

Evaluating the impact of labour market reforms in Greece during 2010-2018

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Nikolaos Vettas

General Director at the Foundation for Industrial and Economic Research (IOBE),
Professor at the Athens University of Economics and Business (AUEB) and Research
Fellow at the Centre for Economic Policy Research (CEPR)



Co-authored with

Georgios Gatopoulos (IOBE, ACG)

Alexandros Louka (IOBE)

Ioannis Polycarpou (AUEB)



HELLENIC OBSERVATORY

Contents

- **Motivation & objectives**
- Stylized facts in the Greek labour market
- Labour market reforms 2010-2018
- Microeconomic approach
- Macroeconomic approach
- Conclusions

Motivation & Objectives

Context

- During three consecutive bail out programs, Greece legislated and implemented various reforms aiming to restore its fiscal sustainability and external competitiveness.
- The most radical structural reforms took place in the labour market.

Objective

- Evaluate the impact of Greek labour market reforms on microeconomic incentives of individuals to enter the formal labour market
- Estimate the impact of labour market reforms on selected macroeconomic and social indicators.

Two complementary approaches

The analysis follows two distinct methodological approaches.

- The first is based on micro-founded simulations at the level of households, through which we evaluate the impact of reforms on microeconomic incentives of individuals in relation to entering the formal labour market.
- The second is based on a top-down macroeconomic perspective at a cross-country level, applying the generalized synthetic control method, which allows to estimate counterfactual paths for selected macroeconomic and social indicators in the absence of labour market reforms.

Contents

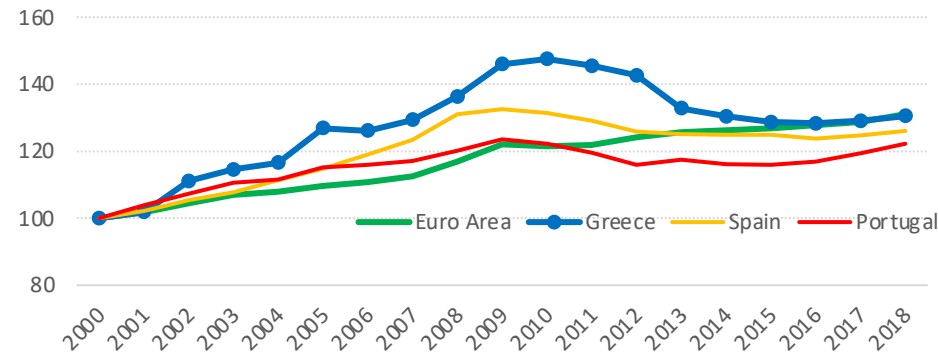
- Motivation & objectives
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- Labour market reforms 2010-2018
- Microeconomic approach
- Macroeconomic approach
- Conclusions

Structural challenges of the Greek labour market

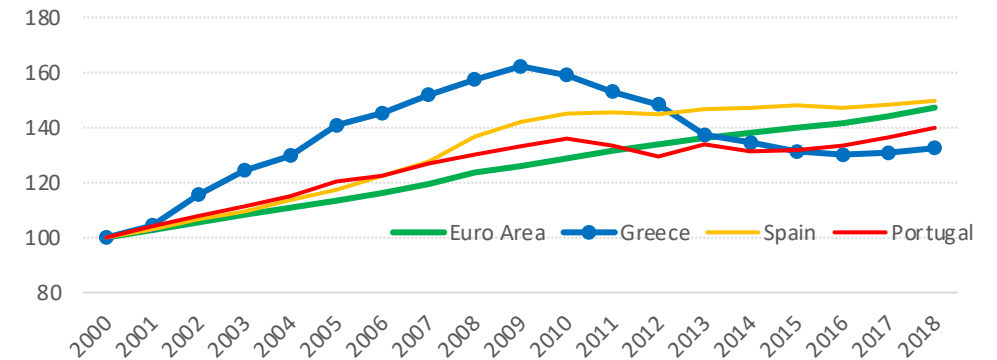
- Low productivity
- ULC increases higher than productivity in the pre-crisis period
- Low participation rate
- High unemployment both before and particularly during and after the crisis
- High tax wedge
- Low use of flexible employment forms in the pre-crisis period
- Skills mismatch and limited Vocational Education & Training outreach
- High informal labour relations
- High share of self-employed

Wages in Greece grew faster than productivity in the pre-crisis period

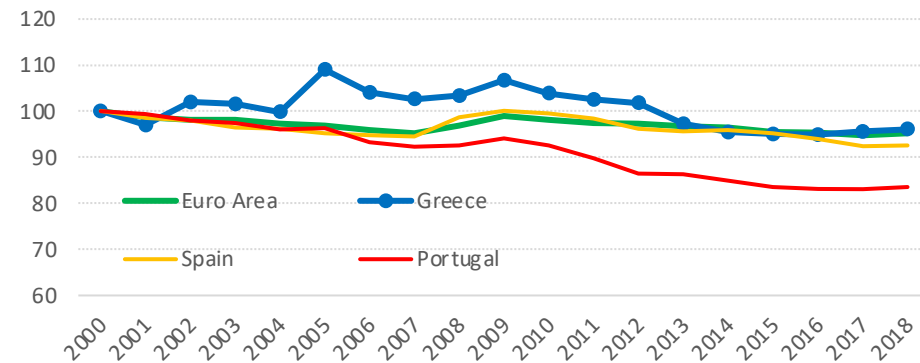
Nominal ULC (Index 2000=100)



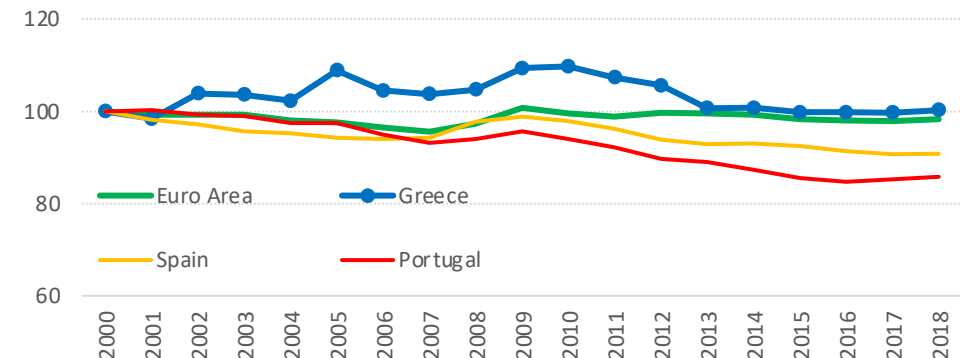
Nominal Wage per employee (2000=100)



Nominal Wage / Nominal Productivity (2000=100)



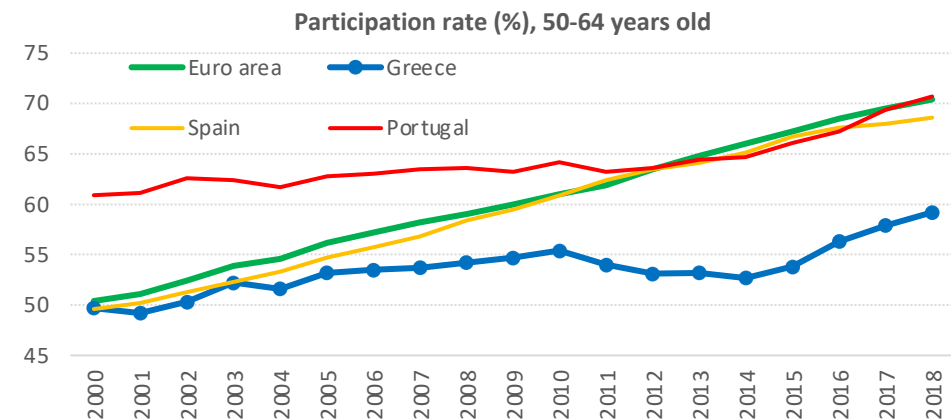
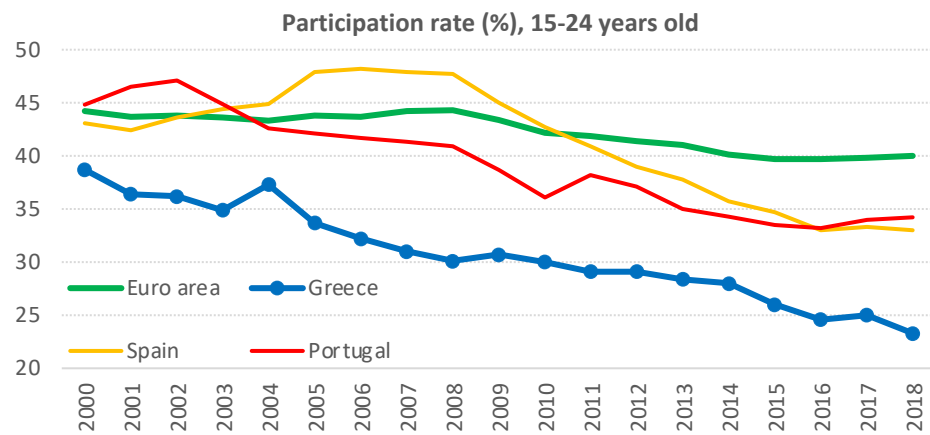
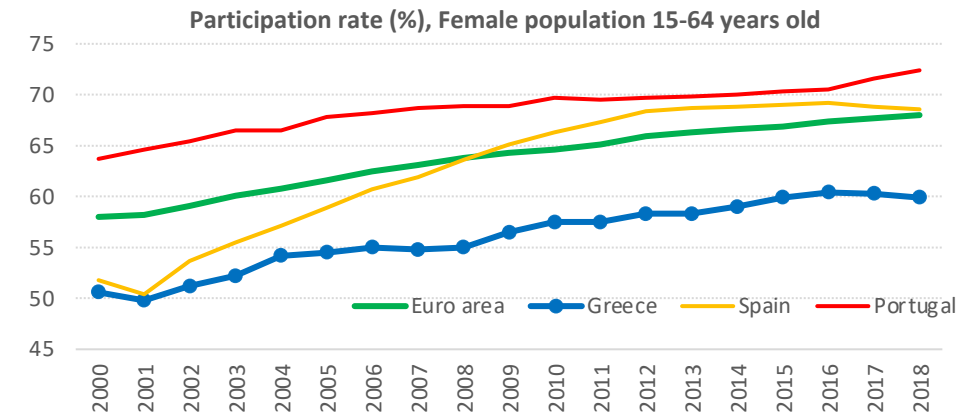
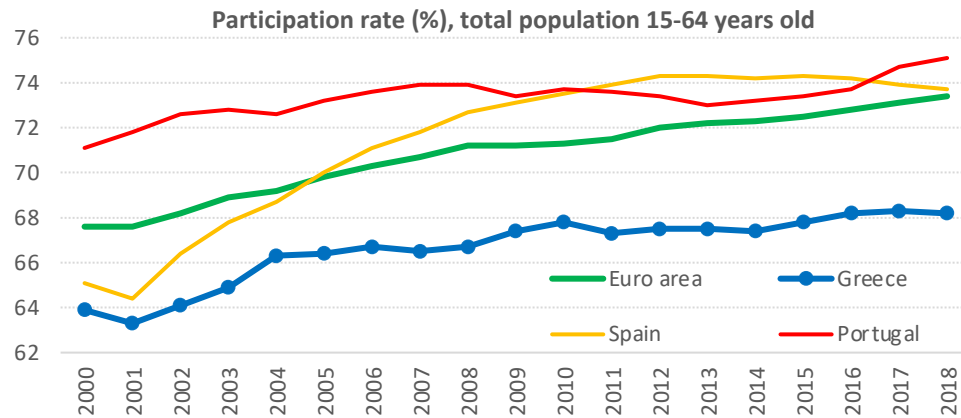
Real Wage / Real Productivity (2000=100)



Source: Ameco. Note: Nominal ULC is defined as the ratio of compensation per employee to real GDP per person employed. Wage is defined as gross wage per employee. Productivity is defined as GDP per person employed.

