

The influence of the active labor market policy measures on unemployment in OECD countries

BEROC Working Paper Series, WP no. 89

ABSTRACT: The main aim of the paper is to evaluate the impact of the individual active labor market policy measures on the unemployment rate in OECD countries. Based on fixed effects panel regression approach and using yearly data for 29 OECD countries we find negative and significant relationship between spending on public employment services and administration, training, and start-up incentives and unemployment rate. Additionally, the results show that if we take into account differences in labor market flexibility and income per capita among studied OECD countries the influence of individual ALMP measures decreases while moving from countries with lower labor market flexibility to countries with higher labor market flexibility and/or from countries with lower income to countries with higher income.

Keywords: active labor market policy; fixed effects panel regression; unemployment.

JEL classification: J08, J48, J68

1. Introduction

The main purpose of active labor market policy (ALMP) is to provide means for skill enhancement and intensify job-search activity which would improve employment prospects of the unemployed. ALMP help ensure the return of the unemployed in the labor market as fast as possible with the most optimal job match. Since the 1990s, there has been an increased acceptance in the developed world of the need to strengthen the link between social protection, ALMP and employment (Casey, 2004; Bonoli, 2010). ALMP is widely regarded as an important tool to solve labor market challenges or promoting overall economic development. As a result, public spending on ALMP is sizeable in most advanced economies and continues to increase. Between 2000 and 2015, and excluding the crisis period 2008-2010, the amount of public spending allocated to active labor market policy in OECD countries has grown at an average annual rate of 6 percent, and today total ALMP expenditure accounts for almost 40 percent of the overall labor market policy budget in the OECD area.

This paper aims to contribute to this topic by examining the effectiveness of individual active labor market policy measures in decreasing unemployment. The analysis is done by ways of a panel cross-country and time series analysis based on 29 Organization for Economic Co-operation and Development (OECD) countries for which detailed annual data on different ALMP measures exists for the period 2003–2019. The study contributes to the empirical evaluation of active labor market policy beyond what it is already known in three ways: (1) the paper disaggregates the analysis by ALMP measure to capture their individual effects on the unemployment rate; (2) it provides an updated assessment approach by extending the time and country coverage, thereby unveiling revised estimates of the effects of ALMP measures on the unemployment rate; and (3) this study investigates empirically the sensitivity of the relationship between unemployment and ALMP measures to the differences in labor market flexibility and income per capita among 29 OECD countries for the period 2003-2019.

The results from this study show: first, only individual ALMP measures display significant decreasing effects on unemployment rate, mainly start-up incentives, public employment services and administration, and training; second, taking into account the magnitude of the underlying coefficients the highest influence on unemployment rate display start-up incentives; third, controlling for differences in labor market flexibility and income per capita among studied OECD countries the influence decreases while moving from countries with lower labor market flexibility to countries

with higher labor market flexibility and/or from countries with lower income to countries with higher income.

The structure of the paper is the following. In section 2, the literature review concerning unemployment and active labor market policy studies is presented. Section 3 displays data description and variables used in the research. In Section 4, there is a review of the econometric model used to capture influence of active labor market policy on unemployment. Section 5, presents our econometric investigations of the effects of the ALMP measures on the unemployment rate. Section 6 concludes the paper.

2. Literature review

Much has been written about the effects of spending on ALMP on labor market outcomes. A large part of these studies uses country-based micro-level data and examines the influence of the participation in the ALMP measures of individual workers on their employment situation. Although the estimated measure-outcomes differ, depending on the country considered, type of measure and length of observation period, most studies suggest, that ALMP measures at the individual level generate significant benefits. For example, microeconomic literature suggests that ALMP measures, which provide job-search assistance, training and private-sector employment incentives have positive impacts at the individual level as workers who have participated in such measures are more likely to find or retain a job over the medium- or long-term than workers who have never participated in ALMP (Card et al., 2010, 2017; Kluve, 2010). For all ALMP measures, findings from micro-level analyses show that the design, targeting and implementation of a policy are crucial in guaranteeing its effectiveness (ILO, 2016).

At the macro-level, conversely, much less research exists that allows to definitely understand whether ALMP measures matter in broad terms. Moreover, the evidence from these studies, which tests for an effect of implementing ALMP measures on aggregate unemployment or employment using cross-country panel data, is quite mixed.

For example, Nickell (1977) found a large unemployment-reducing effect of ALMP spending during the 1980s in OECD countries. Scarpetta (1996) and Elmeskov et al. (1998) using cross-country data over the same period, found small and in some cases insignificant effect of higher spending in ALMP on unemployment. Baker et al. (2005), using OECD data for 1985-1999, similarly found no statistically significant unemployment-reducing effect of ALMP, while Boone and Van Ours (2009)

elaborated results indicating that training significantly reduces unemployment, but other ALMP measures have insignificant effects. Estevao (2003) using national level data for 15 industrial countries for 1985-2000 showed that direct subsidies to employment creation are more effective in raising employment rates in the business sector than expenditures on training or public employment services and administration. Bassanini & Duval (2006) using data for 21 OECD countries for the period 1982-2003 discovered that training programs display most consistent result in reducing unemployment rate.

Additionally, findings from several studies focusing on the macroeconomic effects of labor market institutions and reforms with ALMPs as its component (e.g., Murtin & de Serres, 2014; Blanchard & Wolfers, 2000; Scarpetta, 1996) show that ALMPs have a negative effect on long-term unemployment. Estevão (2007), concentrating on employment, and controlling for demand influences, openness, central-bank independence and other labor market characteristics, finds that ALMP measures increase employment rates in business sector in OECD countries during the 1990s, while no effect during 1980s. Similarly, Zervoyianni et al. (2014), controlling for GDP growth, globalization, central-bank independence and productivity developments, show that ALMP spending increases employment growth, although the magnitude of the estimated effect varies across different model specifications. Escudero (2018) using OECD employment data for 1985-2010, also discovers that ALMPs have significant employment-increasing effects, although the estimates reported indicate that spending on individual ALMP measures are more effective in improving labor market outcomes for low-skill workers than for the overall population.

In sum, while a large body of literature has examined the labor market impact of ALMP at both micro- and macro-level and most authors conclude that spending on ALMP matter for labor market performance there is no general consensus on the magnitude of the individual effects and their signs. Therefore, this paper tries to expand the current research of the ALMP-unemployment relationship by extending data sample on ALMP expenditure for 2003-2019 period and by investigating the sensitivity of the relationship between unemployment and ALMP measures to the differences in labor market flexibility and income per capita among 29 OECD countries.

3. Data

Dependent variable. The dependent variable of this study is unemployment rate, which is available for the full data sample (2003–2019). According to the

International Labor Organization (ILO), the unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work, (b) currently available for work, and (c) actively seeking work. So, the unemployment rate is defined as the number of unemployed in an age group divided by the labor force for that group.

Independent variables. Following the standard classification of the OECD/Eurostat database (OECD, 2023), the total spending on ALMP measured as a percentage of GDP include all those expenditures that are addressed to both unemployed and employed people in order to provide or promote employment or in order to increase their earning capacity. This empirical analysis of the effects of active labor market policy on unemployment rate is carried out on the spending on six ALMP measures¹:

- **Public employment services and administration (PESA)** – effectiveness is dependent on the existence of developed institutional capacity (that most prevalent and efficient in high-income countries) and determined by a right balance of job search support and job approval (De Serres & Murtin, 2013). Examples: counselling and case management of jobseekers; open information services; referral to work, training or other assistance, as well as the budget of the institutions that manage unemployment benefits.
- **Training (TRA)** – effect is significant in the long-run, increases with the use of other ALMP measures, and most successful in low- and middle-income countries (Crépon, Ferracci & Fougère, 2012). Examples: classroom training, vocational training, job training and work experience, etc.
- **Employment incentives (EIN)** – effectiveness may be influenced by such negative effects as displacement or deadweight; if used as a wage subsidy, can play a role of counter-cyclical market stabilizer in protecting jobs and income during recessions; is most effective in low- and middle-income countries when linked to training (Immervoll & Scarpetta, 2012; Neumark, 2013). Examples: "the income tax credit" in the United States and the "employment premium" in France.
- **Supported employment and rehabilitation (SER)** – effectiveness is dependent on strict policy management and works best for inclusion of persons with disabilities into workplaces or supporting autonomous social functioning, i.e., bringing a person closer to the labor market (Immervoll & Scarpetta, 2012).
- **Direct job creation (DJC)** – effectiveness is dependent on policy management (e.g., correct setting of wage level of public works to avoid displacement); is most effective in crisis context as an income protection

policy, allowing to keep beneficiaries close to the labor market and retain the level of human capital; particularly effective in low- and middle-income countries with lower institutional capacity (Neumark, 2013). Examples: subsidized jobs, direct job creation plans, subsidized contracts.

