



Have bailouts shifted the burden of paying for healthcare from the state onto individuals?

Conor Loughnane¹ · Aileen Murphy¹ · Mark Mulcahy¹ · Celine McInerney¹ · Valerie Walshe²

Received: 4 October 2017 / Accepted: 19 March 2018 / Published online: 9 April 2018
© Royal Academy of Medicine in Ireland 2018

Abstract

Background/aims The financial crisis that enveloped Europe in 2009 created financial pressure for governments and required a number of countries to obtain a financial bailout from the IMF. The purpose of this paper is to examine the effect of the financial crisis on public health expenditure in bailout countries and if bailouts shift the burden of paying for healthcare from the state onto individuals.

Methods Quantitative health expenditure data were collected from the WHO and OECD for the period 2004–2015 and evaluated using a comparison of means Welch's *t* test.

Results The majority of bailout countries recorded a decrease in public health expenditure as a percentage of total government expenditure, with Ireland recording the largest decrease with government health expenditure as a percentage of total government expenditure, falling by 22% ($P < .01$). In addition, the results also suggest that the burden of paying for healthcare shifted from the state onto individuals in three countries, namely Hungary, Ireland and Portugal, where public health expenditure declined and private expenditure increased significantly.

Conclusions The ramifications of shifting the burden of paying for healthcare from the state onto individuals at this point remain unclear with further research required to identify the long-term consequences for healthcare.

Keywords Bailouts · Europe · Financial crisis · Healthcare expenditure

Introduction

The global financial crisis which began in 2007 had enveloped Europe by 2009 [1]. As economies slowed and went into recession, governments throughout Europe experienced severe fiscal pressure. Exacerbated by high levels of public debt and the cost of bank bailouts, a European sovereign debt crisis resulted, resulting in the public finances of individual EU countries being put under significant strain. As a result, Cyprus, Greece, Hungary, Ireland, Latvia, Romania and Portugal received bailouts (Table 1) from the International Monetary Fund (IMF) (here after referred to as “bailout countries”). In addition, Cyprus, Greece, Ireland and

Portugal entered into a memorandum of understanding on financial assistance with the European Commission, European Central Bank and the IMF, collectively known as the Troika.

While collectively they received bailouts, the underlying causes of the financial crisis differed between countries [9]. For example, in Ireland, the economy's overreliance on the construction sector led to a bubble in the market that eventually led to the collapse of the construction sector. The resultant drop in house prices led to an increase in credit defaults in the bank's loan books which gave rise to major funding difficulties for banks in Ireland [10]. Subsequently, the Irish government rescued the financial system by issuing a blanket guarantee of all its debt obligations. Whereas, in Portugal, economic growth had stagnated for a decade and unemployment increased rapidly between 2007 and 2010 by 3% [11]. During this time, a sudden jump in the public deficit from 3.7% in 2008 to 10.2% in 2009 [12] put further pressure on public finances. A more unique set of circumstances occurred in the Greek economy. Greece had, for many years, submitted falsified data for the state of its public finances prior to joining the single currency [12] caused by government economic

✉ Conor Loughnane
Conor.loughnane@umail.ucc.ie

¹ Cork University Business School, University College Cork, Cork, Ireland

² Health Service Executive, Model Business Park, Model Farm Road, Cork, Ireland

Table 1 Countries in receipt of IMF loans [2–8]

Country	2010	2011	2012	2013	2014	2015	2016
Cyprus ^a					✓	✓	✓
Greece ^a	✓	✓	✓	✓	✓	✓	✓
Hungary	✓						
Ireland ^a	✓	✓	✓	✓	✓		
Latvia	✓	✓	✓	✓			
Portugal ^a			✓	✓	✓		
Romania	✓	✓		✓			

^a Received funds from the Troika

mismanagement. The underlying economic problems in Greece such as excessive public spending, unsustainable debt levels and tax evasion also compounded the problems faced with the financial crisis. Greece's membership in the Eurozone imposed an economic straitjacket with Greece unable to reduce interest rates or devalue its currency [12] to stimulate economic growth putting the Greek economy under further financial pressure. A number of vulnerabilities of the financial situation in Romania resulting from macroeconomic imbalances, including excessive increases in private credit consumption and a reduction of the relative contribution of foreign direct investment to finance the current account deficit [13]. This led to increased external debt predominantly in the private sector and banks [13]. In the case of Hungary, high external debt, coupled with a large current account deficit and maturity and currency mismatches in the financial system all contributed to put the economy under financial pressure [14]. The Latvian housing market bubble collapse saw an increase in debt burden and the economic growth rate rapidly decelerate [15]. This led the Latvian government to nationalise the country's second largest bank aggravating the economic situation [15]. In Cyprus, a number of factors contributed to the crisis. The country's accession to the European Union and adoption of the euro sparked liberalisation of a previously tightly controlled bank sector [16]. This coupled with over exposure to Greek banks and the government's mismanagement of the budget led to a lack of resources when the banks needed rescuing [16]. Also, the timing of the bailouts was not homogenous across all countries. This is reflected in Table 1 which details the timing of the bailouts in each country. As a result, austerity measures were introduced to meet IMF and Troika targets of decreasing public spending. One affected area that has long-term ramifications is public healthcare spending.

