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Comparative Approach on Education and Healthcare in Romania and Bulgaria as Beneficiaries of the IMF Financial Assistance

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Abstract: *Global financial crisis influenced almost all sectors of countries, affecting significantly the social sectors such as education and healthcare. Many countries could not solely withstand adverse effects of recent crisis and resorted to the International Monetary Fund (IMF) for financial assistance. Given the large criticism of the IMF for neglecting social effects of its bailout conditionality, this paper contains an analysis of its impact on Romanian education and healthcare during the 6 years. Moreover, Romania has been largely criticized for inefficient use of available resources, poor working conditions, low salaries which contribute to mass migration of health and education employees. The research methodology is based on propensity scores in order to identify a counterfactual with similar pre-crisis economic characteristics and by comparative approach reveal whether the IMF programs have been effective in terms of education and healthcare. By selecting Bulgaria as a counterfactual for with-without approach based on proximity of propensity scores, it is revealed that IMF participation has had negative effects on Romanian education and healthcare by decreasing them more than in Bulgaria with self-conditioning. Our findings argue that Romanian authorities should be aware of negative effects of IMF predominantly neo-liberal measures to recover economy, since they are likely to hurt social sector in short and medium-term periods.*

Keywords: *Romania, Bulgaria, IMF, education, healthcare*.

JEL**:** *F33, I18, I28.*

Introduction

IMF reputation has been refined since the wake of Global Financial Crisis (GFC), by assisting troubled countries to cushion adverse effects of the GFC. Before the crisis the demand of the IMF assistance notably decreased being conditioned with global economic stability and its failures to adequately treat economies of Argentina, Mexico and Asian financial crisis of late 1990s (Sachs,

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1998; Stiglitz, 2002; Miyakoshi *et al.*, 2012).. Meanwhile, it should be mentioned that the IMF reputation has been undermined as a result of growing body of literature illustrating IMF bailout programs' adverse effects on economic growth (Przeworski & Vreeland, 2000; Dreher, 2006, Bas & Stone, 2014), on income distribution and poverty (Garuda, 2000; Oberdabernig, 2013), on labor (Nooruddin & Vreeland, 2010; Androniceanu & Ohanyan, 2015), on health care (Ruckert & Labonté, 2013; Reeves *et al.*, 2014) and education (Marphatia, 2010; Vranken *et al.*, 2011). It should be noted that the IMF has been attempting to respond the ongoing critiques by launching various initiatives aimed at improving its performance, transparency and accountability. Particularly, in order to protect its poorest member, in 1999 the IMF established the Poverty Reduction and Growth Facility (PRGF), which then has been replaced by the Extended Credit Facility (ECF). The aim of these arrangements is the enhancement of country ownership by adjusting conditionality with the objectives of country's own poverty reduction strategy (IMF, 2009). Furthermore, in 2001 the IMF launched initiative attempting to streamlining its conditionality and to increase country ownership (IMF, 2002). Since 2002 the IMF has become more public and transparent by publishing member countries' letter of intents and making available the data on prior actions, structural benchmarks and quantitative performance criteria via Monitoring of Fund Arrangements (MONA) database. Meanwhile, Ruben (2009) notes that non-compliance of governments is very high comprising 40 percent, which is even higher in non-core areas of IMF mandate (Fidrmuc, Kostagianni, 2015).

Therefore, in 2009 the IMF launched another initiative seeking to further reduce number of conditions and became more flexible in terms of conditionality accepting suggestion of domestic authorities. Particularly, structural performance criteria requiring formal waivers, was discontinued, and structural reforms, which should be tailored to borrower countries' different policies, are subject of overall program performance review (IMF, 2015). The latter should mitigate the conditions to withdraw disbursements even if there are some mid-term delays. In this end, recent review of IMF conditionality highlights that IMF measures have been better targeted on country programs and programs have generally been more effective and by safeguarding priority spending (IMF, 2012).

On the other side, the national system of education and healthcare is the quintessential tool for the creation and application of knowledge and maintenance of population health, which is pledge of long-term economic growth. Yet, both sectors are mostly financed by public budget and in time of crises it is the shortest way to curtail budget deficit. Moreover, fiscal adjustment is core condition for IMF in providing bailout program to troubled countries, which Marphatia (2010) sometimes by neglecting social costs for health and education in the path to foster economic development. It is true that the IMF does not require direct measures aiming to influence education and healthcare, but it should be recognized that due to the fiscal consolidation requirement most governments employ wage caps, salary freezes and public lay-off.

However, there is a wide consensus among policy makers and donors about the urgency to enhance education financing. In particular, in 2000 the United Nations Educational, Scientific and Cultural Organization (UNESCO) in association with the World Bank (WB) launched Education for All - Fast Track Initiative (EFA-FTI) movement, which is now known under Global Partnership for Education (GPE) to provide quality basic education for all children, youth and adults (UNESCO, 2015). At the same time, this project considers devotion from recipient countries, which means scaled-up levels of public investment as a share of GDP. While, there are two major concerns in scaling-up public investment: to stay in compliance with the IMF policies, which imply low budget deficits and low inflation, and the second, aid from the other donors is usually linked to compliance with IMF's policies (Rowden, 2011, p. 12).

Thus, the paper seeks to unveil IMF program effects on education and healthcare in Romania during the time of recent IMF participation. Romanian authorities have signed three consecutive Stand-By Arrangements (SBA) with the Fund since 2009. In the light of IMF reforms towards safeguarding the priority spending in borrower countries it is of increased interest whether the IMF has required measures that have adverse effects on social sector in Romania.

The remainder of article is structured as follows: Section 2 reviews the relevant literature, Section 3 provides brief outlook of Romanian healthcare and education since the collapse of socialism, Section 4 describes the research methodology, while Section 5 analyzes educational and health indicators in comparative perspective revealing the results of analysis. Final section draws some conclusion based on findings.

