017 Article IV Staff Report.

___, 2017b, Spain: Selected Issues, IMF Country Report No. 17/320.

Jaumotte F. and C. Osorio Buitron, 2015, "Inequality and Labor Market Institutions," IMF Staff Discussion Note No. 15/14, International Monetary Fund.

Kierzenkowski, R., and I. Koske, 2012, "Less Income Inequality and More Growth—Are they Compatible? Part 8, The Drivers of Labour Income Inequality—A Literature Review," OECD Economics Department Working Papers, No. 931.

Nickell, S., L. Nunziata, and W. Ochel, 2005, "Unemployment in the OECD Since the 1960s. What Do We Know?," *The Economic Journal*, 115: 1–27.

OECD, 2014, "The 2012 Labour Market Reform in Spain: A Preliminary Assessment".

Ostry, J., A. Berg, and S. Kothari, 2018, "Growth-Equity Trade-offs in Structural Reforms," IMF Working Paper 18/5.

Roeger, W., J. Varga, J. in 't Veld, and L. Vogel, 2019, "A Model-Based Assessment of the Distributional Impact of Structural Reforms," European Commission Discussion Paper 091.

Salas, J., 2018, "Drivers of Spain's Export Performance and the Role of Labor Market Reforms," IMF Working Paper 18/283.

Tridico, P., 2018, "The Determinants of Income Inequality in OECD Countries," *Cambridge Journal of Economics*, 42, 1009–1042.