- **Start-up incentives (SUI)** – especially effective in low- and middle-income countries if combined with training (particularly for the low-skilled workers) and for women in low-income countries (Schmidt, 2002; Card, Kluve & Weber, 2009). Example: start-up grant to start own business and become independent entrepreneur.

Spending on ALMP as a percentage of GDP is the most common indicator of ALMP effort. However, this measure may be problematic for two reasons (Armingeon, 2007). First, it does not take into account that ALMP expenditures are directly related to the level of unemployment. Second, ALMP as a percentage of GDP does not provide information about the relative size of passive labor market policies. Therefore, it is not possible to analyze a shift from passive to active labor market policies. Following Armingeon (2007), we use indicator that do not have these shortcomings, that is, spending on ALMP measure as a percentage of GDP standardized by the unemployment rate², which is commonly used for such cross-country comparisons (e.g., Scarpetta, 1996) and serves as an indicator for the efforts of governments on ALMP per unemployed person. Controlling the expenditure ratio through the unemployment ratio allows to correctly compare shifts in spending efforts between different countries, since it removes possible distortions caused by changes in the number of recipients of benefits (Van Vliet, 2010). Annual data on government spending for each of the programs included in the analysis is collected from the OECD "Public expenditure of LM programs by categories" database. Data cover the period 2003–2019. Based on the availability of data the sample under analysis includes 29 OECD countries. Unfortunately, the OECD dataset does not present Greece data for 2011 and 2012, and United Kingdom data from 2012 onwards, therefore, these countries are excluded from the data sample. A full list of countries included in the analysis is presented in Table A1 in the Appendix.

Control variables. Other control variables include: public spending on passive labor market policy (PLMP), lagged GDP growth rate, inflation, terms of trade, real interest rate, education level, share of children in total population, tax wedge, Economic Freedom Index (EFI), share of part-time employment. Data on EFI is taken from Fraser Institute, data on other control variables is collected from the OECD database.

Assuming complementarity among passive and active labor market policies (OECD, 2013; Martin, 2015), passive labor market policy measured as the spending on PLMP as a percentage of GDP standardized by the unemployment rate is added to the empirical analysis. GDP growth rate is included as a macroeconomic variable due to the expectation that developed countries with higher economic growth generally have wider protection systems with higher social spending (Van Vliet & Koster, 2011). Therefore, a negative relationship between GDP growth rate and unemployment rate is expected.

Previous studies have shown that inflation can negatively or positively affect economic performance. Barro (2013) found that the level of inflation (high or low) has a negative and significant impact on economic growth. According to this line of thinking, an increase of inflation will cause price distortions, which will affect the effectiveness of the market allocations. On the other hand, Feldmann (2010) found that high inflation is correlated with the low unemployment rate. Also, Feldmann (2013) argued that high inflation rates distort price signals and the relative prices, which hampering the efficient allocation of resources and may lead to an unemployment rise. However, if nominal wages are low, inflation can, in the event of shocks, facilitate the adjustment of real wages, which improves the labor market outcomes. Concerning other macroeconomic variables, terms of trade³ is controlled as is done by Escudero (2018) and real (long-term) interest rate. High real interest rate may lead to lower investment and subsequent drop in labor demand (Blanchard & Wolfers, 2000; Nickell et al., 2005).

Education variable (share of population in the age of 25 to 64 years with tertiary level of education) is used as an explanatory variable to capture influence of the human capital. Share of children in total population (population aged 0-14 years) is also added to the econometric analysis as a demographic variable. The econometric assumption is that a large share of 0-14 years aged population will have implications for unemployment rate. Part-time work opportunities can also lead to decline in unemployment rate. To capture this phenomenon part-time employment as percentage of total employment is used as an explanatory variable in the econometric analysis.

Lastly, labor market outcomes are likely determined by institutional factors, therefore, tax wedge and EFI are used in the study. Regarding tax wedge, studies show that high tax rate is associated with lower employment rate (Nickell, 1997) as it supposed to negatively affect the willingness of the unemployed to fill vacancies. Economic Freedom Index is included as an explanatory variable to capture its impact for labor market performance. It is assumed that countries with greater economic freedom have a larger number of transitions from unemployment to employment. Greater

economic freedom encourages a higher level of entrepreneurial activity and creation of small businesses (Kreft & Sobel, 2005). EFI, which takes into account size of the government, legal structure and security of property rights, access to sound money, freedom to trade internationally, and regulation of credit, labor and business supposed to stimulate economic growth and, thus, decrease unemployment.

Detailed explanation of definitions and sources of all data used in empirical analysis is presented in the Table A2. The summary statistics of variables used in empirical estimations are presented in Table A3.

4. Methodology

The empirical investigation of the effects of spending on ALMP measures on the unemployment rate is carried out for a sample of 29 OECD countries for the period of 2003-2019. The empirical estimation is done with unbalanced panel data, to fully utilize the available information for our variables of interest. Based on Escudero (2018) and Estevão (2007) estimation approach, we construct the following empirical model for our econometric analysis:

$$UR_{it} = \alpha + \beta_1 ALMP_{it} + \beta_2 GDP_{GROWTH_{it-1}} + \beta_3 X_{it} + \beta_4 T_t + \beta_5 C_t + \varepsilon_{it} \quad (1)$$

$$UR_{it} = \alpha + \beta_1 ALMP_{it} + \beta_2 ALMP_{it} \cdot LMRI_{RANKING} + \beta_3 GDP_{GROWTH_{it-1}} + \beta_4 X_{it} + \beta_5 T_t + \beta_6 C_t + \varepsilon_{it} \quad (2)$$

$$UR_{it} = \alpha + \beta_1 ALMP_{it} + \beta_2 ALMP_{it} \cdot Income_{RANKING} + \beta_3 GDP_{GROWTH_{it-1}} + \beta_4 X_{it} + \beta_5 T_t + \beta_6 C_t + \varepsilon_{it} \quad (3)$$

$$UR_{it} = \alpha + \beta_1 ALMP_{it} + \beta_2 ALMP_{it} \cdot Income_{RANKING} \cdot LMRI_{RANKING} + \beta_3 GDP_{GROWTH_{it-1}} + \beta_4 X_{it} + \beta_5 T_t + \beta_6 C_t + \varepsilon_{it} \quad (4)$$

where UR_{it} – represents unemployment rate in country i and year t ; $ALMP_{it}$ is the vector of spending in individual ALMP measures or total spending in ALMP; $GDP_{GROWTH_{it-1}}$ is GDP growth in country i and year $t-1$; X_{it} is the vector of control variables; $Income_{RANKING}$ is dummy variable that takes the value 1 if the country i corresponds to country with higher income and the value of zero otherwise; $LMRI_{RANKING}$ is dummy variable that takes the value 1 if the country i has higher Labor Market Regulations Index (LMRI) and the value of zero otherwise; T_t are year fixed effects; C_t are country fixed effects; α is a constant; and ε_{it} is the error term.

Year fixed effects are included to control for time variant shocks that affect all countries in the same way. Country fixed effects are included that capture any time-invariant difference at the country level. We have employed fixed effect panel estimation method to estimate Equations (1)-(4). Fixed effects model was selected on the basis of Hausman test. Hausman test statistic and corresponding p -value are reported in the result tables A4-A10.

Equation (1) is a base model used to estimate the effects of ALMP measures on unemployment rate. Equations (2)-(4) are applied to assess the sensitivity of the relationship between unemployment and ALMP measures to the differences in labor market flexibility and income per capita among OECD countries for the period 2003-2019.

Labor market flexibility is measured by the LMRI and is used to capture the institutional labor market context, especially the regulations that may impact the willingness of employers to hire participants of the ALMP measures, and the willingness of these participants to take jobs. To evaluate this, a dummy variable, $LMRI_{RANKING}$, was created taking the value of 1 when average LMRI for particular OECD country is above the median calculated from the distribution of all 29 OECD countries and 0 otherwise. To evaluate differences in income a dummy variable, $Income_{RANKING}$, was created taking the value of 1 when average GDP per capita for particular OECD country is above the median calculated from the distribution of all 29 OECD countries and 0 otherwise.