This is inter alia reflected through Greece ULC trends compared to its peers during 2000-2010. A significant adjustment has taken place during 2010-2018.

Labour participation has systematically been lower than EU peers...

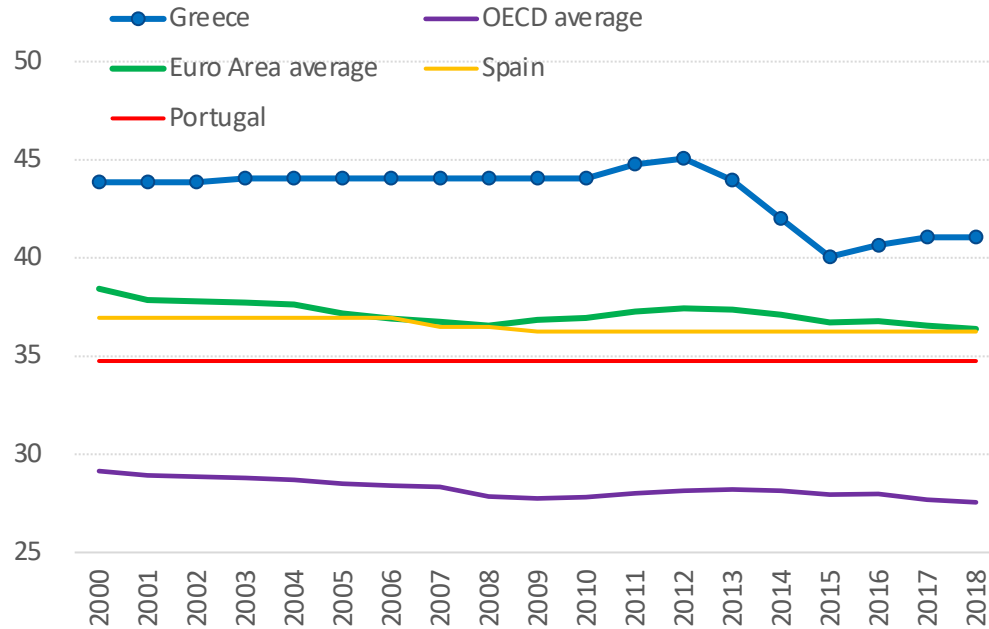


Source: Eurostat, Note: Participation rate is defined as the share of labour force over population within each one of the population sub-groups

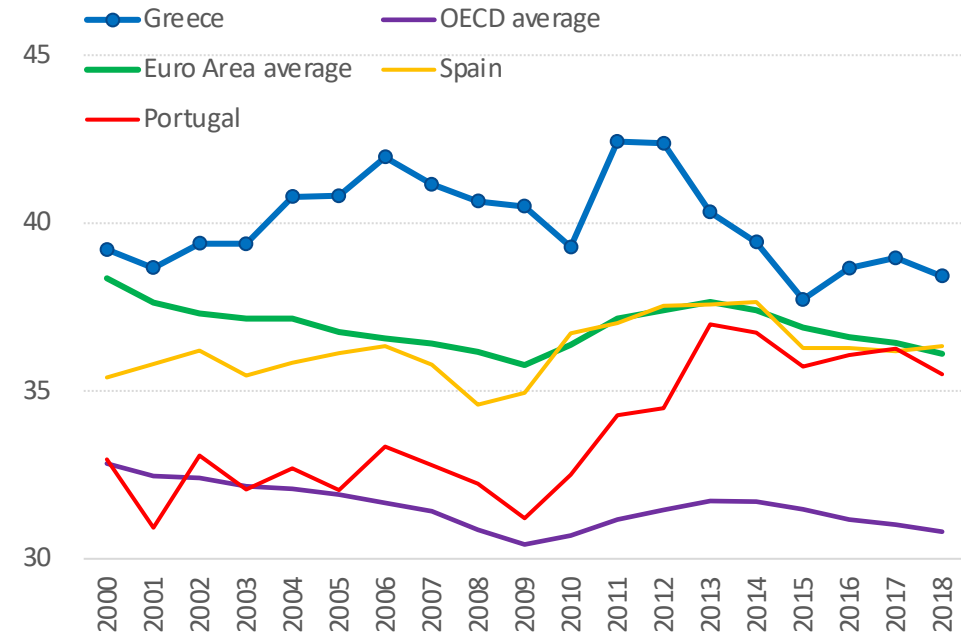
...particularly among female population,
as well as among younger population and age groups eligible to early retirement schemes.

Tax wedge has been higher than EU and OECD peers

Total Social Security Contributions
(in % of gross wage)



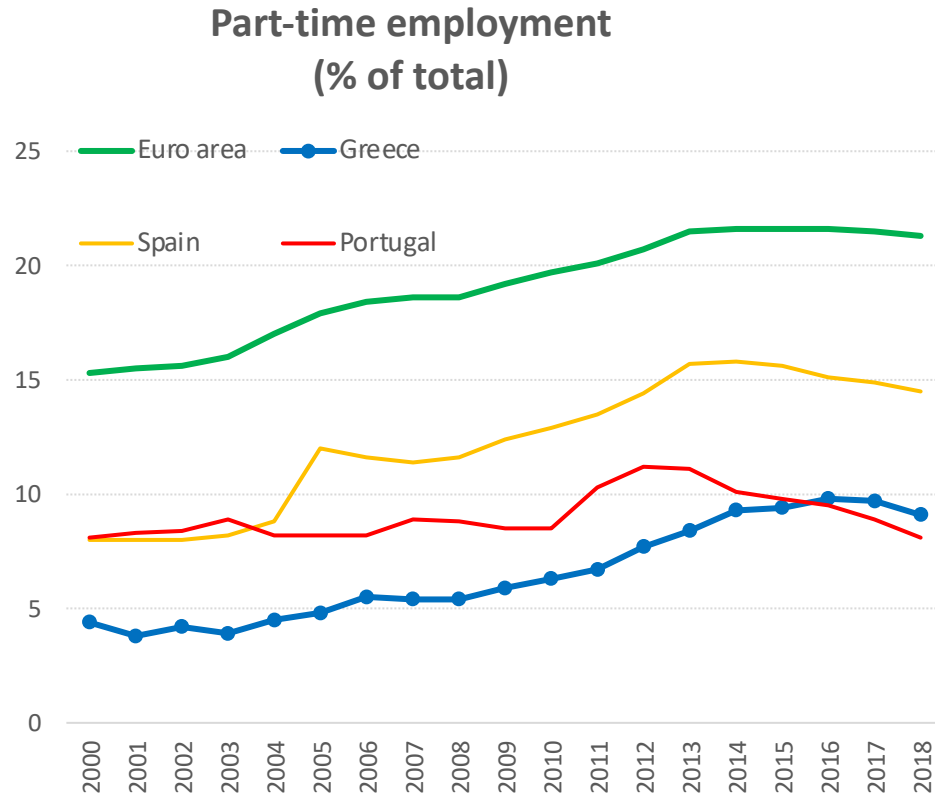
Average tax wedge
(in % of labour cost)



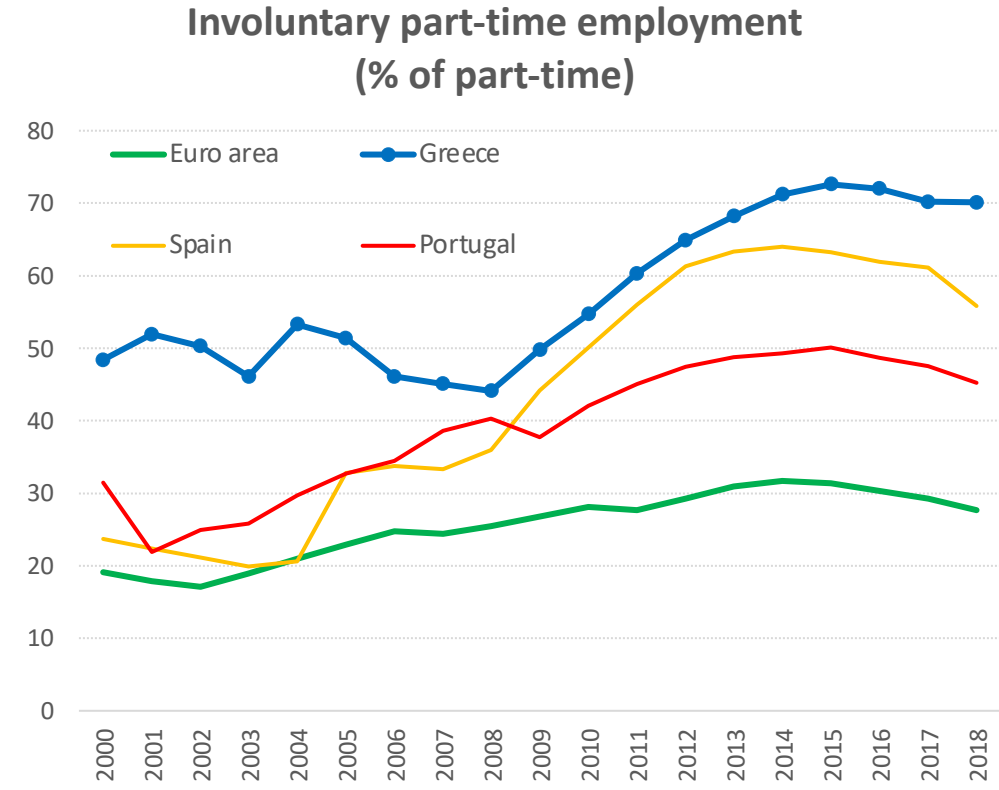
Source: OECD. Note: Tax wedge is measured by the ratio between the amount of taxes paid by a two-earner married couple (one at 100% of average earnings and the other at 67 %) with 2 children and the corresponding total labour cost for the employer.

Despite signs of narrowing the gap during 2012-2015, progress has stalled since then.

Flexible forms of employment had limited outreach...



