REVIEW OF INNOVATION AND COMPETITIVENESS

A JOURNAL OF ECONOMIC AND SOCIAL RESEARCH

6
VOLUME
ISSUE 1
2020

Editorial address

Juraj Dobrila University of Pula
Faculty of economics and tourism "Dr. Mijo Mirković"
Zagrebačka 30, 52100 Pula (Croatia)
+385 (0)52 377-047, fax: +385 (0)52 377-013
e-mail: fet-ric@unipu.hr

The print issue is published annually, with continuous publishing of individual articles online.
Annual subscription: 200 HRK.
Journal is published with the help of Ministry of science and education.

Design

Koncept, Pula

Print

Sveučilište Jurja Dobrile u Puli, Sveučilišna knjižnica u Puli, Ured za izdavačku djelatnost

Copies

50

JOURNAL DOI: 10.32728/ric
ISSUE DOI: 10.32728/ric.2020.61

ISSN (Print): 1849-8795

ISSN (Online): 1849-9015

CONTENTS

AN AUTOREGRESSIVE ANALYSIS OF THE DETERMINANTS OF PRIVATE SAVINGS IN NIGERIA

Adeniyi J. Adedokun, Olabusuyi R. Falayi, Adebowale M. Adeleke

(1)Department of Economics,Dominican University, Ibadan, Oyo State, Nigeria
(2) Department of Economics,Dominican University, Ibadan, Oyo State, Nigeria
(3) Department of Economics, University of Ibadan, Ibadan, Nigeria

Adeniyi J. Adedokun
Department of Economics, Dominican University, Ibadan, Oyo State, Nigeria
jimmyades2005@yahoo.com

Article info
Paper category: Original Scientific Paper
Received: 17.9.2018.
Accepted: 11.12.2019.
JEL classification: E21
DOI: 10.32728/ric.2020.61/1

Keywords
Determinants of private savings; Autoregressive distributed lag; Long-run; Short-run

ABSTRACT

Purpose. *Despite the increasing trend of private savings in Nigeria, the country is still characterised by low investment and output growth, thus, suggesting that the average saving rate is still far from being impressive. This study investigates the determinants of private savings in Nigeria.*

Methodology. *Autoregressive Distributed Lag (ARDL) Model using annual time series data from 1981 to 2016 within the theoretical framework derived from the life-cycle hypothesis is employed in this study. The key variables under investigation are private savings, income, dependency ratio, real interest rate, social security payment, financial development and macroeconomic stability. The data used for analysis are sourced from Central Bank of Nigeria Statistical Bulletin (2016) and World Development Indicator (2016).*

Findings. *The results show that lifetime income and social security payment have significant positive relationship with private saving in the long-run, while adult dependency has significant negative relationship. In the short-run, adult dependency and social security payment have significant positive relationship with private savings. In addition, the result shows that 62% of deviation from the long-run equilibrium level of private savings is annually corrected for by the model estimated.*

Originality. *This research investigates both the long-run and short-run effects of the various determinants of private savings in Nigeria. Thus, the study can serve as eye opener to the important variables that can improve the level of private savings in Nigeria.*

1. INTRODUCTION

Savings remain one of the most important economic activity for mobilising funds for investment purposes; therefore, it is recognised as a catalyst of economic growth. An adequate supply of domestic savings remains a core national policy objective, mainly due to its direct impact on growth process as well as its role as domestic investment stimulants. Ogbokor and Samahiya (2014) emphasised that higher savings rate is crucial for long term investment process, which in turn facilitates an increase in employment rate and economic growth. Given the increasing integration of international financing for instance, it is high domestic savings that can ensure macroeconomic stability internally. The position of the literature (for example Ogbokor and Samahiya, 2014) on the positive influence of savings on investment and subsequently growth and development lend credence to the importance of savings.

However, the dismal domestic savings behaviour in most African countries, including Nigeria, relative to other regions of the world have been of concern to economists in the recent time. For instance, despite the increasing trend of private savings in Nigeria, the country is still characterised by low investment and output growth, thus, suggesting that the average saving rate ratio is still far from being impressive. Iyoha (1998) affirmed this poor state of saving-investment and output relationship in Nigeria and attributed the mid-1980s negative output growth rate to a host of factors among which are decline in investment and savings. In a similar development, Nnanna (2003) also posited that the underdeveloped state of the Nigerian economy is due to her poor savings and investment culture. Basically, there is lack of incentives for a good domestic savings culture in Nigeria mainly due to poor understanding of savings determinants.

While acknowledging the vast contributions of scholars in the literature on various aspects of saving behaviour, it is also important to emphasise that crucial questions still remain unanswered with regard to factors that can enhance the performance of national savings. Germane in this study are issues that focus on: (i) effectiveness of higher income rate as stimulus for raising private saving rate in Nigeria; (ii) effectiveness of financial development for enhancing savings behaviour in Nigeria; and (iii) whether there are roles for monetary policy in increasing private savings in Nigeria?

Various determinants of savings have been identified in the literature such as income, financial development, inflation, and interest rate, among others. Studies have investigated the long-run and the short-run effects of the various determinants, and several standings have been promoted depending on the methodology of the study. Thus, to extend the literature and study the differential impact of the long-run and short-run analyses, this study employs an autoregressive distributed lag (ARDL) technique to analyse the determinants of private savings in Nigeria, given the fact that much of the extant studies focus more on investigating total national savings.

The rest of this paper is sectionalized as follows. Section 2 presents the literature review. Section 3 presents stylized facts on national savings in Nigeria. Section 4 covers the methodology for the study. Section 5 presents empirical analysis. Finally, section 6 covers conclusion.

2. LITERATURE REVIEW

Theoretically, many arguments have been established to explain the motivation for savings. For instance, Keynesian Theory propounded by Keynes (1936) identified absolute disposable income as an important determinant of saving. He defined savings as the amount left over when the cost of consumer expenditure is subtracted from the disposable income that he or she earns in a given period of time. On the other hand, Permanent Income Hypothesis (PIH) advocated by Friedman (1957) differentiates between permanent and transitory income. He opined that savings is influenced by both permanent and transitory income as well as present level of wealth, both human and nonhuman. Also, Ando and Modigliani (1963) propounded the Life Cycle Hypothesis (LCH) and advanced the view that the motivation for savings is the enablement of lifetime consumption. An individual's savings will peak in his or her prime earning years and fall as the savings are drawn down to finance consumption during retirement years. Theoretically, the marginal utility of consumption at a time of lower income is greater than that at a time of higher income (Gersovitz, 1995).

Empirically, there are ample number of studies on determinants of savings. Example of such studies include the work of Modigliani and Brumberg (1954), Ando and Modigliani (1963), Modigliani (1986), Loayza et al. (2000), Athukorala and Tsai (2003), Ozcan, Gunay and Ertact (2003), Kudaisi (2013), Ogbokor and Samahiya (2014), Ndirangu & Muturi (2015), Aissata, Yushi and Borojo (2016), and Abdelmawla and Omran (2016), among others. Results obtained from these studies have been mixed and many authors like Modigliani and Brumberg (1954), Ando and Modigliani (1963) and Modigliani (1986) indicated that savings is positively determined by growth rate of income. Results of these studies are consistent with findings of some household savings studies such as Ogbokor and Samahiya (2014), Aissata,Yushi and Borojo (2016), and Abdelmawla and Omran (2016). However, study by Loayza et al. (2000) obtained negative relationship between saving and growth rate of income for developing countries.

Another relevant determinant of private savings investigated in the literature is financial depth mostly captured by the ratio of money supply (broad money, M2) to GDP (Ozcan, et al., 2003). Financial depth or financial market development shows the range and availability of financial assets, accessibility to banking facilities, and extent of credit opportunity. Increase in financial depth can have positive effect on domestic saving (Touny, 2008). However, in Ogbokor and Samahiya (2014) and Aissata,Yushi and Borojo (2016), financial deepening have no significant effect on savings in Namibia and Guinea, respectively.

In most studies, inflation is incorporated to capture the impact of macroeconomic uncertainty on saving behaviours. Ndirangu & Muturi (2015) and Kudaisi (2013) found that inflation has robust positive effect on gross domestic saving in Kenya and West African countries. These literatures reason out that inflation has positive effect on saving because higher uncertainty would rise saving since risk averse consumers set resources aside as a precaution against possible adverse changes in income and other factors (Modigliani and Cao, 2004). Another effect of inflation is that since it increases nominal interest rate, it will in turn lead to higher household income and saving. This finding is consistent with studies such as Ogbokor and Samahiya (2014) and Aissata,Yushi and Borojo (2016). However, if interest rate is not adjustable to inflation rate changes, a rise in inflation rate will reduce real interest rate and this will be a disincentive to save in financial assets (Loayza et al.,2000).

Other variables that have been investigated as determinants of savings in the literature include deposit interest rate and past income. The behaviour of these variables in the literature were also characterized with mixed results.

Considering the articles reviewed, it is clear that consensus has not been reached as findings are still debatable. The behaviour of the various determinants of savings varies across studies. While some showed clear direction of impact, some were ambiguous.

3. STYLIZED FACTS ON NATIONAL SAVINGS IN NIGERIA

Nigeria economy has witnessed a steady growth in the last few decades. For example, the GDP growth rate averaged 6.80 percent between 2005 and 2013. The growth rate increased from 4.2% in 2012 to 5.5% in 2013. However, the productive base of the Nigerian economy remains weak, narrow and externally-oriented with primary production activities of mining and quarrying (including crude oil and gas) accounting for about 13.82% of total revenue and over 80% of government revenues (Ajakaiye and Babatunde, 2015).

However, despite the fact that Nigerian economy is growing, the proportion of the population living below the poverty line increased significantly from 1980 to 2004. The upshot of the foregoing is that while the country has recorded a steady rate of growth, it has not been inclusive. One of the reasons why the current growth pattern has not been inclusive is the limited sphere of influence that monetary policy has on the Nigerian economy due to its weak productive structure. For example, the agricultural sector is largely insulated from the effects of monetary policy because it is largely peasantry in nature except for a few modern farms. In addition, the services sector with the dominant share of the GDP is largely informal in nature and isolated from the economy except for few sub-sectors such as telecommunication, financial, and the recent modern chain stores. However, the manufacturing sector which the monetary policy is expected to influence directly is small given its share

in GDP. Thus, the success of monetary policy depends on the productive structure of the economy. The challenge therefore is how to make monetary policy more effective especially with regards to savings mobilization for productive economic activities. But the trend of Determinants and performance of savings mobilisation for productive investment is far from being impressive. Although the interest rate movement have been highly volatile (Table 1.), yet private savings on the other hand have been less volatile. The extremely low and negative real interest rate as recorded during the period of study has the likelihood of being responsible for the low private savings recorded. Private savings only begins to witness upward trend in the 1990s. Therefore, private savings in the last one and half decade (1990-2006) trends upward but still shows dismal performance towards the end of the period under study.

Table 1.: Five Year Average of Growth of Selected Macroeconomic Variables

YEAR	Financial Development	Adult Dependency	RGDP	Social Security Payment	Private Saving Rate	Real Interest Rate	Inflation
1981-1985	10.886	5.386	1.657	4.421	14.474	-7.776	15.396
1986-1990	11.263	5.516	5.317	36.179	19.350	-11.924	25.870
1991-1995	12.209	5.473	1.068	38.935	31.173	-32.361	48.926
1996-2000	10.885	5.321	3.095	28.964	29.237	-1.302	12.269
2001-2005	13.546	5.169	9.645	21.946	29.105	-1.654	15.729
2006-2010	18.140	5.145	7.827	18.616	36.616	0.272	10.092
2011-2015	19.513	5.167	4.802	3.977	14.928	-1.544	9.722
2016	21.291	5.183	-1.583	3.445	7.524	0.903	9.059

Source: Author's computation from Statistics Obtained from the Central Bank of Nigeria Statistical Bulleting (2016).

A comparative analysis of private savings vis-a-vis financial development, real interest rate, *RGDP* and social security payments indicates that the private saving (*PSR*) mirrored the trends in social security payment (*SSP*) during the period. Available data shows that *PSR* rises as *SSP* was increasing reaching an all-time high of 54.3% in 1993 when *SSP* was 106.1%. The periods of negative growth in *RGDP* but increase in *SSP* might not be unconnected with periods of huge borrowings and fiscal deficit financing by the government. Growth in financial development does not move in the same direction with *SSP* growth rate. Moreover, *RGDP* moves in the same direction with *PSR* and *SSP* in the period under study.

4. METHODOLOGY

4.1. Model Specification

The review of theoretical framework provides guidance to determine the set of relevant variables to be included in an empirical investigation of saving behaviour in Nigeria. Thus, the empirical model was adopted from a study by Huang (2006). The adopted model is however, modified in the context of this study to account for financial development and it is specified as follows:

$$PSR = F(INCOM, ADEP, INTR, SSP, FD, MAC) \quad (1)$$

Where *PSR* is growth of private saving, *INCOM* is income, *ADEP* is dependency ratio, *INTR* is real interest rate, *SSP* is social security payment, *FD* represents financial development, while *MAC* denotes macroeconomic stability proxy by inflation rate. However, the model specified in equation (1) above is in its implicit form, to derive the explicit form that is amendable to regression analysis; the model is further respecified in explicit form as follows:

$$PSR_t = \beta_0 + \beta_1 INCOM + \beta_2 ADEP + \beta_3\, INTR + \beta_4 SSP + \beta_5 FD + \beta_6\, MAC + \varepsilon_t \quad (2)$$

Equation (2) is further transformed into an autoregressive distributed lag model as follows;

$$\begin{aligned}\Delta PSR_t = {} & \alpha_0 + \theta_1 PSR_{t-1} + \theta_2 INCOM_{t-1} + \theta_3 ADEP_{t-1} + \theta_4 INTR_t + \theta_5 SSP_t + \theta_6 FD_t \\ & + \theta_7 MAC_t + \sum_{i=0}^{m} \beta_i \Delta PSR_{t-i} + \sum_{i=0}^{m} \beta_i \Delta INCOM_{t-i} + \sum_{i=0}^{m} \beta_i \Delta ADEP_{t-i} \\ & + \sum_{i=0}^{m} \beta_i \Delta INTR_{t-i} + \sum_{i=0}^{m} \beta_i \Delta SSP_{t-i} + \sum_{i=0}^{m} \beta_i \Delta FD_{t-i} + \sum_{i=0}^{m} \beta_i \Delta MAC_{t-i} + \varepsilon_t \end{aligned} \quad (3)$$

Theoretically, we expect private saving in a particular period to respond positively to income, but the response of private saving to factors such as ADEP and INTR is however ambiguous and therefore could be positive or negative. An effective financial development should enhance private saving culture hence; we predict positive response of private saving to financial development (FD). Increase in social security payment (SSP) is expected to increase private saving, but the response should be otherwise for rising inflation rate (MAC).

4.2. Data Sources and Variable Measurement

The study opted for the ARDL estimation technique because of it advantage over Ordinary Least Square method (OLS) to choose appropriate number of lags for each of the independent variable and the most parsimonious model automatically. We

employed annual data series from 1981 to 2016 sourced from the Central Bank of Nigeria Statistical Bulletin (2016) and World Development Indicator (WDI, 2016). The private saving in equation (2) is measured as growth of private savings; the income is proxy by GDP growth rate; social security payment is proxy by growth of government expenditure; financial development is measure as ratio of broad money supply (M2) to GDP; while the macroeconomic stability is proxy via inflation rate.

5. EMPIRICAL ANALYSIS

The analysis in this section proceeded in three stages following empirical econometric literature. The analysis is carried out using pre-analysis, modelling and post estimation techniques with the theoretical ARDL model proposed by Pasaran et.al (2001).

5.1. Preliminary Analysis: Descriptive Statistics and Correlation Analysis

The results of the Descriptive Statistics indicate that the average increase in *PSR* over the period is 5.66% which closely mirrors *SSP* with an average increase of 5.88% over the period. Although *INCOM* recorded an average increase of 10.2%, the savings culture is still a poor reflection of this performance. *MAC* recorded an average increase of 19.42% which is a reflection of an unstable macroeconomic climate. The correlation analysis also shows that there is positive relationship among the variables, except *ADEP* and *MAC* that have negative relationships with all the other variables.

Table 2.: Descriptive Statistics of Variables Used in the Regression Analysis

	ADEP	FD	INTR	PSR	LNCOM	SSP	MAC
Mean	5.307	13.986	-7.793	5.659	10.220	5.881	19.419
Median	5.286	12.479	-0.314	5.463	10.016	6.371	11.897
Maximum	5.535	21.291	12.419	9.419	11.142	8.554	72.836
Minimum	5.087	9.152	-59.305	1.881	9.531	2.266	5.382
Std. Dev.	0.150	3.862	16.392	2.494	0.535	2.212	17.767
Skewness	0.185	0.781	-1.598	0.081	0.443	-0.359	1.669
Kurtosis	1.463	2.100	4.736	1.663	1.775	1.689	4.522
Jarque-Bera	3.750	4.879	19.844	2.719	3.431	3.353	20.190
Probability	0.153	0.087	0.000	0.257	0.180	0.187	0.000
Observations	36	36	36	36	36	36	36
Correlation Analysis Table							
	ADEP	FD	INTR	PSR	LNCOM	SSP	MAC
ADEP	1.000						
FD	-0.650	1.000					
INTR	-0.443	0.285	1.000				
PSR	-0.838	0.850	0.313	1.000			

	ADEP	FD	INTR	PSR	LNCOM	SSP	MAC
LNCOM	-0.826	0.881	0.331	0.981	1.000		
SSP	-0.834	0.752	0.294	0.978	0.932	1.000	
MAC	0.494	-0.311	-0.976	-0.328	-0.359	-0.289	1.000

Source: Authors' estimation using data extracted from Central Bank of Nigeria Statistical Bulletin, 2016.

The results in respect of the unit root tests are presented in Table 3. In general terms, it indicates that only *ADEP and INTR* were stationary at levels while *FD*, *PSR*, *SSR*, *INCOM* and *MAC* were non-stationary at levels. However, they were all found to be stationary after first differencing.

Table 3.: Unit Root Test Results

Unit Root Test Results					
		Level		First Difference	Stationarity Order
Variable	ADF	PP	ADF	PP	
ADEP	-5.10***	-0.72	-3.55***	-3.53***	I(0)
FD	-0.59	-0.68	-5.17***	-5.21***	I(1)
INTR	-3.16**	-3.05**	-5.76***	-10.99***	I(0)
PSR	-0.20	-0.21	-4.44***	-4.46***	I(1)
INCOM	0.10	1.21	-3.23**	-3.04**	I(1)
SSP	-1.53	-1.21	-1.40	-6.94***	I(I)
MAC	-2.77*	-2.68*	-5.44***	-8.83***	I(1)

Source: Authors' estimation from E-views 9; Note: *, ** and *** indicate rejection of the null hypothesis of non-stationarity (there is unit root) at 10%, 5%, and 1% significance level respectively.

5.2. Results on the Determinants of Private Savings in Nigeria

Given the mixture of stationarity arising from the unit root results presented in Table 3., this study proceeded to estimate the Bound test Co-integration (proposed by Pesaran, Shin, and Smith, 2001) to confirm the existence of long-run relationship among our series. The results of the ARDL-bounds test is presented in Table 4. The model F-statistics is greater than the upper bound and lower-bound critical value at all level of significance. Hence the null hypothesis of no co-integration is rejected and long-run co-integration relationship established among the variables in this model. This prompted us to estimate both long and short-run relationship for the model specified in equation (2).

Table 4.: Bound Test Co-integration Result

	Bound Level of Significance		
F-Statistics = 5.782 (6)	10%	5%	2.5%
I(0)	2.12	2.45	2.75
I(1)	3.23	3.61	3.99

Source: Authors' estimation.

The short-run and long-run ARDL results on the determinants of private savings in Nigeria is presented in Table 5. In the long-run, *ADEP* has a significant negative influence on *PSR*. Thus, 1.0% increase *ADEP* causes about 2.6% decrease in *PSR*, and vice versa. The results further showed that *FD* and *INTR* has insignificant positive relationship with *PRS* in the long-run. Meaning that as *FD* and *INTR* increase in Nigeria, *PSR* also increase. This implies that in the long run, as financial institutions activities and dealings improve, in terms of electronic transaction, financial inclusiveness and Bank-Customer relationship through convenience, relevance and responsiveness, the economy at the aggregate will record more private savings. Similarly, *INTR* is observed to be positively related with private savings in Nigeria. The intuition derived from this result is that a rise in *INTR* within the country will attract foreign investor (in form of foreign direct investment and foreign portfolio investment) and thus, generate more employment and income and will further increase private savings. However, the result shows that the effect of *FD* and *INTR* is not significant (not different from zero). *INCOM* and *SSP* have significant positive relationship with *PSR*. A 1.0%, increase in *INCOM* and *SSP* go with an associated improvement of about 2.19% and 0.5% in *PSR*, respectively. Further, results show there is insignificant positive long run relationship between *MAC* and *PSR* in Nigeria.