5. Results

5.1. Unemployment rate and ALMP measures

Figure 1 shows changes in average unemployment rate and average public spending on labor market policies in 29 OECD countries over 2003-2019 period. In 2019, unemployment rate was 5.9 percent, spendings on ALMP and PLMP were 13.7 and 11.4 percent, correspondingly; compared with 8.0 percent for unemployment rate and 8.2 and 12.6 for ALMP and PLMP in 2003. Dynamics show that the unemployment rate hovered around 8.0 percent in 2003, however starting from 2013 this indicator constantly decreased and reached 5.9 percent in 2019. Correspondingly, spending on ALMP were equal to 8.2 percent in 2003 and gradually increased starting from 2013 up to 13.7 percent in 2019. Figures on PLMP are mixed, while during 2003-2012 spending on PLMP hovered around

11.5 percent, during 2013-2019 average spending on PLMP were by 1.2 percentage points lower compared to previous period and equal to 10.3 percent.

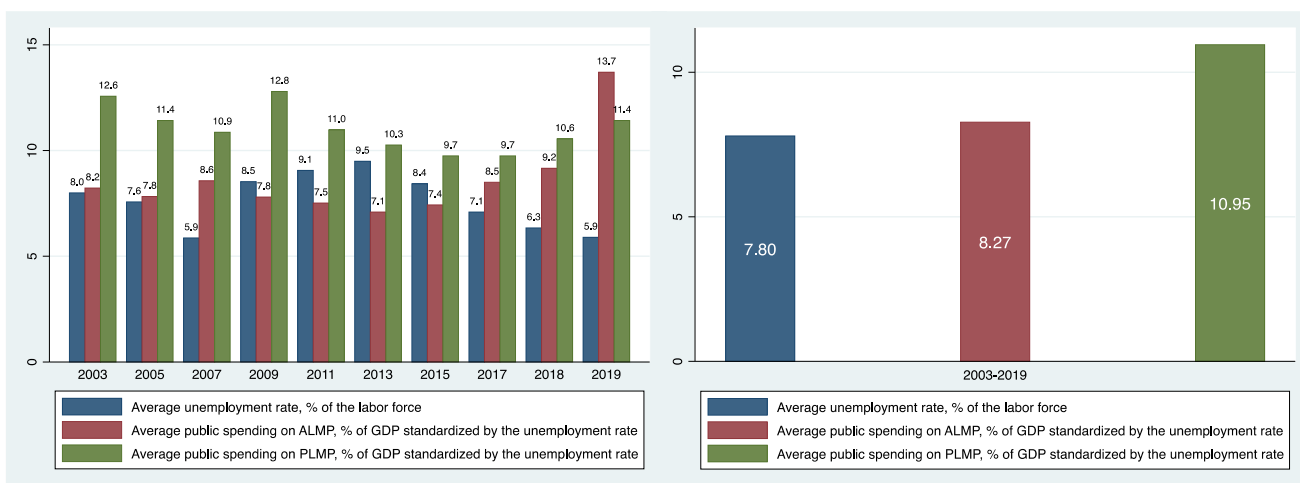


Figure 1. Unemployment rate and public spending on labor market policies in 29 OECD countries, 2003-2019

Source: Authors' own calculations based on OECD data.

Figure 2 shows a statistical analysis of the distribution of the public spending on ALMP measures in 29 OECD countries from 2003 to 2019. Starting from 2013 ALMP expenditure grew continuously at an average annual rate of 15.2 percent. Prior to 2019 spending on training and public employment services were main expenditure measures, while in 2019 spending in employment incentives took the first place rising by 3.6 times compared to 2017. However, training continues to be the preferred tool of governments to address labor market problems in OECD countries. The remaining of this paper will show whether targeting spending towards mentioned above ALMP measures is indeed the most effective way to decrease unemployment.

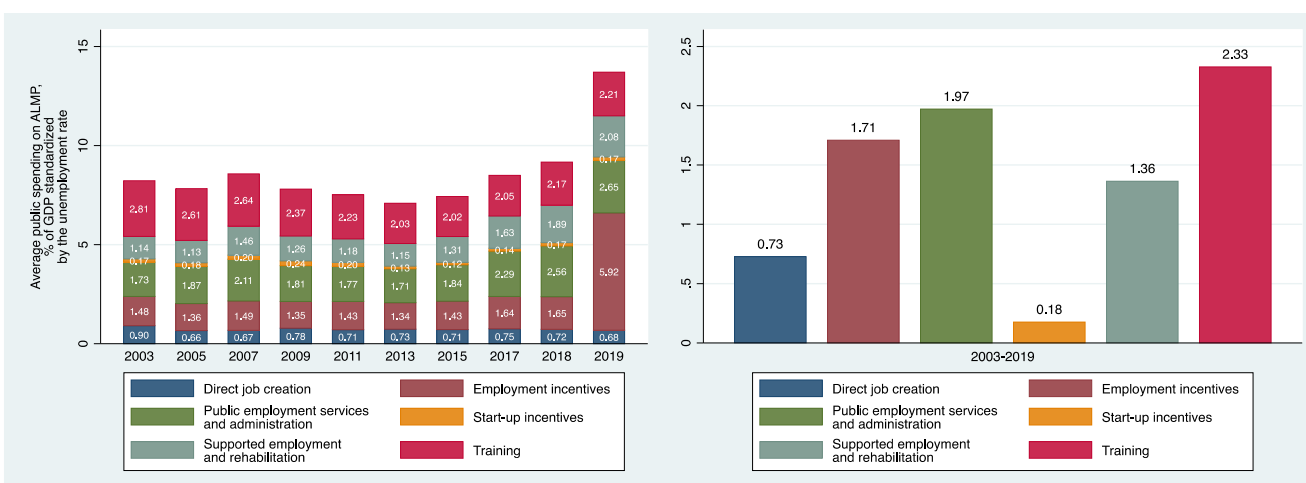


Figure 2. Public spending on ALMP in 29 OECD countries, 2003-2019

Source: Authors' own calculations based on OECD data.

Table A4 presents results of empirical estimation of Equation (1) using fixed effect panel approach over the period 2003-2019 for the panel of 29 OECD countries. Fixed effects regression has been selected on the basis of Hausman test⁴. The results given in model 1 indicates that total spending on ALMP decreases unemployment rate, however, the coefficient is statistically insignificant.

Importantly, different measures can generate different effects depending on their objective, design and population targeted. To capture this, the analysis includes individual ALMP measures. Specifically, all six ALMP measures were evaluated in models 2-7 (see Table A4). Public employment services and administration, training, and start-up incentives are negatively and significantly correlated with the unemployment rate. In particular, these three ALMP measures have proved to be the most effective in improving the unemployment in studied OECD countries. Generally, these ALMP measures contribute to the creation of comfort through financing (e.g., start-up grant), increase in stimulation through work (physical or mental effort) or skill development, which improves human capital and encourages the unemployed. These results are in line with other studies (Caliendo & Kritikos, 2010; Puig-Barrachina et al., 2020).

However, employment incentives are positively and significantly correlated with the unemployment rate, which implies that on average growth in spending in employment incentives leads to increase in unemployment. On the one hand, employment incentives (e.g., wage subsidies) aim at integrating the unemployed into the labor market by providing them additional benefits in order to increase their low productivity (Wolff & Stephan, 2013; Sahnoun & Abdennadher, 2018). For example, "the income tax credit" in the United States and the "employment premium" in France. On the other hand, employment incentives can lead to stigmatization of the status of participants, which increases as they receive more benefits.

Coefficients for supported employment and rehabilitation, and direct job creation are statistically insignificant, which may be caused by the fact that for unemployed person being out of the labor force is involuntary and this individual is not working for a reason that is not his own choice.

To sum up, in model 8 we include all ALMP measures and find that results remain consistent except for coefficient of direct job creation, which changed from negative to positive, but it still remains insignificant.

5.2. Sensitivity of the unemployment rate to ALMP measures adjusted for labor market flexibility and income per capita

Several interesting patterns can be discovered from the indicators presented in Table 1. First, there are large cross-country differences in the intensity of the public spending effort on ALMP for OECD countries with lower and higher income. Average ALMP expenditure in countries with higher income are by 2.2 times higher than in countries with lower income. Second, OECD countries with lower labor market flexibility spend by 11.5 percent more on ALMP compared to countries with higher labor market flexibility. Third, there are almost no differences in spending on active labor market policies for OECD countries with lower income and with lower or higher labor market flexibility (5.21 percent vs 5.23, correspondingly). Fourth, ALMP expenditure of countries with higher income with lower labor market flexibility are by 33 percent higher, than expenditure of OECD countries with higher labor market flexibility. Fifth, unemployment rate is higher by 0.68 percentage points, on average, in countries with lower labor flexibility than with higher labor market flexibility, and by 2.87 percentage points higher, in countries with lower income than in OECD countries with higher income.