1. Literature review

There is a bulk amount literature that claims IMF adverse effects on social spending, especially on health care and education. While, we have selected those pieces that are directly related with Romanian education sector and IMF program effects on education. Even, since 1986, the IMF has been highly criticized for affecting most vulnerable sectors of economy, that are mostly dependent on public finances among them health and education (Remmer, 1986, p. 7). Likewise, other prominent scholars note that burden of cuts in public spending as a result of IMF's fiscal adjustment spills on economic services and on education and health care, rather than on defence (Pinstrup-Andersen *et al.*, 1987, p. 77).

Therefore, the IMF's watchdog Independent Evaluation Office (IEO), in order to fight back against the criticism, published a circumstantial review of Fund's fiscal adjustment (Martin & Segura-Ubiergo, 2004). The authors employing Autoregressive Integrated Moving Average (ARIMA) model techniques, also a two-stage estimation method to correct for the endogeneity of IMF programs, find that social spending does not decline under IMF-supported programs. The data covers 146 countries over 1985-2000 period. Yet, the paper does not cover

efficiency of public spending, i.e. IMF impact on health and education outcome indicators have not been evaluated, but total expenditures on health and education as a share of GDP. At the same time that paper is considered first attempt to assess IMF conditionality effects on public spending empirically. According to Nooruddin and Simmons (2006) preceding studies had problems either with data availability mostly based on anecdotal evidence or did not count selection bias or endogeneity. Furthermore, they note that Martin & Segura-Ubiego's (2004) study has solved the issue with endogeneity and it is more rigorous, but it is not bereft of a serious flaw. Particularly, the paper has not counted political considerations in regard with governments' decision to cut public spending as a response to IMF austere measures. Inclusion of political considerations in the regression provided strong and robust evidence of IMF adverse effects on health and education (Nooruddin & Simmons, 2006, p. 1027).

Stuckler *et al.* (2008, p. 1079) concluded that IMF participation had notably increased tuberculosis incidence, prevalence and mortality rate and in post-socialist countries once potential detection, selection and ecological biases were controlled. This is first assessment of IMF program impact by considering health output variables not just input variable such as public spending on health as a share of GDP. Another paper evaluating effects of IMF programs on school enrolment covers data on school attendance at the district level aged 9-11 and 12-14 from 44 developing countries in the 1997-2007 period (Vranken *et al.*, 2011, p. 11). The authors using multi-level analyses find significant positive short-term impact on school enrolment in the age 9-11, and positive significant for 14-14 age group if employed specific group of control variables. Meanwhile long-term insignificant negative impact on boys and girls in age 12-14 is found and bivariate analyses show positive but as well insignificant impact on growth in school enrolment.

Case studies from Latvia, Jamaica and Uganda come to corroborate the critiques towards the IMF adverse effects on education during the global financial crisis. The author exploring alternative ways to avoid cuts on education, claim that education advocates requirement to be unified in fighting against the neoliberal regime put forward by the IMF-like institutions (Rowden, 2011, p. 68).

IMF experts conducted another research to evaluate effects of IMF programs on social spending in 2011 and found positive significant impact on growth of health care and education spending (Clements *et al*, 2011). Particularly, the authors use cross-country panel regression model for data of 140 countries from between 1985 and 2009, where all countries are eligible for concessional IMF lending. They argue, that concessional loans contributes to the growth in social spending, where over a five-year period education spending as a share of GDP increases 0.8 percentage point of GDP, and for health care, about 1 percentage point of GDP.

The most recent research on the topic of IMF effects on social spending was conducted in 2014, which claimed that IMF had negative impact on social indicators inclusive health and education in 9 under-program countries (Kotsios &

Kotsios, 2014, p. 218). The authors simply compare under-program countries' social indicators with non-program ones and conclude about lower rates in under-program countries without accounting selection bias. In many cases, IMF under-program countries are affected by crisis and other factors that should have been included in the analysis. Reeves *et al.*, (2014, p. 6) in evaluation of healthcare spending patterns in the EU utilize multivariate random- and fixed-effects models conclude that every $100 reduction of tax revenue entailed $2.72 drop in healthcare spending, where the governments under IMF programs were more likely to reduce health spending than non-borrowers. Kentikelenis *et al.* (2015a, p. 175) employing government expenditures as a dependent variable conclude that in the 1985-2009 period the IMF programs contributed to enhancement of government expenditures on health in the Sub-Saharan African low income countries, while other regions faced with palpable decline. Thus, they argue that IMF participation negatively affects recipient countries in regard with healthcare. Moreover, the IMF has been condemned for Ebola outbreak in three African countries, by arguing that the lack of professionals in hospitals have been caused by mass migration of health workers due to the wage cups and salary freezes (Kentikelenis *et al.*, 2015b). The latter was conditioned by the IMF requirement to curtail public expenditures within the fiscal adjustment measure. Since, growing body of literature argue about the adverse effects of IMF programs on education and healthcare, and the existing niche of case studies revealing the nature of domestic bargaining under the shadow of IMF austerity measures (Nooruddin & Simmons, 2006), it is proposed to conduct current research aiming to uncover IMF particular impact on a recipient country.

2. Brief overview of Romanian education and healthcare sectors: exogenous antecedents

It is, indeed, a difficult and harmful path transformation from socialism to capitalism towards market-oriented economic system. Romania, after the famed revolution in 1989 and termination of Ceausescu's socialist regime, has started collaboration with international financial institutions such as IMF and WB, to mitigate the economic slow-down, rising inflation with its adverse consequences on the population. Besides, Romania in 1993 signed an association agreement with European Union as a first step towards integration with European society.