In the short-run, result reveal that the effect of *ADEP* and its lagged values on *PSR* is positive, though only lagged *ADEP* is significant at 5% level of significant in the short-run. This implies that a 1% increase in past value of *ADEP* will lead to improvement of about 1.79% in *PSR*, also, an improvement of about 0.01% by approximation of current *ADEP* will be required to increase *PSR*. Overall, short run results indicate a positive relationship between *FD*, *INTR*, current *INCOM*, *MAC* and *SSP* on *PSR* in Nigeria. Thus, 1.0% increase in *FD*, *INTR*, current *INCOM*, *MAC* and *SSP* results in an increase in *PSR* by 0.01%, 0.01%, 0.33%, 0.01% and 0.32% respectively.

The coefficient of the error correction term (ECT) represented by CointEq(-1) is significant at 1% thus, suggesting that 62% of deviation from the long-run equilibrium level of *PSR* is corrected for annually.

Table 5.: ARDL Analysis of the Determinants of Private Savings in Nigeria

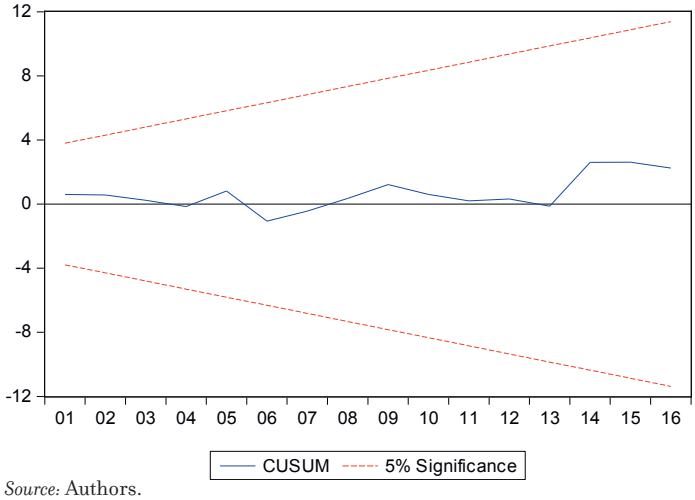
	Short-Run Results		
Variable	Coefficient	Std. Error	Prob.
D(ADEP)	0.001	0.708	0.999
D(ADEP(-1))	1.793**	0.724	0.025
D(FD)	0.011	0.015	0.484
D(INTR)	0.011	0.008	0.187
D(LNCOM)	0.325	0.681	0.640
D(LNCOM(-1))	-0.447	0.834	0.599
D(LNCOM(-2))	-1.263*	0.616	0.057
D(MAC)	0.012	0.007	0.132
D(SSP)	0.320***	0.098	0.005
D(SSP(-1))	0.209*	0.106	0.067
D(SSP(-2))	0.248**	0.115	0.046
CointEq(-1)	-0.621***	0.155	0.001
	Long-Run Results		
Variable	Coefficient	Std. Error	Prob.
ADEP	-2.595**	0.973	0.017
FD	0.017	0.021	0.439
INTR	0.017	0.015	0.273
LNCOM	2.188***	0.333	0.000
MAC	0.016	0.014	0.268
SSP	0.497***	0.079	0.000
C	-6.000	4.768	0.226
R-squared	0.999		
F-statistic	1796.639		
Durbin-Watson stat	2.404		
ARDL Diagnostic Tests			
Serial Correlation LM Test	1.131		0.304
Jarque-Bera	2.772		0.250
ARCHTest	1.756		0.195
Breusch-Pagan-GodfreyTest	0.549		0.879
Ramsey RESET Test	0.048		0.829

Source: Author's Estimates from E-views 9. Note: ***, ** and * represent 1%, 5% and 10% level of significance respectively.

The non-significance of the diagnostic tests confirm that the estimated model satisfied all the required properties of a good model. The residual series are normally distributed as suggested by the Jarque-Bera statistics; the model has no serial correlation as indicated by the Breusch-Godfrey LM test; and the residuals are homoscedastic as suggested by the ARCH test. Moreover, the Ramsey RESET test shows that the model is well specified with the correct linear functional form. In addition,

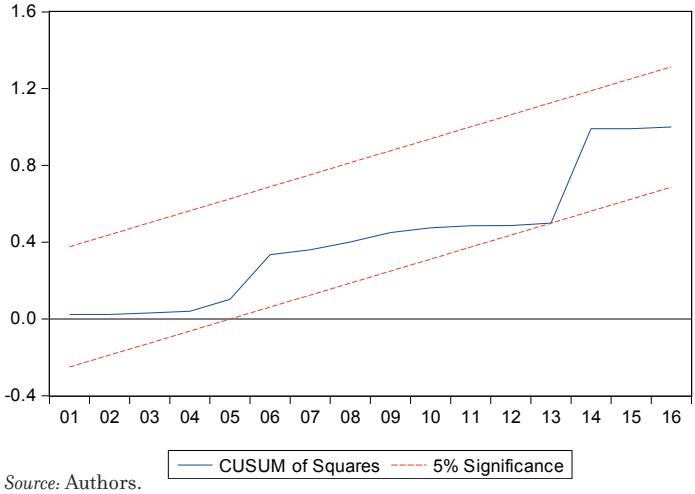
Figure 2. and 3. confirm the stability of the model estimated in equation 2 and presented in Table 5. The figures shows that our model is stable and correctly specified and estimated. Thus, the results are reliable.

Figure 2.: CUSUM Stability Test



Source: Authors.

Figure 3.: CUSUM of Square Stability Test



Source: Authors.

6. CONCLUSION

This study seeks to underscore the determinants of private savings in Nigeria during 1981-2016. The estimated autoregressive distributed lag (ARDL) model was derived from the life-cycle hypothesis. Both long-run and short-run effects of lifetime income (*INCOM*), dependency ratio (*ADEP*), real interest rate (*INTR*), Social Security Payment (*SSP*), financial development (*FD*) and macroeconomic stability (*MAC*) on private savings (*PSR*) were analysed.

Long-run results show that *ADEP* has a negative and significant influence on *PSR*, while *FD* is positive. Also, *INTR* is positive but insignificant at 10%, suggesting that a rise in *INTR* within the country will lead to a further increase in private savings, as more fund will be available through investment from foreign investor who are pursuing higher interest rate for investment. In addition, the coefficient of *INCOM*, *MAC* and *SSP* have positive impact on *PSR* in Nigeria.

In the short-run, result reveal that the effect of *ADEP* and its lagged values on *PSR* is positive, though only lagged value of *ADEP* is significant at 5% level of significant in the short-run. This implies that a 1% increase in past value of *ADEP* will lead to improvement of about 1.79% in *PSR*, also, an improvement of about 0.01% by approximation in current *ADEP* will be required to increase *PSR*. Overall, short run results indicate that *FD*, *INTR*, current *INCOM*, *MAC* and *SSP* have positive relationship with *PSR* in Nigeria. Thus, 1.0% rise in *FD*, *INTR*, current *INCOM*, *MAC* and *SSP* results in an increase in *PSR* by 0.01%, 0.01%, 0.33%, 0.01% and 0.32%, respectively under the period covered. The coefficient of the error correction term (ECT) that is represented by CointEq(-1) is significant at 1% thus, suggesting that 62% of deviation from the long-run equilibrium level of PSR is corrected for, annually.

Based on the above findings, the following recommendations are made for policy. Given that interest rate and *FD* foster increased private savings, there is need to raise demand for credit or loans for domestic investor by reducing collateral demand by financial institutions so as to further increase the amount of private savings. Therefore government and his agencies should promote policy to address uncertainty in macroeconomic environment and financial reforms to reduce financial exclusion in rural areas so as to increase private savings.

REFERENCE

Abdelmawla, M.A. and Omran, A.Y. Determinants of saving rate in Sudan: an empirical investigation (1990-2013), *Khartoum University Journal of Management Studies, School of Management Studies*. Vol. 10(1), 2016.

Aissata, K.B., Yu-shi, J. and Borojo, D.G. Determinants of domestic saving in Guinea, *European Journal of Business and Management*. Vol.8, No.26., 2016.

Ajakaiye, D. O and M.A. Babatunde The future of banking system and economic development in Nigeria. *Annals of the Social Science Academy of Nigeria.*, No. 20, (2015):47

Ando, A. and Modigliani, F. The life-cycle hypothesis of saving: Aggregate implications and tests. *American Economic Review*, *53(1),* (1963):*55-84*

Athukorala, P. and Tsai, P. Determinants of household saving in Taiwan: growth, demography and public policy, *Journal of Development Studies*, 39(5), (2003): 65-88

Friedman, M. *A theory of the consumption function*. Princeton: Princeton University, 1957.

Gersovitz, M. *Savings and development*. In: H. Chenery, and T.N. Srinivasan, (eds.), Handbook of Development Economics. Vol. 1. (1995): 381-424

Huang, P. Determinants of household saving in China. A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Commerce and Management at Lincoln University, 2006.

Iyoha, M. A. *Rekindling investment for economic development in Nigeria: The Macroeconomic Issues: in Rekindling Investment for Economic Development in Nigeria*. Nigerian Economic Society, Selected Papers for the 1998 Annual Conference, 1998.

Keynes, J.M. The general theory of employment, interest and money. New York, 1936.

Kudaisi, B. V. Savings and Its determinants in West Africa countries. *Journal of Economics and Sustainable Development,* 4(18), (2013): 107-119

Loayza, N., Schmidt-Hebbel, K. & Serven, L. (2000). Saving in developing countries: An overview. *World Bank Economic Review*

Modigliani, F. and Brumberg, R. H. *Utility analysis and the consumption function: an interpretation of cross-section data, in Kenneth K. Kurihara, ed., Post Keynesian Economics*, New Brunswick, NJ.Rutgers University Press, (1954): 388-436

Modigliani, F. and Cao, S. The Chinese saving puzzle and the life cycle Hypothesis. *Journal of Economic Literature*, 42(1), (2004): 145-170

Modigliani, F. Life cycle, individual thrift and the wealth of nations: *The American Economic Review,* 17(3), (1986):150-171

Ndirangu, E. P.M. and Muturi, W. Determinants of gross domestic savings in Kenya (1970-2013). *International Journal of Economics, Commerce and Management*, III(7), (2015):157-178

Nnanna, O. J. Promoting savings and investment culture for national development. *Central Bank of Nigeria Economic and Financial Review*, 4(3), (2003): 19-28

Ogbokor, C.A. and Samahiya, O.A. (2014) A time series analysis of the determinants of savings in Namibia, *Journal of Economics and Sustainable Development* 5(8).

Ozcan K, Gunay, A. and Ertact, S. Determinants of private savings behavior in Turkey. *Applied Economics*, 2003(35), (2003): 1405-1416

Pesaran, M.H., Shin, Y. and Smith, R.J. Bounds testing approaches to the analysis of level relationship. *Journal of Applied Economics*, 16. (2001):289-326

Touny, M. A. Determinants of domestic saving performance in Egypt: An empirical study. *Journal Commercial Studies and Resources*, 1(2008), (2008): 1-22

IMPLEMENTATION OF FLEXICURITY IN SLOVENIA

Suzana Laporšek

Suzana Laporšek
Faculty of Management, University of Primorska, Koper, Slovenia
suzana.laporsek@fm-kp.si

Article info
Paper category: Preliminary Paper
Received: 29.4.2019.
Accepted: 28.1.2020.
JEL classification: J30, J38
DOI: 10.32728/ric.2020.61/2

Keywords
Flexicurity; Labor Market; Slovenia; EU

ABSTRACT

Flexicurity remains an important policy instrument in the EU and will be especially important in the changing economic and labor market environment, characterized with changing nature of work and development of new forms of work.

Purpose. *This paper examines the implementation of flexicurity policies in Slovenia and compares them with the EU countries*

Design/methodology/approach. *As there is no uniform measure of flexicurity, the analysis is structured in accordance with four elements of flexicurity policies, developed within the EU, and suitable indicators: (i) flexibility of contractual relations; (ii) lifelong learning; (iii) active labor market policies; and (iv) social protection system. Analysis uses descriptive statistics for last available years and compares these data with crisis year 2010. Data for international comparisons were obtained from the European Commission, Eurostat and Organization for the Economic Co-operation and Development, Statistical Office of the Republic of Slovenia and the Employment Service of Slovenia.*

Findings and iImplications. *Slovenia has in the past already performed labor market reforms that relate to flexicurity components, yet there is still room for improvement. These are especially needed in the field of lifelong learning and expenditures for active labor market policies, where Slovenia is at the tail of the EU countries. In the front of flexibility, a significant decline in the employment protection was noticed with the last legislative change in 2013, which aimed at reducing segmentation and increasing labor market flexibility. In the front of social protection, Slovenia is among the EU countries with the most generous social systems, which, on the other hand, create high work disincentives.*

Limitations. *This study focuses only on the presentation of the recent indicators of flexicurity components, which is one of its major limitation. Future research should study in more detail the effects of flexicurity on labor market, reconsider the importance of flexicurity in assuring decent work and develop a more comprehensible measure of flexicurity.*

Originality. *The paper adds to the existing literature on Slovenia by giving an overview of re-cent developments of flexicurity concept, pointing on the areas that require policy response.*

1. INTRODUCTION

Flexicurity aims to find a right balance between labor market flexibility and employment and social security. Although the development of the flexicurity policy in the European union (EU) has been challenged with the outbreak of the economic and financial crisis, it seems to undergo a revival since 2012. According to the latest EU Council Recommendation in 2018, labor market reforms should include the following flexicurity policies: (i) reliable labor contracts that provide flexibility and security for employees and employers; (ii) quality, efficient and inclusive lifelong education and training systems; (iii) effective active labor market policies (ALMPs); and (iv) sustainable and adequate social protection systems (Bekker, 2018).

This paper aims to give an overview of the implementation of flexicurity policies in Slovenia and compares them with the EU countries. As flexicurity policies are complex, we focus our analysis on representative labor market indicators for each flexicurity component. The paper adds to the existing literature on Slovenia by giving an overview of recent developments of flexicurity concept, pointing on the areas that require policy response, especially in times of changing labor market, characterized with an increase of new forms of employment and calls for decent work.

In order to present performance of Slovenia and the EU Member States in implementing flexicurity approach we rely on descriptive statistics for last available years and compare these data with crisis year 2010. Data for international comparisons were obtained from the European Commission, Eurostat and Organization for the Economic Co-operation and Development (OECD); additional data for Slovenia were collected at the Statistical Office of the Republic of Slovenia (SORS) and the Employment Service of Slovenia (ESS).

The rest of the paper is organized as follows. Section 2 gives a literature review, followed by a presentation of labor market situation in Slovenia. Section 4 gives a detailed overview of flexicurity implementation using representative variables. Section 5 provides discussion and section 6 concludes.

2. LITERATURE REVIEW

In this section we discuss the development of the flexicurity concept in the EU, followed by a brief overview of empirical studies in the area.

2.1. The concept of flexicurity and its re-definition in the European Union

The concept of flexicurity emphasizes that flexibility and security should not be perceived as contradictory, but as complementary and mutually supportive (European Commission, 2007). It could be best described as a system of joint and mutual risk management for workers and employers (European Expert Group on Flexicurity, 2007).

Flexicurity was first employed in the Netherlands in the mid-1990s, as part of the labor reform aimed to increase flexibility in labor market by easing the rules for dismissal and rules for starting a temporary work agency on one hand and, at the same time, to generate a higher level of security for employees in flexible jobs on the other (Wilthagen and Tros, 2004; Keune and Jepsen, 2007; see also Laporšek and Dolenc, 2011, 2012). Simultaneously, the idea of flexicurity entered into political language through the speeches and interviews of sociologist Hans Adriaansens. He defined flexicurity as "a shift from job security towards employment security" (Tangian, 2006) and suggested compensating a decreasing job security by improving employment opportunities and social security (Tangian, 2006). The concept of flexicurity was soon taken up also by other countries, for example Germany (see Klammer and Tillmann, 2001; Leschke, Schmid and Griga, 2006), Belgium (see Sels et al., 2001), Denmark (see Madsen, 2003), eastern and central European countries (see Cazes and Nesporova, 2003, 2006) and of course by the EU (Wilthagen and Tros, 2004).

Finding balance between flexibility and security has been present in the EU policy discourse since 1993 and became an important part of policy discussion in 2006. In 2007, the EU introduced common principles and pathways to flexicurity. The document defined flexicurity as "an integrated strategy to enhance, at the same time, flexibility and security in the labor market" (European Commission, 2007) that could be implemented through four policy components: (1) flexible and reliable contractual arrangements; (2) comprehensive lifelong learning; (3) effective ALMPs; and (4) modern social security systems. The EU's concept of flexicurity was criticized, mainly from academics and trade unions, for its norms and (in)ability to lead to balanced practices (see Bekker, 2018; Bekker and Mailand, 2019).

The development of flexicurity concept in the EU has become heavily challenged with the outbreak of the economic and financial crisis. The EU's crisis emphasis on austerity measures and structural reforms has reduced attention to the 'security' component of flexicurity. The security components began to strengthen again from 2012 onwards as a response to increased unemployment rates and poverty (Bekker and Mailand, 2019). The flexicurity re-entered the EU policy discourse in 2015 with the Five Presidents' Report on completing the European Monetary Union, which confirmed that the standards for labor markets should combine security and flexibility, developed through elements of flexicurity (European Commission, 2019a). The subsequent Council Recommendation on the economic policy of the euro area between 2015 and 2018 specified in more detail the nature of labor market reforms. According to the 2018 Council Recommendation on the economic policy of the euro area (Official Journal of the European Union 2018/C 179/01), the labor market reforms should aim at:

(1) reliable labor contracts that provide flexibility and security for employees and employers, combined with adequate support during transitions, while avoiding labor market segmentation;

(2) quality, efficient and inclusive lifelong education and training systems;
(3) effective ALMPs;
(4) sustainable and adequate social protection systems that contribute to social inclusion and labor market integration throughout the life cycle and are responsive to new types of employment and employment relationships;
(5) smooth labor mobility across jobs, sectors and locations;
(6) effective social dialogue and wage bargaining at the appropriate level according to national specificities;
(7) shifting taxes away from labor, particularly for low-income earners and second earners.

As shown above, all four "old" flexicurity components have remained, although some of them revised (see also Bekker, 2018). For example, components (1) and (4) have changed significantly - the importance of social aspect has strengthened to resemble the new developments at the labor market related to labor market segmentation and development of new forms of work. Furthermore, three important areas of labor market reforms have been pointed out - labor mobility, social dialogue and wage bargaining, and taxing wages.

2.2. Empirical studies on the effects of flexicurity policies

Most of the empirical studies focuses on estimating the effects of individual flexicurity components on labor market outcomes. Despite extensive literature on the effects of employment protection legislation on labor market outcomes, no consensus has been reached on the direction and magnitude of the effect (see Vodopivec, Laporšek and Vodopivec, 2017). Most studies find insignificant and/or negative effects of rigid EPL on the level of employment, and no effect on unemployment (see Boeri, 2011, and Betcherman, 2012, for review of studies). Empirical findings are more conclusive on the effects on labor market dynamics, mostly showing that strict regulations negatively affect worker and job flows and thus labor market transitions (see, for example, Kugler, 1999; Micco and Pages, 2006; Autor, Kerr and Kugler, 2007; Bassanini et al., 2010; Cingano et al., 2010; OECD, 2010; and Haltiwanger, Scarpetta and Schweiger, 2014). Similar conclusion can be derived from study by Vodopivec, Laporšek and Vodopivec (2017) for Slovenia, who studied the effects of a 2013 labor market reform, aimed to make permanent contracts less restrictive and fixed-term contracts more restrictive. Using matched employer-employee database covering all Slovenia's labor market participants authors found that the reform increased the probability of accessing permanent jobs via transitions from both fixed-term jobs and unemployment, and improved the accessibility of permanent jobs for both young and old workers.

The effects of lifelong learning programs have been subject of less research, mostly pointing that high participation in lifelong learning positively associates with

high employment and low long-term unemployment (see, for example, Jenkins et al., 2003; European Commission, 2006; Dieckhoff, 2007).

The effects of ALMPs have been intensively analyzed and summarized in several meta-analyses, including, for example, Card, Kluve and Weber (2010, 2017), Kluve (2010) and Crépon and van den Berg (2016). In a recent meta-analysis of Card et al. (2017), which contains 857 impact estimates from 207 program evaluation studies worldwide, authors found that (1) on average, ALMPs effects on labor market outcomes are close to zero in the short run, but become more positive 2-3 years after the end of the program; (2) the time profile of the effects varies by type of program, being larger for programs that emphasize human capital accumulation; (3) effects are larger for females and participants who enter the program from long term unemployment; and (4) ALMPs are more likely to show positive impacts in a recession.