Table 1. Average values of the unemployment rate, ALMP measures and PLMP by labor market flexibility and/or income per capita

	UR	PESA	TRA	EIN	SER	DJC	SUI	Total ALMP	PLMP
<i>By labor market flexibility</i>									
Lower LMRI countries	8.15	1.98	2.82	1.76	0.93	1.01	0.24	8.74	12.22
Higher LMRI countries	7.47	1.96	1.87	1.66	1.76	0.46	0.12	7.84	9.77
<i>By income per capita</i>									
Lower income countries	9.18	1.03	1.17	1.55	0.52	0.74	0.20	5.22	7.60
Higher income countries	6.31	2.98	3.56	1.88	2.27	0.71	0.14	11.55	14.55
<i>By income per capita and labor market flexibility</i>									
Lower income countries *	9.33	0.81	1.36	1.41	0.27	1.14	0.21	5.21	8.95
Lower LMRI countries									
Lower income countries *	9.02	1.27	0.96	1.72	0.80	0.28	0.19	5.23	6.06
Higher LMRI countries									
Higher income countries *	6.58	3.55	4.76	2.23	1.82	0.84	0.27	13.46	16.59
Lower LMRI countries									
Higher income countries *	6.12	2.56	2.67	1.61	2.61	0.62	0.05	10.12	13.01
Higher LMRI countries									

Source: Authors' own calculations based on OECD and Fraser Institute data.

Note: UR – unemployment rate, % of the labor force; PESA – public employment services and administration, % of GDP standardized by the unemployment rate; TRA – training, % of GDP standardized by the unemployment rate; EIN – employment incentives, % of GDP standardized by the unemployment rate; SER – supported employment and rehabilitation, % of GDP standardized by the unemployment rate; DJC – direct job creation, % of GDP standardized by the unemployment rate; SUI – start-up incentives, % of GDP standardized by the unemployment rate; Total ALMP – total active labor market policies, % of GDP standardized by the unemployment rate; PLMP – passive labor market policies, % of GDP standardized by the unemployment rate.

Taking into account the labor market flexibility related to the active labor market policy measure by using the interaction term between $LMRI_{RANKING}$ and ALMP measure regression results are presented in model 1 in Tables A5-A10. In such settings the coefficient for ALMP measure will show how spending on ALMP measure will influence unemployment rate in countries with lower labor market flexibility (i.e., when $LMRI_{RANKING} = 0$), while the coefficient for $LMRI_{RANKING} * ALMP$ measure will show the difference in influence of spending on ALMP measure on unemployment rate in countries with higher labor market flexibility (i.e., when $LMRI_{RANKING} = 1$) compared to OECD countries with lower labor market flexibility. Starting from Table A5, the coefficient for public employment services and administration in model 1 is significant at 1 percent and implies that increasing spending on public employment services and administration in countries with lower labor market flexibility by 1 percentage point leads to an average decrease in unemployment rate by -0.57 percentage points. The coefficient on $(LMRI_{RANKING} * PESA)$ is insignificant.

Turning to Tables A6-A8, where training, employment incentives, and supported employment and rehabilitation are examined, results from model 1 show negative influence of spending on these three ALMP measures in countries with lower labor market flexibility on unemployment. The coefficient on $(LMRI_{RANKING} * TRA)$ is insignificant, while the coefficients on $(LMRI_{RANKING} * EIN)$ and $(LMRI_{RANKING} * SER)$ are significant suggesting on average positive influence of increasing spending on employment incentives $(-0.77 + 0.80 = 0.03)$ and negative influence of increasing spending on supported employment and rehabilitation $(-0.75 + 0.50 = -0.25)$ on unemployment rate in OECD countries with higher labor market flexibility. Coefficients for direct job creation, start-up incentives and their interaction terms with $LMRI_{RANKING}$ presented in Tables A9 and A10 in model 1 are insignificant.

Next, taking into account differences in income per capita related to the active labor market policy measure by using the interaction term between $Income_{RANKING}$ and ALMP measure regression results are presented in model 2 in Tables A5-A10. In such settings the coefficient for ALMP measure will show how spending on ALMP measure will influence unemployment rate in OECD countries with lower income (i.e., when $Income_{RANKING} = 0$), while the coefficient for $Income_{RANKING} * ALMP$ measure will show the difference in influence of spending on ALMP measure on unemployment rate in OECD countries with higher income (i.e., when $Income_{RANKING} = 1$) compared to OECD countries with lower income.

Coefficients for public employment services and administration in Table A6, supported employment and rehabilitation in Table A8, start-up incentives in Table A10 are negative and significant (model 2) implying that increasing

spending on public employment services and administration, supported employment and rehabilitation, and start-up incentives in OECD countries with lower income by 1 percentage point leads to an average decrease in unemployment rate by -1.19, -0.88 and -4.15 percentage points, correspondingly. Coefficients for training, employment incentives and direct job creation presented in Table A6, Table A7 and Table A9 in model 2 are insignificant.

Results from model 2 in Tables A6-A10 also show that only significant interaction term is ($Income_{RANKING} * SU$) suggesting on average positive influence of increasing spending on start-up incentives ($-4.15 + 5.30 = 1.15$) on unemployment rate in OECD countries with higher income compared to OECD countries with lower income.

Finally, taking into account both differences in labor market flexibility and in income per capita related to the active labor market policy measure by using the interaction terms between $LMRI_{RANKING}$, $Income_{RANKING}$ and ALMP measure regression results are presented in model 3 in Tables A5-A10. In such settings the coefficient for ALMP measure will show how spending on ALMP measure will influence unemployment rate in OECD countries with lower income and lower labor market flexibility (i.e., when $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 0$), while the coefficient for $Income_{RANKING} * LMRI_{RANKING} * ALMP$ measure with $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 1$ will show the difference in influence of spending on ALMP measure on unemployment rate in OECD countries with lower income and higher labor market flexibility, coefficient for $Income_{RANKING} * LMRI_{RANKING} * ALMP$ measure with $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 0$ will show the difference in influence of spending on ALMP measure on unemployment rate in OECD countries with higher income and lower labor market flexibility, coefficient for $Income_{RANKING} * LMRI_{RANKING} * ALMP$ measure with $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 1$ will show the difference in influence of spending on ALMP measure on unemployment rate in OECD countries with higher income and higher labor market flexibility compared to OECD countries with lower income and lower labor market flexibility.

Coefficient for public employment services and administration for OECD countries with lower income and with lower labor market flexibility ($Income_{RANKING} = 0$ and $LMRI_{RANKING} = 0$) in Table A5 in model 3 is negative and significant implying that increasing spending on public employment services and administration in OECD countries with lower income and lower labor market flexibility by 1 percentage point leads to an average decrease in unemployment rate by -2.10 percentage points. When $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 0$ the coefficient is insignificant, when $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 1$ or $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 1$ corresponding interaction coefficients with public employment services and administration

are positive and significant suggesting, however, on average negative influence of increasing spending on public employment services and administration on unemployment rate in OECD countries with higher income and lower labor market flexibility ($-2.10 + 1.68 = -0.48$) or OECD countries with higher income and higher labor market flexibility ($-2.10 + 1.43 = -0.67$) compared to OECD countries with lower income and lower labor market flexibility. Moreover, for OECD countries with higher income and higher labor market flexibility it leads to an average higher decrease in unemployment rate than in case of countries with lower labor market flexibility.

Coefficient for employment incentives for OECD countries with lower income and lower labor market flexibility ($Income_{RANKING} = 0$ and $LMRI_{RANKING} = 0$) in Table A7 in model 3 is negative and significant implying that increasing spending on employment incentives in OECD countries with lower income and lower labor market flexibility by 1 percentage point leads to an average decrease in unemployment rate by -1.18 percentage points. When $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 1$ or $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 1$ corresponding interaction coefficients with employment incentives are positive and significant suggesting on average positive influence of increasing spending on employment incentives on unemployment rate in OECD countries with higher income and lower labor market flexibility ($-1.18 + 1.20 = -0.02$) or OECD countries with higher income and higher labor market flexibility ($-1.18 + 1.25 = 0.07$) compared to OECD countries with lower income and lower labor market flexibility. Moreover, for OECD countries with higher labor market flexibility higher income per capita leads to an average higher increase in unemployment rate than for countries with lower income per capita. When $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 0$ interaction coefficient with employment incentives is positive and significant suggesting, however, on average negative influence of increasing spending on employment incentives on unemployment rate in OECD countries with higher income and lower labor market flexibility ($-1.18 + 1.12 = -0.06$) compared to OECD countries with lower income and lower labor market flexibility.