Yet, collaboration with such institutions and higher targets of integrations supposed substantial changes and structural reforms. Particularly, the IMF has famed by its conditionality attached to the loans, which entails privatization and marketization of economy. The IMF goal is to solve balance of payments problems of its member-states and to contribute to sustainable economic growth. Yet, its conditions vary from fiscal adjustment to structural reforms in education and health care. Since the collapse of socialist regime, first SBA with IMF signed in 1994 under Nicolae Văcăroiu government, meanwhile first full compliance with IMF

conditionality and continuity of tranches was recorded in mere 1999 under technocrat prime-minister Mugur Isărescu.

Education sector along with other sectors of economy was privatized transforming higher education from totally controlled and government-funded institutions to privatized and internationally commercialized ones. Particularly, Eisemon *et al.* (1998) note that Romania was the leader in Europe by operating 73 private higher education institutions in late 1990s. Moreover, Ginsburg *et al* highlight that enrollment in higher private institutions was significantly increased from 0 percent in 1989-1990 to 31.9 percent in 2000-2001. Continuing the reforms in education sector, Romania became first post-socialist country, which created the legislative framework for distance education. Within this framework, Bucharest University of Economic studies opened its branch in Piatra-Neamț in 2001. Moreover, several public universities began to launch their own open distance education programs.

Notwithstanding the dynamics of reforms, assessment of Romanian Education performance before the adhesion to the EU by World Bank experts finds real failures and challenges for Romanian authorities. In particular, Romania Education Policy Note (2007) underlines major challenges among them: continuously decreasing teacher/student ratio, therefore high staffing level; strong trade unions and regulations; low teaching loads and low wages, human resource management, chronically underfinanced education sector. Indeed, Romania lagged behind the neighboring countries by most indicators. Accordingly, Program for International Student Assessment launched by Organisation for Economic Cooperation and Development (OECD) scores Romania 36th out of 57 participant countries (PISA, 2006). In addition, low wages of teachers make them reluctant to their jobs and there are poorly motivated and rarely accountable. This is partially caused by Romanian Ministry of Education and Scientific Research (MESR) low authority to supervise and motivate the teachers. As MESR preserves the right to establish the curriculum, to hire the staff but it does not have any instrument to guide the allocation of scarce resources and defend education budget. Instead, Ministry of Public Finance (MPF) is responsible for remuneration, which is almost 60 percent of annual expenditures on education.

Recent phase of Romanian education has begun since its accession to the EU in 2007. Currently, Romanian government has a unique opportunity to improve efficiency of education allocation and increase expenditures/GDP ratio via attracting resources from structural and cohesion funds. While, they by absorption rate of cohesion funds are lagging behind the average EU-28 by 15 percentage points comprising 63.7 percent in 2013 (Cohesion data, 2013). Already, in 2008 all major political parties and trade unions highlighted the urgency of educational reforms by signing National Pact for Education (NPE). The following objectives are put in the pact: modernization of education and institutions in 2008-2013; budget allocation on education pin at minimum 6 percent of GDP by 2013; adoption of the principle "the money follows the students" in precollege education

and many others (NPE, 2008). Yet, Romanian government receded since the GFC hard hit its economy. Moreover, it could not be able to withstand the downturn solely and turned to the IMF and the EU for financial assistance. Both provided financial assistance by conditioning Romanian government to pursue IMF measures tailored to the loans.

An overview of some Romanian educational indicators in 2008-2013 reveals negative impact of crisis (see Figure 1). Particularly, since 2008 educational units decreased by 1,161 comprising only 7,069 in 2013. Moreover, population enrollment in education and teaching staff along with shrinkage of educational units curtailed by respectively around 700 thousand and 32 thousand persons.

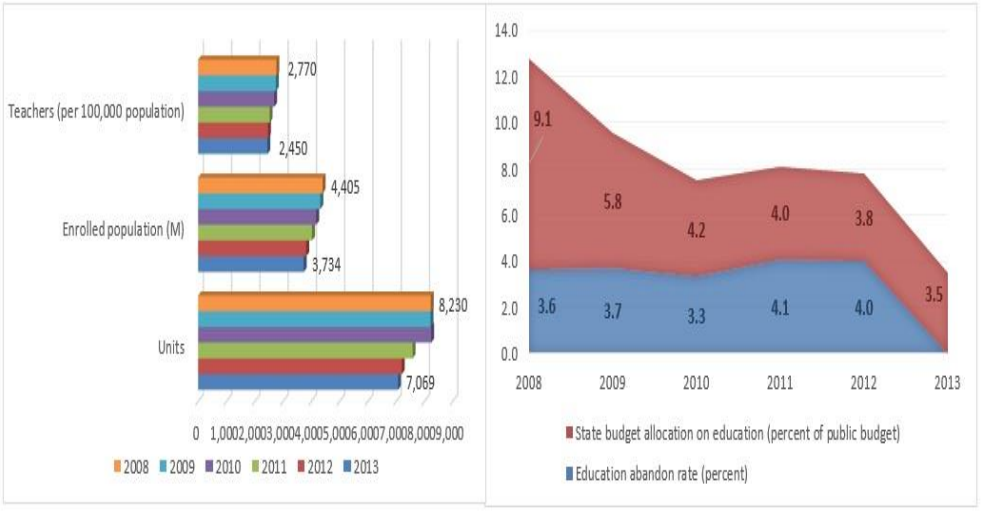

Figure 1. Some descriptive indicators of Romanian Education
(*Source:* Romanian National Institute of Statistics and authors' calculation)

Yet, some small improvement could be noticed on primary and secondary education abandon rate, which comprised 1.8 percent in 2012 instead of 2.0 percent in 2008. At the same time, abandon rate within high school and post high school education increased respectively comprising 4.2 and 6.1 percent in 2012. As could be observed state allocation on education was significantly reduced becoming just 3.5 percent of state budget.