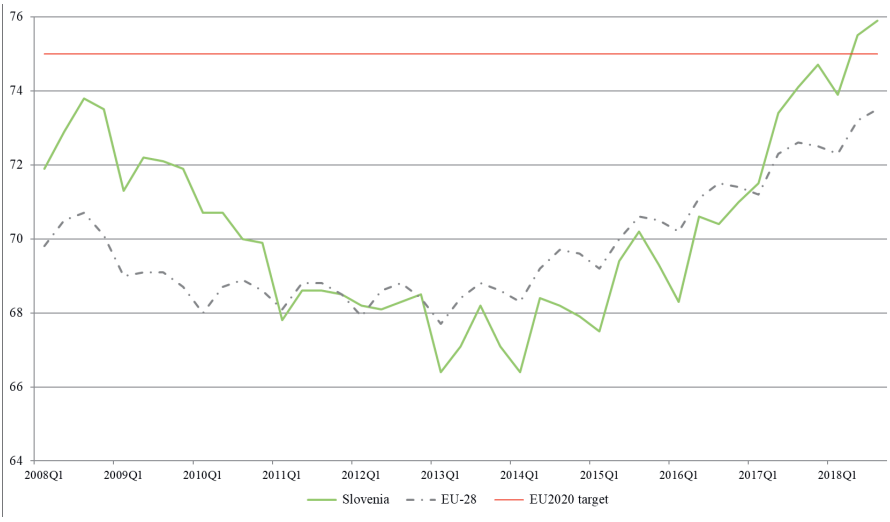
As regards the passive labor market policies (PLMPs) they tend to have an ambiguous effect on labor market performance. On one hand, they have an important role in protecting the standard of unemployed, whereas on the other, they can lead to job matching inefficiency, reduced job search intensity and motivation of unemployed (see Fialová and Schneider, 2009; Laporšek and Dolenc, 2012).

Laporšek and Dolenc (2012) have analyzed the relationship between flexicurity policy components and labor market performance in 20 EU countries over the 1990-2008 period. They found that expenditures for ALMPs and participation in lifelong learning positively associate with labor market outcomes, due to their positive effects on human capital of workers. In contrast, generous PLMPs negatively associate with unemployment-employment transitions. Less explicit are results regarding the relation with the EPL strictness. Moreover, Laporšek and Dolenc (2011) also analyzed the relationship between flexicurity and labor productivity in the EU countries, reporting of positive relationship. Moreover, they pointed on considerable differences in labor market flexibility and security across EU countries, with the new member states being at least successful, showing rigid labor market regulation at very low security of employees. Noja (2018) focused on the relationship between flexicurity and labor productivity in the Central Eastern European (CEE) countries. She found that increasing flexibility through additional temporary and fixed-term contracts, enhancing participation in education and training, along with higher expenditures for ALMPs and prospects for job transition to higher employment security, had positive effects on labor productivity in the CEE countries.

3. LABOR MARKET SITUATION IN SLOVENIA - BRIEF OVERVIEW

Employment rate in Slovenia has in 2016 reached above the EU average - in 2018q3 the employment rate in the age group 20-64 was 75.9%, which is 2.4 percentage points above the EU average. Slovenia is recording an increase in the employment rate from 2014 (Figure 1.) and it has in 2018 for the first time reached the EU 2020 target, according to which the employment rate should achieve 75% by 2020 (see Laporšek, Franca and Arzenšek, 2018a, b).

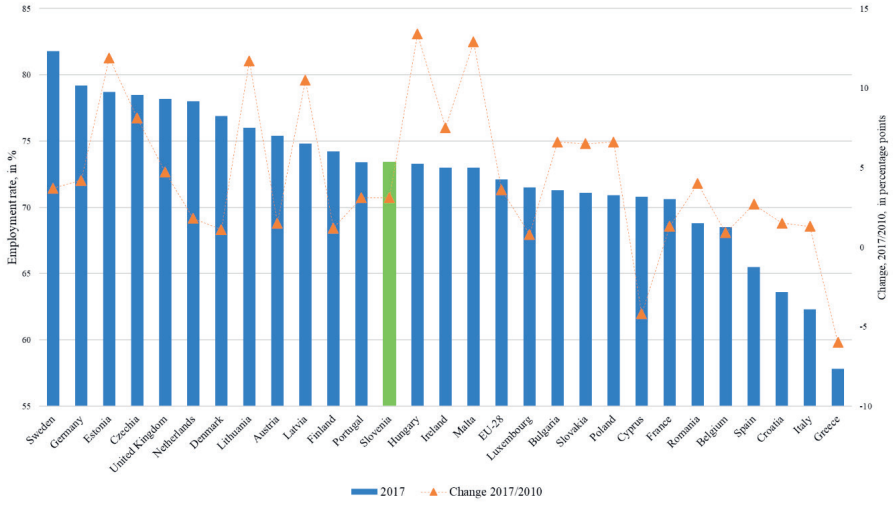
Figure 1.: Employment rate in Slovenia and the EU-28, age group 20-64, quarterly data for 2008q1-2018q3, in %



Note: Data are not seasonally adjusted. Labor Force Survey data.
Sources: SORS, 2019; Eurostat, 2019.

Among the EU countries, in 2017 the highest employment rates in the age group 20-64 years were recorded by Sweden (81.8%) and Germany (79.2%), followed by, interestingly, Estonia (78.7%) and Czechia (78.5%), countries that recorded one of the highest growths in employment rates compared to 2010. In contrast, employment rates are particularly low in Greece (57.8%), Italy (62.3%), Croatia (63.6%) and Spain (65.5%). Compared to 2010, the employment rates increased at most in Hungary (for 13.4 percentage points), Malta (for 12.9 percentage points) and Baltic countries (for 11.9 percentage points in Estonia, 11.7 in Lithuania and 10.5 percentage points in Latvia). Only in Cyprus and Greece the employment rates fell compared to 2010 (for 4.2 and 6 percentage points, respectively). In Slovenia, the employment rate increased for 3.1 percentage points compared to 2010, which is slightly below the EU average (3.6 percentage points). Among EU countries only nine have reached the EU 2020 employment target in 2017.

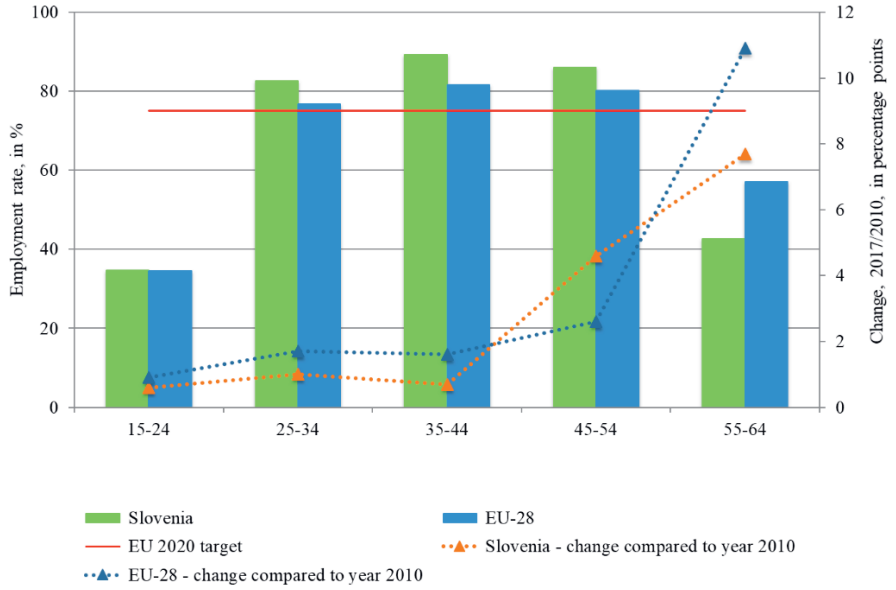
Figure 2.: Employment rates in 2017 for persons in the age group 20-64 (left axis) and change in employment rate compared to 2010 (right axis), EU countries



Notes:
- Countries are ranked by decreasing employment rate in 2017.
- Labor Force Survey data.
Sources: Eurostat, 2019; own calculations.

A closer look at Slovenia shows that employment rate is higher for men (79.8% in 2018q3; women 71.6%), although the gap is decreasing in last years. One of the problems of the Slovenian labor market is age segmentation, which is reflected in low employment rates among young and old people (Laporšek, Franca and Arzenšek, 2018a, b). Figure 3. shows employment rates by individual age groups in Slovenia and the EU average for 2017 and change in employment rates by individual age groups compared to 2010. Employment rates are the highest in age groups 35-44 years (89.2%) and 45-54 years (86%) and are above the EU average. Compared to 2010, the employment rate increased in both age groups - for 0.7 percentage points in the 35-44 age group and for 4.6 percentage points in the 45-54 age group. Among young (25-34 years of age) employment rate amounted 82.6% in 2017, which is 5.9 percentage points above the EU average, whereas the employment rate among the youngest (15-24 years of age) was 34.7%. The employment rate is, also in international perspective, particularly low among older people - the employment rate in the age group 55-64 years amounted 42.7% in 2017 (the EU average 57.1%) and is even lower for women, as they retire earlier. Among the EU countries, Slovenia is at the bottom with regard to employment rate of older people; lower employment rates can be found only in Croatia and Greece. Nevertheless, compared to 2010, the employment rate of older people remarkably increased - for 7.7 percentage points.

Figure 3.: Employment rates by age groups in 2017 (left axis) and change in employment rate by age groups compared to 2010 (right axis)



Sources: SORS, 2019; Eurostat, 2019; own calculations.

As regards unemployment, we observe a step decline in the number of registered unemployed after the crisis - their number has dropped to 78,474 in 2018. A more in-depth analysis of the characteristics of unemployed (see Table 1.) shows that the share of unemployed women among all unemployed increases - their share has exceeded 50% in 2015, - which could be attributed to the improvement of employment opportunities in traditionally men sectors and therefore a decrease in total number of unemployed (and especially men) (see ESS, 2016). Young (old 29 years or less) presented less than 20% of all unemployed in 2018, although they were strongly exposed to the impact of reduced economic activity (in crisis years their share among all unemployed exceeded 25%). In contrast, old unemployed, aged 50 years or more, are the largest group of unemployed. Their share increased markedly in last years, which could be attributed to the fact that they go to unemployment before the pension, and to the fact that younger jobseekers are more likely to be employed in times of economic recovery, meaning that their number in unemployment falls. Moreover, low-educated (with primary education or less) account for about 30% of all unemployed in Slovenia. The share of long-term unemployed, i.e., those who are unemployed for more than a year, is increasing - in 2010 42.5% of all unemployed were unemployed for more than one year, and by 2018 this share increased to 51.7%. This increase mainly reflects an increase in the number of unemployed people with the longest duration of unemployment, i.e., three years or more (see also Laporšek, Franca and Arzenšek, 2018a, b).

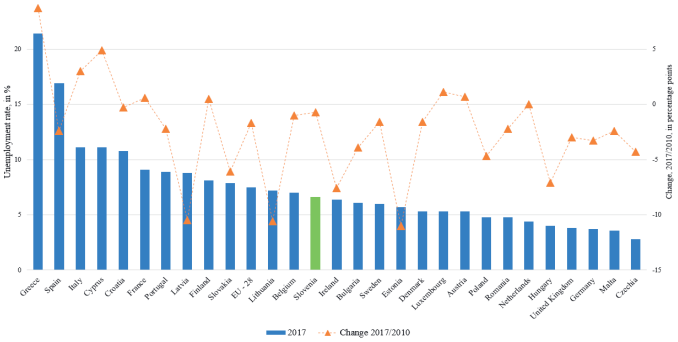
Table 1.: The number of unemployed and their characteristics in Slovenia, 2010-2018 (31. 12.)

Slovenia							
Year	Number of registered unemployed	/	Share among all unemployed by category				
			Women	Young, 29 years or less	Older, 50+ years	Primary education or less	Long-term unemployed
2010	100,504		47.7	26.7	31.2	37.3	42.5
2011	110,692		47.0	24.0	35.3	35.7	45.3
2012	110,183		47.4	22.6	34.7	35.1	50.1
2013	119,827		47.9	24.0	32.5	34.0	46.2
2014	120,109		49.7	25.3	31.1	28.6	49.8
2015	112,726		51.0	23.7	32.6	29.3	52.9
2016	103,152		50.8	21.6	35.4	29.2	53.4
2017	88,648		51.2	19.7	38.7	30.1	53.1
2018	78,474		50.8	19.2	40.1	31.0	51.7

Sources: SORS, 2019; ESS, 2019; own calculations.

Figure 4. presents unemployment rates in the EU countries in 2017 and compares them to 2010 crisis years. Slovenia's unemployment rate (6.6%) is below the EU-28 average (7.5%). The highest unemployment rates among the EU countries are still recorded in Greece (21.4%) and Spain (16.9%), whereas the lowest in Czechia (2.8%), Malta (3.6%) and Germany (3.7%). Although Slovenia's unemployment rate is below the EU average, Slovenia ranks in the upper half among the EU countries. Compared to the 2010 crisis year, unemployment rate remarkably increased in Greece (8.7 percentage points), Cyprus (4.9 percentage points) and Italy (3 percentage points), which can be attributed to the longer persistence of economic crisis and weak economic recovery thereafter. In contrast, Baltic countries recorded the highest drop in unemployment rates compared to 2010 (for 11 percentage points in Estonia, 10.6 in Lithuania and 10.5 in Latvia), followed by Ireland (7.6 percentage points) and CEE countries (7.1 percentage points in Hungary, 6.1 in Slovakia, 4.7 in Poland and 4.3 in Czechia), i.e., countries that recorded high economic expansion after the crisis. In Slovenia the unemployment rate declined for 0.7 percentage points, while the EU average is 1.7 percentage points.

Figure 4.: Unemployment rates in 2017 for persons in the age group 20-64 (left axis) and change in unemployment rate compared to 2010 (right axis), EU countries, LFS



Notes:
- Countries are ranked by decreasing unemployment rate in 2017.
- Labor Force Survey data.
Source: Eurostat, 2019; own calculations.

4. COMPARATIVE ANALYSIS OF THE FLEXICURITY ELEMENTS - SLOVENIA IN THE EU PERSPECTIVE

In this section we present findings of a comparative analysis of flexicurity in Slovenia and the EU. The analysis is structured in accordance with four elements of flexicurity policies, developed within the EU (see Section 2), and suitable indicators. To date there has been no consensus on the measures of indicators, therefore we mostly rely on partial indicators suitable for the analysis of flexicurity, prepared by the European Commission (2007). The analysis is based on the latest available data for the 2016-2018 period.

The empirical analysis is based on three main sources of data:

- data on strictness of employment protection were obtained from the official OECD database (OECD.Stat, 2019);
- data on other indicators of flexibility and security in the labor market for the EU countries were obtained from the databases of the European Commission (2019b, c) and Eurostat (2019);
- additional data for Slovenia were obtained from statistical database and reports of the SORS (2019) and the ESS (2019).

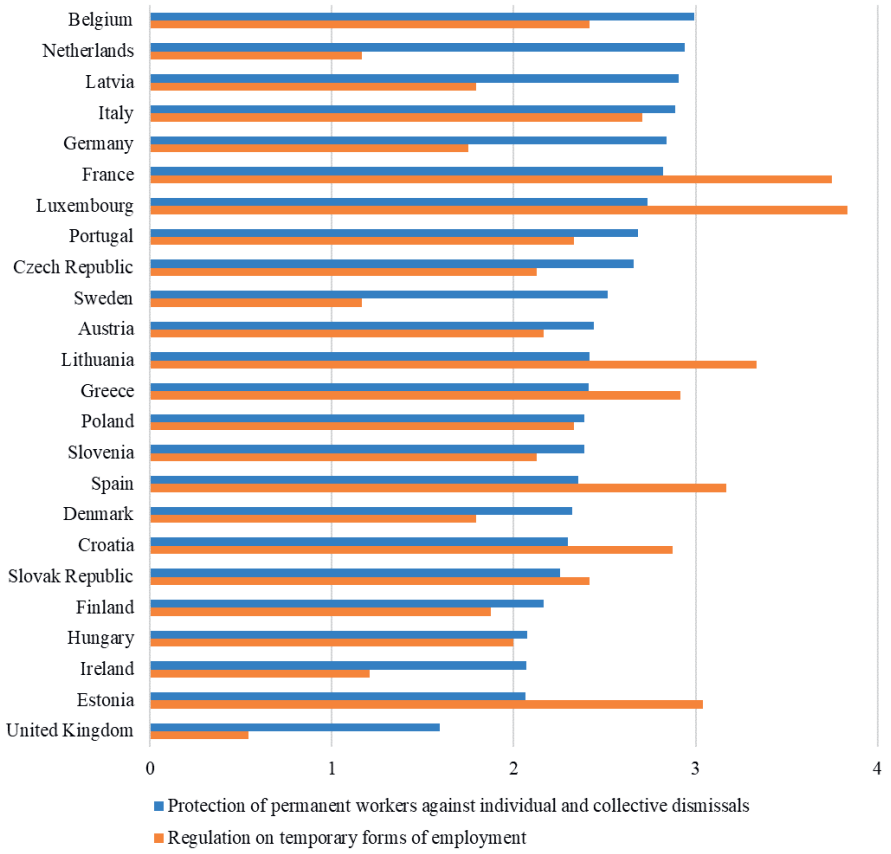
4.1. Flexible contractual arrangements

One of the most commonly used indicators in economic literature for international comparison of regulations of labor relations and labor market is Employment Protection Legislation Index (EPL), developed by the OECD. The EPL index is compiled from 21 items covering three different aspects of employment protection: (i)

individual dismissal of workers with regular contracts; (ii) additional costs for collective dismissals; and (iii) regulation of temporary contracts. Index values are ranging from 0 (least stringent employment legislation) to 6 (most restrictive employment legislation) (OECD, 2004).

Figure 5. shows values of indicators for protection of permanent workers against individual and collective dismissal, and for regulation on temporary forms of employment. Regarding the protection of permanent workers, the highest EPL values are observed mostly in western European countries - the index reached 3 in Belgium, 2.9 in the Netherlands, Latvia and Italy, followed by Germany and France (2.8). In contrast, in the United Kingdom the indicator's value was 1.6 in 2014. Low protection of permanent workers is observed also in Estonia, Ireland and Hungary (2.1). Regarding the scope of the employment protection of permanent workers, majority of the EU countries show considerable rigidity in the area of collective dismissal, which is especially evident in Belgium (5.1), Luxembourg (3.9), Italy and Latvia (3.9). Temporary forms of employment are at most rigid in Luxembourg and France (3.8), whereas the most flexible in the United Kingdom (0.5), followed by Sweden, the Netherlands and Ireland (1.2). Slovenia ranks in the lower half among the EU countries with regard to employment protection - indicators' values for protection of permanent workers amounted 2.4 and 2.1 for regulations on temporary forms of employment.

Figure 5.: Indicators of the EPL, 2013-2015, EU countries



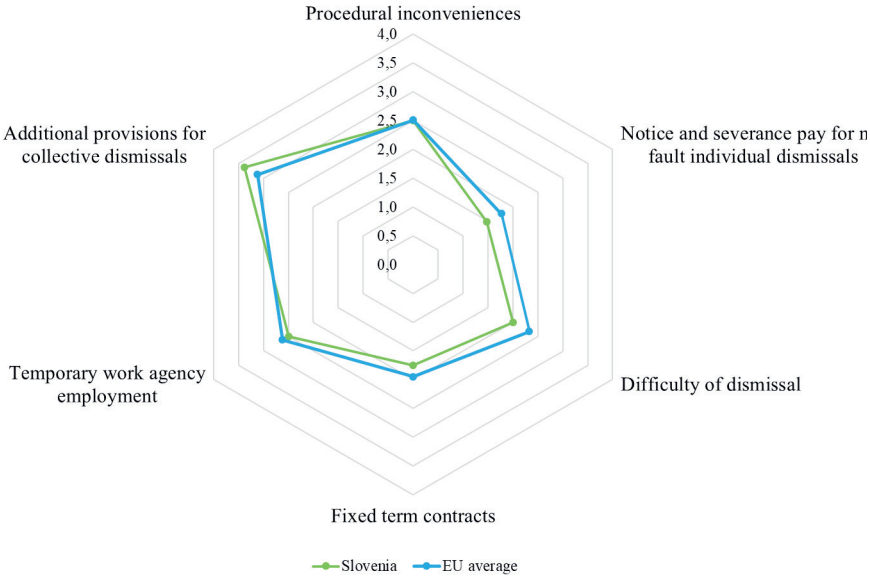
Notes:
- EPL index data are not available for Bulgaria, Cyprus, Malta and Romania. For Lithuania and Croatia, we present data for 2015, for Slovenia and the United Kingdom for 2014. For other countries last available data refer to 2013.
- Index values are ranging from 0 (least stringent employment legislation) to 6 (most restrictive employment legislation).
- Countries are ranked by decreasing value of the indicator for protection of permanent workers against individual and collective dismissal.
Source: OECD.Stat, 2019.