Coefficient for supported employment and rehabilitation for OECD countries with lower income and lower labor market flexibility ($Income_{RANKING} = 0$ and $LMRI_{RANKING} = 0$) in Table A8 in model 3 is negative and significant implying that increasing spending on supported employment and rehabilitation in OECD countries with lower income and lower labor market flexibility by 1 percentage point leads to an average decrease in unemployment rate by -0.93 percentage points. When $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 1$ or $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 0$ coefficients are insignificant, when $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 1$ corresponding interaction coefficient with supported employment and rehabilitation is positive and significant suggesting, however,

on average negative influence of increasing spending on supported employment and rehabilitation on unemployment rate in OECD countries with higher income and higher labor market flexibility ($-0.93 + 0.81 = -0.12$) compared to OECD countries with lower income and lower labor market flexibility.

Coefficient for start-up incentives for OECD countries with lower income and lower labor market flexibility ($Income_{RANKING} = 0$ and $LMRI_{RANKING} = 0$) in Table A10 in model 3 is negative and significant implying that increasing spending on start-up incentives in OECD countries with lower income and lower labor market flexibility by 1 percentage point leads to an average decrease in unemployment rate by -4.05 percentage points. When $Income_{RANKING} = 0$ and $LMRI_{RANKING} = 1$ or $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 1$ coefficients are insignificant, when $Income_{RANKING} = 1$ and $LMRI_{RANKING} = 0$ corresponding interaction coefficient with start-up incentives is positive and significant suggesting on average positive influence of increasing spending on start-up incentives on unemployment rate in OECD countries with higher income and lower labor market flexibility ($-4.05 + 4.97 = 0.92$) compared to OECD countries with lower income and lower labor market flexibility.

Coefficients for training, direct job creation and their interaction terms with $Income_{RANKING}$ and $LMRI_{RANKING}$ presented in Tables A6 and A9 in model 3 are all insignificant implying that there are no significant differences in influence of additional spending on these ALMP measures on unemployment in OECD countries if we take into account disparities in labor market flexibility and income per capita in these countries.

6. Conclusion

Over the last decades, OECD governments have strengthened active labor market policy to provide better opportunities in their national labor markets, which comes in line with the overall OECD strategy (OECD, 1996, 2006) and the EU employment strategy (European Commission, 2006, 2015). However, the evidence from the macroeconomic literature on the effects of ALMP spending for unemployment is inconclusive. Therefore, using updated data this paper tries to shed light on whether implementing active labor market policy measures worthwhile from an overall macroeconomic perspective and which ALMP measures are most effective.

Based on fixed effects panel regression approach the results of this research are next:

- First, from overall macroeconomic point of view the influence of total ALMP spending (without disaggregating them into individual measures) on unemployment is insignificant, while the influence of individual ALMP measures display different levels of significance and influence directions.
- Second, taking into account the magnitude of the underlying coefficients the most promising ALMP measure to deal with unemployment are start-up incentives. However, additional spending on start-up incentives decrease unemployment only for OECD countries with lower income and lower labor market flexibility, while in case of OECD countries with higher income and lower labor market flexibility it eventually increases unemployment.
- Third, increase in spending on public employment services and administration also work best for OECD countries with lower income and lower labor market flexibility, though, its effect decreases while moving to OECD countries with higher income.
- Fourth, additional spending on training decreases unemployment only for OECD countries with lower labor market flexibility without disaggregating them by income level.
- Fifth, growth in spending on employment incentives decreases unemployment only in case of OECD countries with lower labor market flexibility (both for lower or higher income countries), although, its effect is almost negligible for OECD countries with higher income. Moreover, additional spending on employment incentives eventually increases unemployment in case of OECD countries with higher labor market flexibility.
- Sixth, additional spending on supported employment and rehabilitation decreases unemployment in case of OECD countries with lower income and lower labor market flexibility or OECD countries with higher income and higher labor market flexibility, however, its effect substantially decreases while moving to second case.
- Finally, there is no evidence of significant unemployment decreasing effect of additional spending on direct job creation taking or not taking into account labor market flexibility or differences in income per capita in OECD countries.

Comparing different ALMP measures helps to guide government policy interventions and decisions. Several recommendations are elaborated from the research. First, start-up incentives, public employment services and administration, and training must be created in order to decrease the

unemployment. Second, design and evaluation of the other measures (employment incentives, supported employment and rehabilitation, direct job creation), which do not show expected effects require their revision and improvement. Third, governments must make the right decisions about unemployment by contributing more meaningfully to the ALMP measures based on labor market institutional context and taking into account differences in income per capita among OECD countries.

Notes

¹ We have excluded the sixth category of "job rotation and job sharing" due to lack of available data.

² Note that the indicator ALMP expenditures as a percentage of GDP standardized by the unemployment rate can be understood as spending per unemployed person as a percentage of GDP per member of the labor force, since $[(\text{ALMP expenditures} / \text{GDP}) / (\text{unemployment} / \text{labor force})] = [(\text{ALMP expenditure} / \text{unemployment}) / (\text{GDP} / \text{labor force})]$.

³ Terms of trade are defined as the ratio between the index of export prices and the index of import prices. If the export prices increase more than the import prices, a country has a positive terms of trade, as for the same amount of exports, it can purchase more imports.

⁴ Low p -value of Hausman test suggests using fixed effects model instead of random effects.

⁵ www.fraserinstitute.org

References

- Armingeon, K. 2007. 'Active labor market policy, international organizations and domestic politics', *Journal of European Public Policy* 14(6), 905-932.
- Baker, D., Glyn, A., Howell, D. & Schmitt, J., 2005. *Labour market institutions and unemployment: A critical assessment of the cross-country evidence*. In: Howell, D.R. (Ed.), *Fighting Unemployment: The limits of free market orthodoxy*, Oxford University Press.
- Barro, R. 2013. 'Inflation and economic growth', *Annals of Economics & Finance* 14(1), 121-144.
- Blanchard, O. & Wolfers, J. 2000. 'The role of shocks and institutions in the rise of European unemployment: The aggregate evidence', *Economic Journal* 110, 1-33.
- Bonoli, G. 2010. 'The political economy of active labor market policy', *Politics & Society* 38(4), 435-457.
- Boone, J. & Van Ours, J. 2009. 'Bringing unemployed back to work: Effective active labour market policies', *De Economist* 157, 293-313.
- Caliendo, M. & Kritikos, A. 2010. 'Start-ups by the unemployed: Characteristics, survival and direct employment effects', *Small Business Economics* 35(1), 71-92.
- Card, D., Kluve, J. & Weber, A. 2010. 'Active labor market policy evaluations: a meta-analysis', *Economic Journal* 120, 452-477.
- Card, D., Kluve, J. & Weber, A. 2017. 'What works? A meta-analysis of recent active labor market program evaluations', *Journal of the European Economic Association* 16(4), 1-38.
- Casey, B. 2004. 'The OECD jobs strategy and the European employment strategy – Two views of the labour market and the welfare state', *European Journal of Industrial Relations* 10, 329-352.
- Crépon, B., Ferracci, M. & Fougère, D. 2012. 'Training the unemployed in France: How does it affect unemployment duration and recurrence? ', *Annals of Economics and Statistics* 107(108), 175-200.
- De Serres, A. & Murtin, F. 2013. 'Do policies that reduce unemployment raise its volatility? Evidence from OECD countries', Working Papers no 1020. Paris, OECD Economics Department.
- Elmeskov, J., Martin, J. & Scarpetta, S. 1998. 'Key lessons for labour market reforms: evidence from OECD countries' experience', *Swedish Economic Policy Review* 5, 22-38.