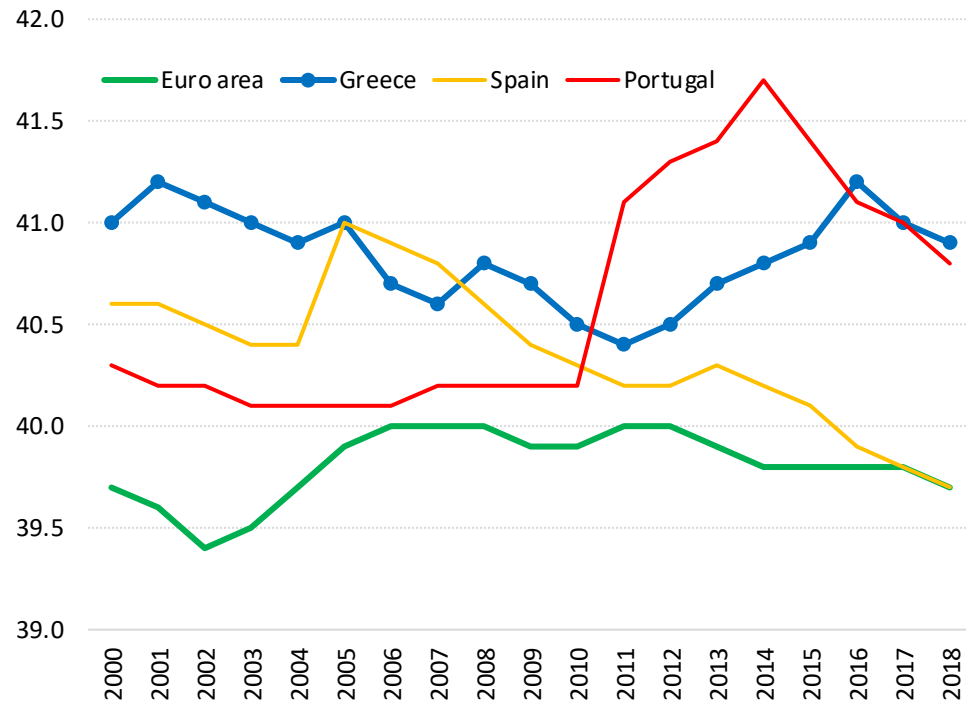
Source: Eurostat



...as this is reflected by the low use of part-time employment, especially in a voluntary manner

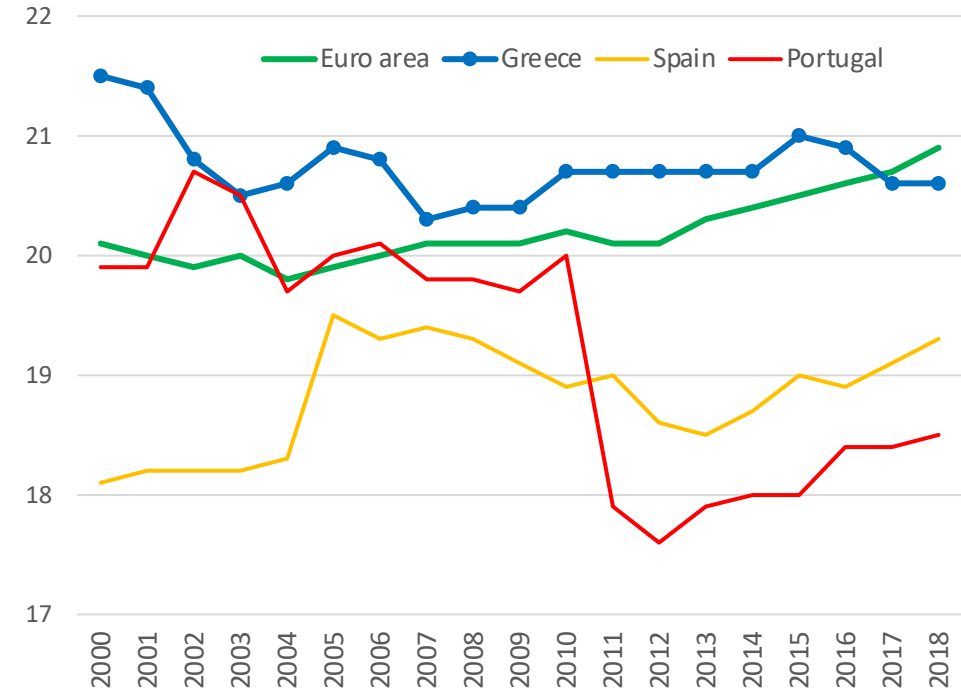
Average working hours have been high in Greece...

Full-time wage earners (hours per week)



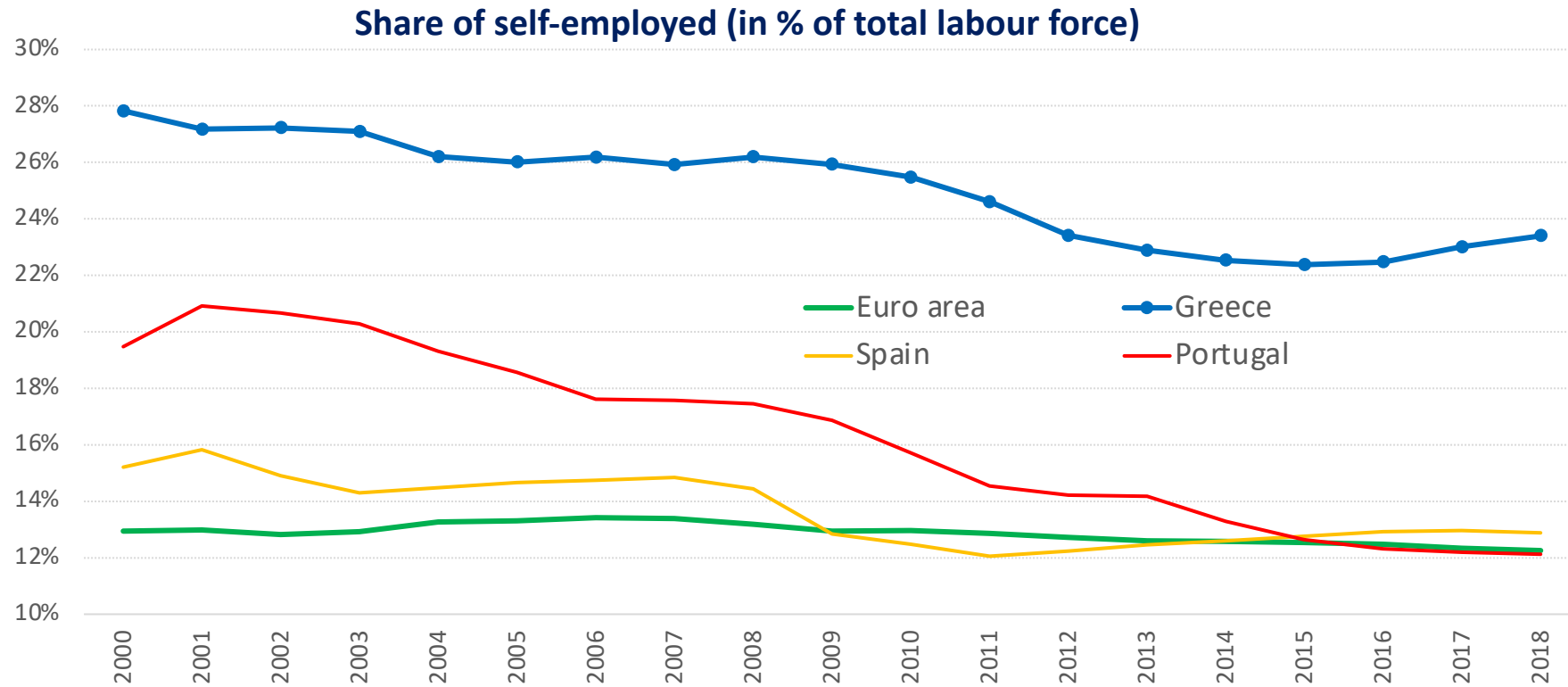
Source: Eurostat

Part-time wage earners (hours per week)



...while their declining trend has been reversed during the economic crisis.

The economy exhibits a very high share of self-employed



Source: Eurostat

...which continued after the labour market reforms, despite a slight convergence with other EU peers during 2012-2015

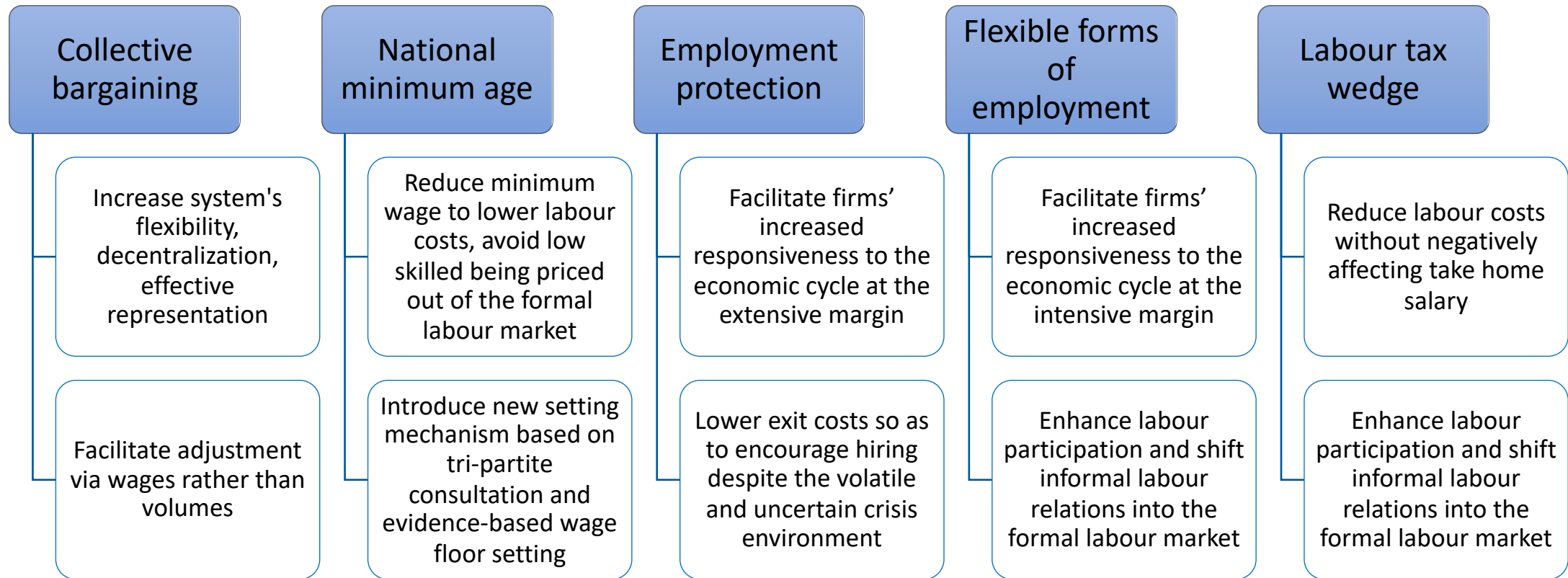
Contents

- Motivation & objectives
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Programmes labour reforms two-fold objective