In 2013 Slovenia adopted a significant legislative change in the field of labor market segmentation and flexibility. The new Employment Relations Act (Official Gazette of the Republic of Slovenia, no. 21/2013) namely reduced the difference in costs between employing a worker under a fixed-term and a permanent contract. For fixed-term workers it introduced severance pay, increased the unemployment insurance contribution rate, and restricted the leeway for contract extensions. For permanent workers it reduced the level of severance pay and the advance notice period and simplified dismissal procedures. Moreover, the new law also allowed more

flexible deployment of workers and introduced the option of monetary compensation instead of reinstatement (Vodopivec, Laporšek and Vodopivec, 2017). After the introduction of the new law, the EPL index for protection of permanent workers against individual and collective dismissal decreased from 2.7 to 2.4, the EPL index for regulation on temporary forms of employment from 2.5 to 2.1.

Figure 6. gives more detail about individual EPL items for Slovenia and the EU. Provisions are at most rigid for collective dismissal - the index value for Slovenia is 3.4, which is above the EU average of 3.1. The EPL index value for protection of permanent contracts against individual dismissal is largely driven by procedural inconveniences, which record high index value both in Slovenia and the EU (2.5). In contrast, the regulation on difficulty of dismissal and on notice and severance pay are more flexible in Slovenia than on average in the EU (2 and 1.5 for Slovenia, respectively). Slovenia also records lower index values for regulations on temporary forms of employment - the index value for fixed-term contracts amounted 1.8, whereas for temporary work agency employment 2.5 (see also Vodopivec, Laporšek and Vodopivec, 2017).

Figure 6.: Indicators values for individual EPL items, Slovenia

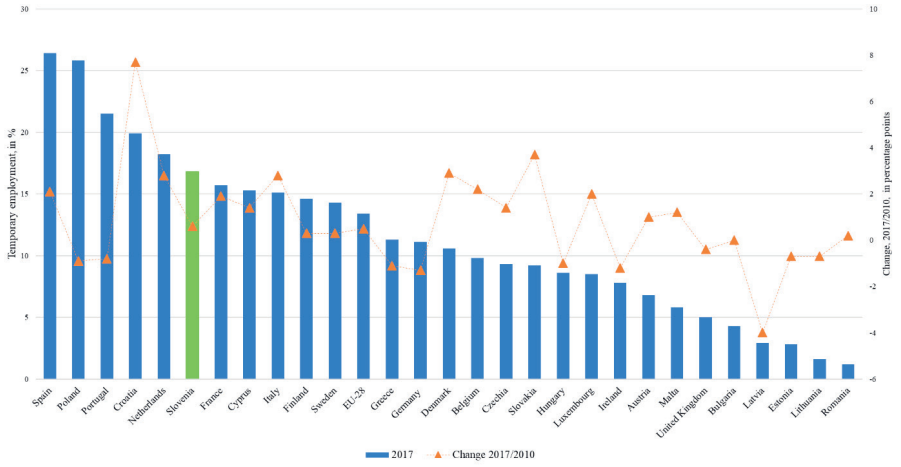


Notes:
- The EU average does not include data for Bulgaria, Cyprus, Malta and Romania and refers to data for 2013, with exception to Lithuania and Croatia (2015) and Slovenia and the United Kingdom (2014).
- Index values are ranging from 0 (least stringent employment legislation) to 6 (most restrictive employment legislation).
Sources: OECD.Stat, 2019; own calculations.

One of the major shortcomings of the EPL is the fact that all components of the index cannot be accurately measured (for example, decisions of courts in the event of disputes due to the interpretation of a reasoned dismissal, the estimation of the difficulty of dismissal) (see Kajzer, 2005; Bertozzi and Bonoli, 2009). Therefore, researches use additional indicators to observe the labor market flexibility, as presented below.

The level of flexibility in the labor market is also reflected by the share of fixed-time and part-time employment. There is a high segmentation between workers with permanent contracts and those on fixed-term contracts in Slovenia, by which young workers are at most affected. In 2017, the incidence of temporary employment in Slovenia was 16.8% (data for persons aged 20-64), yet among 25-34 years old the share of workers in temporary employment was 26.6% (the EU average 18.8%). In contrast, only 8.8% of older workers (55 to 64 years of age) worked in temporary employment. In the EU perspective, Slovenia ranks among countries with the highest incidence of temporary employment - the percentage of temporary employees is higher only in the Netherlands (18.2%), Croatia (19.9%), Portugal (21.5%), Poland (25.8%) and Spain (26.4%). The lowest shares of temporary employments are recorded in Romania, Bulgaria and Baltic countries (in all countries the share is below 5%). Compared to 2010, the share of temporary employment increased at most in Croatia (for 7.7 percentage points) and Slovakia (for 3.7 percentage points). On the other hand, the highest decrease in the share of temporary employees was recorded in Latvia, for 4 percentage points.

Figure 7.: Temporary employees as percentage of the total number of employees in 2017 (left axis) and change in percentage of temporary employees compared to 2010 (right axis), EU countries



Note: Countries are ranked by decreasing share of temporary employees among all employees in 2017. Data refer to persons aged 20 to 64.
Sources: Eurostat, 2019; own calculations.

The incidence of part-time employment in Slovenia, as another form of atypical employment, is low- only 9.6% of all employed aged 20-64 worked part-time in 2017 (the EU average 18.7%). This might be attributed to high participation of women in the labor market (Slovenia namely records one of the highest participation rates of women aged 35-44 in the EU). Among the EU countries, the share of part-time employed is particularly high in the Netherlands (46.6% in 2017), followed by Austria (28.2%) and Germany (26.9%), while being low (below 5%) in Bulgaria, Hungary and Croatia. Again, the most exposed group to part-time employment are young people (15-29 years of age), especially young women (in 2017 the percentage of part-time employed young women in total employment in the EU amounted 31.4% (in Slovenia 30.5%), the percentage of young men yet 16.9% (in Slovenia 15.7%)). This is related to the fact that part-time employment gives women more flexibility and possibility to balance work and family life, yet it puts them in unfavorable position as it hinders their progress and use of their competences and knowledge (Andersen et al., 2008).

Slovenia records a steady increase of employment in temporary work agencies. According to Vodopivec, Laporšek and Vodopivec (2017), the total employment in temporary agencies has increased from 5 thousand in January 2011 to 15.9 thousand in December 2016. Over the same period, the share of permanent employment contracts in temporary work agencies has increased from 5% to 44.5%. This might be attributed to the provisions of the 2013 Employment Relationship Act under which temporary work agency employees are exempt from quotas. Compared to the EU, Slovenia records the highest share of temporary employment agency workers - in 2017, they represented 4.9% of all workers, whereas the EU average was 1.9%.

To summarize, employment protection in Slovenia significantly declined with the 2013 legislative change, which had favorable effects on labor market outcomes. As showed by micro-econometric study performed by Vodopivec, Laporšek and Vodopivec (2013), the legislative change increased the probability of accessing permanent jobs via transitions from both fixed-term jobs and unemployment and improved the accessibility of permanent jobs for both young and old workers. Nevertheless, Slovenia should further address the issue of labor market segmentation, especially with regard to younger workers.

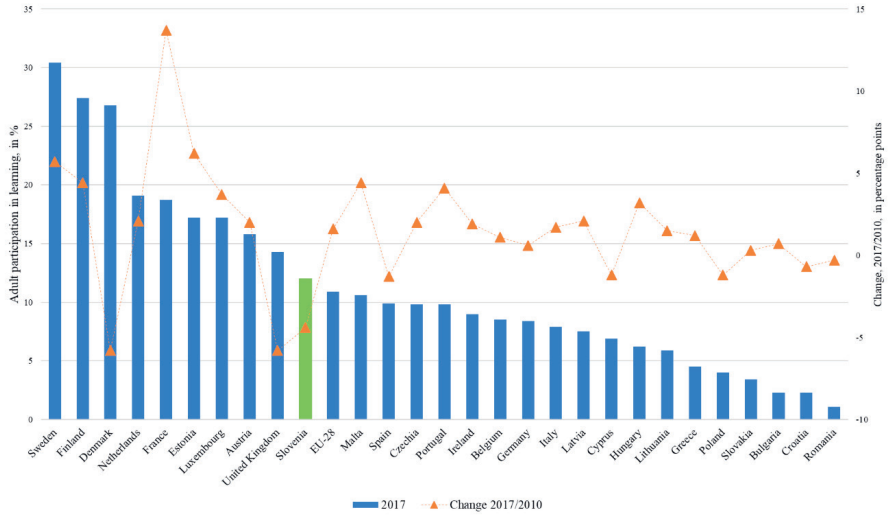
4.2. Lifelong learning

Lifelong learning encompasses all formal, non-formal or informal learning activities, undertaken on an ongoing basis with the aim of improving knowledge, skills and competences (Eurostat, 2019). It is of immense importance in today's fast-changing working environment, where adults need to continuously improve their knowledge and skills to remain competitive and productive (European Commission, 2017).

Participation rates in adult learning are rather low. As shown in Figure 8., in 2017, only 10.9% of adults in the EU had undertaken any recent learning activity,

which is way below the EU 2020 target of at least 15% of adults (aged 25-64) having taken part in learning. This is only 1.6 percentage points higher than in 2010. Furthermore, there are large differences in participation rates across the EU countries. Adult participation in learning is high in northern and western Europe, by most countries reaching the EU 2020 target. In contrast, participation rates are very modest in some of the EU new member states - in Romania, Bulgaria, Croatia and Slovakia not reaching even 4%. In Slovenia, 12% of population aged 25-64 participated in adult learning in 2017, which is slightly above the EU average. Only a few countries considerably increased adult participation in learning, most of them in northern Europe (Estonia, Sweden, Finland and Malta)[1]. In Slovenia, the rate of adult participation in learning substantially declined compared to 2010 (for 4.4 percentage points). Similar decline can be observed also in Denmark and the United Kingdom.

Figure 8.: Adult participation in learning in 2017 (left axis) and change in their participation rate compared to 2010 (right axis), EU countries



Notes:
- Adult participation in learning is defined as the share of 25 to 64 year-olds who received formal or non-formal education or training in the four weeks preceding the interview.
- Countries are ranked by decreasing participation rate in 2017.
Sources: Eurostat, 2019; own calculations.

One of the important challenges is inclusion of low-qualified adults in lifelong learning. As shown by the European Commission (2018), the situation for low-qualified adults has not changed noticeably since the beginning of the decade - their participation rates at the EU level remain low at 4.3% in 2017.

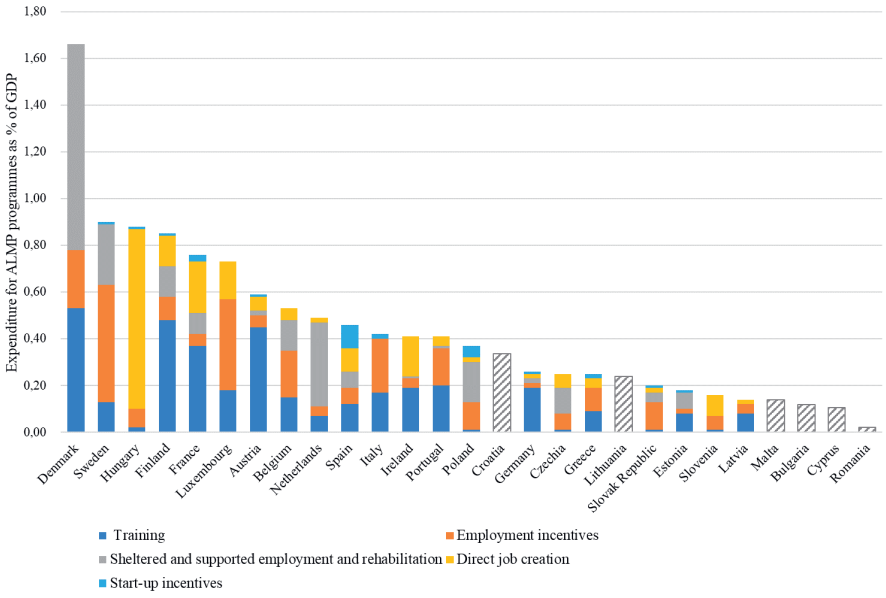
1 Figure 8. shows that the adult participation in learning at most increased in France. This data must be taken with caution, as it is lead by a change in measurement methodology (for more details see European Commission, 2018).

Low participation in lifelong leaning is one of the weakest points of flexicurity concept in Slovenia. This area should receive a special attention by the Slovenian policy makers, also due to problems related to ageing society and lack of working force.

4.3. Active labor market policies

Expenditures for the ALMPs are rather low in most of the EU countries. As shown in Figure 9., only in Denmark ALMPs' expenditures exceed 1% of GDP (1.66% in 2016). ALMP expenditures are high also in other Scandinavian countries and in some of western European countries. In contrast, majority of countries that joined the EU in 2004 or later record rather low expenditure rates, being lower than 0.3% of GDP. A noticeable exception is Hungary that devoted 0.88% of GDP to the ALMPs in 2016 and recorded the highest increase in the ALMPs' expenditures compared to 2010 (for 0.33 percentage points). Slovenia is at the tail of the EU countries, as the expenditures for the ALMPs accounted for 0.16% of the GDP in 2016. As regards the structure of expenditures for the ALMP (see Figure 9.), most of the EU countries earmark a major part of expenditures to training, employment incentives and direct job creation.

Figure 9.: Expenditure for the ALMPs as % of GDP by type of action in 2016, EU countries



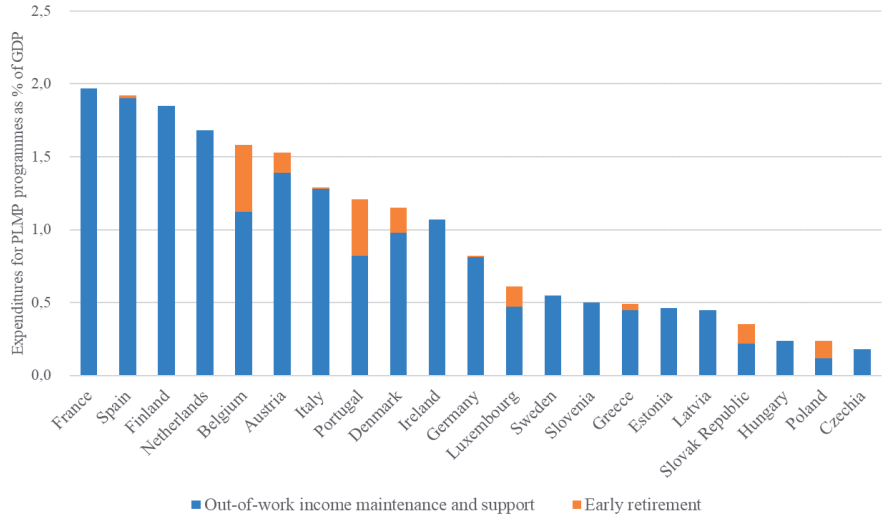
Notes:
- Data for France, Greece, Italy and Spain refer to 2015. Data for the United Kingdom are missing. Data for Croatia, Lithuania, Malta, Bulgaria, Cyprus and Romania (marked with grey stripes) present total expenditure for ALMP (data for these countries were collected from the European Commission, 2019b).
- Countries are ranked by decreasing expenditures in 2016.
Sources: OECD.Stat, 2019; European Commission, 2019b; own calculations.

Slovenia should increase expenditure for the ALMP. There are several arguments in favor of this expansion. First, Slovenia lags substantially behind the EU and OECD countries with regard to the public expenditures and participation stocks on ALMPs. Second, as showed by micro-econometric evaluation done by Burger, Vodopivec, Laporšek and Vodopivec (2017), Slovenia's ALMPs perform rather well judged both by their impact on labor market outcomes and by their cost-effectiveness. These findings are in line with findings in other countries. Moreover, for the ALMPs to be more effective, Slovenia should strengthen activation measures via introducing compulsory participation in ALMPs of unemployment benefit recipients who are still unemployed after a certain period of time (see Vodopivec, Cvörnjek, Laporšek and Vodopivec, 2017).

4.4. Sustainable and adequate social protection systems

Slovenia provides a comprehensive social protection system. For unemployed workers, there exist an unemployment insurance program as a part of PLMPs, offering financial support during unemployment. Expenditures for PLMPs in Slovenia are three times higher than for the ALMPs - 0.5% in 2016. This is the case also in other European countries. As shown in Figure 10., expenditures for PLMPS almost reached 2% of GDP in 2016 in France, Spain and Finland. Expenditures present more than 1% also in most of other western EU countries. In contrast, in countries that joined the EU in 2004 or later, PLMPs' expenditures account for 0.5% or less.

Figure 10.: Expenditure for the PLMPs as % of GDP by type of action in 2016, EU countries



Notes:
- Data for France, Greece, Italy and Spain refer to 2015.
- Countries are ranked by decreasing expenditures in 2016.
Sources: OECD.Stat, 2019; European Commission, 2019b; own calculations.

Slovenia's unemployed workers can claim unemployment benefits after termination of fixed-term employment or after involuntary termination of employment under the permanent contract. To qualify for unemployment benefits, they must have been employed for at least nine months in the preceding 24 months (for young workers under the age of 30, six months in the preceding 24 months). The potential benefit duration is determined by the cumulative duration of employment engagements preceding the onset of unemployment and age of unemployed. The benefits range from two months for young workers with six to eight months of prior employment to a maximum of 25 months for workers aged 55 or more. They are set at the 80% of the average monthly wage (during the last eight months (of five months if young worker) for the first three months of the unemployment spell, and are reduced to 60% between the fourth and the twelfth month of unemployment, and to 50% thereafter. The benefit paid is subject to an absolute minimum of 350 EUR gross and maximum of 892.50 EUR gross (Labor Market Regulation Act, Official Gazette of the Republic of Slovenia, no. 80/2010, 40/2012, 63/2013, 100/2013). In addition, the ESS pays pension and invalidity insurance contributions for a maximum of one year for unemployed close to retirement.

Those who do not qualify for unemployment benefits may be eligible for social assistance. Financial social assistance in Slovenia is means-tested cash transfer provided to individuals with no income or income below the statutory set basic minimum income (i.e., 392.75 EUR since January 1, 2019). Recipients of financial social assistance are also eligible to an activity allowance, aimed to encourage employment or motivation for work. To be eligible, an individual must be employed or engaged in volunteer work. The level of monthly activity allowance depends on the number of hours worked and it ranges from 102.12 EUR for individuals working 60 to 128 hours per month to 200.3 EUR for individuals working more than 128 hours per month (Ministry of Labor, Family, Social Affairs and Equal Opportunities of the Republic of Slovenia, 2019).[2]

Unemployment benefits and cash transfers may create work disincentives, especially when coupled with large taxation rates of personal income. Particularly for families with several dependents, such circumstances can create an "unemployment trap" or an "inactivity trap" - disincentives due to non-employment benefits being relatively high compared with expected incomes when working, as well as the "low-wage trap" - disincentives due to additional taxes and of cash benefit reductions taking away most of additional earnings from increased hours worked. An important factor is also a tax burden on labor (Laporšek et al., 2017).

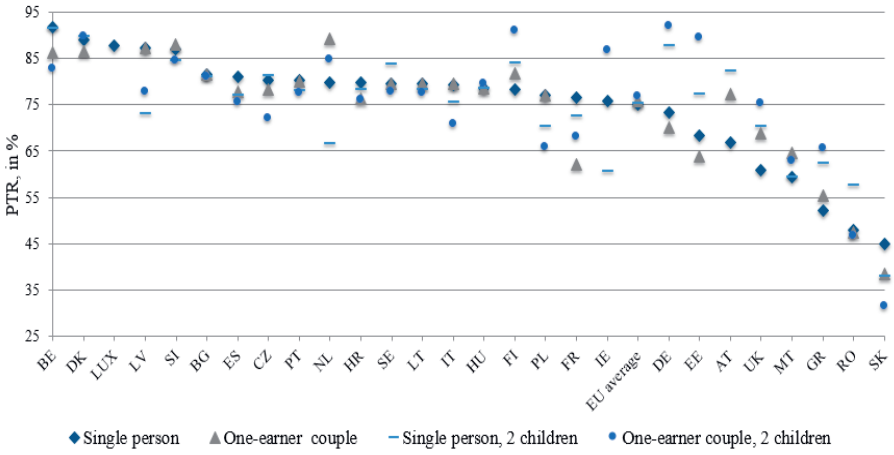
Slovenia records one of the weakest financial incentives to move from unemployment to employment among the OECD and the EU, regardless the family type or wage level. As shown in Figure 11., by employing at the 67% of average wage single person lost 87.1% of the additional earnings due to taxes and reduced benefits in

2 For more details see Laporšek, Vodopivec and Vodopivec (2017, 2019).

2016 (the EU average was 75.8%), which puts Slovenia in the very top among the EU countries.