A similar transition processes have undergone healthcare system of Romania being faced with profound reforms after the collapse of socialism regime in 1990s. Anton and Onofrei (2012) highlighted that those reforms incorporated all areas of national health system such as funding, provision, capital creation, stewardship and personnel management. Many hospitals have been privatized in the process. Particularly, the distinctions and country's own experience in carrying out structural reforms conditioned variety across countries of CEE region in terms of healthcare system (Coady *et al.*, 2012). Notwithstanding, the 25 year of

continuous reforms, improvement and availability of financing the performance of Romanian healthcare system and the entry to health services is still lacking behind their western counterparts (Anton, 2013).

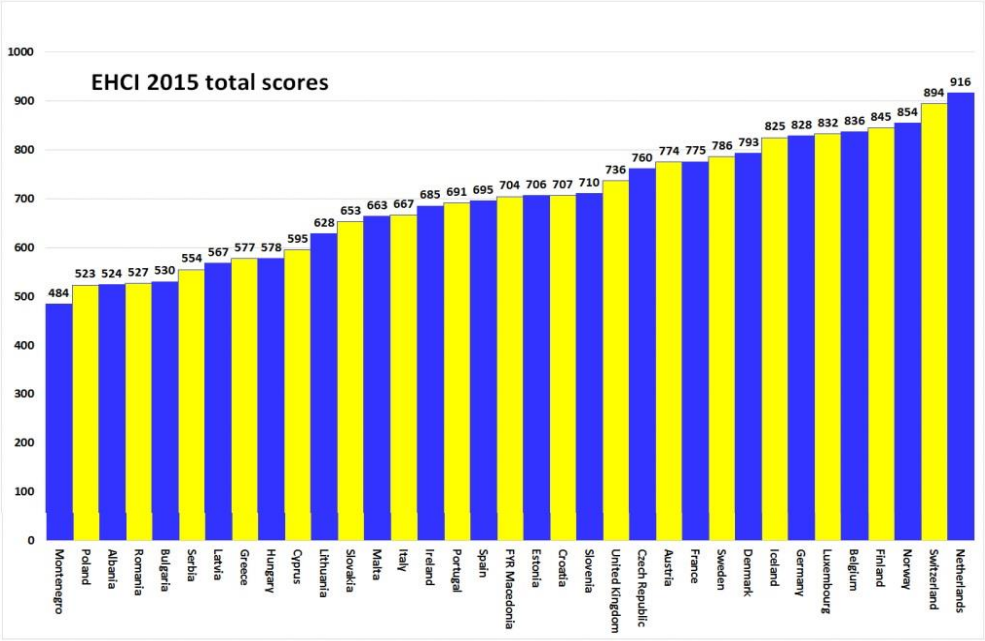

Figure 2. Euro health consumer index
(*Source:* A. Björnberg (2015), Health Consumer Powerhouse)

At the same time, Predescu (2008) concluded that the major hampering factors to provide effective healthcare services are as follows: low remuneration of medical personnel, poor equipment of medical units, inferior coverage of health services, poor education. In addition, this factors contribute to emigration of high-skilled medical staff to abroad, leaving the healthcare to average doctors. The aforementioned factors particularly explain the place of Romania among the European countries by Euro Health Consumer Index (EHCI) calculated by Arne Björnberg (2015) within the Health Consumer Powerhouse report. Figure 2 reveals that among 35 Euro countries Romania is 32nd by EHCI, which is the worst performance after Poland in the European Union. It should be noted nevertheless Bulgaria is one step forwards from Romania, the score is quite similar. Indeed, we could observe that education and healthcare lags behind the EU average and were more affected since financial crisis penetrated the national economy. In this end, further analysis would be an attempt to identify whether and in what extent the IMF participation helped Romanian government to mitigate adverse effects on education and healthcare. Yet, it was mentioned above, there is a notable amount of studies claiming that IMF participation led to reducing budget allocations on educations, freezing salaries of public employees and cutting jobs in public institutions, despite the IMF claim that it employs social protective measures

aiming to safeguard most vulnerable (Kentikelenis *et al.*, 2015b). Hence, the following section discusses choice of appropriate method and its limitations.

3. Research methodology and data

In the literature there are several statistical methods employed to estimate effects of IMF programs. In this section we briefly introduce those main methodological approaches by justifying our choice of a method. Particularly, Ul Haque and Khan (1998) segregate the following four methods: before-after method, with-without, generalized evaluation and comparison of simulations. Yet, Vreeland (2006) goes further by splitting generalized evaluation into three distinct approaches, there are as follows: controlling for selection on observed variables, controlling for selection on unobserved variables and instrumental variables. Each of them represents sophisticated methods to tackle selection problem in evaluation of IMF programs.

The before-after (BA) and with-without (WW) approaches are more intuitive and have drawback as they do not count selection problem, but their advantage is the ease of calculation. Yet, generalized evaluation and controlling for selection demand large-n observations, which are available in cross country and panel data analysis. Moreover, these methods, as well, have their limitations. Particularly, controlling selection methods are based on assumption that errors are distributed normally or bell-shaped. Instrumental variables could solve the problem with selection, but factors that condition the selection into IMF program can influence its effects, as well (Vreeland, 2006). Thus, assessment of IMF conditionality effects on program countries is not straightforward.

Given that our research attempts to identify IMF conditionality effects on Romanian education and healthcare, we have faced with real constraints on data availability. Data limitation hinders employment of above mentioned sophisticated methods for evaluation remaining the most appropriate ones BA and WW. Meanwhile, BA approach could be applied in this case, as Romania since 2009 has signed three continuous SBAs with IMF with two years duration, respectively in 2011 and 2013. Hence, there is no available data on education and healthcare indicators to evaluate after program performance.