- Escudero, V. 2018. 'Are active labour market policies effective in activating and integrating low-skilled individuals? An international comparison', *IZA Journal of Labor Policy* 7(1), 1-26.
- Estevão, M. 2003. 'Do active labor market policies increase employment?', *IMF Staff Papers* 54, 113-138.
- Estevão, M. 2007. 'Labour policies to raise employment', *IMF Staff Papers* 54, 113-138.
- European Commission 2006. Employment in Europe 2006. Directorate-general for Employment, Social Affairs & Equal Opportunities.
- European Commission 2015. Guidelines for the employment policies of the member states. Council Decision (EU) 2015/1846.
- Feldmann, H. 2010. 'Government size and unemployment in developing countries', *Applied Economics Letters* 17(3), 289-292.
- Feldmann, H. 2013. 'The unemployment effect of hiring and firing regulation in developing countries: Survey evidence', *Applied Economics Letters* 20(18), 1603-1607.
- Immervoll, H & Scarpetta, S. 2012. 'Activation and employment support policies in OECD countries. An overview of current approaches', *IZA Journal of Labor Policy* 1(1), 9.
- International Labor Organization (ILO) 2016. What works: active labor market policies in Latin America and the Caribbean. Studies on growth with equity. ILO: Geneva.
- Kluge, J. 2010. 'The effectiveness of European active labour market policies', *Labour Economics* 17, 904-918.
- Kluge, J. & Schmidt, C. 2002. 'Can training and employment subsidies combat European unemployment', *Economic Policy* 35, 409-448.
- Kreft, S. & Sobel, R. 2005. 'Public policy, entrepreneurship and economic freedom', *The Cato Journal* 25(3), 595-617.
- Martin, J. 2015. 'Activation and active labour market policies in OECD countries: Stylized facts and evidence on their effectiveness', *IZA Journal of Labor Policy* 4, 4-26.
- Murtin, F. & de Serres, A. 2014. 'How do policies affect the exit rate out of unemployment? Disentangling job creation from labor market frictions', *Labor* 28, 190-208.
- Neumark, D. 2013. 'Spurring job creation in response to severe recessions: Reconsidering hiring credits', *Journal of Policy Analysis and Management* 32(1), 142-171.

- Nickell, S. 1977. 'Unemployment and labor market rigidities: Europe versus North America', *Journal of Economic Perspectives* 11, 55-74.
- Nickell, S. 1997. 'Unemployment and labor market rigidities: Europe versus North America', *Journal of Economic Perspectives* 109, 1-24.
- Nickell S., Nunziata, L. & Wolfgang O. 2005. 'Unemployment in the OECD since the 1960s. What do we know? ', *Economic Journal* 115(500), 502-506.
- OECD 1996. The OECD job strategy – Pushing ahead with the strategy. OECD Publishing.
- OECD 2006. Boosting jobs and incomes – The reassessed job strategy. In: OECD Employment Outlook 2006. OECD Publishing.
- OECD 2013. OECD Employment Outlook 2013. OECD Publishing, Paris.
- OECD 2023. Social Expenditures Database 1980-2022. Paris, OECD.
- Puig-Barrachina, V., Giró, P., Artazcoz, L., Bartoll, X., Cortés-Franch, I., Fernández, A. & Borrell, C. 2020. 'The impact of active labour market policies on health outcomes: A scoping review', *European Journal of Public Health* 30(1), 36-42.
- Sahnoun, M. & Abdennadher, C. 2018. 'The efficiency of active labor market policies: A comparative analysis of Tunisia and OECD countries', *International Economic Journal* 32(1), 1-21.
- Scarpetta, S. 1996. 'Assessing the role of labour market policies and institutional settings on unemployment: A cross-country study', *OECD Economic Studies* 26.
- Van Vliet, O. 2010. 'Divergence within convergence: Europeanisation of social and labor market policies', *Journal of European Integration* 32(3), 269-290.
- Van Vliet, O & Koster, F. 2011. 'Europeanization and the political economy of active labor market policies', *European Union Politics* 12(2), 217-239.
- Wolff, J. & Stephan, G. 2013. 'Subsidized work before and after the German Hartz Reforms: Design of major schemes, evaluation results and lessons learnt', *IZA Journal of Labor Policy* 2(1), 16.
- Zervoyianni, A. & Anastasiou, A. 2014. 'Does central bank independence really matter? Re-assessing the role of the independence of monetary policymakers in macroeconomic outcomes', *International Journal of Economics and Business Research* 8, 427-473.

Appendix A

Table A1. List of OECD countries

Countries
Austria, Australia, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, New Zealand, Norway, Poland, Portugal, South Korea, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United States

Table A2. Variables description and data sources

Variable	Definition	Measure	Source
<i>Dependent variables</i>			
Unemployment rate	The unemployed persons in the age of 15 to 64 years as a percentage of the labor force.	Percentage	OECD database
<i>Independent variables</i>			
Public employment services and administration	Public spendings on services, such as information and support services and other activities, such as the administration of labor market policy services measured as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
Training	Public spendings on programs aimed at improving the skills and qualifications of the labor force measured as a percentage of GDP. It encompasses vocational training, apprenticeships, and various forms of education and skill development initiatives standardized by the unemployment rate.	Percentage	OECD database
Employment incentives	Public spendings on recruitment incentives, employment maintenance incentives, and job rotation and job sharing measured as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
Supported employment and rehabilitation	Public spendings on subsidies for the productive employment of persons with a permanently (or long-term) reduced capacity to work and on vocational rehabilitation for persons with a reduced working capacity which prepares them to move on to work or regular training measured as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
Direct job creation	Public spendings on programs to create additional jobs measured as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
Start-up incentives	Public spendings on programs that encourage entrepreneurship as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
<i>Control variables</i>			
Passive labor market policy	Public spendings on passive labor market policy measured as a percentage of GDP standardized by the unemployment rate.	Percentage	OECD database
Gross domestic product growth	The annual growth rate of real GDP.	Percentage	OECD database

Terms of trade	Terms of trade are defined as the ratio between the index of export prices and the index of import prices.	Index	OECD database
Inflation	Annual change in the consumer price index (CPI) defined as the change in the prices of a basket of goods and services that are generally purchased by specific groups of households.	Percentage	OECD database
Real interest rate	The long-term lending interest rate adjusted for inflation as measured by CPI.	Percentage	OECD database, own calculations
Labor Market Regulations Index	Labor Market Regulations Index is a composite index based on six measures of labor market institutions (minimum wage, hiring and firing regulations, centralized collective bargaining, mandated cost of hiring, mandated cost of worker dismissal and conscription). The LMR index is an unweighted average of these six measures and its value varies from 1-10.	Index	Fraser Institute ⁵
Economic Freedom Index	Summary index from Economic Freedom of the World, scaled to take values between 0 (least free) and 10 (most free). The index measures the degree of economic freedom in the following areas: (1) Size of government: expenditures, taxes and enterprises, (2) Legal structure and security of property rights, (3) Access to sound money (4) Freedom to trade internationally, (5) Regulation of credit, labor, and business. The summary ratings of the index are the arithmetic means of the five area ratings.	Index	Fraser Institute ⁵
Tax wedge	Tax wedge is defined as the ratio between the amount of taxes paid by an average single worker (a single person at 100% of average earnings) without children and the corresponding total labour cost for the employer. The average tax wedge measures the extent to which tax on labour income discourages employment. This indicator is measured in percentage of labour cost.	Percentage	OECD database
Population aged 0-14	Share of population in the age of 0 to 14 years.	Percentage	OECD database
Education	Share of population in the age of 25 to 64 years with tertiary level of education.	Percentage	OECD database
Part-time employment	Part time employment as percentage of total employment.	Percentage	OECD database, World Bank database

<i>Dummy variables</i>			
LMRI ranking	The indicator takes value of 1 when average LMRI for particular country is above the median value obtained from the distribution of all countries and 0 otherwise.	Values between 0 and 1	Own calculations
Income ranking	The indicator takes value of 1 when average GDP per capita (current US Dollars) for particular country is above the median value obtained from the distribution of all countries and 0 otherwise.	Values between 0 and 1	Own calculations

Source: OECD database, Fraser Institute database.

Table A3. Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
Unemployment rate	493	7.798	4.249	2.014	27.468
<i>Active labor market policies:</i>					
Public employment services and administration	493	1.972	1.723	0.000	12.795
Training	493	2.328	2.409	0.000	11.098
Employment incentives	493	1.709	4.599	0.000	91.780
Supported employment and rehabilitation	493	1.363	2.509	0.000	19.490
Direct job creation	493	0.727	1.085	0.000	7.194
Start-up incentives	493	0.176	0.252	0.000	1.316
Active labor market policies: Total	493	8.274	7.715	0.438	97.195
Passive labor market policies: Total	493	10.952	8.508	0.000	49.063
GDP growth	493	2.289	3.294	-14.839	24.475
Terms of trade	493	99.779	6.633	78.651	142.451
Inflation	493	1.858	1.779	-4.478	15.402
Real interest rate	493	1.510	2.395	-8.971	20.996
Labor Market Regulations Index	493	6.594	1.320	3.540	9.260
Economic Freedom Index	493	7.829	0.374	6.650	8.780
Tax wedge	493	37.059	10.488	7.000	56.087
Population aged 0-14	493	16.575	2.415	12.057	25.958
Education	463	32.247	9.924	10.460	59.375
Part-time employment	493	14.121	6.772	1.962	31.850
LMRI ranking	493	0.517	0.500	0.000	1.000
Income ranking	493	0.483	0.500	0.000	1.000

Source: Authors' own calculations based on OECD and Fraser Institute data.