The existing literature has focussed on the indirect consequences of the financial crisis on health outcomes in bailout countries. For instance, consequences for health outcomes have emerged from the erosion of public services, with increasing incidences of mental health disorders [17], higher prevalence of reporting of poor self-rated health and unmet

healthcare needs [11, 18–20] with an increase in the effect likely over time [21]. The rise in levels of unmet healthcare need has been attributed to costs and inability to pay in Greece [22]. While in Ireland, there has been a reduction in the breadth and depth of coverage, with inpatient activity decreasing (through 2013 and 2014) and day case activity levelling off despite increased demand [23]. While home care hours provided in the community have been declining since 2008 (just under 9 million hours provided in 2013, compared to over 11 million hours in 2006 [23]).

Meanwhile, research on the direct impact of the crisis on healthcare spending is limited [1]. Although some studies have stated that private healthcare spending has increased since the crisis [23] (including Ireland and Portugal), it is an open question in the literature whether healthcare spending in bailout countries has been affected by the financial crisis. Furthermore, no study has analysed the impact of reduced public healthcare expenditure and whether the burden of cost i.e. paying for healthcare, has shifted to individuals as a result.

This study fills this research gap by examining the impact of the financial crisis on government health expenditure in bailout countries and whether the burden of cost has shifted from the state (government expenditure, funded by individuals through general taxation or social health insurance) onto individuals (private expenditure) as a result of the financial crisis. The burden of cost in this study refers to the distributional burden of payment for healthcare. A change in the proportion between government and private spending on health changes the distribution of payment. The countries that received a bailout during the financial crisis and considered in this study are presented in Table 1.

Methodology

With the spread of the financial crisis throughout Europe in 2009 [1], 2009 was chosen as the turning point around which data was categorised into two groups for statistical comparisons; so expenditure data for 2004–2009 were categorised the pre-financial crisis group and 2010–2015 categorised the post-financial crisis group. Although not all countries received a bailout immediately (Table 1), any country that received a bailout from 2010 to 2015 was included in the analysis for this study.

The indicators selected for analysis were government health expenditure as a percentage of total government expenditure, government health expenditure as a percentage of total health expenditure and private health expenditure as a percentage of total health expenditure. Evaluation metrics were selected based on their capacity to demonstrate the effects of the financial crisis on healthcare expenditure and whether the distribution of cost shifted from the state (government expenditure) onto private individuals (private expenditure). The

analysis presented here uses aggregate of health expenditure as opposed to absolute values. While absolute values have been used in country specific and disease specific studies [24, 25], when undertaking comparisons across different countries, aggregate health expenditure are appropriate as they permit investigation of the different institutional systems and other possible explanatory variables [26]. As this study compares health expenditure across countries with dynamic economies and populations, aggregates are appropriate and can reveal relevant changes in the proportion of government health expenditure even if the absolute values remain unchanged. The indicators were derived from the WHO global health expenditure database and the OECD health expenditure indicators library and include expenditure on government schemes and compulsory health insurance schemes [27, 28].

The analysis presented here employs a comparison of means Welch’s *t* test to assess the differences between healthcare expenditure in the years before the financial crisis with expenditure in the years following on from the financial crisis. A *t* test was used as it used as it is applicable for measuring the significance of the difference between means [29], with the statistical analysis performed in Eviews version 9 (2016). The comparison of means calculates the difference between the observed means in two independent samples. A significance value (*p* value) of the difference is reported. The *p* value is the probability of obtaining the observed difference between the samples if the null hypothesis were true. The null hypothesis is the hypothesis that the difference is 0.

Results

The results of the aforementioned statistical analysis are presented in Table 2. The table illustrates the percentage changes,

Table 2 Mean expenditure changes pre (2004–2009) to post (2010–2015) financial crisis (adapted from: [27, 28])

Countries	% change in government health expenditure as % of total government expenditure	% change in government health expenditure as % of total health expenditure	% change in private health expenditure as % of total health expenditure
Cyprus	14.98% ***	8.20% ***	−6.82% ***
Greece	−7.04% *	5.58%	−12.08% **
Hungary	−5.00%	−4.50% ***	10.85% ***
Ireland	−22.57% ***	−9.76% ***	30.92% ***
Latvia	−8.13% *	2.80%	−7.03% *
Portugal	−12.13% ***	−4.05% ***	8.92% **
Romania	4.11%	0.73%	−1.84%
Significance level			*10% **5% ***1%

with significance levels of 10, 5 and 1%, in health expenditure between the years pre and post the financial crisis for the evaluation metrics selected.