We have consulted the literature to combat the selection problem in WW approach, since non-consideration of selection bias could cause serious misinterpretation of results. Particularly, it is not fair to compare a country that has problems and turned to the IMF with one that is in more preferable economic situation. The solution to surmount this issue is offered by Garuda (2000), who uses propensity scores to group countries based on their economic performance and propensity to apply for IMF financial assistance. Meanwhile, inclusion of just economic factors as determinants of IMF participation as well entails bias, since there are many political factors (availability of veto players, government stability, IMF past participation) that can influence the decision of government. All covariates with their sources are presented in Table 1.

Table 1. Data description and sources

Variable	Description	Source
GDPPC	Gross domestic product per capita based on purchasing-power-parity (PPP), current international dollar	WEO
GROWTH	Real growth of GDP in constant prices	WEO
INV	Ratio of total investment in current local currency and GDP in current local currency	WEO
INFL	Annual percentages of average consumer prices year-on-year changes	WEO
GDEBT	General government gross debt as a percentage of GDP	WEO
RESERVE	Total reserves in months of imports	WDI
CAB	Current account balance as a ratio of GDP	WEO
IMFPART	Dummy variable; 1 if the country was under program that year, 0 otherwise	Monitoring of Fund Arrangements database (MONA)
PASTAG	Dummy variable: 1 when the country has ever participated in an IMF program and 0 otherwise	MONA
SUMUN	Cumulative years a country t under an IMF-supported program	MONA
CHECKS	Veto players' number in the country	Database of Political Institutions (DPI)
STABS	Government stability based on the percent of veto players who drop from the government in any given year	DPI
LEGELEC	Dummy variable: 1 when there for the legislative election year and 0 otherwise	DPI
POPGROWTH	Annual growth of population	WDI

Current study in measuring propensity scores involve *probit* model with both economic and political factors as covariates of IMF participation decision (see Table 2). We have estimated two models with one-year lagged variables and with logarithmic values of them. The significance of covariates, thus, has been improved and propensity scores of the Model 2 have considered for our analysis. Based on obtained propensity scores, where the model correctly predicts 74 percent of

participation, it has been identified that Romania and Bulgaria had similar propensity scores in 2007 and 2008, i.e. before Romanian government decision to resort to the IMF in 2009. The propensity scores in average for two years comprised respectively 0.73 and 0.72. And the propensity to resort to the IMF was preserved at the high level for both governments in 2009, as well, Romania having 0.78 and 0.76 for Bulgaria. The tests of unconfoundedness and overlap have been conducted, yet not presented within the paper due to space limitation, but are available upon request.

Table 2. Propensity score calculation with Probit model

Model 1		**Model 2**	
Covariates	**Coefficient**	**Covariates**	**Coefficient**
gdppc1	-.001 (.000***)	loggdppc1	-.042 (.018) ***
growth	-.038 (.029**)	growth1	-.034 (-.009) ***
inv1	-.077 (.030**)	loginv1	-.036 (.012) ***
infl	.071 (.026**)	loginfl1	.052 (.037) ***
gdebt	.017 (.006***)	gdebt1	.008 (.001)**
reserve	-.031 (.013**)	reserve1	-.021 (.001) **
cab1	-.018 (-.006)	logcab1	-.016 (.005) **
pastag	1.28 (.386***)	pastag	1.72 (.089) ***
sumun	.174 (.040***)	sumun	.122 (.010) **
logchecks	.822 (.041*)	logchecks1	.631 (.398) *
stabs	-.631 (-.495)	logstabs1	-.326 (.129) **
legelec1	.145 (-.321)	legelec1	.007 (-.098)
intercept	-2.10 (-1.52***)	intercept	.932 (-.467)***

Model 1		Model 2	
Covariates	**Coefficient**	**Covariates**	**Coefficient**
Observations	**477**		**468**
Chi squared	**187.5**		**184.0**
Pseudo R squared	**0.513**		**0.521**
Correct prediction	**0.71**		**0.74**

Note: Standard errors in parentheses
* Significant at 10%; ** significant at 5%; *** significant at 1% n/a: PASTAG in trimmed sample was dropped due to co linearity

(Source: Authors' calculation)

Yet, having high score of propensity to participate in an IMF program Bulgarian authorities chose not to resort to the IMF. Thus, employing Bulgaria as a counterfactual for Romania would significantly reduce the bias of selection on observables and may allow to draw some general conclusions about the IMF participation effects on Romanian education and healthcare. At the same time, it is worth mentioning that the involvement of PSs still may entail bias since it fails to control for selection on unobservable.

In general, data on analysis of education and healthcare include input and output variables, where input variables are public expenditures on different levels of education, healthcare and its share in GDP and public budget. Yet, output variables illustrate the efficiency of such expenditures on education such as enrollment of students, out-of-school children number, and for healthcare: life expectancy at birth; infant mortality rate; (per 1,000 live births); and incidence of tuberculosis (per 100 000 population per year). In this end, we have made comparison of both input and output variables in Romania and Bulgaria to understand the sway of IMF programs on Romanian education and healthcare. It should be noted, that input variables have been under indirect influence of IMF measures such as cutting budget deficit, shrinkage of public jobs and wage increase limitations, which is discussed in details in the following section. In order to eliminate problems related with differences between statistical methodologies of distinct sources. We have based just on Eurostat databases, which provide data till 2012.

4. Comparative analysis of IMF program effects on education and healthcare in Romania

Romania since 2009 has signed three SBAs with IMF, where the last two ones have been declared as precautionary. Therefore, given that IMF officials need to review Romanian government performance on quarterly basis, 16 overall reviews by the IMF staff has been analyzed and extracted the reforms or measures that directly or indirectly could influence Romanian education and healthcare.