- **Support the adjustment** in the economy through more flexible labour market regulations
 - Cushion the negative impact on employment when domestic demand was severely hit by the crisis, rationale to assist the labour market rather adjust through prices than through volumes
 - Facilitate a faster employment recovery as soon as the country returned to economic growth
- **Enhance gains in cost competitiveness**
 - During the first decade of the euro adoption, the Greek economy's price competitiveness weakened relative to the euro area average, but also relative to other southern euro area peers
 - In the absence of an exchange rate policy instrument, the competitiveness channel required adjustment in relative prices and nominal wages in order to correct the large external imbalances

Five key labour reform areas



Main labour market measures implemented

Labour market dimension	Policy measures	Year	Legal reference
1. Collective bargaining framework	Temporary suspension of the extension mechanism of collective agreements, possibility for firm level collective agreements to prevail over sectoral and occupational agreements (suspension of favourability principle), restriction of 'after effects' of collective agreements, and revision of the rules on recourse to arbitration	2011, 2012	Laws 4024/2011, 4046/2012
2. National minimum wage	The minimum wage was reduced by 22% (32% for employees up to 25 years old) in February 2012. The setting mechanism was modified in that the statutory minimum wage is set by the government following consultation with social partners and input by stakeholders taking into consideration economic and social criteria.	2012, 2014	Laws 4046/2012, 4093/2012, 4172/2013, 4254/2014
3. Employment protection	The probation period for new hires was extended (2010), the severance payment and notification periods for dismissals were reduced (2012)	2012	Laws 4046/2012, 4093/2012
4. Flexible forms of employment	The use and renewal of fixed-term contracts was facilitated (2011), regulations for part-time shift work and working time arrangements were made more flexible (2010, 2011 and 2012), premia for part-time and overtime work were reduced (2010), the scope of temporary work agencies was broadened in line with other countries (2010 and 2014)	2011, 2012	Laws 3986/2011, 4093/2012
5. Labour tax wedge	Employers' social security contribution rates were reduced by 1.1 and 2.9 percentage points in 2012 and 2014 respectively, while employees' contributions were reduced by 1 percentage point in 2014.	2012, 2014	Laws 4093/2012, 4254/2014

Contents

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- **Microeconomic approach**
- Macroeconomic approach
- Conclusions

An analysis of employment incentives

Objective: Evaluate the impact of Greek labour market reforms on microeconomic incentives of individuals to enter the formal labour market

Approach

- We construct a micro-founded proxy of counterincentives for employment
- We compare how these incentives have evolved during the programmes period and across individual/household characteristics
- We estimate the impact of the 2014 reduction of employees' social security contributions by 1 ppt on employment incentives

Instrument: micro-founded simulations at the level of households

Instrument for micro-simulations

EUROMOD micro-simulation model

- The application (European Commission, University of Essex) applies tax and benefit policy rules which hold within a given year (policy system) and simulates the taxes, benefits, social insurance contributions and disposable income for each household when the system rules are applied

Micro-data source

- European Union Statistics on Income and Living Conditions (EU – SILC) for Greece during 2010-2018
- Choice of sample following filtering criteria (e.g. focus on wage earners)

Variables of interest

- We simulate the components that critically impact labour market participation incentives at the extensive margin, namely taxes paid, benefits received, social insurance contributions paid, and labour earnings

Data sample for micro-simulations

	2010		2014		2018	
	Number of persons	% of total	Number of persons	% of total	Number of persons	% of total
Total employed persons	3,342	100%	5,662	100%	9,278	100%
Gender						
Female	1,460	43.7%	2,474	43.7%	3,998	43.1%
Male	1,882	56.3%	3,188	56.3%	5,280	56.9%
Age						
18-30	700	20.9%	865	15.3%	1,342	14.5%
31-50	2,020	60.4%	3,654	64.5%	5,750	62.0%
51-65	622	18.6%	1,143	20.2%	2,186	23.6%
Education level						
Primary or low secondary	636	19.0%	681	12.0%	1,088	11.7%
Secondary	1,193	35.7%	1,945	34.4%	3,288	35.4%
Tertiary	1,513	45.3%	3,036	53.6%	4,902	52.8%

Source: EU-SILC 2010, 2014, 2018, authors' sample selection criteria. Note: our sample is the result of filtering criteria used such as to focus only on employed wage earners and is hence a sub-sample of the EU-SILC data base.

A proxy for employment counterincentives

Participation Tax Rate (PTR)

- Defined as the share of gross labour earnings which are recovered if the employed person becomes unemployed, ceteris paribus
- It can be viewed as a proxy for counterincentives for official labour faced by employed persons

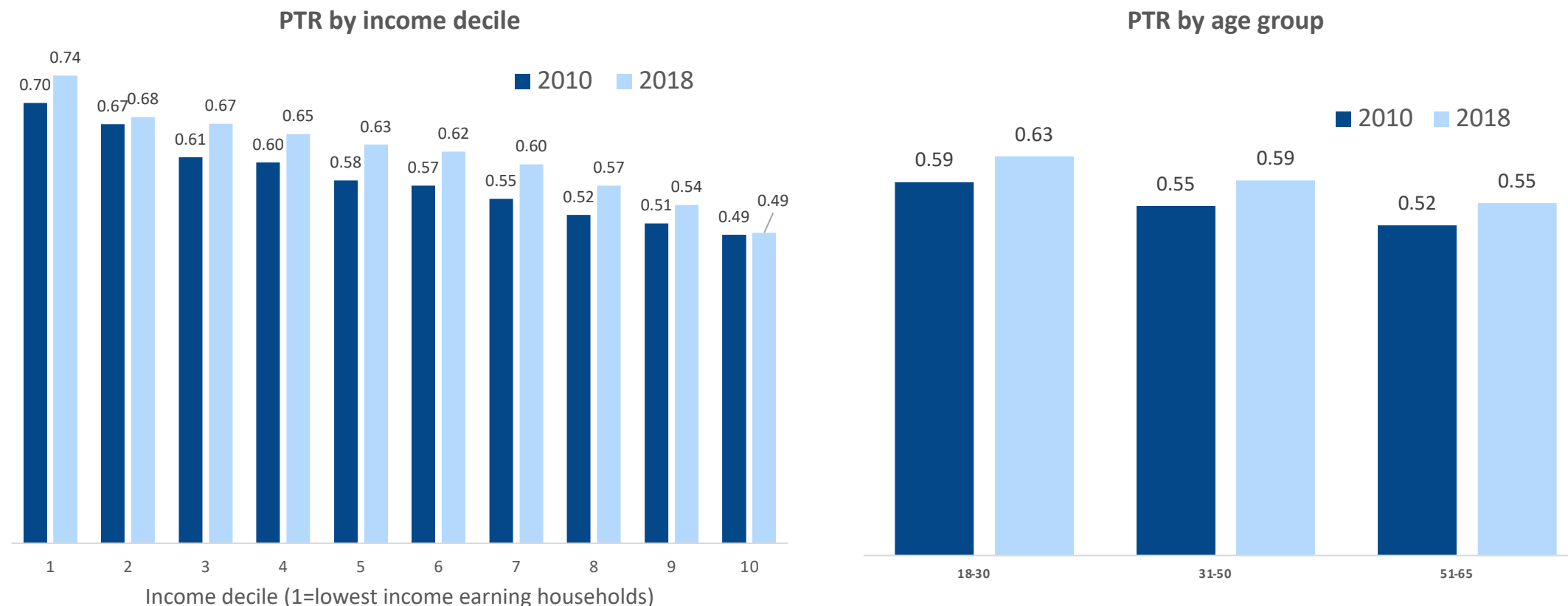
PTR Formula

$$PTR_i = 1 - \frac{Y_h^W - Y_h^U}{E_i}$$

where:

- Y_h^W is the household's disposable income when the individual is employed
- Y_h^U the household's disposable income when the individual becomes unemployed
- E_i are the individual's gross earnings (as long as she participates in the labour market)

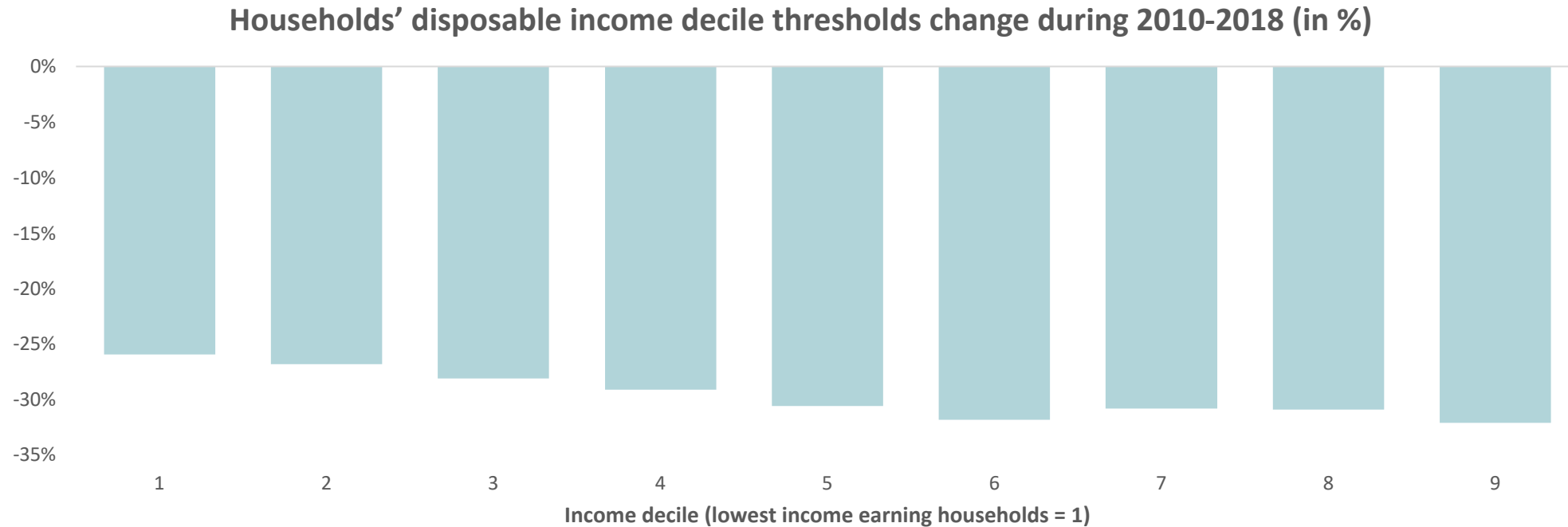
Employment counterincentives increased during 2010-2018...



... particularly among younger and male population.

Counterincentives remain higher for low income earning households, young and female population.

Households' disposable income was significantly hit...



...as a result of fiscal consolidation measures on the income tax side,
as well as due to the sizable and prolonged recession,
which in turn negatively affected employment incentives.

What was the impact of the 2014 reduction in employees' social security contributions?