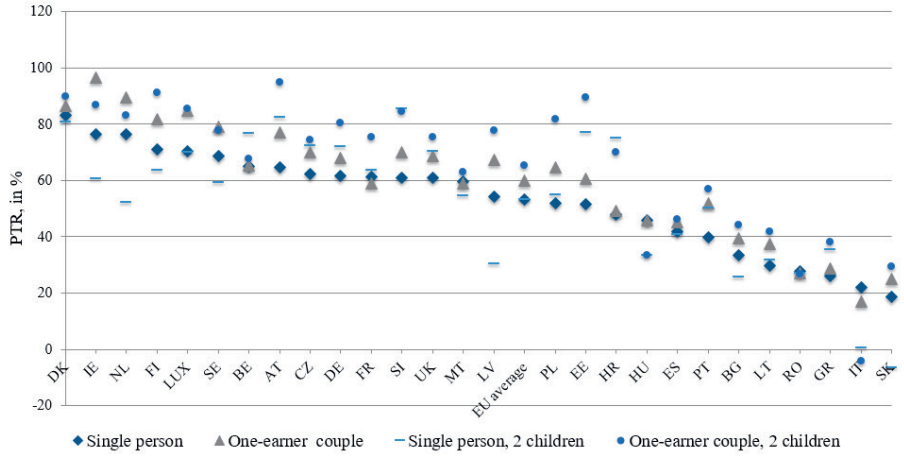
Slovenia also faces strong inactivity traps, particularly for low-wage earners. For example, for a lone parents and one-earner married couples (with or without children), 80% of increased earnings were lost when moving from inactivity to employment at the minimum wage in 2016 due to taxes and reduced financial social assistance. For lone parents and one-earner families the PTR was even higher, reaching 85% when moving to employment at the 67% of average wage. At taking a job at the average wage, the PTR declined, however it remained still significant, as it ranged between 42 and 77% (see Figure 12.).

Figure 11.: Participation tax rate for transition into full-time employment at 67% of average wage for persons receiving unemployment benefits at the initial level (during the first three months of the receipt), the EU countries, 2016



Notes: Countries are ranked by decreasing value of the PTR for single person with no children. Data for Cyprus are not available.
Sources: European Commission, 2019c; OECD, 2018; own calculations.

Figure 12.: Participation tax rate for transition into full-time employment at 67% of average wage for persons without entitlement to unemployment insurance but entitled to social assistance, the OECD and the EU countries, 2016, in percent



Notes: Countries are ranked by decreasing value of the PTR for single person with no children. Data for Cyprus are not available.
Sources: European Commission, 2019c; OECD, 2018; own calculations.

To summarize, Slovenia's social security system is rather generous. Moreover, families and individuals who are not working have poor incentives to find a job - because for many, "it does not pay to work." In other words, unemployment benefits and cash transfers, coupled with high tax wedge, create high work disincentives in Slovenia (Laporšek et al., 2019). Slovenia should therefore introduce certain measures to stimulate transition from non-employment to employment, especially for the most vulnerable groups. Following international experience, Slovenia should consider introducing into-work benefits, in-work benefits, or both (for more details see Laporšek et al., 2017).

5. DISCUSSION

There are considerable differences in the level of implementation of flexicurity elements across the EU countries. Scandinavian countries still record at most balanced flexicurity policies, characterized by both rather flexible labor market (especially with regard to temporary employment) and high security of workers. In contrast, the EU countries that joined the integration in 2004 or later, together with Greece, remain weak, especially in the security part of the flexicurity concept. With regard to Slovenia, our main findings are:

- Slovenia ranks in the lower half among the EU countries by the employment protection; the employment protection significantly declined with the last

legislative change in the field of employment relations in 2013, which aimed at reducing segmentation and increasing labor market flexibility.

- Slovenian labor market remains highly segmented between workers with permanent contracts and those on fixed-term contracts, by which young workers are at most affected.
- Participation in lifelong learning is low both in Slovenia and the EU and is way below the EU 2020 target of at least 15% of adults (aged 25-64) having taken part in learning. Moreover, in Slovenia, the rate of adult participation in learning even declined compared to 2010.
- Slovenia records low expenditures for the ALMPs, putting it at the tail of the EU countries.
- Slovenia provides a comprehensive social protection system, offering unemployed workers financial support during unemployment. Nevertheless, unemployment benefits and cash transfers create high work disincentives.

The results of the analysis suggest that the scale of Slovenia's lifelong learning and ALMPs should be increased. This would not only bring Slovenia closer to the EU/OECD average, but, most importantly, it would have a favorable effect on labor market outcomes, as showed also by Burger et al. (2017). The effect could be even higher if coupled with the more intense development of activation policies for unemployed, especially for the most vulnerable groups of unemployed. Moreover, an overview of social security system offers an additional perspective on the incentives to work in Slovenia - for many individuals who are not working "it does not pay to work." Labor market reforms in Slovenia should therefore take into account high work disincentives and consider introducing into-work benefits, in-work benefits, or both, as suggested by Laporšek et al. (2017). Further strengthening of the flexicurity idea in Slovenia is needed also due to changes in the nature of work and developments of other forms of work, which often bring forward problem of precariousness. Namely, Slovenia has over the past years recorded a significant growth of new forms of work, with the increase being at most remarkable in the number of self-employed who do not employ any workers and are working mostly for one client. It can be assumed that a lot of these cases are disguised employment relations. All these challenges and policy changes will of course not be possible without a close co-operation of all social partners.

6. CONCLUSIONS

Flexicurity remains an important policy instrument in the EU and will be especially important in the changing economic and labor market environment, characterized with the development of new forms of work. Slovenia has in the past already performed labor market reforms that relate to flexicurity components, yet there is still room for improvement.

This paper aims to examine situation in terms of implementation of flexicurity concept in Slovenia and compare it to the EU countries. The findings point on the need for Slovenia to further invest in development of lifelong learning and ALMPs, where Slovenia lags well behind the EU countries, yet the effects of these programs seem to be beneficial. This is especially important due to generous social protection, which could be spurring transitions from non-employment to employment.

The study gives an up-to-date overview of state of flexicurity in Slovenia and in the EU and therefore upgrades already available studies for Slovenia, done by Laporšek and Dolenc (2011, 2012), and adds to the studies on the EU as a whole. Comparing findings of both this and past studies, we can observe that there has been only little progress and improvements in the implementation of flexicurity concept in Slovenia. A legislative change in 2013 in terms of labor market flexibility had favorable effects on labor market (see Vodopivec, Laporšek, Vodopivec, 2017), whereas there have been no significant improvements in terms of participation in lifelong learning and financing of ALMPs.

This study focuses only on the presentation of the recent indicators of flexicurity components, which is one of its major limitation. Future research should study in more detail the effects of flexicurity on labor market, reconsider the importance of flexicurity in assuring decent work and develop a more comprehensible measure of flexicurity.

LITERATURE

Andersen, T., Haah, J. H., Hansen, M. E. & Holm-Pedersen, M. (2008). *Job Mobility in the European Union: Optimising its Social and Economic Benefits. Final report*. Taastrup: Danish Technological Institute, Centre for Policy and Business Analysis.

Autor, D. H., Kerr, W. R. and Kugler, A. D. Does Employment Protection Reduce Productivity? Evidence from US States. *The Economic Journal*, 117(521), (2007): F189-F217

Bassanini, A., Garnero, A., Pascal, M. and Sebastien, M. (2010). Institutional Determinants of Worker Flows: A Cross-Country/Cross-Industry Approach. *OECD Social, Employment and Migration Working Paper*, No. 107.

Bekker, S. Flexicurity in the European Semester: still a relevant policy concept? *Journal of European Public Policy*, 25(2), (2018):175-192

Bekker, S. & Mailand, M. The European flexicurity concept and the Dutch and Danish flexicurity models: How have they managed the Great Recession? *Social Policy Administration*, 53(1), (2019): 142-155

Bertozzi, F. & Bonoli, G. (2009). Measuring Flexicurity at the Macro Level -Conceptual and Data Availability Challenges. *Working Papers on the Reconciliation of Work and Welfare in Europe,* REC-WP 10/2009.

Betcherman, G. (2012). Labor Market Institutions: A Review of the Literature. *The World Bank, Policy Research Working Paper*, No. 6276.

Boeri, T. Institutional Reforms and Dualism in European Labour Markets. *Handbook of Labour Economics*, Vol. 4(B), (2011):1173-1236

Burger, A., Vodopivec, M., Laporšek, S. and Vodopivec, M. (2017). *Impact evaluation of key employment programmes in Slovenia.* Ljubljana: Ministry of Labour, Family, Social Affairs and Equal Opportunities.

Card, D., Kluve, J. and Weber, A. Active Labour Market Policy Evaluations: A Meta-analysis. *Economic Journal*, 120(548), (2010): F452-F477

Card, D., Kluve, J. and Weber, A. What works? A meta analysis of recent active labor market program evaluations. *Journal of the European Economic Association*, 16(3), (2017): 894-931

Cazes, S. and Nesporova, A. (2003). *Labour markets in transition: Balancing Flexibility and security in Central and Eastern Europe*. Geneva: International Labour Office.

Cazes, S. and Nesporova, A. Combining flexibility and security for employment and decent work in the Western Balkans. *South-East Europe Review for Labour and Social Affairs*, 2, (2006): 7-23

Cingano, F., Leonardi, M., Messina, J. and Pica, G. The Effects of Employment Protection Legislation and Financial Market Imperfections on Investment: Evidence from a Firm-level Panel of EU Countries. *Economic Policy*, 25(61), (2010):117-163

Council of the European Union (2007). Towards common principles of flexicurity - Council conclusions, Council Document No.16201/07, 6 December, Brussels: Council of the EU, http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2016201% 202007%20INIT

Council of the European Union (2018). Council Recommendation of 14 May 2018 on the economic policy of the euro area, *Official Journal of the European Union* 2018/C 179/01

Crépon, B. and van den Berg, G. J. (2016). Active labor market policies. *Annual Review of Economics*, 8, 521-546

Dieckhoff, M. Does it Work? The Effect of Continuing Training on Labour Market Outcomes: A Comparative Study of Germany, Denmark, and the United Kingdom. *European Sociological Review*, 23(3), (2007): 295-308

Employment Relations Act. *Official Gazette of the Republic of Slovenia*, no. 21/2013.

ESS (2016). *Annual report 2015*. Ljubljana: ESS.

ESS (2019). *Trg dela v številkah* (Labour market in numbers), https://www.ess.gov.si/trg_dela/trg_dela_v_stevilkah.

European Commission (2006). *Employment in Europe 2006*. Luxembourg: Office for Official Publications of the European Communities.

European Commission (2007). *Towards Common Principles of Flexicurity: More and better jobs through flexibility and security.* Luxembourg: Office for Official Publications of the European Communities.

European Commission (2017). European Semester Thematic Factsheet: Skills for the Labour Market, https://ec.europa.eu/info/sites/info/files/european-semester_thematic-factsheet_skills-for-labour-market_en_0.pdf

European Commission (2018). *Education and Training Monitor 2018*. Luxembourg: Publications Office of the European Union.

European Commission (2019a). *Flexicurity*, https://ec.europa.eu/social/main.jsp?langId=en&catId=102.

European Commission (2019b). *Labour Market Policy Data*, https://webgate.ec.europa.eu/empl/redisstat/databrowser/explore/all/lmp?display=card&sort=category.

European Commission. (2019c). *Tax and Benefits Indicators Database*, http://ec.europa.eu/economy_finance/db_indicators/tab/.

European Expert Group on Flexicurity (2007). *Flexicurity Pathways: Turning hurdles into stepping stones.* Brussels: European Commission.

Eurostat (2019). *Statistical Database*, http://stats.oecd.org/Index.aspx.

Fialová, K. and Schneider, O. Labor Market Institutions and Their Effect on Labor Market Performance in the New EU Member Countries. *Eastern European Economics*, 47(3), (2009): 57-83

Haltiwanger, J., Scarpetta, S. and Schweiger, H. Cross Country Differences in Job Reallocation: The Role of Industry, Firm Size and Regulations. *Labour Economics* 26 (January), (2014): 11-25

Jenkins, A., Vignoles, A., Wolf, A. and Galindo-Rueda, F. The Determinants and Labour Market Effects of Lifelong Learning. *Applied Economics*, 35(16), (2003): 1711-1721

Kajzer, A. (2005). *Fleksibilnost trga dela - Problem definicije in merjenja*. Statistični dnevi, 2005. Ljubljana: Statistični urad RS.

Keune, M. and Jepsen, M. (2007). Working Paper 1/2007 - Not balanced and hardly new the European Commission's quest for flexicurity. *ETUI-REHS Working Paper,* 1/2007.

Klammer, U. and Tillmann, K. (2001). *Flexicurity: Soziale Sicherung und Flexibilisierung der Arbeits- und Lebensverhältnisse*. Düsseldorf: WSI in der Hans-Böckler-Stiftung.

Kluve, J. The effectiveness of European active labor market programs, *Labour Economics*, 17, (2010): 904-918

Kugler, A. D. (1999). The Impact of Firing Costs on Turnover and Unemployment: Evidence from the Colombian Labour Market Reform. *Economics Working Paper*, No. 388.

Labor Market Regulation Act, *Official Gazette of the Republic of Slovenia*, no. 80/2010, 40/2012, 63/2013, 100/2013.

Laporšek, S. and Dolenc, P. The analysis of flexicurity in the E.U. member states. *Transylvanian Review of Administrative Sciences*, 32E/2011, (2011): 125-145

Laporšek, S. and Dolenc, P. Do Flexicurity Policies Affect Labour Market Outcomes? An Analysis of EU Countries. *Revija za socijalnu politiku*, 19(2), (2012): 107-129

Laporšek, S., Franca, V. and Arzenšek, A. Kako dostojne so nove oblike dela v Sloveniji?. *Economic and business review*, 20(special issue), (2018): 129-145

Laporšek, S., Franca, V. and Arzenšek, A. (2018b). *Atypical employment and new forms of works in Slovenia - empirical overview*. Conference Proceedings of the MIC 2019 conference Managing Global Diversities, 30 May-2 June 2018, Bled, Slovenia.

Laporšek, S., Vodopivec, M. and Vodopivec, M. (2017). *Making work pay in Slovenia.* Ljubljana: Ministry of Labour, Family, Social Affairs and Equal Opportunities.

Laporšek, S., Vodopivec, M. and Vodopivec, M. Making work pay in Slovenia. *Revija za socijalnu politiku*, 26(3), (2019): 315-337

Leschke, J., Schmid, G. and Griga, D. (2006). On the Marriage of Flexibility and Security: Lessons from the Hartz-reforms in Germany. *WZB Discussion Paper, SP I 2006-108*.

Madsen, P. K. (2003). Flexicurity through labour market policies and institutions in Denmark. In P. Auer and S. Cazes, S. (Eds.) *Employment stability in an age of flexibility - Evidence from industrialized countries* (pp. 59-105). Geneva: International Labour Office.

Micco, A. and Pages, C. (2006). The Economic Effects of Employment Protection: Evidence from International Industry-Level Data. *IZA Discussion Paper*, No. 2433.

Ministry of Labour, Family, Social Affairs and Equal Opportunities of the Republic of Slovenia. (2019). *Financial Social Assistance*, http://www.mddsz.gov.si/en/areas_of_work/social_affairs/financial_social_assistance/.

Noja, G. G. Flexicurity models and productivity interference in C.E.E. countries: a new approach based on cluster and spatial analysis, Economic Research-Ekonomska Istraživanja, 31(1), (2018): 1111-1136

OECD (2004). *OECD Employment Outlook 2004*. Paris: Organisation for Economic Co-operation and Development.

OECD (2010). *OECD Employment Outlook 2010: Moving Beyond the Jobs Crisis*. Paris: Organisation for Economic Co-operation and Development.

OECD. (2018). *Tax and Benefit Systems: OECD Indicators*, http://www.oecd.org/social/benefits-and-wages.htm.

OECD.Stat (2019). *OECD Statistics*, http://stats.oecd.org/Index.aspx.

Sels. L., van Hootegem, G., de Witte, H., Forrier, A. & Vandersteene, T. Flexicurity, made in Belgium. Bevindingen van twee jaar flexibiliteitsonderzoek. In G. Vandenbroucke (Eds.), *Dossier - Arbeidsmarktonderzoekersdag 2001*. Verslagboek, (2001): 401-419

SORS (2019). *SI-Stat Database*, https://pxweb.stat.si/pxweb/dialog/statfile2.asp

Tangian, A. (2006). European flexicurity: concepts (operational definitions), methodology (monitoring instruments), and policies (consistent implementations). *WSI-Diskussionspapier*, 148.

Vodopivec, M., Cvörnjek, N., Laporšek, S. and Vodopivec, M. (2017). Activation policies in cash benefit programmes for the unemployed: Ljubljana: Ministry of Labour, Family, Social Affairs and Equal Opportunities.

Vodopivec, M., Laporšek, S. and Vodopivec, M. (2017). *Equity Effects of The New Law on Labour Relations in Slovenia.* Ljubljana: Ministry of Labour, Family, Social Affairs and Equal Opportunities.

Wilthagen, T. and Tros, F. The concept of ''flexicurity'': A new approach to regulating employment and labour markets. *Transfer*, 10 (2), (2004): 166-187

PUBLIC FAMILY SPENDING, LABOUR PRODUCTIVITY, INCOME INEQUALITY AND POVERTY GAP IN THE GROUP OF SEVEN COUNTRIES: EMPIRICAL EVIDENCE FROM PANEL DATA

O. Andy Titus, O. Rowland Tochukwu, O. Timothy Chidi, K. Margret N., A. Emeka Okoro

(1) Department of Economics, Babcock University, Ilishan-Remo, Nigeria
(2) Department of Economics, Babcock University, Ilishan-Remo, Nigeria
(3) Department of Actuarial Science, University of Lagos, Akoka, Nigeria
(4) Department of Business Administration and Marketing, Babcock University, Ilishan-Remo, Nigeria
(5) Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Nigeria

Okwu Andy Titus
Department of Economics, Babcock University, Ilishan-Remo, Nigeria
okwua@babcock.edu.ng

Article info
Paper category: Original Scientific Paper
Received: 29.3.2020.
Accepted: 17.10.2020.
JEL Codes: I14.P14, P26, P36, O47
DOI: 10.32728/ric.2020.61/3

Keywords:
Family-oriented spending, income inequality, poverty gap, Endogenous growth equation

ABSTRACT

Purpose. *Comparable data on distribution of family income provide reference point for determining economic performance of any country, opportunity to assess effects of income inequality and poverty drivers that are either country- or region-specific. This study analysed the effectiveness of composite indices of public spending on family benefits, labour productivity, macroeconomic performance indicators and moderating factors in reducing income inequality and poverty gap in the Group of Seven (G7) countries from 1980 to 2019.*

Methodology. *The study employed fixed effects Least Squares regression model in panel environment within the framework of empirical econometric methodologies. The composite indices comprised public spending on family benefits in cash and kind, unemployment allowance payments, tax on personal income, labour productivity, harmonised unemployment rate, consumer price index, real GDP growth rate, GDP per capita and per hour worked, fertility rate and trade. After graphical analysis of the data, order of integration was via unit root tests. Hausman test was carried out to choose between fixed and random effects models. Subsequently, parameters of the models were estimated and evaluated for significance at the 0.05 critical level.*

Findings. *The results showed that percentage changes in income inequality and poverty gap indices differed for same percentage change in components of the composite indices. Some variable-specific percentage changes in income inequality and poverty gap were statistically significant, while others were not. However, the overall percentage changes was statistically significant. The paper concluded that while some specific effectiveness of the explanatory variables in reducing income inequality and poverty gap was not significant, their joint effectiveness significantly reduced poverty. Therefore, it is pertinent that family-oriented fiscal policy thrusts should be strengthened and sustained so as to continually reduce income inequality and, ultimately, narrow poverty gap in the countries.*

Limitations. *The study considered the G7 countries for a period of 40 years. The limitations were that the variables considered to influence income inequality and poverty gap in the countries were both exhaustive. Also, the results were conditioned to the method used, and different methods can alternatively be used by other researchers and the results compared with this.*

Originality. *The study is original research paper. It has neither been published in any other peer-reviewed journal not under consideration for publication by any other journal.*

1. INTRODUCTION

Considerable reduction in income inequality and poverty, through people-centred fiscal policy thrusts and increased productivity and national output, has been one of the main objectives of governments of most countries all over the world. Recent data show global extreme rate to be 10.7 percent in 2012, 12.4 percent of the world's population lived in extreme poverty in 2013, and that number of people living below the international poverty line of $1.9 daily income decreased by 114 million (Perreira, Lalner and Sanchez-paramo, 2017). World Vision (2018) reports that about 25 percent of the world's population has moved out of extreme poverty since 1990, and less than 10 percent now lives in extreme poverty, with survival based on $1.9 or less in a day.