Particularly, the IMF officials after all reviews concluded that "*Romania has successfully concluded two Stand-by Arrangements with the Fund"* (IMF MONA, 2015). Thus, we suppose that government compliance was not a problem in implementation of IMF measures. Hence, the effects of IMF policies on Romanian education and healthcare could be fully attributed to the Fund, given the compliance of Romanian authorities.

Table 3. Major requirements of the IMF

SBA 2009-2011	SBA 2011-2013
Budget expenditures	**Budget expenditures**
Streamlined public employment (by over 100,000)	Continued streamlining of public employment allowing restoration of the 2010 public wage cut within a sustainable wage bill
A public sector wage cut of 25 percent (partly offset by 15 percent increase in 2011)	Improved targeting of subsidies and social assistance
Elimination of holiday bonuses and the 13th salary	Elimination of arrears of the health insurance fund, reduction and improved control of central and local government arrears, and shortening of payments period
Inefficient social benefits cut (15 percent) and reinforced social inspections	
Central government arrears reduced to near zero	
Budget revenue	**Budget revenue**
A rise in social security contribution rates (3 ppts.)	egration of tax and social contributions collection
Structural reforms	**Structural reforms**
A major pension reform was approved to increase retirement ages, move indexation from wages to inflation, and reduce incentives for early retirement, while continuing to build the second pension pillar	Passage of a New Labour Code and Social Dialogue Law that enhance labour market efficiency
The public wage system was reformed, harmonizing wages across ministries and significantly reducing the role of bonuses in compensation	assage of a Social Assistance Law that provides for streamlining and better targeting of social benefits
Social benefits were reformed—including unemployment insurance, social assistance programs, and maternity benefits—to improve efficiency while reducing costs	

(Source: IMF official reviews of Romanian SBAs initiated in 2009 and 2011)

According to the reviews of the IMF staff, Romanian government has implemented various successive and comprehensive reforms in four major economic areas: budget expenditures and revenue, structural reforms and financial sector. Yet, within our topic we have extracted those measures that could affect education and healthcare either directly or indirectly (see Table 3). Particularly, first SBA signed in 2009 urged Romanian government to cut budget deficit up to 3 percent of GDP. This difficult path could not be implemented without harmful and rigid methods. Especially, on expenditure side IMF measures caused shrinkage in public employment by over 100,000 persons, public wages are cut by 25 percent, the 13th salary was eliminated and inefficient social benefits were cut by 15 percent. Meanwhile, the majority of public employees are in education and in health sector, hence those sectors are more affected of the aforementioned measures. Moreover, on the revenue side 3 percentage point rise in social contribution, as well may have adverse effects on employment in private sector and private schools. Furthermore, Romanian authorities made reforms of wages and social contribution by reducing the role of bonuses and compensations.

Review of SBA initiated in 2011 shows that Romanian government continued streamlining of public employment, eliminations of arrears and improved targeting of social assistance on the expenditure side. Yet, on the revenue side IMF officials highlight that integration of tax and social contribution collection took place. Amongst the structural reforms we have extracted Passage of New Labor Code and Social Assistance Law, which was likely to affect education and healthcare. In this end, we further analyze main education and healthcare indicators of Romania and Bulgaria to unveil the effects of aforementioned measures on them. Thus, the data are split into two categories based on their nature. Particularly, data represented in the first part include those indicators that directly may be affected by domestic fiscal policies and are entitled as input variables. As was mentioned above the data are extracted from the one source, in order to overcome some minor differences in methodology of calculation. In our case all data are captured from Eurostat database, which let us analyze the desired data from 2008 until 2012 with some exceptions. We include 2008 as a non-crisis year to draw on some conclusions (See Table 4 and Table 5).

First of all, the attention is directed to the education expenditures to explore its development since crisis penetration. This indicator is calculated as a percentage of GDP and illustrates that Bulgaria has notable comparative advantage on Romania. Especially, Bulgarian authorities managed to preserve approximately the pre-crisis year level of education expenditures comprising 3.8 percent in 2013. At the same time, Romanian authorities, perhaps due to IMF imposed measures to cut budget deficit, notably reduced expenditures on education pinning it on 2.8 percent in 2013, which is less than pre-crisis year by 37.7 percentage points. By another indicator, such as expenditures on educational institutions from private

sources as percentage of GDP, as well Bulgaria steps forward. Particularly, during 2008-2011 investment from private sources on education had some growth increasing by 16.5 percent and comprising 0.65 percent of GDP in 2011. At the same time, Romania being behind Bulgaria by this indicator could hardly preserve that level comprising just 0.11 percent of GDP in 2011. Moreover, public subsidies towards private sector illustrates the same image, i.e. Bulgarian authorities with minor deeds, but stepped forward, while Romanian authorities just lagged behind their Bulgarian counterparts respectively 0,65 and 0,12 percent of GDP in 2011.

Our last input indicator is annual expenditure on educational institutions per pupil/student in purchasing power standard. By comparing performances of these two countries in 2009 and 2011 respectively could be revealed that Romanian students were more affected than Bulgarian ones. Besides the fact that Bulgarian government spends more money on an average pupil/student they did manage to mitigate the adverse effects of crisis more efficiently than Romanian government. Particularly, per student expenditures in Bulgarian and Romanian decreased in 2011 comparing with 2009 by respectively 5.1 and 13.2 percent composing 2,713 and 2,074 pps. We further discuss the effects of input indicators on overall performance of education sector by presenting some output indicators, which is classified by the International Standard Classification of Education (ISCED) (see Table 4).