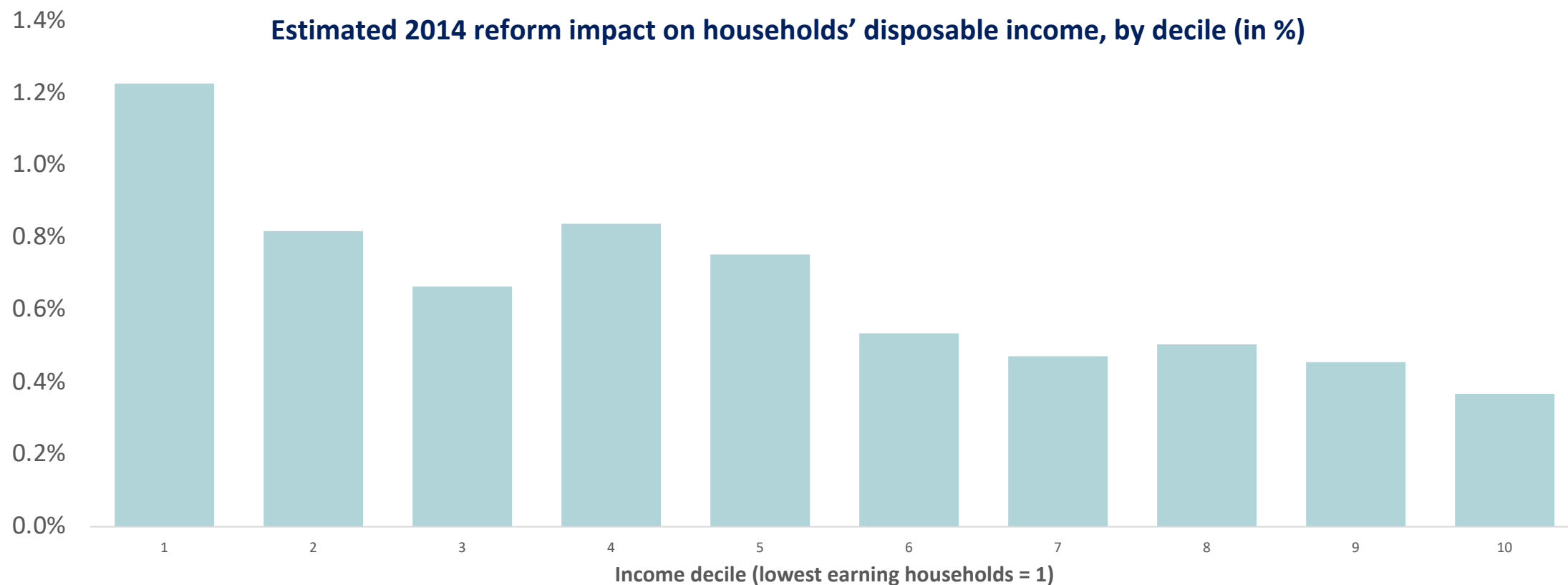
2014 “reform”

Cut in social security contribution (SSC) rates for employees by 1 ppt

Approach

- We focus on our 2014 sample from EU-SILC and EUROMOD
- We estimate PTR prior the 2014 SSC rate cut, including across individual types
- We simulate the 2014 reduction in SSC rates and re-estimate PTR, ceteris paribus

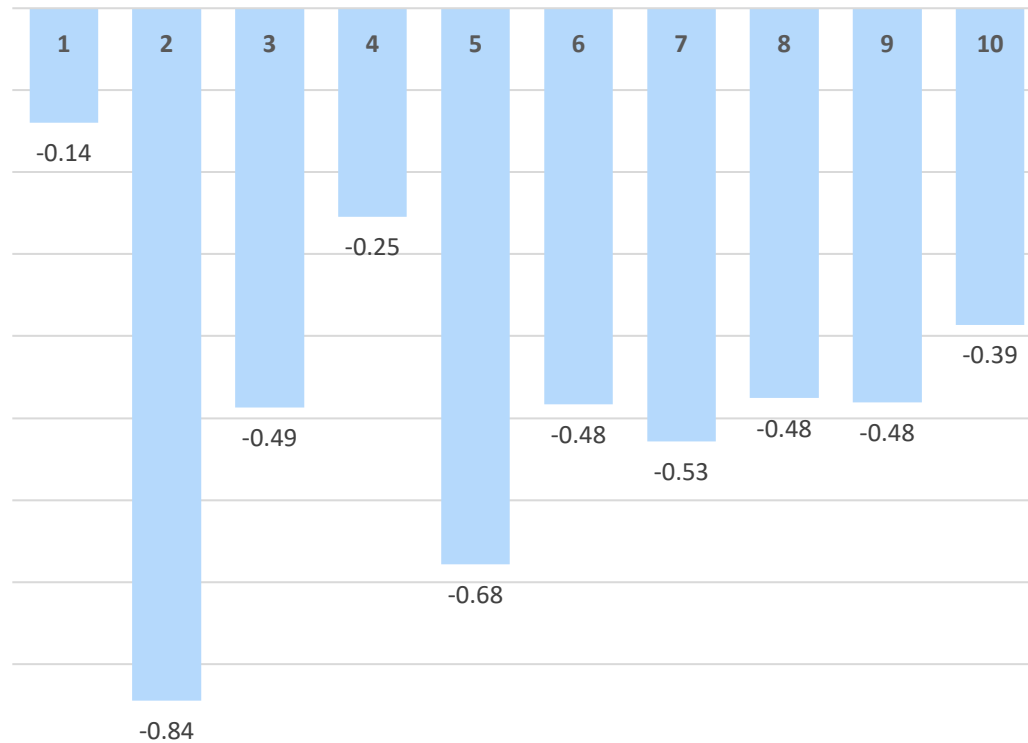
Disposable income increased after the 2014 reform



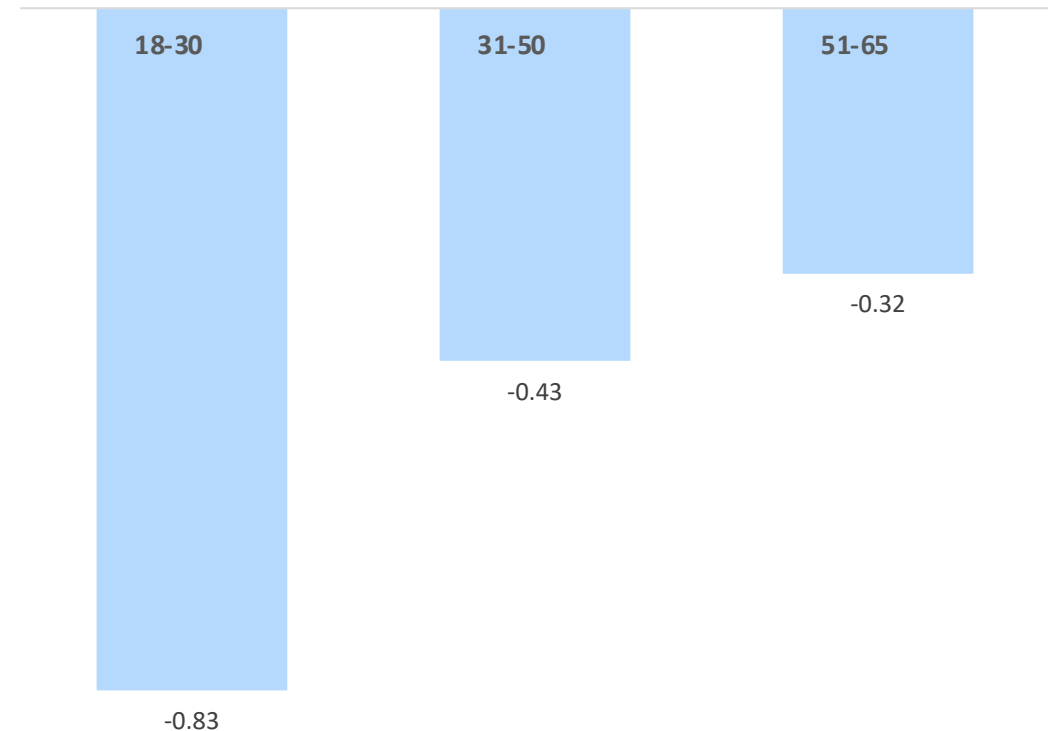
... ranging from 0.4% to 1.2%, while the positive impact was more pronounced for low income earners

Counterincentives for employment dropped after the 2014 reform

2014 reform: PTR reduction by income decile (in ppts)



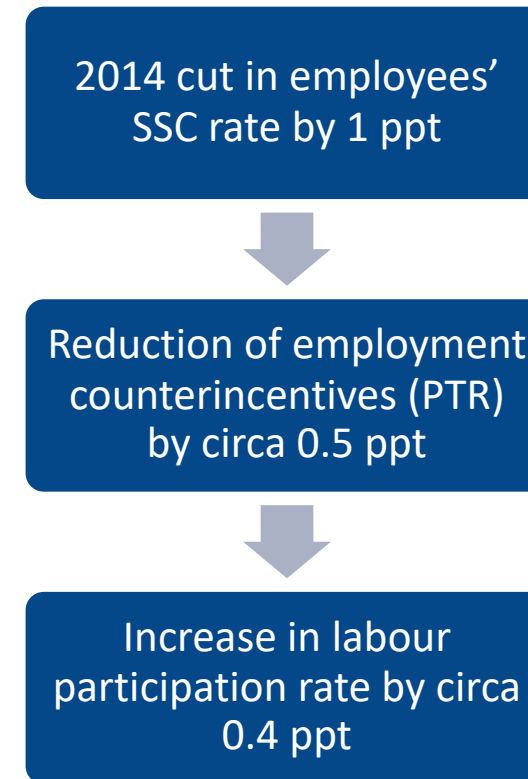
2014 reform: PTR reduction by age group (in ppts)



... while the positive impact was more pronounced among the young population. Nonetheless, the magnitude of the reform seems limited, while counterincentives remained significantly higher for female and young population groups.

The reduction in PTR translates into an increase in labour participation

- The probability of an individual participating in the labour market increases when PTR drops
- IOBE (2019) has estimated an elasticity of around 0.75 ppt. Every 1 ppt reduction of PTR increases labour participation rate by 0.75 ppt



Nonetheless, the magnitude of the reform seems limited given that:

- participation rates in Greece have been lagging EU average by around 5 ppts.
- counterincentives for labour have remained higher for female and young population groups.

Contents

- Motivation & objectives
- Stylized facts in the Greek labour market
- Labour market reforms 2010-2018
- Microeconomic approach
- **Macroeconomic approach**
- Conclusions

An analysis of macroeconomic counterfactuals

Objective: Estimate the impact of labour market reforms on selected macroeconomic and social indicators.