Historically, official poverty rate differs across the Group of Seven (G7) countries over time. Official Poverty rates in the United States were 14.8, 12.3 and 11.8 percent in 2014, 2017 and 2018 respectively (Semega *et al*, 2019). In Britain, the rates were 22.0 percent and 13.9 percent in 1990 and 2017, respectively (Semega *et al*, 2018). At the end of the 19th Century, more than 25.0 percent of people in Britain lived at subsistence level, or even below (The British Academy, 2018). Poverty rate in Canada was 12.4% in 2008, with plus or minus 1 percent changes from 12.0 percent until 2015. In 2017, poverty rate in the country was 8.7 percent (Statistics Canada, 2020). In France, 2 million people lived in extreme poverty, and recent data indicate that 14 percent of the population (8.8 million people) live in poverty (Komyati, 2019). Germany experienced rising poverty rate from 14.0 percent in 2006 to 14.5 percent in 2010, 15.1 percent in 2011 and 15.2 percent in 2012 (Kreft, 2014; CIA World Factbook, 2019). Accurate number or percentage of the population living in poverty in Japan is difficult to obtain because the country has no official poverty line. However, regular employment status survey in 2006 showed that 8.2 percent of regular Japanese workers lived in poverty. The poverty rates were estimated at 16.1 percent in 2013, with 15.7 percent of the population living in poverty (United Nations, 2017), and 15.7 percent in 2017 (Statistica, 2017). The percentage of Italian poor population increased from 7.9 percent in 2016 to 8.4 percent in 2017, with poverty rates of 14.0 percent in 2016, and 27.7 percent in 2017 (Statistica, 2017; Instituto Nazionale di Statistica, 2018; Lu, 2018; Maio, 2018).

Like poverty rates, threshold of poverty differs across the G7 countries. Poverty thresholds in the countries were: $61,372 in the Unites States in 2017 (Semega *et al*, 2018); 60 percent of the median United Kingdom household income or £25,000 in Britain (The British Academy, 2018); 13.0 percent in Canada, determined as household after-tax income below 50 percent of the median after-tax income (Statistics Canada, 2019); 60 percent of a median revenue in France (Komyati, 2019) and 2,099 euros in Germany, where the trend poverty line is anchored on net income (Kreft, 2014; CIA World Factbook, 2019). Though Japan has no official poverty line, house-

hold mean net-adjusted disposable income of US$23,458, which exceeds the OECD countries' average of US$22,378, is the proxy (Lu, 2018); but at poverty threshold of 1676.54 euros (Instituto Nazionale di Statistica, 2018; Maio, 2018), Italy is below the OECD countries' average.

Comparable data on distribution of household disposable income provide reference point for determining relative position of any country on the global economic development map as the basis to assess the effects of income inequality and factors that are either country- or region-specific. Governments could learn from the success of palliative measures implemented in other countries to reduce income disparities and poverty. Arguably, achieving comparability in the context may be constrained by differences in national practices, especially in terms of concepts of inequality measures such as the GNI coefficient and statistical sources (OECD, 2017). For instance, Heshmati (2004) used World Income Inequality Database (WIID), also known as United Nations University (UNU-WIDER), to provide evidence that suggests that inequality in disposable income is declining over time. But the significant heterogeneity at regional and development levels over time cast serious doubts on Heshmati's evidence. For instance, estimates by the International Labour Organisation (2016) show that more than 300 million people in developed countries lived in poverty in 2012. Moreover, widening inequality has accompanied rising incomes around the world; just as poverty level is on the increase in the developed countries (United Nations, 2016). Therefore, poverty is also the experience in the developed countries.

Though global data suggest that income inequality across households has risen in many countries, some estimates show that it has narrowed across the world as a whole because the incomes of developing and developed regions have been converging (United Nations, 2016). This shows that, despite the growth in income, widening inequality still persists. For instance, although China has remarkably reduced poverty incidence in a short period of time, income inequality still remains a serious challenge, which requires greater effort over longer time horizons (Liu, 2017). Fiscal policies that engender equity in education reduce income inequality by reducing earnings disparity among the population (OECD, 2012).

Sources of income inequality and poverty such as low labour productivity, high fertility rate and proportional income tax may exacerbate poverty gap within and across regional groupings, especially in the event of negative externality economic shock. For example, Philpott (2013) notes that productivity gap between the United Kingdom and other G7 countries widens to largest in 20 Years, with the tendency to increase in the years ahead. Recent data (see the Appendix) show that only the United States ranks among the five most productive countries in the world in 2015 (Johnson, 2017).

Hitherto, substantial studies concentrated on productivity in general, and labour productivity in particular; and just few analysed income inequality and pov-

erty in relation to either economic growth (Charles, 1982; Blank and Blinder, 1986; Blank and Card, 1993; Khan *et al*, 2014; Liu 2017) or labour productivity (Chinbui *et al*, 1993; Cimoli *et al*, 2017) in the context of regional groupings of either developing or developed countries. Therefore, this study examines the effectiveness of family-centred public spending and some other macroeconomic indices in reducing income inequalities and poverty gap in the Group of Seven (G7) countries, with reference to the forty-year period, 1980-2019. The empirical statistical results provide basis for logical conclusion and appropriate policy implications.

The remaining sections of this paper are: literature review, methodology employed for the analysis, presentation of results and discussion of findings, and conclusion and policy implications for the G7 countries.

2. LITERATURE REVIEW

2.1.Conceptual and Theoretical Issues

In the literature, the different indices used to measure income inequality among individuals or households include:

(1) The GINI coefficient index, which shows the extent to which income distribution among households or individuals in an economy deviates from a perfectly equal distribution (OECD, 2018). It compares the cumulative proportions of the population against proportions of income they receive. Its value ranges from 0 (perfect inequality) to 1 (perfect equality). The more the coefficient tends to 1, the less inequality and vice versa.

(2) S80/S20 index, which is the ratio of the average income of the twenty percent richest to the twenty percent poorest people in the population of a given country.

(3) P90/P10 index, determined as the ratio of 10 percent of people with highest income (i.e., upper bound value of the ninth decile) to that of the first decile or 10 percent of people with lowest income.

(4) P90/P50 index, which shows the ratio of the upper bound value or ninety percent of the people with highest income to the median income or fifty percent of the population with middle income level.

(5) P50/P10, which indicates the fifth bound value of the fifth decile or fifty percent of people with median income relative to the upper bound value of the first decile or ten percent of people with median income.

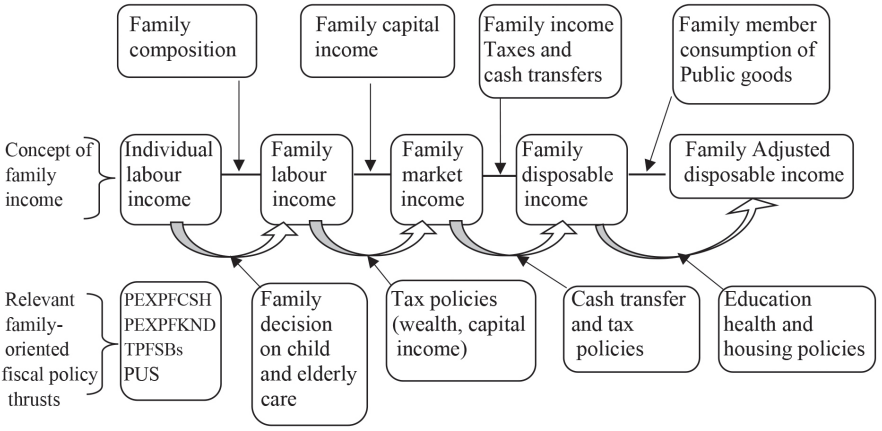
(6) The Palma ratio which shows the share of all income received by ten percent of the people with highest disposable income relative to the share of all income received by forty percent of people with the lowest disposable income among the population of a given country (OECD, 2017). Productivity index is expressed as the ratio of a country's real gross domestic product (RGDP) to the average number of hours (full- and part-term) all employed people work annually (Johnson, 2017). Poverty

gap measures the ratio or proportion by which the mean income of the poor falls below the poverty line. Poverty gap provides an indication of the poverty level in a country, thereby helping to put the country's poverty rate in its proper context (OECD, 2017). As an indicator of poverty level, it is measured for the total population as well as for people within the age range of 18 and 65 years and people over 65 years of age.

Discussions on ethical side of the concept have been considering questions as to whether equality is desirable, fair, and the appropriate level (Sen, 1992). Modern approach to inequality and poverty measurement has definitional elements in the contexts of income based on ethical concepts or other basis for the consideration of distributional comparisons (Deininger, 1996). The concepts are anchored on a set of assumptions that validate any specific ranking principle. In practice, income may be considered as wealth or expenditure. Substantial modern literature explains that income plays the role of a personal index or utility, usually articulated as nominal income normalised by an index of needs (Cowell, 2002). Stiglitz, Sen and Fitoussi (2009) considers income that is adjusted for publicly-provided in-kind transfers to be the most comprehensive concept of household disposable income. This implies that the income of an individual is assumed to fall within some range that gives exact economic definition of income.

Under perfect competition, wage distribution among workers is deemed to reflect marginal revenue products, which varies according the workers' abilities. But the tenets of perfect competition are not consistent with inequality in disposable income (Liu, 2002). Naturally, therefore, this aspect of research study is not suggested by traditional economic theory. Income distribution vector contains the income of a given individual family member and determines the welfare of the family in terms of the income amount available to it. Therefore, welfare of the family is contextualised and suitably classified as either poor or rich class. The amount of money allocated to each class differs; so does the amount which may be invested in social resources (Marx, 1849) or allocated to finance public benefits varies, and family or household income inequality persists. This negates the realism that macroeconomic policies that deviate significantly from poor family-palliative spending usually have far-reaching adverse effects on poor family disposable income OECD (2012). In addition, a wide range of other factors determine family disposable income, some of which are articulated in the perceived linkage channels shown in Figure 1.

Figure 1.: Linkage Channels of Family Earnings and Adjusted Disposable Income



Source: Adapted from OECD (2012) Economic Policy Reforms: Going for Growth.

2.2. Empirical Studies

Available literature suggest paucity of studies related to this aspect of research work in recent times. Based on regional panel data, Blank and Card (1993) investigated the connectivity among poverty, income distribution and growth in nine regions of the United States during 1957-1991 period. The study found heterogeneous effects of poverty on income inequality and growth. The study showed that income inequality and poverty are closely related to conditions in the labour market. Failure of poverty rates to respond to robust GDP growth during the 1980s was due to the combination of slow productivity growth and widening wage inequality. Though the study ignored the determinants of family disposable income, its findings are consistent with some earlier studies (Charles 1977; Charles, 1982; Blank and Blinder, 1986; Slottje, 1989; Ruggles, 1990; Jargowski and Bane, 1991; Levy and Murnane, 1992); and contemporary studies (Blank, 1993; Chinbui *et al*, 1993; Card and Riddell, 1993). In the context of wage inequality, Liu (2002) investigated the net effects of relative deprivation and efficiency wages on labour productivity in Taiwan and South Korea. Based on Taiwanese data from 1979 to 1996 and Korean data from 1993 to 1996, the results indicated that relative deprivation has a highly negative effect on industrial productivity while the effect of efficiency wages is not statistically significant. These underscore the importance of relative deprivation and support the view that manufacturing firms must be concerned with the social legitimacy of their wage distribution, if sustained high labour productivity must be engendered.

The literature provides some empirical evidence which suggest multiple linkage paths between labour productivity increases and poverty reduction. The linkages include price level instability, unemployment, barriers to technology adoption, initial

asset endowments and constraints to market access, all of which inhibit the ability of the poorest to participate in the gains from labour productivity growth (Schneider and Gugerty, 2011). With annual panel data for 32 Sub-Saharan African (SSA) countries, Dhrifi (2014) estimated a simultaneous equation model that catalysed the interrelationship between agriculture labour productivity, technological innovation and poverty. The results showed significant contribution of agricultural productivity to output growth and poverty in the countries. Technological innovation had direct and indirect significant positive impact on poverty. Khan *et al.* (2014) found that rural development and national income per capita have negative association with poverty and income inequality, but positive association with labour agricultural output growth in Pakistan. Also, FDI has a positive impact on income inequality and poverty. However, external debt is positively related to poverty and income inequality in rural Pakistan. Worthy of note is that health expenditures have positive relationships with poverty and inequality; an indication that the country's health reforms are intrinsically anti-poor. Cimoli *et al* (2017) examined productivity in the contexts of social expenditure and income distribution in Latin America. The study showed that though social expenditure and direct redistribution are crucial for improving income distribution, and that sustainable equality requires structural change. The authors provided evidence that both institutions and production structure in Latin America fail to foster equality and, thus, engender extremely high levels of inequality during the 1990-2010 period.

Based on data for Korea in the post-World War II period accessed from WIDER inequality database, Heshmati (2004) investigated the linkage between inequality and some macroeconomic variables Ð growth, openness, wages, liberalisation and income redistribution. The results suggested declining income inequality over time both in the levels and development. Cervantes-Godoy and Dewbre (2010) reported that while economic growth has considerable poverty reduction effect, the sector mix of growth matters substantially with growth in agricultural incomes being specifically important for poverty reduction in OECD countries.

A survey by Ramos and Mann (2017) on fiscal approach for inclusive growth as strategy to reduce inequalities found that the G7 countries have been facing lingering period of low growth and persistent lower income of the poorest. The evidence suggests that inequalities widened over the last two decades amid stagnating productivity growth. The emphasised potential of fiscal policy to fundamentally shaping the nexus between productivity and inclusiveness so as to engender income inequality and poverty reduction in the OECD and other countries. Therefore, it recommended, among other things, that the G7 governments need to revisit the tax and benefits system to provide enhanced incentives for labour market participation, encourage the creation of quality jobs in the formal economy, and provide incentives for skills development and lifelong learning. And that the countries should strengthen their social protection systems, particularly in the areas of public spending policies in the direction of poor family benefits.

It is obvious that, except Ramos and Mann (2017), the previous studies left out some relevant key variables in the linkages between poor family-oriented fiscal policy thrusts and labour productivity, on the one hand, and income inequality and poverty gap, on the other hand. For instance, the studies ignored the role of tax on personal income in shaping family adjusted disposable income adjusted. The studies also neglected the relevance of family fertility rate and other macroeconomic considerations such as real GDP growth rate and trade-driven external economic shock. Therefore, the stimulation and innovative point of departure of this current research interest is the inclusion of these relevant key variables omitted by previous studies. This justifies the relevance of the study within the contexts of public family spending, labour productivity, income inequality and poverty gap in the Group of Seven (G7) countries.

3. METHODOLOGY

3.1. Design, Data and Source

We employed Panel EGLS regression model to analyse data for the Group of Seven (G7) countries, namely: The United States of America, Britain or the United Kingdom, Canada, France, Germany, Japan and Italy. The data sets are proxy variables for poor family-oriented fiscal policy thrusts and income inequality incidence and poverty gap in the G7 countries. For the policy variables, we considered public spending on family in-cash and kind, unemployment allowances payments and tax on personal income. GDP per hour worked and labour productivity are the productivity variables, while harmonised unemployment rate, consumer price index, real GDP growth rate, GDP per capita and trade are relevant macroeconomic variables, and fertility rate and trade moderate the influence of the variables on income inequality and poverty gap. The data span 40 years (1980 Đ 2019). Time series values of the data set were extracted from the OECD (2019) family database and World Bank's (2019) World Development Indicators data bank. The sources have been proven to be authoritative and reliable over the years. The variables, descriptions and sources are summarised in Table 1.

Table 1.: Variable, Description, Measurement and Source

Variable	Description	Measurement	Source
IEQTY	Income inequality index is a ratio that approximates the disposable income gap between individuals' or families' disposable income in the population of a country (e.g., an OECD country).	Family disposable income adjusted for publicly-provided in-kind transfers, which is influenced by various factors.	OECD (2017; 2018; 2019)
PG	Poverty gap index is a ratio that shows the extent by which the average income of the poor population in the OECD countries falls below the poverty line. Therefore, it indicates the intensity of poverty in the OECD countries.	Estimate of the depth of poverty obtained by determining extent to which, on the average, income of the poor falls below the poverty line.	OECD (2017; 2019)
Composite Index	**Description, Indicator and Components**	**Measurement**	**Source**
FOFPT	Family-oriented fiscal policy thrust, which consists of poor family-oriented mechanisms aimed at reducing income inequality and poverty gap in the OECD countries.Indicator: Public spending on family transfers (PSFTs). Components: (i) Public spending on families in cash and kind as well as unemployment allowance payment to families, and tax on personal income (TOPI).	Financial support, as % of total government expenditure, exclusively for families and children, exclusive spending to assist families in other areas like education, health and housing.	OECD (2018, 2019)
LPVTY	Labour productivity index. In shows the efficiency of labour in the process of producing national output. Components: GDP per hour worked (GDPPHW), which is the ratio of aggregate output to total number of hours worked. Labour productivity (LP) indicates the efficiency of labour in the producing aggregate national output in the OECD countries.	Values of GDP per capita and GDP per hour worked by labour.	Economic Policy Institute (2018)OECD (2018, 2019)

Variable	Description	Measurement	Source
MEPI	Macroeconomic performance index. This shows the performance of the aggregate economy which shapes family disposable income. Components: Harmonised unemployment rate (HUR), which shows unemployed family members as a ratio of total labour force who are actively looking for employment in the OECD countries but do not find any. Consumer price index (CPI), showing fluctuations in general price level in the OECD countries. Real GDP growth (rGDPgr), which shows whether or not growth in aggregate output is stable over time. Gross domestic product per capita (GDPPC) indicating per capita population share in the gross domestic product.	HUR: Unemployed family members actively looking for work but cannot find any. CPI: Increases in average price level over time. rGDPgr: Change in real gross domestic product adjusted for inflation.GDPPC: Yearly ratio of national product to population.GDPPHW: Yearly ratio of national product to total hours worked.	World Bank's (2019) WDI OECD (2018, 2019)
MF	Moderating factors. Composite index of factors that moderate influences of poor family-oriented family policy thrust on family disposable income. Components: Fertility rate (FTR), which indicates the rate at which family size changes, and trade to proxy the influence of trade globalisation on poor family-oriented fiscal policy thrust in the OECD countries.	Fertility Rate: Percentage of total births per woman. Trade: exchange of goods and services across international borders as percentage of GDP.	OECD (2018, 2019), Max (2020)

Source: Authors' compilation (2020).

3.2. Specification of Models for Analysis

We specified and estimated two models, as the basis to determine the relative effectiveness of the poor family-focused public spending in reducing the income inequality intensity and poverty gap in the G7 countries. In the models, income inequality and poverty gap are the respective dependent variables while composite indices of poor family-oriented fiscal policy transfers, labour productivity, macroeconomic performance indicators and composite index of the moderator variables are the independent variables. Though most of the series are ratios or percentages, we transformed all into logarithmic form to bring all data to the same baseline and, thus, eliminate idiosyncratic-induced outliers in the models (Wooldridge, 2006). This neutralises country-specific influence across the OECD countries. We recognise that several factors shape the family or household disposable income of the family. Therefore, we specified the aggregated analytic models as follows:

$$lniieqty_{i,t} = \lambda_0 + \lambda_j \sum_{j=1}^{4} fofpt_{i,t} + \lambda_k \sum_{k=5}^{6} lpvty_{i,t} + \lambda_q \sum_{q=7}^{10} mepi_{i,t} + \lambda_r \sum_{r=11}^{12} mf_{i,t} + \mu_{i,t} \quad (1)$$

$$lnpg_{i,t} = \theta_0 + \theta_j \sum_{j=1}^{4} fofpt_{i,t} + \theta_k \sum_{k=5}^{6} lpvty_{i,t} + \theta_q \sum_{q=7}^{10} mepi_{i,t} + \theta_r \sum_{r=11}^{12} mf_{i,t} + \mu_{i,t} \quad (2)$$

where *lniieqty* and *lnpg* are indices of income inequality and poverty gap, respectively. **Σ***fofpt* is composite index of family-oriented fiscal policy thrusts, consisting of three fiscal policy indicators, namely: public spending on family in cash and kind as well as unemployment allowance payments, which we classified the sum as public spending on family transfers (PSFTs), plus tax on personal income (TOPI). **Σ***lpvty* is a composite index of labour productivity, which components are GDP per hour worked (GDPPHW) and labour productivity index (LP). Also, **Σ***mepi* is a composite index of macroeconomic performance, which incorporates harmonised unemployment rate (HUR), consumer price index (CPI) or inflation, real GDP growth (rGDPgr) and GDP per capita (GDPPC). Similarly, **Σ***mf* is a composite index of intra-country moderating factors across the OECD countries, and the components are fertility rate (FTR) and trade (TRADE). FTR moderates demographic influence on family disposable income while TRADE moderates influence of external sector or exchange globalisation on family disposable income. μ is the error term , and it is assumed to satisfy white noise conditions.