Table A4. Regression results for total ALMP and individual ALMP measures

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<i>Active labor market policies:</i>								
Public employment services and administration		-0.592*** [0.208]						-0.568*** [0.161]
Training			-0.613*** [0.202]					-0.397* [0.200]
Employment incentives				0.025* [0.013]				0.024** [0.010]
Supported employment and rehabilitation					-0.332 [0.203]			-0.104 [0.140]
Direct job creation						-0.105 [0.181]		0.038 [0.155]
Start-up incentives							-2.237* [1.343]	-2.728** [1.077]
Total	-0.028 [0.048]							
<i>Control variables:</i>								
Passive labor market policies: Total	-0.349*** [0.078]	-0.314*** [0.073]	-0.326*** [0.068]	-0.371*** [0.076]	-0.346*** [0.075]	-0.359*** [0.078]	-0.350*** [0.074]	-0.279*** [0.062]
GDP growth (-1)	-0.227*** [0.056]	-0.217*** [0.054]	-0.234*** [0.053]	-0.226*** [0.057]	-0.216*** [0.054]	-0.228*** [0.057]	-0.229*** [0.055]	-0.221*** [0.050]
Terms of trade	0.028 [0.036]	0.031 [0.037]	0.030 [0.032]	0.026 [0.037]	0.033 [0.035]	0.025 [0.039]	0.026 [0.036]	0.034 [0.037]
Inflation	0.136 [0.152]	0.151 [0.146]	0.130 [0.145]	0.139 [0.153]	0.155 [0.154]	0.136 [0.153]	0.168 [0.156]	0.192 [0.144]
Real interest rate	0.456*** [0.077]	0.441*** [0.075]	0.439*** [0.071]	0.463*** [0.078]	0.475*** [0.073]	0.458*** [0.078]	0.490*** [0.077]	0.473*** [0.063]
Economic Freedom Index	-3.403*** [0.828]	-2.742*** [0.887]	-3.211*** [0.860]	-3.340*** [0.794]	-3.085*** [0.826]	-3.389*** [0.828]	-3.262*** [0.821]	-2.319*** [0.875]
Tax wedge	0.168 [0.137]	0.074 [0.134]	0.180 [0.126]	0.164 [0.140]	0.148 [0.131]	0.173 [0.142]	0.180 [0.141]	0.088 [0.121]
Population aged 0-14	0.096 [0.296]	0.224 [0.286]	-0.001 [0.283]	0.095 [0.302]	0.101 [0.302]	0.092 [0.300]	0.043 [0.306]	0.098 [0.270]
Education	0.006 [0.045]	0.027 [0.044]	-0.036 [0.051]	-0.001 [0.046]	0.020 [0.041]	0.002 [0.046]	0.008 [0.044]	0.012 [0.044]
Part-time employment	0.760*** [0.167]	0.780*** [0.163]	0.764*** [0.158]	0.787*** [0.167]	0.771*** [0.165]	0.770*** [0.167]	0.715*** [0.144]	0.713*** [0.139]
Constant	16.503 [12.455]	12.139 [11.889]	18.231 [12.687]	16.217 [12.508]	13.725 [12.426]	16.572 [12.552]	16.684 [12.682]	12.435 [12.403]
Observations	463	463	463	463	463	463	463	463

No of countries	29	29	29	29	29	29	29	29
R-squared	0.644	0.665	0.667	0.644	0.653	0.643	0.660	0.705
Hausman Test Statistic (<i>p</i> -value)	63.62 (0.000)	63.34 (0.000)	53.24 (0.000)	33.40 (0.001)	54.32 (0.000)	57.53 (0.000)	43.27 (0.000)	66.59 (0.000)

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A5. Sensitivity regression results for public employment services and administration

Variables	Model 1	Model 2	Model 3
<i>Active labor market policy:</i>			
Public employment services and administration	-0.573** [0.263]	-1.189* [0.674]	-2.103*** [0.572]
<i>Control variables:</i>			
$LMRI_{RANKING} * PESA$ (Higher LMRI countries)	-0.048 [0.457]		
$Income_{RANKING} * PESA$ (Higher income countries)		0.724 [0.661]	
$Income_{RANKING} * LMRI_{RANKING} * PESA$ (Lower income countries * Higher LMRI countries)			1.506 [0.971]
$Income_{RANKING} * LMRI_{RANKING} * PESA$ (Higher income countries * Lower LMRI countries)			1.675*** [0.569]
$Income_{RANKING} * LMRI_{RANKING} * PESA$ (Higher income countries * Higher LMRI countries)			1.428** [0.629]
Passive labor market policies: Total	-0.315*** [0.072]	-0.287*** [0.074]	-0.284*** [0.069]
GDP growth (-1)	-0.217*** [0.053]	-0.206*** [0.050]	-0.210*** [0.050]
Terms of trade	0.030 [0.037]	0.032 [0.038]	0.033 [0.037]
Inflation	0.154 [0.146]	0.167 [0.145]	0.129 [0.143]
Real interest rate	0.442*** [0.074]	0.444*** [0.073]	0.429*** [0.073]
Economic Freedom Index	-2.735*** [0.898]	-2.636** [0.876]	-2.599*** [0.867]
Tax wedge	0.076 [0.134]	0.068 [0.127]	0.025 [0.130]
Population aged 0-14	0.217 [0.294]	0.163 [0.288]	0.272 [0.293]
Education	0.027 [0.045]	0.034 [0.042]	0.035 [0.044]
Part-time employment	0.778** [0.167]	0.770*** [0.161]	0.786*** [0.165]
Constant	12.229 [11.911]	12.056 [11.384]	11.535 [11.656]
Observations	463	463	463
No of countries	29	29	29
R-squared	0.665	0.671	0.681
Hausman Test Statistic (<i>p</i> -value)	60.76 (0.000)	72.08 (0.000)	72.89 (0.000)

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A6. Sensitivity regression results for training

Variables	Model 1	Model 2	Model 3
<i>Active labor market policy:</i>			
Training	-0.591** [0.228]	-1.107 [0.651]	-0.822 [0.831]
<i>Control variables:</i>			
$LMRI_{RANKING} * TRA$ (Higher LMRI countries)	-0.074 [0.380]		
$Income_{RANKING} * TRA$ (Higher income countries)		0.663 [0.616]	
$Income_{RANKING} * LMRI_{RANKING} * TRA$ (Lower income countries * Higher LMRI countries)			-0.869 [0.929]
$Income_{RANKING} * LMRI_{RANKING} * TRA$ (Higher income countries * Lower LMRI countries)			0.334 [0.814]
$Income_{RANKING} * LMRI_{RANKING} * TRA$ (Higher income countries * Higher LMRI countries)			0.470 [0.817]
Passive labor market policies: Total	-0.326*** [0.069]	-0.316*** [0.069]	-0.326*** [0.073]
GDP growth (-1)	-0.235*** [0.054]	-0.234*** [0.052]	-0.232*** [0.053]
Terms of trade	0.030 [0.032]	0.028 [0.032]	0.028 [0.032]
Inflation	0.131 [0.147]	0.111 [0.143]	0.114 [0.147]
Real interest rate	-3.200** [0.882]	0.428*** [0.074]	0.435*** [0.076]
Economic Freedom Index	-3.200** [0.882]	-3.368*** [0.884]	-3.504*** [0.862]
Tax wedge	0.179 [0.127]	0.155 [0.136]	0.169 [0.138]
Population aged 0-14	-0.002 [0.283]	0.087 [0.264]	0.068 [0.265]
Education	-0.037 [0.050]	-0.026 [0.048]	-0.027 [0.049]
Part-time employment	0.760** [0.170]	0.737** [0.155]	0.732** [0.171]
Constant	18.279 [12.689]	19.086 [12.691]	20.069 [12.014]
Observations	463	463	463
No of countries	29	29	29
R-squared	0.667	0.673	0.676
Hausman Test Statistic (<i>p</i> -value)	51.55 (0.000)	55.77 (0.000)	52.43 (0.000)

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A7. Sensitivity regression results for employment incentives