Approach

- Top-down perspective involving econometrics analysis at a cross-country level
- We estimate counterfactual paths for selected macroeconomic and social indicators in the absence of labour market reforms
- We estimate the impact of labour market measures implemented in 2012, as well as explore the impact of the 2014 cut on social security contribution rates

Instrument: Generalized synthetic control method

Econometric method for counterfactual scenarios

Generalized synthetic control method (Xu, 2017)

- Step 1. We use countries in the control group to construct factor variables, that is, time-varying unobserved variables that explain the largest part of the variations among control countries.
- Step 2. Factor loadings (i.e. country-specific coefficients) are estimated for the treated countries using only the pretreatment periods.
- Step 3. The number of factors is chosen optimally, so that the error of prediction is minimized in the pretreatment periods.
- Step 4. We impute the counterfactuals for the treated countries using the previously determined factors and loadings. The above procedure essentially amounts to an implicit weighting of the control countries to obtain an appropriate counterfactual for each treated country.

Treated and control sample of countries

- Treated sample of countries: the three programme countries of the southern Euro Area where significant labour market reforms with common features took place around 2012, Greece, Portugal and Spain (GPS)
- Control group: a comparable group of 22 advanced economies which are both members of the EU and the OECD

Variables of interest

- Total employment growth, unemployment rate, youth unemployment rate, participation rate, part-time and full-time shares of employment, including involuntary part-time work, average working hours, unit labour costs and Gini coefficient

Caveats on the estimated counterfactual scenarios

Methodology advantages

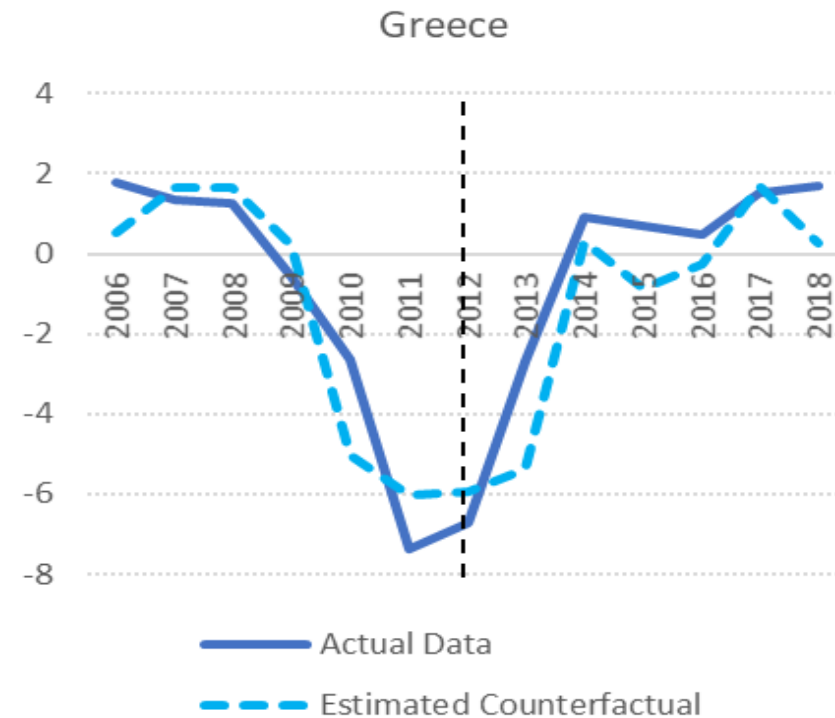
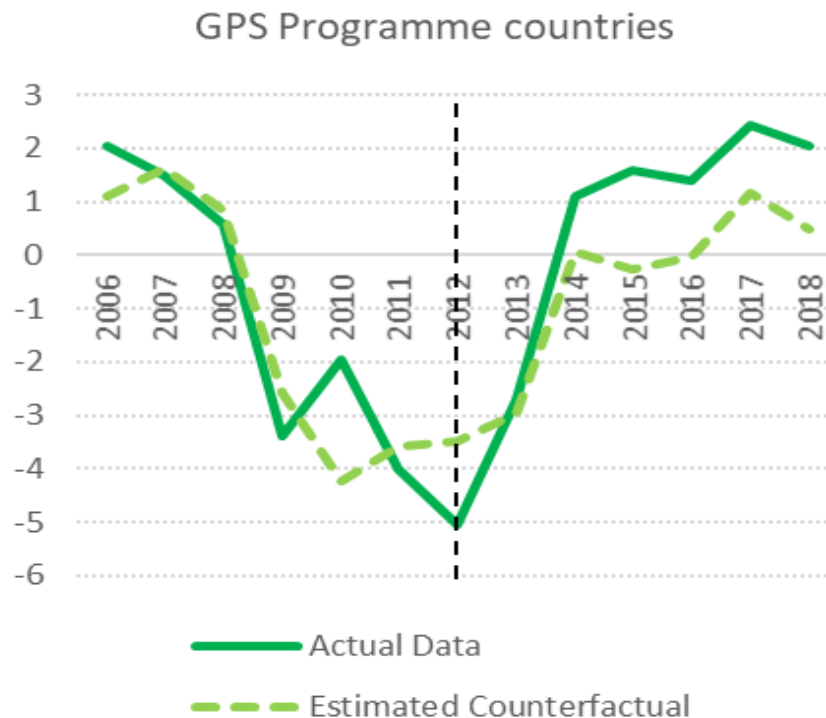
- By exploiting the variations across our control units (interactive fixed effects) and given the choice of the control group, our results are purely data-driven
- We minimize the risk of mis-specification due to potentially inappropriate regressors
- More general than the difference-in-differences (DID) method, as it allows assigning different weights on the control units. It can thus overcome the often violated “parallel trends” assumption required by DID.

Methodology limitations/ avenues for further research

- The estimated reform impact may be influenced by other idiosyncratic shocks that occurred simultaneously with the labour market reforms
- Although we allow for heterogeneous responses of countries to common trends or shocks, it is possible that the treated countries are affected differently by common shocks in the post-treatment periods
- Wide confidence intervals around the scenarios in our application, due to the aggregate nature of the data set variables in terms of time and cross-sectional variation

The 2012 reforms seem to have had a slight positive impact on actual total employment growth trends...

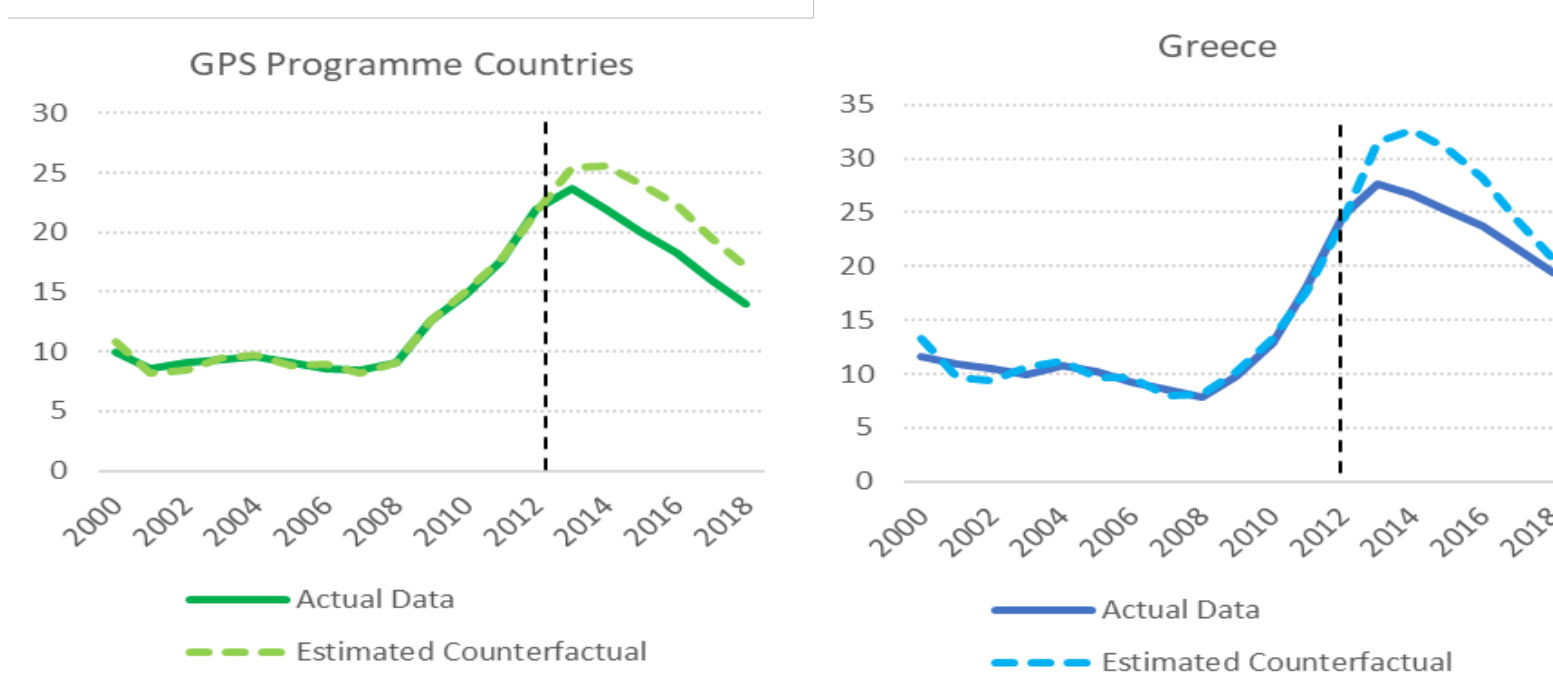
Estimated effect of labour market reforms on employment growth (in ppts)



... both in Greece and the other programme countries GPS (Greece, Portugal and Spain). Actual employment growth in Greece during 2013-2018 is estimated to have been on average around 1.1 ppt higher than in a scenario without the 2012 labour market reforms.

The 2012 reforms appear to have had a sizable positive impact on easing unemployment dynamics...