Disaggregating equations (1) and (2), we obtain the following:

$$lniieqty_{i,t} = \lambda_0 + \lambda_1 lnpsfts_{i,t} + \lambda_2 lntopi_{i,t} + \lambda_3 lngdpphw_{i,t} + \lambda_4 lnlp_{i,t} + \lambda_5 lnhur_{i,t} + \lambda_6 lncpi_{i,t} + \lambda_7 lnrgdpgr_{i,t} + \lambda_8 lngdppc_{i,t} + \lambda_9 lnftr_{i,t} + \lambda_{10} lntrade_{i,t} + \mu_{i,t} \quad (3)$$

$$lnpg_{i,t} = \theta_0 + \theta_1 lnpsfts_{i,t} + \theta_2 lntopi_{i,t} + \theta_3 lngdpphw_{i,t} + \theta_4 lnlp_{i,t} + \theta_5 lnhur_{i,t} + \theta_6 lncpi_{i,t} + \theta_7 lnrgdpgr_{i,t} + \theta_8 lngdppc_{i,t} + \theta_9 lnftr_{i,t} + \theta_{10} lntrade_{i,t} + \mu_{i,t} \quad (4)$$

where $\boldsymbol{\lambda}_o$ and $\boldsymbol{\theta}_o$ are the intercepts of the models, $\boldsymbol{\lambda}_j$ ($j = 1, 2, 3, \ldots, 10$) and $\boldsymbol{\theta}_k$ ($k = 1, 2, 3, \ldots, 10$) are the respective coefficients of the models to be estimated. The coefficient of each of the independent variables depicts the effect of the associated independent variable on the dependent variable. $\mu_{i,t}$ is the white noise error term. PSFBS, TOPI, HUR, CPI, RGDPgr GDPPC LP, GDPPHW, FTR and TRADE are as earlier defined.

The data set are time series observations on the variables. Therefore, stationary properties of the sets are ascertained so as to ensure stability and time invariance in the estimated relationships. The justification is that a non-stationary time series yields spurious results and, therefore, is inappropriate to generalise for time other than the present as regression tends to yield spurious and inconsistent estimates (Engle and Granger, 1987). The data set is characterised by small number of cross-section units (seven countries) and relatively long period (1980 Ð 2019). We conduct Hausman test to determine the appropriateness of either fixed or random effects model. Based on the result, we employed period fixed effects model to estimate parameters of the model, via panel least squares. This method is considered more suitable than the Generalised Method of Moments (GMM) Estimator which is suitable for dynamic panel data models with fixed effects, large number of cross-sections and short time series (Holtz-Eakin, Newey and Rosen, 1988; Arellano and Bover, 1995; Stock, 2007; William, 2008). We control for time heterogeneous outlier effects across the countries by incorporating period dummy in the estimation process and, thus, control for country-specifics among the OECD countries. This mitigates any unobserved problems of endogeneity among the dependent and independent variables, as well as time outlier effects across the countries.

The *a priori* expectations are that the coefficients of lnTOPI, lnFTR, lnHUR and lnCPI would have positive sign, thereby indicating positive response of income inequality (lnIIEQTY) and poverty gap (PG) to 1 percentage change the variables. On the other hand, the coefficients of lnPSFTs lnRGDPgr, lnGDPPC, lnLPRODVTY, lnGDPPHW and lnTRADE would have negative sign showing that the response of income inequality (lnIIEQTY) and poverty gap (PG) to 1 percentage change in the independent variables would be negative. We evaluated statistical significance of the responses at the conventional 5% critical level. The expectations are summarised in Table 2.

Table 2.: A Priori (Pre-Estimation) Expectations

Explanatory Variable	Nomenclature	Hypothesis	Expected sign of coefficient
Public spending on family transfers	PSFTs	Income inequality and poverty gap have no significant negative relationship with public spending on family transfers.	Negative (-)
Tax on personal income	TOPI	Income inequality and poverty gap have no significant positive relationship with tax on personal income.	Positive (+)
Fertility rate	FTR	Income inequality and poverty gap have no significant positive relationship with fertility rate.	Positive (+)
Harmonised unemployment rate	HUR	Income inequality and poverty gap have no significant positive relationship with harmonised unemployment rate.	Positive (+)
Consumer price index	CPI	Income inequality and poverty gap have no significant positive relationship with CPI price index.	Positive (+)
Real gross domestic product growth rate	RGDPgr	Income inequality and poverty gap have no significant negative relationship with real domestic product growth rate.	Negative (-)
Gross domestic product per capita	GDPPC	Income inequality and poverty gap have no significant negative relationship with gross domestic product per capita.	Negative (-)
Labour productivity	LP	Income inequality and poverty gap have no significant negative relationship with labour productivity.	Negative (-)
Gross domestic product per hour worked	GDPPHW	Income inequality and poverty gap have no significant negative relationship with gross domestic product per hour worked.	Negative (-)
Trade	TRADE	Income inequality and poverty gap have no significant negative relationship with trade.	Negative (-)

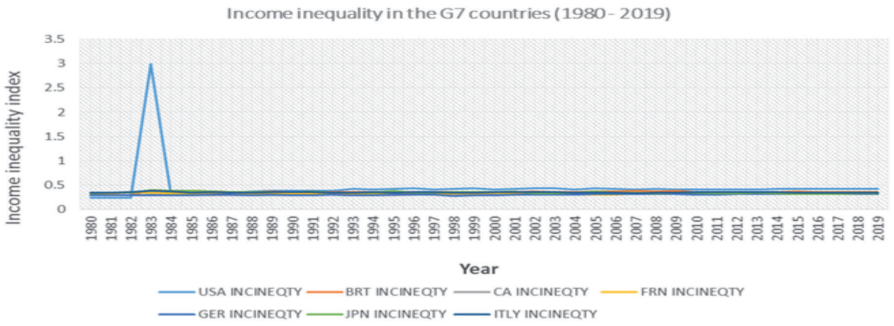
Source: Authors' compilation (2020).

4. ANALYSIS, RESULTS AND DISCUSSION

4.1. Graphical Analysis of the Data Series

Graphical analysis of income inequality, poverty gap, labour productivity, public spending on families in cash, and unemployment allowance payment during the 1980-2019 period are presented in Figures 2. to 7. respectively.

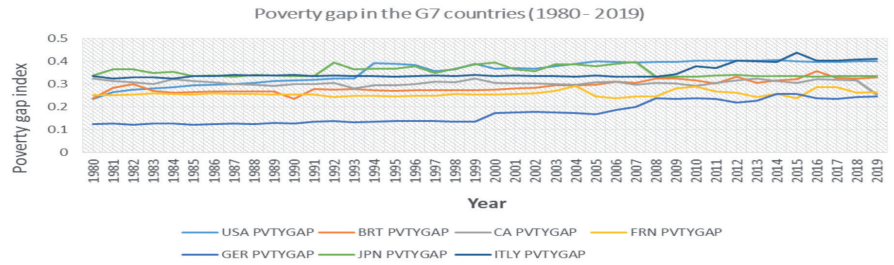
Figure 2.: Income inequality (1980-2019)



Source: Authors' Analysis (2020).

It is obvious from Figure 2. that the G7 countries experienced narrow inequality income distribution during the period, except the United States whose inequality widened between 1982 and 1984, and peaked at 3 percent.

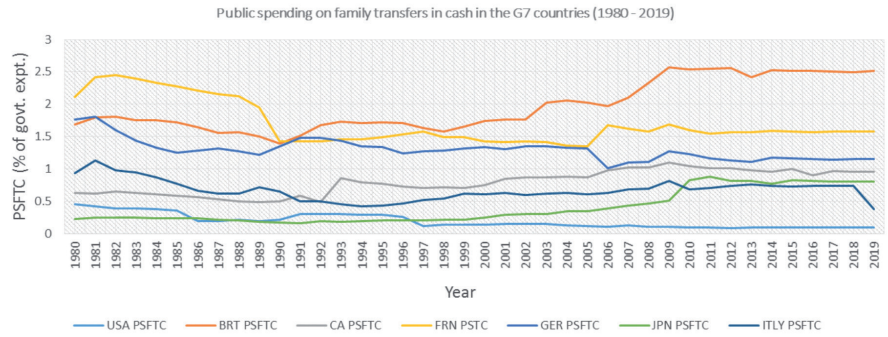
Figure 3.: Poverty gap (1980-2019)



Source: Authors' Analysis (2020).

Figure 3. shows that poverty gap fluctuated slightly upwards in the G7 countries during from 1980 to 2004, except in Italy which experienced slightly decreasing poverty gap from 2000 to 2004. The Figure also shows that, relatively, pverty gap in the G7 countries fluctuated in the years 2005 to 2019.

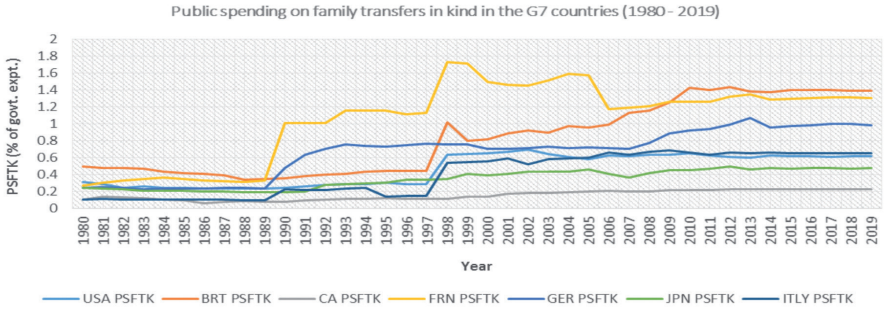
Figure 4.: Public spending on family in cash (1980-2019)



Source: Authors' Analysis (2020).

It is evident from Figure 4. that in the G7 countries, government cash spending on families relativey fluctuating trends during the 1980-2019 period, and that over the period the US and Britain exhibited greater fluctuations (between 1.2 and 2.5 percent of GDP) than other G7 countries.

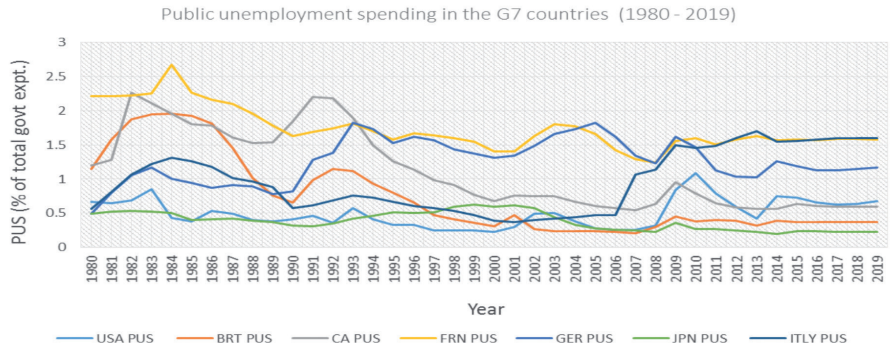
Figure 5.: Public spending on family in kind (1980-2019)



Source: Authors' Analysis (2020).

As shown in Figure 5., public spending (in kind) on families in the G7 countries during the period, was relatively stable during 1980 to 1989, except for Britain and France in the spending msrginally declined marginally. The Figure shows that spending fluctuated considerably during 1990-2019 period, especially in the US, Britain and France.

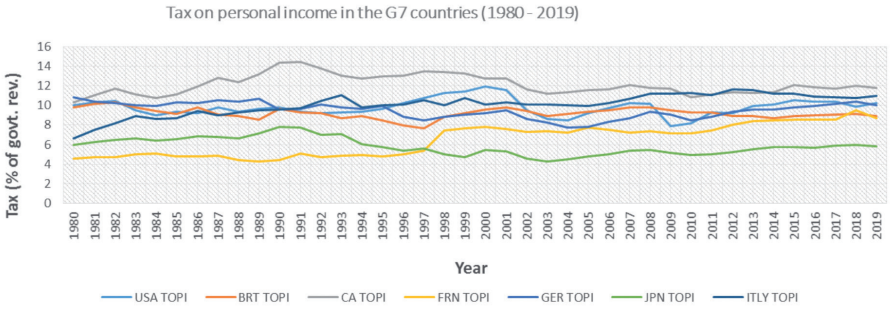
Figure 6.: Public unemployment spending (1980-2019)



Source: Authors' Analysis (2020).

Figure 6. shows more downward fluctuating trend in time series amounts of government spendings to cousion the adverse effects of unemployment on families of the G7 countries during the period being analysed. Obviously, government unemployment spending fluctuated the most in the US and France; and the least in Britain and Canada.

Figure 7.: Tax on personal income (1980-2019)



Source: Authors' Analysis (2020).

Figure 7. shows low fluactions in tax on personal income in the G7 countries during the 40-year period. It is manifest from the line graphs that differrent tax-government ratios in the countries during period. For instance, from 1981 to 2009, Canada has greater tax-government ratio while the ratio is lowest France and Japan throughout the period. From 1981 to 1997, the ratio ratio was lower in France than Japan; but reversed between the two countries from 1998 to 2019.

4.2. Time Series Properties of the Data Sets

Stationarity test result of the time series panel data set for unit root test of times series panel data set is presented in Table 3.

Table 3.: Summary of Unit Root Tests for the Variables at First Difference

Variable	Levin Lin and Chu (LLC)Statistic	Probability Value	Order of Integration
Iieqty	-3.55722	0.0002	I(0)
PG	-2.51253	0.0060	I(0)
Fofpt	-1.95151	0.0255	I(0)
Topi	--2.05836	0.0198	I(0)
Ftr	-3.14445	0.0008	I(0)
Hur	-1.85459	0.0318	I(0)
Cpi	-4.48223	0.0000	I(0)
Rgdpgr	-9.98010	0.0000	I(0)
Gdppc	-5.95039	0.0000	I(0)
Lprodvty	-5.86971	0.0000	I(0)
Gdpphw	-6.75291	0.0000	I(0)
Trade	-2.39139	0.0084	I(0)

Source: Authors' computations (2020), using E-Views version 10
Notes: LLC assumes common unit root process. **Significant at the level of 0.05.

Trade moderates the influence of trade globalization.

The results in Table 3. show that panel data series of the variables are integrated of order zero, *I(0)*. Therefore, Panel Engle and Granger Least Squares (EGLS) estimation technique is appropriate to obtain numerical values of parameters of the models.

4.3.Hausmen Test Result

Result of the Hausman test is presented in Table 4.

Table 4.: Summary of Hausman Test Result

Test Summary	Chi-Square Statistic	Chi-Square Degree of Freedom	Probability
Period Random	35.174435	11	0.0002

Note: Effect is considered at the 95% confidence interval or p-value < 0.05 level.
Source: Authors' computations (2020).

The result shows that at 11 degree of freedom, Chi-Square statistic has p-value of 0.0002, which is less that the conventional 0.05 level. Therefore, fixed effects panel model is appropriate.

4.4.Results of the Fixed Effect Panel Least Squares Regression

Estimates of the intercept and coefficients, as well as the relevant evaluation statistics with p-values, for the Panel EGLS regression models specified in equations (1) and (2) are presented in Table 5.

Table 5.: Regression Analysis Results

Dependent Variable in Model 1: lnPG Method: Panel Least Squares Sample: 1980 - 2019 Periods Included: 40 Cross-Sections Included: 7 Total Panel (balanced) Observations: 280			lnIEQTY Dependent Variable in Model 2:	
		Model 1		
Variable	Coefficient (λj)	Std. Error	t-Statistic	Prob.
Constant	-16.3560	6.3154	-2.5898	0.0102
lnPSFTs	0.0081	0.0378	02143	0.8305
lnTOPI	0.0452	0.0494	0.9153	0.3610
lnFTR	0.1532	0.0818	1.8742	0.0622
lnHUR	-0.0218	0.0254	-0.8577	0.3920
lnCPI	0.0257	0.0101	2.5441	0.0116
lnRGDPgr	0.0242	0.0160	1.5104	0.1323
lnGDPPC	-0.1503	0.0696	-2.1579	0.0320
lnPRODVTY	-0.0621	0.0534	-1.1637	0.2458
lnGDPPHW	-0.0843	0.1279	-0.6593	0.5104
lnTRADE	-0.2127	0.0591	-3.6027	0.0004
YR2-40	-0.4510	0.1562	-2.8869	0.0043
R-squared = 0.4302 F-Statistic = 2.4573 Adjusted R-squared = 0.3057 Prob(F-statistic) = 0.0000 Durbin-Watson statistic = 2.3193				
		Model 2		
Variable	Coefficient (qj)	Std. Error	t-Statistic	Prob.
Constant	-2.2467	19.7372	-0.1138	0.9095
lnPSFTs	-0.1336	-0.1336	-1.1314	0.2591
lnTOPI	-0.1232	0.1544	-0.7978	0.4258
lnFTR	1.3651	0.2555	5.3432	0.0000
lnHUR	-0.0679	0.0793	0.8543	0.3938
lnCPI	0.0761	0.0316	2.4068	0.0169
lnRGDPgr	0.0996	0.0502	1.9866	0.0482
lnGDPPC	-0.5270	0.2176	-2.4216	0.0162
lnLPRODVTY	0.4646	0.1668	2.7863	0.0058
lnGDPPHW	0.6408	0.3997	1.6031	0.1103

lnTRADE	-0.4362	0.1845	-2.2635	0.0189
YR2-40	-0.0684	0.4882	-0.1401	0.8887
R-squared = 0.3827 F-Statistic 2.8388 Adjusted R-squared = 0.2479 Prob(F-statistic) 0.0000 Durbin-Watson statistic = 1.0172				

Note: Significance is considered at the 95% confidence interval or p-value < 0.05 level.
Source: Author's computations (2020).

Estimates of Model 1 coefficients provide statistical evidence of varying response of income inequality to dynamics of the independent variables. Some of the coefficients have the sign as expected *a priori* while others are to the contrary. As the sign of the coefficients indicates, the percentage response of income inequality (IIQTY) to percentage change in tax on personal income (TOPI), fertility rate (FTR), consumer price index (CPI), productivity (PRODVTY), gross domestic product growth per hour worked (GDPPHW) and trade (TRADE) is consistent with the expectations, while the response to public spending on family transfers (PSFTs), harmonised unemployment rate (HUR) and real GDP growth rate (RGDPgr) is contrary to the expectations.

The magnitude of the coefficients with the p-values of the coefficient t-statistic values provided statistical evidence that some of the responses are negligible while others are not. The positive response of income inequality (IIEQTY) to public spending on family transfers (PSFTs) is negligible. For 1 percent increase in the composite index of public spending on family transfers (PSFTs), tax on personal income (TOPI), fertility rate (FTR) and real gross domestic product growth (RGDPgr), income inequality (IIEQTY) responds by 0.8, 4.5, 15.3, and 2.4 percent increases respectively, with respective t-statistic p-values of 0.8305, 0.3610, 0.0622 and 0.1323, which prove that the response is negligible or not statistically significant. But the response of income inequality (IIEQTY) to 1 percent increase in consumer price index (CPI) is 2.6 percent increase, which is statistically significant (p-value = 0.0116). The response of IIEQTY to 1 percent increase in harmonised unemployment rate (HUR) is 2.2 percent decrease, which is statistically negligible (p-value = 0.3920). Similarly, IIEQTY responds to 1 percent increase in labour productivity (LPRODVTY) and gross domestic per hour worked (GDPPHW) by 6.2 percent and 8.4 percent decreases, respectively. For 1 percent increase in gross domestic per capita (GDPPC) and trade (TRADE), there are 1.5 percent and 21.3 decreases, respectively, in income inequality (IIEQTY), each of which is statistically significant (p-values = 0.0320 and 0.0004). The negative coefficient, with statistic p-value of 0.0043, shows that percentage decrease in income inequality (IIEQTY) significantly exceeds its percentage increase in the context time shocks.

The F-statistic (3.4573), with p-value of 0.0000, is statistical evidence that joint percentage decrease in income inequality is statistically significant relative to the dynamics of poor family-focused fiscal policy, labour productivity, macroeconomic performance and the moderating factors. Therefore, the composite indices induce significant decrease in income inequality in the OECD countries during the 1980-2019 period. The adjusted coefficient of multiple determination (Adjusted R-

squared = 0.3056) shows that the independent variables considered in the model explain about 31 percent of the total variations in income inequality. This suggests that the unexplained proportion situates outside the model. The Durbin-Watson statistic (DW = 2.3193) indicates that, within the context of Model 1, the explanatory variables are free from the problem of serial order correlation.