Variables	Model 1		Model 2		Model 3	
<i>Active labor market policy:</i>						
Employment incentives	-0.772*	[0.446]	0.018	[0.014]	-1.182**	[0.489]
<i>Control variables:</i>						
$LMRI_{RANKING} * EIN$ (Higher LMRI countries)	0.799*	[0.445]				
$Income_{RANKING} * EIN$ (Higher income countries)			0.065	[0.048]		
$Income_{RANKING} * LMRI_{RANKING} * EIN$					1.201**	[0.489]
(Lower income countries * Higher LMRI countries)						
$Income_{RANKING} * LMRI_{RANKING} * EIN$					1.118*	[0.600]
(Higher income countries * Lower LMRI countries)						
$Income_{RANKING} * LMRI_{RANKING} * EIN$					1.248**	[0.482]
(Higher income countries * Higher LMRI countries)						
Passive labor market policies: Total	-0.337***	[0.068]	-0.375***	[0.078]	-0.316***	[0.070]
GDP growth (-1)	-0.228***	[0.056]	-0.227***	[0.057]	-0.232***	[0.056]
Terms of trade	0.030	[0.037]	0.025	[0.038]	0.029	[0.038]
Inflation	0.145	[0.156]	0.139	[0.153]	0.141	[0.157]
Real interest rate	0.460**	[0.080]	0.463***	[0.078]	0.449***	[0.083]
Economic Freedom Index	-3.169**	[0.806]	-3.311***	[0.794]	-3.209***	[0.822]
Tax wedge	0.178	[0.145]	0.165	[0.140]	0.184	[0.146]
Population aged 0-14	0.155	[0.289]	0.087	[0.303]	0.179	[0.291]
Education	0.011	[0.047]	-0.004	[0.047]	0.017	[0.049]
Part-time employment	0.747**	[0.161]	0.787**	[0.167]	0.734***	[0.160]
Constant	13.404	[12.738]	16.254	[12.598]	12.797	[12.979]
Observations	463		463		463	
No of countries	29		29		29	
R-squared	0.655		0.645		0.660	
Hausman Test Statistic (<i>p</i> -value)	61.51	(0.000)	36.76	(0.000)	142.59	(0.000)

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A8. Sensitivity regression results for supported employment and rehabilitation

Variables	Model 1	Model 2	Model 3
<i>Active labor market policy:</i>			
Supported employment and rehabilitation	-0.748*** [0.204]	-0.875* [0.428]	-0.933*** [0.214]
<i>Control variables:</i>			
$LMRI_{RANKING} * SER$ (Higher LMRI countries)	0.496* [0.280]		
$Income_{RANKING} * SER$ (Higher income countries)		0.713 [0.435]	
$Income_{RANKING} * LMRI_{RANKING} * SER$ (Lower income countries * Higher LMRI countries)			0.092 [0.724]
$Income_{RANKING} * LMRI_{RANKING} * SER$ (Higher income countries * Lower LMRI countries)			0.397 [0.476]
$Income_{RANKING} * LMRI_{RANKING} * SER$ (Higher income countries * Higher LMRI countries)			0.810*** [0.217]
Passive labor market policies: Total	-0.342*** [0.075]	-0.320*** [0.076]	-0.320*** [0.077]
GDP growth (-1)	-0.216*** [0.053]	-0.211*** [0.052]	-0.212*** [0.053]
Terms of trade	0.039 [0.036]	0.031 [0.036]	0.035 [0.037]
Inflation	0.153 [0.153]	0.176 [0.152]	0.176 [0.154]
Real interest rate	0.473*** [0.074]	0.480*** [0.067]	0.480*** [0.067]
Economic Freedom Index	-3.153*** [0.819]	-2.864*** [0.828]	-2.923*** [0.837]
Tax wedge	0.140 [0.130]	0.122 [0.125]	0.128 [0.124]
Population aged 0-14	0.111 [0.294]	0.010 [0.280]	0.001 [0.282]
Education	0.020 [0.040]	0.027 [0.040]	0.026 [0.038]
Part-time employment	0.780*** [0.167]	0.769*** [0.161]	0.768*** [0.166]
Constant	13.722 [12.557]	14.082 [11.897]	14.221 [12.059]
Observations	463	463	463
No of countries	29	29	29
R-squared	0.656	0.662	0.663
Hausman Test Statistic (p-value)	53.95 (0.000)	27.61 (0.006)	31.76 (0.004)

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A9. Sensitivity regression results for direct job creation

Variables	Model 1		Model 2		Model 3	
<i>Active labor market policy:</i>						
Direct job creation	-0.050	[0.191]	-0.130	[0.246]	-0.076	[0.219]
<i>Control variables:</i>						
$LMRI_{RANKING} * DJC$ (Higher LMRI countries)	-0.256	[0.422]				
$Income_{RANKING} * DJC$ (Higher income countries)			0.086	[0.353]		
$Income_{RANKING} * LMRI_{RANKING} * DJC$ (Lower income countries * Higher LMRI countries)					-1.188	[1.501]
$Income_{RANKING} * LMRI_{RANKING} * DJC$ (Higher income countries * Lower LMRI countries)					0.135	[0.356]
$Income_{RANKING} * LMRI_{RANKING} * DJC$ (Higher income countries * Higher LMRI countries)					-0.033	[0.434]
Passive labor market policies: Total	-0.358**	[0.079]	-0.359**	[0.078]	-0.357**	[0.079]
GDP growth (-1)	-0.229**	[0.057]	-0.228**	[0.057]	-0.229**	[0.057]
Terms of trade	0.023	[0.039]	0.026	[0.039]	0.026	[0.039]
Inflation	0.133	[0.152]	0.137	[0.153]	0.138	[0.155]
Real interest rate	0.455**	[0.077]	0.459**	[0.077]	0.465**	[0.076]
Economic Freedom Index	-3.380**	[0.834]	-3.373**	[0.828]	-3.258**	[0.841]
Tax wedge	0.168	[0.145]	0.174	[0.144]	0.176	[0.141]
Population aged 0-14	0.078	[0.306]	0.100	[0.304]	0.078	[0.312]
Education	-0.003	[0.048]	0.004	[0.048]	0.002	[0.048]
Part-time employment	0.761**	[0.176]	0.773**	[0.174]	0.771**	[0.177]
Constant	17.397	[13.167]	16.062	[13.108]	15.547	[12.494]
Observations	463		463		463	
No of countries	29		29		29	
R-squared	0.644		0.643		0.645	
Hausman Test Statistic (<i>p</i> -value)	381.48 (0.000)		319.36 (0.000)		54.98 (0.000)	

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

Table A10. Sensitivity regression results for start-up incentives

Variables	Model 1		Model 2		Model 3	
<i>Active labor market policy:</i>						
Start-up incentives	-1.779	[1.573]	-4.154***	[1.384]	-4.049**	[1.844]
<i>Control variables:</i>						
$LMRI_{RANKING} * SUI$ (Higher LMRI countries)	-2.331	[2.971]				
$Income_{RANKING} * SUI$ (Higher income countries)			5.301***	[1.675]		
$Income_{RANKING} * LMRI_{RANKING} * SUI$ (Lower income countries * Higher LMRI countries)					-0.306	[3.117]
$Income_{RANKING} * LMRI_{RANKING} * SUI$ (Higher income countries * Lower LMRI countries)					5.204**	[2.012]
$Income_{RANKING} * LMRI_{RANKING} * SUI$ (Higher income countries * Higher LMRI countries)					4.971	[7.205]
Passive labor market policies: Total	-0.350***	[0.076]	-0.325***	[0.068]	-0.326***	[0.067]
GDP growth (-1)	-0.226***	[0.055]	-0.230***	[0.053]	-0.230***	[0.053]
Terms of trade	0.026	[0.036]	0.028	[0.036]	0.028	[0.036]
Inflation	0.178	[0.156]	0.159	[0.158]	0.160	[0.156]
Real interest rate	0.507**	[0.076]	0.480***	[0.079]	0.483***	[0.079]
Economic Freedom Index	-3.115**	[0.869]	-3.057***	[0.775]	-3.043***	[0.829]
Tax wedge	0.145	[0.138]	0.106	[0.137]	0.103	[0.137]
Population aged 0-14	0.034	[0.296]	0.139	[0.278]	0.136	[0.277]
Education	0.011	[0.041]	0.032	[0.038]	0.032	[0.041]
Part-time employment	0.682**	[0.159]	0.685***	[0.142]	0.681***	[0.154]
Constant	17.453	[12.633]	15.532	[12.624]	15.662	[12.566]
Observations	463		463		463	
No of countries	29		29		29	
R-squared	0.663		0.678		0.678	
Hausman Test Statistic (<i>p</i> -value)	19.75 (0.072)		65.00 (0.000)		64.10 (0.000)	

Source: Author's estimates based on OECD data.

Note: Robust standard errors in square brackets. Significance: ***: 1 percent; **: 5 percent; *: 10 percent.