Estimated effect of labour market reforms on unemployment rate (in ppts)

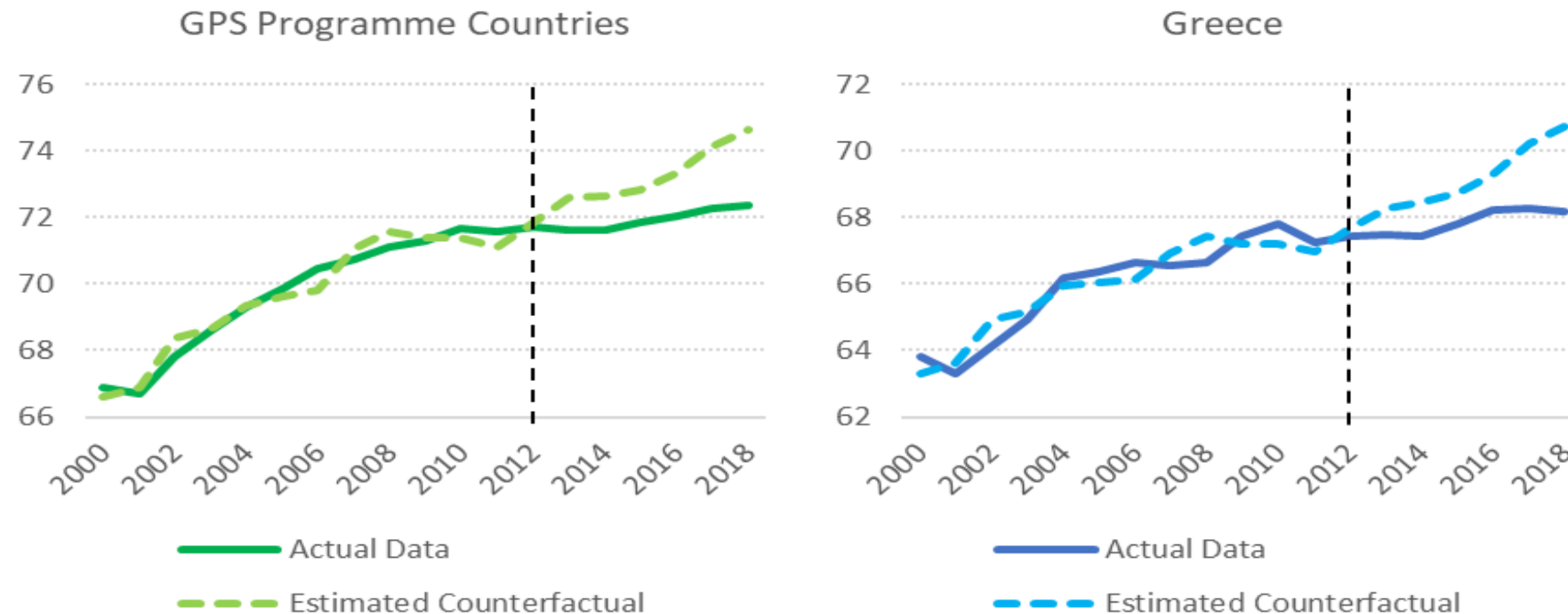


... particularly in Greece, but also in the other programme countries.

- The estimated positive impact is present in the case of youth unemployment too.
- Actual unemployment rate in Greece during 2013-2018 is estimated to have been on average around 4.0 ppt lower than in a scenario without the 2012 labour market reforms.

The 2012 policy interventions seem to have had a negative impact on actual labour participation trends

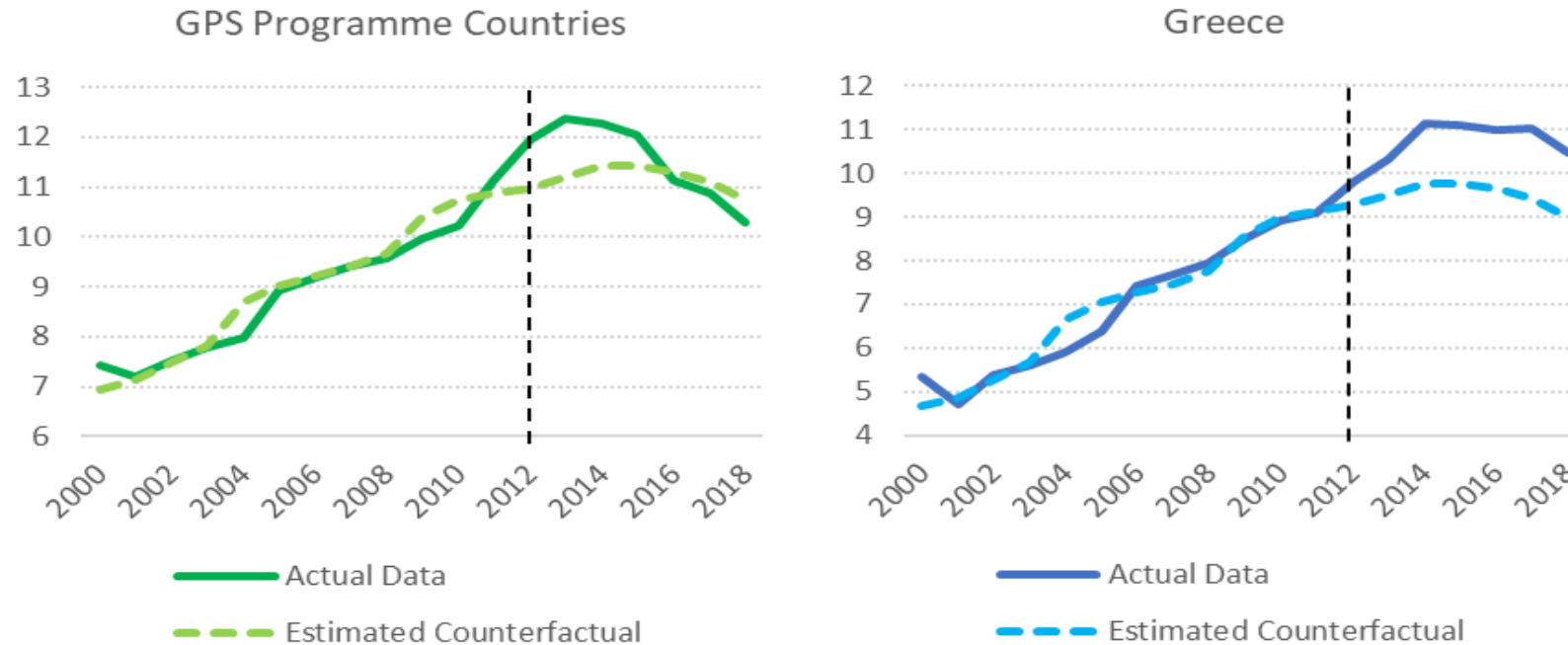
Estimated effect of labour market reforms on participation rate for ages 15-64 (in ppts)



This can be partly due to parallel fiscal consolidation measures imposed on labour taxation in the programme countries around 2012 (e.g. special solidarity contribution in Greece), which hampered the incentives for official labour supply

The 2012 reforms are found to have had a sizable positive impact on the actual use of part-time employment

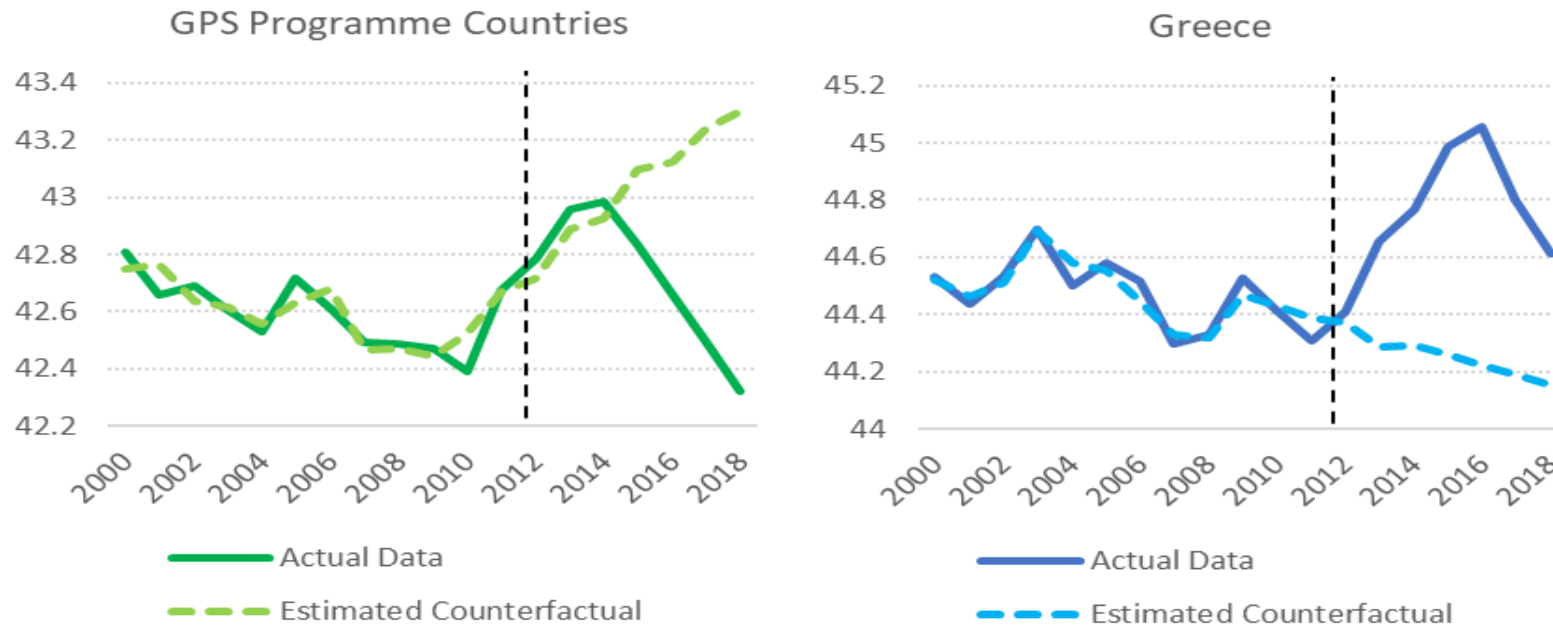
Estimated effect of labour market reforms on the share of part-time employment in total employment (in ppts)



- Actual part-time employment as a share of total employment in Greece during 2013-2018 is estimated to have been on average around 1.3 ppt higher than in a scenario without the 2012 labour market reforms.
- Nonetheless, the transition towards part-time employment in Greece was often not the outcome of preferences, as the share of involuntary part-timers in part-time employment increased in Greece, contrary to the other two programme countries

Average working hours in Greece seem to have increased following the 2012 reforms...