The estimates of Model 2 coefficients show that poverty gap responses differently to changes in poor family-centred fiscal policy thrusts and the other explanatory variables in the model. Coefficients of PSFTs, FTR, HUR, CPI, GDPPC and TRADE are appropriately signed, while coefficients of the other variables in the model are not consistent with the *a priori* expectations. Numerical values of the coefficients, with the associated t-statistic p-values provide statistical basis which show that the response of poverty gap (PG) to 1 percent increase in public spending on family transfers (PSFTs), tax on personal income (TOPI), harmonised unemployment rate (HUR) and gross domestic product per hour worked (GDPPHW), respectively, is statistically negligible (i.e., not statistically significant). The evidence is that for 1 percent increase in PSFTs, TOP1, HUR, and GDPPHW, respectively, the percentage decreases in PG are 13.36 (p-statistic p-value = 0.2591), and 12.32 (t-statistic p-value = 0.4258); percentage increases in HUR and GDPPHW, respectively, are 6.78 (p-value = 0.3938) and 64.08 (p-value = 0.1103), respectively. On the other hand, 1 percent increase in CPI, RGDPgr and LPRODVTY induces statistically significant percentage increase in PG of 7.61, 9.96 and 46.46, respectively, with t-statistic p-values of 0.0169, 0.0482 and 0.0058, respectively. The results also provide statistical evidence that 1 percent increae in moderating influence of TRADE induces significant decrease (43.62 percent; t-statistic p-value = 0.0189) in poverty gap. On the other hand, 1 percent increase in the moderating influence of FTR results induces significant increase in PG (36.51 percent; t-statistic p-value = 0.0000). The implication is that possibly, in the G7 countries, moderating influences of influences of fertility rate trade transmit through dynamics of poor family-friendly fiscal policy thrusts, labour productivity and some macroeconomic variables. Negative coefficient (0.0684) of the period dummy, with statistic p-value of 0.0043, provides evidence of significant difference between percentage decrease and increase in poverty gap (GP) resulting period-induced shocks.

The F-statistic value of 2.8388, with p-value of 0.0000, shows that joint percentage decrease in poverty gap (GP) during the 40-year period is statistically significant relative to the mechanisms of poor family-centred fiscal policy, labour productivity, macroeconomic performance and the moderating factors. This means that the explanatory variables significantly reduce poverty gap in the G7 countries. This supports support the finding by Philpott (2013), the view expressed by the United Nations (2016) and the estimates by the International Labour Organisation (ILO, 2016). The value of the adjusted coefficient of determination (Adjusted R-squared = 0.2479) shows that the poor-focused public spending mechanisms, labour productivity metrics and macroeconomic economic factors account for about 25 percent of the total variations in

poverty gap. Therefore, the unexplained proportion of the total variations may be attributable some factors outside the model such as consumption and other life styles of the poor. The Durbin-Watson statistic (DW = 1.9172) shows that the independent variables in the model are free from the problem of serial order correlation.

By comparison, the negative coefficients of PSFTs and TOPI Model 2, which are positive in Model 1, show that poor family-oriented public spending on family transfers and tax on personal income effectively reduce index of income gap, but increase that of income inequality in the countries.

5. SUMMARY, CONCLUSION AND POLICY IMPLICATIONS FOR THE G7 COUNTRIES

This paper employed empirical econometric methodologies to examine the effectiveness of public spending on family transfers, labour productivity, some key macroeconomic performance indices and two moderating variables in reducing income inequality and poverty gap in the Group of Seven (G7) countries. Graphical presentations and fixed effects panel least squares (PLS) estimation techniques are used for the analysis. Estimates of the model coefficients, with the relevant statistics, provided the basis for the evaluation of the effectiveness of the independent variables in bridging income and poverty gaps in the countries. The results show that percentage changes in income inequality and poverty gap indices differ for same percentage change in public spending on family transfers, labour productivity and the macroeconomic performance indices. Some variable-specific percentage changes induced statistically significant percentage changes in income inequality and poverty gap, while others did not. Aggregate percentage change in the explanatory variables induced significant change in in income inequality and poverty gap in the countries. The results also showed that powers of the models are moderately low, and varied in explaining the total variations in incidences of income inequality and poverty gap in the G7 countries during the period.

The paper concludes that, individually, increases in public spending on family transfers reduces poverty gap but increases income inequality in the G7 countries. Similarly, tax on personal income reduces poverty gap but increases the incidence of income inequality. Labour productivity reduces income inequality incidence but increases poverty gap in the countries. Changes in consumer price index (inflation), real gross domestic product growth rate, incidence of income inequality and poverty gap move in same direction. But changes in gross domestic product per capita, income inequality and poverty gap move in opposite directions. Poverty gap and gross domestic product per hour worked change in the same direction while income inequality change in the opposite direction.

The findings, which are subsumed in the conclusion, present certain policy implications for the G7 countries. First, poor family-centred public spending mecha-

nisms should be sustained with a view to continually narrowing poverty gap in the countries. By implication, therefore, increasing public spending on family benefits in-kind and in-cash as well as unemployment allowance payments should be in-built in poor family-focused benefits expenditures. To mitigate the increases in income inequality induced by poor family-oriented public spending and tax on personal income, buffers should by in-built in the tax structure to alleviate the income inequality-escalating effect. Further, progressive tax regime should be implemented, and substantial proportion of resultant tax revenue be channeled towards increasing poor family-beneficial public spending. Alternatively, labour productivity-enhancing investment, such as investment in functional education, training and research should be considered. This would empower the poor and increase their income earning capacity and, thus, improve their financial status. It would also reflect in increased real gross domestic product both per capita and hour worked and, ultimately, reduce poverty gap in the countries. Hence, incorporating these in the fiscal and other macroeconomic policy frameworks have inherent potentials for broader effectiveness in reducing the incidences of income inequality and poverty gap in the G7 countries.

The data analysed in this paper are for the G7 countries. Therefore, the paper suggests that further studies should consider similar and or related studies for larger sample of the OECD countries and other geographical regions in the developed and developing countries as well as the emerging market economies.

Authors Contributions

Each of the co-authors participated actively in sourcing and extracting data sets used for analysis in this paper. Each author also participated equally parts in the review of literature done in section two. The third and fifth co-authors wrote the introduction (section one) and conceptual issues (in section two). All authors made equal contributions to the theoretical considerations (in section two) of the paper. The authors articulated the methodology in section three; implemented the econometric methodological analysis, discussion of the results, conclusion and policy implications in sections four and five.

Statement of Public Interest

Many studies have provided empirical evidence of dwindling income incidence and poverty reducing effects of fiscal, economic and social policy thrusts in countries across the world, particularly in the developed nations. This is confirmed for the G7 countries analysed in this paper. Therefore, the authors are of the view that appropriately redesigning and fine-tuning the mechanisms of public spending on households, and engendering commensurate labour productivity are matters of urgency within and among the countries for enhanced reductions in the widening incidences of income inequality and poverty gap.

REFERENCES

Arellano, M., and Bover, S., Dynamic Panel Data and Simultaneous Reverse Causation Bias. *Journal of Econometrics*, *23*(6), (1995): 250-261.

Blank, R. M., Why were Poverty Rates So High in the 1980s? In Papadimitriou D. B. and Wolff E. N. (eds.): In Poverty and Prosperity in the USA in the Late Twentieth Century. New York: St. Martin's Press, 1993.

Blank, R. M. and Card, D., Poverty, Income Distribution and Growth: Are They Still Connected? *Brookings Papers on Economic Activity*, *1993*(2), (1993):285-339.

Economic Policy Institute (EPI), The Productivity-Pay Gap. (2018). https://www.epi.org/productivity-pay-gap/ Accessed on 30 August 2018.

Blank, R. M. and Blinder, A. S., Macroeconomics, Income Distribution, and Poverty. In Danziger, S. H. and Weinberg D. H. (eds.) Fighting Poverty: What Works and What Doesn't. Cambridge, Mass.: Harvard University Press, 1986.

Card, D. and Riddell, W. C., A Comparative Analysis of Unemployment in the United States and Canada. In Card D. and Freeman R. B. (Eds.). Small Differences that Matter: Labour Markets and Income Maintenance in Canada and the United States. Chicago: University of Chicago Press, 1993.

Cervantes-Godoy, D. and Dewbre, J., Economic Importance of Agriculture for Poverty Reduction. OECD Food, Agriculture and Fisheries Working Papers, No. 23, OECD Publishing, (2010), doi: 10.1787/5kmmv9s20944-en.

Charles, M. A., The Two Wars against Poverty: Economic Growth and the Great Society. *Public Interest*, 69, (1982): 3-16.

Charles, B. M., Cyclical Sensitivity of Aggregate Income Inequality. *Review of Economics and Statistics*, 59(1), (1977): 56-66.

Chinbui, J., Murphy, K. M. and Pierce, B., Wage Inequality and the Rise in Returns to Skill. *Journal of Political Economy*, 101(3), (1993): 410-442.

CIA World Factbook., Poverty in Germany Hits New High (2019). Retrieved from https://www.indexmundi.com/germany/population_below_poverty_line.html on 06 April 2020.

Cimoli, M., Porcile, G. Neto, A. M. and Sossdorf, F., Productivity, Social Expenditure and Income Distribution in Latin America, *Brazilian Journal of Political Economy*, 37(4), (2017)

Cowell, F., The Economics of Poverty and Inequality: Introduction, (2002). www.darp.lse.ac.uk/papersdb/Cowell_(Elgar_03).pdf. Accessed on 07 September 2018: 660-679.

Deininger, K. and Squire, L., A New Data Set Measuring Income Inequality, *World Bank Economic Review*, 10(3), (1996): 565-591.

Dhrifi, A., Agricultural Productivity and Poverty Alleviation: What Role for Technological Innovation. *Journal of Economic and Social Studies*, 4(1), (2014): 139-158.

Economic Policy Institute (EPI)., The Productivity-Pay Gap, (2018). Retrieved from https://www.epi.org/productivity-pay-gap/ on 25 August 2018.

Engle, R. and Granger, C., Co-Integration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55, (1987): 251-276.

Heshmati, A., Growth, Inequality and Poverty Relationships, (2004). MTT Economic Research, Agrifood Research Finland. Discussion Papers 2004/16.

Holtz-Eakin, S., Newey, M. and Rosen, P., Generalised Method of Moments (GMM) Estimator for Dynamic Models of Panel Data. *Quantitative and Empirical Economics Journal*, 25(1), (1988): 172-190.

International Labour Organization (ILO)., Key Indicators of the Labour Market, (2016), 9th Edition. Retrieved from www.ilo.org/kilm on 5 September 2018.

Instituto Nazionale di Statistica (ISTAT)., Poverty in Italy, (2018), Retrieved from https://www.istat.it/en/archivio/217653 on 06 April 2020.

Jargowski, P. A. and Bane, M. J., Ghetto Poverty in the United States, 1970-1980. In Jencks C. and Peterson P. E. (eds.): The Urban Underclass. Washington: Brookings, 1991.

Johnson, D., These are the Most Productive Countries in the World, (2017).

Retrieved from http://time.com/4621185/worker-productivity-countries/ on 07 September 2018.

Khan, M. A., Khan, M. Z., Zaman, K. and Khan, A., Poverty-Growth-Inequality Triangular Component Analysis: With an Empirical Illustration Using Pakistan's Data. *International Journal of Rural Management*, 10(1), (2014): 69-86.

Komyati A., Top 10 Facts about Poverty in France, (2019). Retrieved from https://borgenproject.org/top-10-facts-about-poverty-in-france/ on 06 April 2020.

Kreft, K., Poverty in Germany. World Socialist Web Site, (2014). Retrieved from https://www.wsws.org/en/articles/2014/01/06/germ-j06.html on 08 April 2020.

Levy, F. and Murnane, R. J., U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations. *Journal of Economic Literature*, 30(3), (1992): 1333-1381.

Liu, M., Inclusive Growth and Poverty Eradication Policies in China. Paper prepared for eradicating poverty to achieve sustainable development for all. Division for Social Policy and Development, Department of Economic and Social Affairs. New York: United Nations Headquarters, 2017.

Liu, J., Does Wage Inequality Affect Labour Productivity? Some Evidence from Manufacturing Industries of Taiwan and South Korea. *Asia Pacific Management Review*, 7(4), (2002): 449-476.

Lu, J., World Update: Top 10 Facts about Poverty in Japan, (2018). Retrieved from https://borgenproject.org/top-10-facts-about-poverty-in-japan/ on 07 April 2020.

Maio, L. D., Poverty in Italy at worst for 12 years. A Speech Delivered at the Italian Business Association Confcommercio meeting in Rome, Italy, June 7, 2018. https://www.reuters.com/article/us-italy-politics-poverty/poverty-in-italy-at-worst-for-12-years-new-government-vows-action-idUSKBN1JM2GM, (2018). Retrieved on 08 April 2020.

Max, R., Fertility Rate, (2020). Retrieved from https://ourworldindata.org/fertility-rate on 3 April 2020.

Marx, K., Wages Ð Labour and Capital. New York: International Publishers, 1933, 1849.

OECD., Reducing income inequality while boosting economic growth: Can it be done? In Economic Policy Reforms: Going for Growth, (2012): 181-202. Retrieved from ww.oecd.org/economy/labour/49421421.pdf on 30 March 2020.

OECD., Public Spending on Family Benefits, (2012). Retrieved from https://www.familie.at/dl/qLKmJKJkoKJqx4NJK/OECD on 3 April 2020.

OECD., Income Inequality Indicator, (2017). Retrieved from http://dx.doi.org/10.1787/459aa7f1-en on 02 September 2018.

OECD., Poverty Gap Indicator, (2017). Retrieved from http://dx.doi.org/ 10.1787/349eb41b-en on 02 September 2018.

OECD., Income Distribution: Inequality, (2017). Retrieved from http://dx.doi.org/10.1787/data-00199-en on 02 September 2018.

OECD., Income Distribution: Poverty, (2017). Retrieved from http://dx.doi.org/10.1787/data-00200-en on 02 September 2018.

OECD., Labour Productivity and Utilisation, (2017). Retrieved from http://dx.doi.org/10.1787/data-00200-en on 02 September 2018.

OECD., Harmonised Unemployment Rate, (2018). Retrieved from https://www.oecd-ilibrary.org/search?value1=harmonised+unemployment+rateandoption1=quicksearchandfacetOptions=51andfacetNames=pub_igoId_facetandoperator51=ANDandoption51=pub_igoId_facetandvalue51=%27igo%2Foecd%27andpublisherId=%2Fcontent%2Figo%2FoecdandsearchType=quick on 3 April 2020.

OECD., Income Inequality, (2019). Retrieved from https://www.oecd-ilibrary.org/social-issues-migration-health/income-inequality/indicator/english_459aa7f1-en on 3 April 2020.

OECD., Family Database, (2019). Retrieved from www.oecd.org/social/family/database, on 8 February 2020.

Ferreira, F., Lakner, C and Sanchez-Paramo, C., The 2017 Global Poverty Update from the World Bank, (2017). World Bank Blogs. https://blogs.worldbank.org/developmenttalk/2017-global-poverty-update-world-bank. Retrieved on 09 April 2020.

Philpott, J., Productivity Gap between UK and other G7 Countries Widens to Largest in 20 Years. The Guardian International Edition, (2013). Retrieved from https://www.theguardian.com/business/2013/sep/18/productivity-gap-uk-g7-output on 31 August 2018.

Ramos, G. and Mann, C., A Fiscal Approach for Inclusive Growth in G7 Countries, (2017). Retrieved from www.oecd.org/Tax-tax-policy-analysis on 05 September 2018.

Ruggles, P., Drawing the Line: Alternate Poverty Measures and their Implication for Public Policy. Washington: The Urban Institute Press, 1990.

Schneider, K. and Gugerty, M. K., Agricultural Productivity and Poverty Reduction: Linkages and Pathways. The Evans School Review, 1(1), (Spring 2011): 56-74.

Semega, J., Fontenot, K. R. and Kollar, M. A., What is the Current Poverty Rate in the United States? Census Bureau, Centre for Poverty Research, (2018). Retrieved from https://poverty.ucdavis.edu/faq/what-current-poverty-rate-united-states on 08 April 2020.

Semega, J. Fontenot, K. R. and Kollar, M., Income and Poverty in the United States, 2018. https://www.census.gov/library/publications/2018/demo/p60-263.html

Sen, A., Inequality Re-Examined. New York, Russell Sage Foundation: Oxford, Clarendon Press, 1992.

Slottje, D. J., The Structure of Earnings and the Measurement of Income Inequality in the U.S. Amsterdam: North-Holland, 1989.

Statistica., Poverty Rates in OECD countries as of 2017. Retrieved from https://www.statista.com/statistics/233910/poverty-rates-in-oecd-countries/ on 09 April 2020.

Statistics Canada., Persons Living below Canada's Official Poverty Line (Market Basket Measure) 2013-

2017, (2019). https://www150.statcan.gc.ca/n1/daily-quotidien/190226/t002b-eng.htm. Retrieved on 06 April 2020.

Statistics Canada., Dimensions of Poverty Hub, (2020). Retrieved from https://www.statcan.gc.ca/eng/topics-start/poverty on 06 April 2020.

Stiglitz, J., Sen, A. and Fitoussi, J. P., Report by the Commission on the Measurement of Economic Performance and Social Progress, (2009). Commission on the Measurement of Economic Performance and Social Progress.

Stock, J. H. and Watson, M. W., Introduction to Econometrics. 2nd ed. Boston: Pearson Addison Wesley, 2007.

The British Academy., How Poverty in Modern Britain Echoes the Past, (2018). Retrieved from www.thebritishacademy.ac.uk on 07 April 2020.

United Nations., Human Development Report 2016: Human Development for Everyone, United Nations Development Programme, (2016). https://www.un.org/human-development-report-2016.pfd.

United Nations., World Economic Situation and Prospects: October 2017 Briefing, No. 107, (2017). Retrieved from https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-october-2017-briefing-no-107/ on 09 April 2020.

William, H. G., Econometric Analysis. 6th ed., New Jersey: Upper Saddle River, Prentice Hall, 2008

Wooldridge, J. M., Introductory Econometrics. 3rd. ed., Thomson South-West, 2006.

World Vision., Global Poverty: Facts, FAQs, and How to Help, (2018). Retrieved from https://www.worldvision.org/sponsorship-news-stories/global-poverty-facts.

World Bank., World Development Indicators, (2019). Retrieved from databank.worldbank.org/reports.aspx?source=world-development-indicators on 25 February 2020.

APPENDIX: MOST PRODUCTIVE COUNTRIES (2015)

Rank	Country	GDP per hour Worked	Employed Population	GDP (USD)	Average work week (hrs)
1	Luxembourg	$ 93.4	405,600	$57b	29
2	Ireland	$ 87.3	1,989,400	$302b	33.5
3	Norway	$ 81.3	2,753,000	$318b	27.3
4	Belgium	$ 69.7	4,601,200	$498b	29.8
5	United States*	$ 68.3	151,000,000	$18,037b	33.6
6	Denmark	$ 67.6	2,829,000	$270b	27.2
7	France*	$ 65.6	27,523,000	$2,648b	28.2
8	Germany*	$ 65.5	43,057,000	$3,857b	26.3
9	Netherlands	$ 65.4	8,792,000	$818b	27.4
10	Switzerland	$ 64.2	4,962,600	$506b	30.6
11	Austria	$ 60.2	4,290,700	$415b	30.9
12	Sweden	$ 59.1	4,809,700	$458b	31
13	Finland	$ 54.8	2,497,400	$225b	31.6
14	Australia	$ 54.6	11,860,000	$1,101b	32.7
15	United Kingdom*	$ 52.1	31,293,000	$2,701b	31.9
16	Italy*	$ 51.9	24,476,100	$2,191b	33.1
17	Spain	$ 51	18,490,800	$1,594b	32.5
18	Canada*	$ 50.9	18,285,700	$1,589b	32.8
19	Iceland	$ 45.1	183,700	$16b	36.1
20	Japan*	$ 41.9	65,801,200	$4,741b	33.1
21	New Zealand	$ 40.9	2,360,600	$170b	33.8
22	Slovenia	$ 40.4	941,500	$64b	32.5
23	Israel	$ 40.3	3,947,100	$300b	36.3
24	Slovak Republic	$ 39.7	2,267,100	$158b	33.7
25	Czech Republic	$ 38	5,179,700	$346b	33.8
26	Portugal	$ 35.4	4,575,800	$303b	35.9
27	Greece	$ 35.3	4,019,800	$288b	39.1
28	Hungary	$ 33.5	4,327,500	$254b	33.6
29	Lithuania	$ 32.6	1,334,700	$81b	35.8
30	Korea	$ 31.9	25,936,300	$1,749b	40.7
31	Estonia	$ 31.6	622,900	$36b	35.6
32	Latvia	$ 28.3	887,900	$48b	36.7
33	Chile	$ 25.9	7,802,200	$402b	38.2
34	Russia	$ 25.1	72,187,700	$3,580b	38
35	Mexico	$ 20.3	50,262,900	$2,188b	41.2

Note: *G7 countries.
Source: https://stats.oecd.org/Index.aspx?DataSetCode=PDB_LV