Table 4. Romanian and Bulgarian educational indicators

	2008	2009	2010	2011	2012	2013
Input indicators						
Education expenditures as a percentage of gross domestic product (GDP)						
Bulgaria	4	4.2	3.7	3.5	3.4	3.8
Romania	4.5	4.1	3.3	4.1	3	2.8
Expenditure on educational institutions from private sources as % of GDP						
Bulgaria	0.56	0.66	0.63	0.65	na	na
Romania	na	0.11	0.12	0.11	na	na
Public subsidies to the private sector as % of GDP. for all levels of education combined						
Bulgaria	0.6	0.7	0.74	0.65	na	na
Romania	na	0.13	0.12	0.12	na	na
Annual expenditure on educational institutions per student in pps						
Bulgaria	2,874	2,861	2,655	2,713	na	na
Romania	na	2,391	2,133	2,075	na	na

	2008	2009	2010	2011	2012	2013
Output indicators						
Teachers (ISCED 0-4) and academic staff (ISCED 5-6) thousand persons						
Bulgaria	108.1	100.6	98.4	96.4	97.1	na
Romania	276.8	275.4	268.7	253	247.5	na
Number of enrolled students						
Bulgaria	1,349	1,323	1,315	1,308	1,294	na
Romania	4,553	4,532	4,401	4,228	3,989	na
Ratio of Students to teachers (ISCED 1-3)						
Bulgaria	12.8	13.5	13.6	13.8	13.9	na
Romania	14.3	14.1	14.3	15.2	15.4	na
Students in public institutions (ISCED 1 to 4) - as % of all students						
Bulgaria	97.1	97	97.3	96.7	96.3	na
Romania	98.4	98	97.7	97.5	97.4	na
Participants in early education (aged between 4-7 years-old) - as % of inhabitants of the corresponding age group						
Bulgaria	84.4	84.2	85.3	86.6	87.1	na
Romania	88.5	88	87.2	86.4	85.5	na

(Source: Eurostat)

Teachers and academic staff in these countries are seriously affected by the crisis. The data show that both in Bulgaria and Romania took place serious cuts, particularly comparing with 2008 the overall number of teachers and academic staff decreased by respectively 10.1 and 10.6 percent comprising 97.1 thousand and 247.5 thousand in 2011. As well, a drastic shrinkage in number felt students in those countries, as in 2012 compared with pre-crisis year student amount in Bulgaria and Romania decreased respectively by 4.1 and 12.4 percent. These two mentioned indicators together contribute to the growth of students to teachers ratio, which traditionally was lagging behind the EU member-states. Particularly, in Bulgaria and Romania this indicator comprised respectively 13.9 and 15.4 at primary and secondary levels of education. Furthermore, from Table 4 could be shown that two countries have high level student enrollment in public institutions in Bulgaria 96.3 percent and 97.4 percent in Romania. Yet, both two countries felt decrease in enrollment in public institutions during the crisis. At the same time, Bulgaria has significantly improved enrollment in early education increasing it by 3.2 percent compared with pre-crisis year. Yet, Romania felt decrease in enrollment of pre-primary education by 3.4 percent in the same period. Hence, 14.5 and 12.9 percent of inhabitants corresponding age group remained out of education in 2012 respectively in Romania and Bulgaria.

Table 5. Romanian and Bulgarian healthcare indicators

	2008	2009	2010	2011	2012	2013
Input indicators						
Total healthcare expenditures as a percentage of (GDP)						
Bulgaria	6.6	7.06	7.54	7.66	7.72	7.83
Romania	5.27	5.59	5.82	5.51	5.46	5.48
Total public expenditure on healthcare as % of GDP						
Bulgaria	3.71	3.84	4.18	4.16	4.25	na
Romania	4.29	4.4	4.65	4.34	4.36	na
Total private expenditure on healthcare as % of GDP						
Bulgaria	2.89	3.23	3.36	3.5	3.47	na
Romania	0.98	1.19	1.16	1.16	1.1	na
Total healthcare expenditures per inhabitant (Euro)						
Bulgaria	311.3	330.5	366.0	400.3	434.6	na
Romania	356.8	323.4	356.5	358.6	357.6	na
Public healthcare expenditures per inhabitant (Euro)						
Bulgaria	175.0	179.6	202.9	217.3	229.1	na
Romania	290.5	254.6	284.9	282.8	285.8	na
Output indicators						
	2008	2009	2010	2011	2012	2013
Healthy life years in absolute value at birth						
Bulgaria	63.9	64.0	65.1	64.0	63.9	64.5
Romania	61.5	60.8	57.4	57.2	57.7	58.3
Healthy life years at birth in percentage of the total life expectancy						
Bulgaria	87.2	86.9	88.2	86.3	86	86.1
Romania	83.7	82.7	77.9	76.9	77.6	77.7
Life expectancy in absolute value at birth						
Bulgaria	73.4	73.8	73.9	74.3	74.4	75.0
Romania	73.5	73.7	73.9	74.4	74.4	75.0
Incidence of tuberculosis (per 100 000 population per year)						
Bulgaria	61.6	60.8	60.5	51.2	47.9	46.3
Romania	233.8	230.1	210.1	188.4	204.5	201
Health personnel, per 100 000 population per year (excluding nursing and caring professionals)						
Bulgaria	443	454.6	460.1	477.2	483.8	498.1

	2008	2009	2010	2011	2012	2013
Romania	276.4	283.7	297.3	301.5	329.7	335.7
Available beds in hospitals (per 100 000 population per year)						
Bulgaria	649.4	659.7	655.4	644.9	661.2	681.6
Romania	656.9	662	628.5	612.4	659.6	667.3

(Source: Eurostat)