Estimated effect of labour market reforms on average hours worked for full-time employed persons

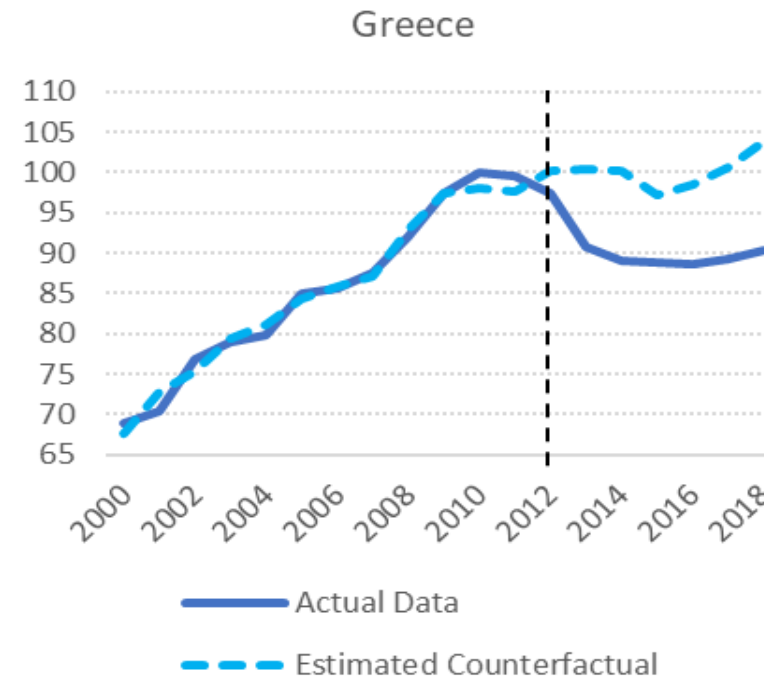
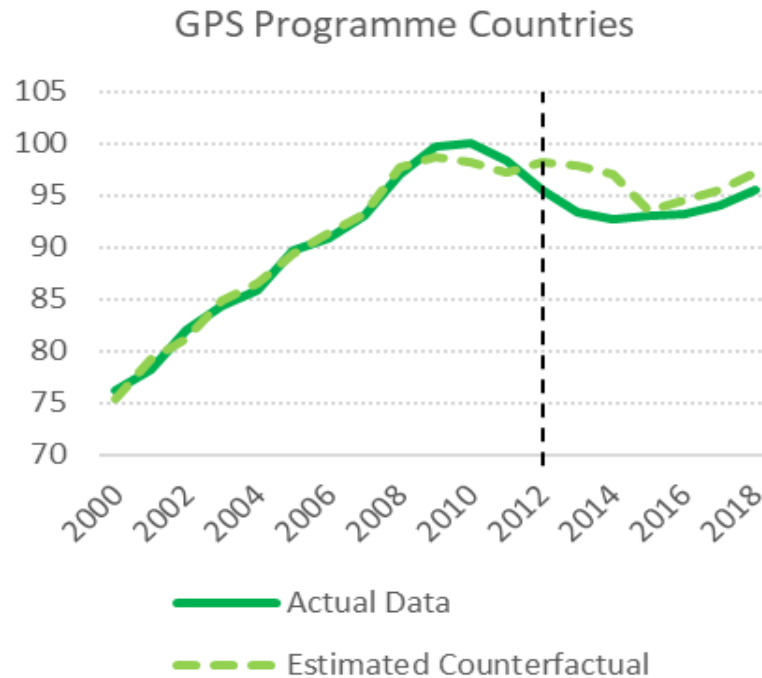


...while the trend was different in the other programme countries.

Besides indicating increased flexibility in working relationships, and possible higher use of overtime work, the significantly higher average working hours observed in Greece may also relate to the large number of self-employed population.

The 2012 reforms seem to have had a significant impact on lowering unit labour costs...

Estimated effect of labour market reforms on unit labour cost (Index 2010=100)

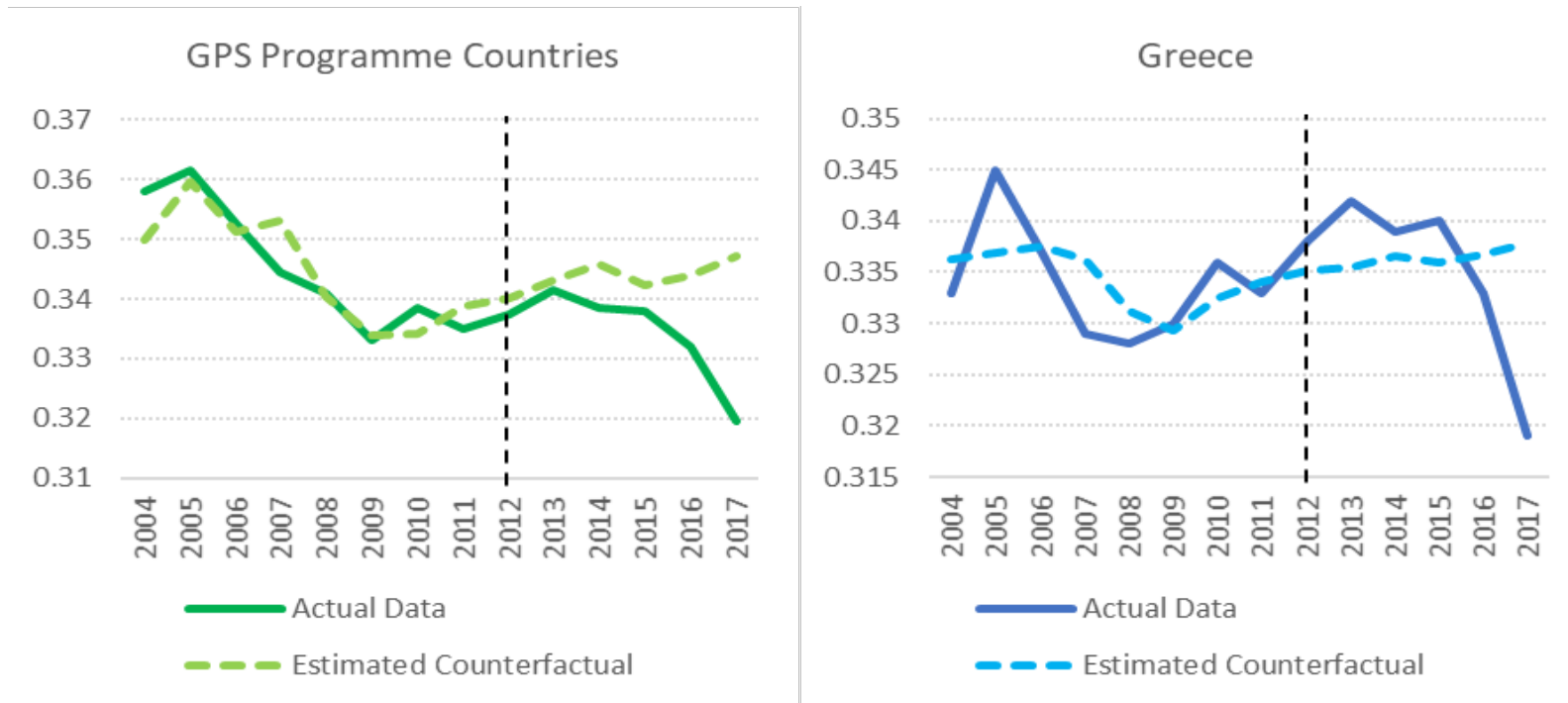


... particularly in Greece, but also in the other programme countries.

Actual ULC in Greece during 2013-2018 is estimated to have been on average around 10.6 ppts lower than in a scenario without the 2012 labour market reforms.

At the same time, income inequality appears to have increased following the 2012 reforms...

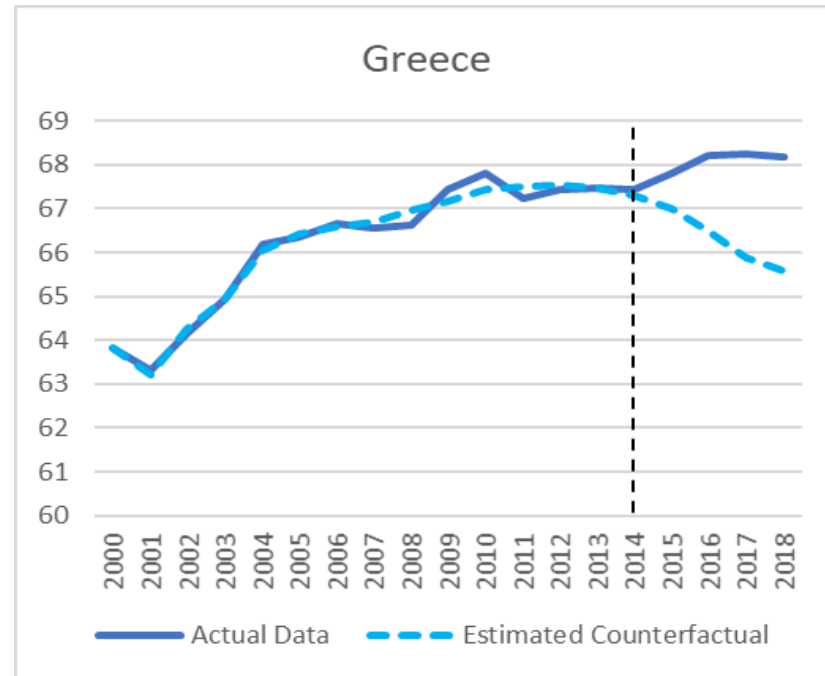
Estimated effect of labour market reforms on the GINI coefficient



... in Greece, while inequality appears to have eased following the reforms in the other programme countries. The recorded GINI inequality coefficient increased in Greece compared to the estimated counterfactual scenario.

The 2014 reduction in employees' contribution is found to have increased labour market participation...

Estimated effect of the 2014 reduction of social security contributions on participation rate for ages 15-64 (in ppts)



... in line with evidence from the microeconomic simulations.

The actual labour participation trend is estimated to exceed the counterfactual scenario for Greece during 2015-2018 by an average of 1.9 ppts per annum.

Contents

- Motivation & objectives
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- Labour market reforms 2010-2018
- Microeconomic approach
- Macroeconomic approach
- **Conclusions**

Overall assessment

Radical labour market reforms were implemented in Greece during the economic adjustment programmes. Empirical evidence suggests that they:

- **largely fulfilled** the objective to enhance gains in cost competitiveness.
- increased flexibility in labour regulations which in turn **partially supported** the objective for the labour market to adjust through prices than through volumes.
- left **mostly unaddressed** other long-standing weaknesses, such as low participation rate and high tax wedge.

Conclusions

Micro-founded simulation analysis.

- While the 2014 reduction in social security contributions positively affected incentives for official labour participation, those appear to have decreased cumulatively during the overall programme period.
- A possible explanation for the weak record of labour participation in the longer-term is that the magnitude of the 2014 policy intervention was limited and its positive effects on labour participation were more than offset by other fiscal consolidation measures relying on labour income taxation.

Top-down macroeconomic perspective.

- Greece's 2012 labour market reforms appear to have had a positive impact on reducing ULC, increasing the use of flexible forms of employment, slowing down unemployment rate dynamics and slightly accelerating employment growth trends.
- At the same time, it appears that the 2012 reforms did not improve labour participation rates, while increased average working hours and inequality.

Forward looking policy priorities

- There is evidence that **further reducing the tax wedge** can boost labour market participation and narrow the respective gap between Greece and its peers, while it enhances growth prospects.
- Further **areas of labour market structural weaknesses** that need to be tackled:
 - Skills mismatch
 - Low outreach of vocational education training
 - Low effectiveness of active labour market policies
 - Undeclared work
- A continuous monitoring of Greek labour market trends is warranted in order for policy makers to implement informed based labour market measures in the direction of
 - further **increasing labour productivity**
 - **reducing unemployment and inequality**

Annex. Selected references

- Collective bargaining: Bertola et al. (2010), OECD (2011), Boeri (2014), Kosma et al. (2017)
- Minimum wage setting: ILO (2014), Yannelis (2014), Kanellopoulos (2015), Georgiadis et al. (2018)
- Reviewing and assessing Greece's labour market reforms: Koukiadaki and Kokkinou (2012), Ioannou and Papadimitriou (2013), Daouli et al. (2017), Lyberaki et al. (2017),
- Impact of labour market reforms in other southern Euro Area peers: OECD (2014, 2017), Stepanyan and Salas (2020)
- Microeconomic methodology: Immervoll et al. (2007)
- Macroeconomic methodology: Xu (2017)