The similar situation is with healthcare input indicators such as total and public expenditures as a share of GDP, or per inhabitant expressed in Euro (see Table 5). Particularly, the total expenditures on healthcare as a percentage of GDP were higher in Bulgaria in pre-crisis year and remaining high in 2013, after implementation of two IMF programs. In average, the growth of expenditures on healthcare in 2012 compared with 2008 in Bulgaria comprised 16.9 percent, yet in Romania just 3.6 percent. It should be noted, that financing of healthcare from private agents grew rapidly in Bulgaria by ensuring 9.0 percent growth of total expenditures, where public sector ensured 7.9 percent (calculated based on data from Table 5). In Romania, as well financing from private sector grew rapidly by provoking 2.3 percent growth of total expenditures, yet Romanian funds from private agents are relatively small compared with Bulgaria, where in average 45 percent of healthcare finance comes from private agents. Another input indicator that reveals Bulgarian comparative advantage in terms of healthcare is total expenditures per inhabitant expressed in Euro. It could be observed that while in Romania per inhabitant in 2008 was spent Euro 357 by 14.6 percent higher than in Bulgaria, the situation extremely changed in 2013, where already Bulgaria exceeded Romania by 21.5 percent, i.e. during observed period Bulgarian expenditures on healthcare grew by 7 percent faster that in Romania. Moreover, public spending on healthcare in the same period decreased by 5 euros in Romania, while in Bulgaria increased by 54 euros. Therefore, it could be concluded that during the crisis Bulgarian government managed more effective substitution of financing of private agents who were hard hit by crisis through increase in public financing, than its Romanian counterpart. Furthermore, in the Table 5 are presented healthcare output indicators to check whether cuts in healthcare expenditures were the results of their efficient allocation.

The Table 5 captures most widely used output indicators of healthcare (Anton, 2013). Life expectancy at birth in two countries were quite similar without notable fluctuation during the observed period, which was acceptable given the nature of the indicator. Thus, life expectancy at birth in 2013 comprised 75 years for both countries. Nevertheless, the life expectancy is equal, the divergence exist in the indicator of expected healthy life, where Bulgarian citizens have a notable advantage. Particularly, an average citizen in Bulgaria is anticipated to live healthy by 6 years more than one in Romania. Moreover, this indicator during the discussed period was slightly improved for Bulgaria, yet in Romania it worsened

by decreasing 3 years and comprising a little bit more than 58 healthy years. Thus, it is expected that a person born in Bulgaria 2013 is expected to live 86 percent of his/her life healthy, while the one in Romania only 77 percent of his/her life. Meantime, significant decrease is observed during the IMF participation year in this indicator, which from 83.7 percent reduced to 77.7 percent. According to Stuckler *et al.* (2008) incidence of tuberculosis raise along with countries' participation to the IMF, yet our data shows that Romania managed to decrease incidence of tuberculosis by 14 percent in 2013 compared with 2008. However, Bulgaria having by almost 4 time less tuberculosis incidence in 2008 than Romania, succeeded to decrease at even faster step reaching 46 tuberculosis patients per 100,000 population, which is less than its 2008 result by 24.8 percent. Furthermore, Bulgaria having two times bigger health personnel per 100,000 population could increase it by 12.4 percent in 5 years comprising 498 person in 2013, while Romania at the same period managed to add its health personnel by 24.5 percent having 335 person (Health personnel is a cumulative number of medical doctors and dentists). In the aftermath, Romanian authorities managed to reduce existing large difference between the health personnel of Bulgaria per 100.000 population. And at the last, but not least should be mentioned that despite Romania had advantage in pre-crisis period by availability of beds in hospitals per 100,000 population exceeding Bulgaria by 10 beds, it increased the number of beds by 10 in 2013. Yet, Bulgaria lagging behind Romania managed to increase availability of beds at a faster step reaching in 681 beds in 2013, which already was by 14 beds more than Romania.

As could be observed from above discussed, by both input and output indicators of healthcare Bulgaria had comparative advantages while being relative in the same economic situation as was Romania on the weak of the GDC. The major distinction was the decision of Romanian government to resort to the IMF, while Bulgarian one abstained. Therefore, the observed differences in performance of healthcare and education indicators could be attributed to the measure of IMF, which was likely to have negative influence on social indicators in Romania during observed period.

Conclusions

Romania since fall of socialism regime has made several reforms to improve education sector and be more integrated with the EU member-states. Yet, in 2008 by signing a national pact on education all major parties and civil societies agreed that it was still more need to be done to improve the efficiency of education sector. On the other side, financial crisis put another pressure on Romanian authorities to implement those reforms with stringent budget. Moreover, Romania could not solely withstand the adverse effects of crisis and turned to IMF for assistance, which aggravated the pressure on government to cut the budget deficit.

The latter caused elimination of thousand jobs in public sector, wage freezes and elimination of all incentives.

Nevertheless, the IMF during the crisis underlined the importance of both education and health sector, in Romania education sector has felt the serious financial shortages. In this end, we involved Bulgaria as a "control group" and make a comparison between those two countries, based on our earlier findings that those two had closest propensity in pre-crisis years to apply to an IMF program. Thus, two types of education and healthcare indicators are employed, i.e. input and output indicators. First one unveils direct impact of budget cuts on observed sectors, while the second one attempts to reveal the efficiency of those expenditures.

Overview of both input and output indicators reveal that Romanian education sector is more affected than Bulgarian one. Particularly, expenditures on education in Romania are cut more drastically than in Bulgaria and enrollment of students are more severe than in Bulgaria. Moreover, enrollment in early education has increased in the observed period in Bulgaria, but dropped down in Romania. On the other side in both countries predominates the concept, that public educational institutions are better, which is explained by overwhelming weight of student enrollment in public institutions.

Taking into consideration the rigor of employed methodology in estimation the effects of IMF programs on Romanian education, we may conclude that IMF participation had adverse effects on education and healthcare in Romania. Given the nature of employed method it does not permit to generalize the results. Yet, in Romanian case IMF programs had negative short and middle-term impact on education and healthcare. Hence, before applying for another precautionary loan from the IMF, Romanian government should be advised about adverse social effects of those conditional loans.

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