Cyprus

Cyprus received its first bailout in 2014 (Table 1) [2–8]. The comparison of means analysis reported in Table 2 reveals that government health expenditure in the post-financial crisis years increased significantly compared to pre-financial crisis levels, with government health expenditure, both as a percentage of total government and total health expenditure, increasing by 15% (*p* < .01) and 8% (*p* < .01) respectively. Concurrently, private health expenditure as a percentage of total health expenditure decreased significantly by 6% (*p* < .01).

Greece

Greece received its first bailout in 2010 and continued to receive financial assistance in 2017 (Table 1) [2–8]. The comparison of means results (Table 2) indicate that in the years post the financial crisis, government health expenditure as a percentage of total government health expenditure declined significantly, relative to expenditure in the pre-crisis years by 7% (*p* < .10). In the same period, however, government health expenditure accounted for a greater percentage of total health expenditure, and increased by 5% (*p* > .10), while private health expenditure declined significantly by 12% (*p* < .05), relative to expenditure pre the financial crisis.

Hungary

Hungary only required a bailout in 2010 [2–8]. However, the comparison of means results, reported in Table 2, indicate that in the post-financial crisis years, government health expenditure as a percentage of both total government and total health expenditure declined relative to pre-financial crisis expenditure levels, decreasing by 5% (*p* > .10) and 4% (*p* < .01) respectively. Meanwhile for the same period, private health expenditure as a percentage of total health expenditure increased significantly by 10% (*p* < .01).

Ireland

Ireland received a bailout from 2010 until the beginning of 2014 [2–8]. The comparison of means results reported in Table 2 reveal that government health expenditure in the post-financial crisis years decreased significantly both as a

percentage of total government expenditure and total health expenditure by 22% ($p < .01$) and 9% ($p < .01$) respectively. As illustrated in Table 2, these decreases in government health expenditure are the largest amongst bailout countries. Concurrently, private health expenditure as a percentage of total health expenditure increased significantly by 30% ($p < .01$).

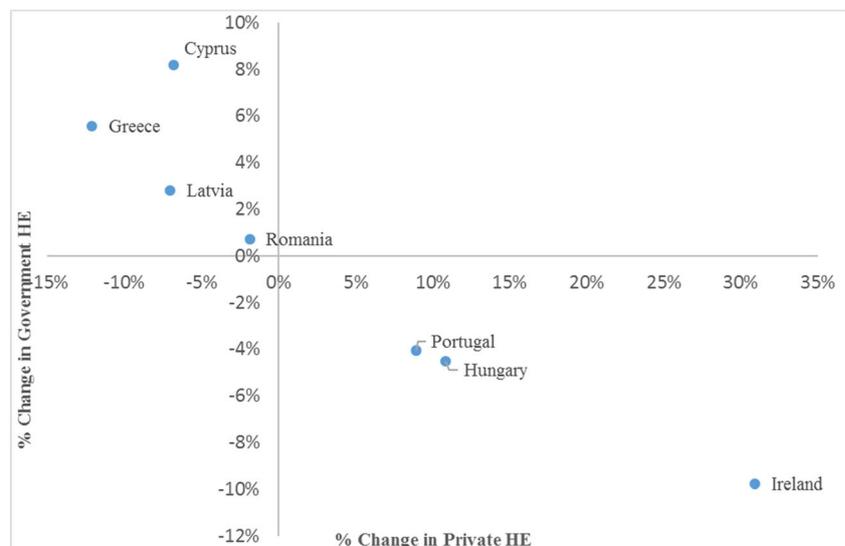
Latvia

Latvia received a bailout from 2010 to 2013 inclusive [2–8]. The comparison of means results (Table 2), indicated that government health expenditure as a percentage of total government expenditure decreased by 8% ($p < .10$) in the post-financial crisis years relative to pre-financial crisis expenditure. In the same period, however, government health expenditure accounted for a greater percentage of total health expenditure and increased by 2% ($p > .10$), while private health expenditure decreased by 7% ($p < .10$).

Portugal

Portugal received a bailout for 3 years from 2012 to 2014 [2–8]. The comparison of means results (Table 2) reveal that in Portugal, government health expenditure both as a percentage of total government and total health expenditure decreased significantly by 12% ($p < .01$) and 4% ($p < .01$) respectively in the post-financial crisis years relative to pre-financial crisis expenditure. Meanwhile in the same period, private health expenditure as a percentage of total health expenditure increased significantly by 8% ($p < .05$).

Fig. 1 % change in government and private health expenditure as a % of total health expenditure (adapted from: [27, 28])



Romania

Romania received a bailout in 2010, 2011 and again in 2013 [2–8]. However, the comparison of means results presented in Table 2 indicate that in the post-financial crisis years that, government health expenditure both as a percentage of total government and total health expenditure increased by 4% ($p > .10$) and 1% ($p > .10$) respectively relative to government expenditure in the pre-financial crisis years. Concurrently, private health expenditure as a percentage of total health expenditure declined by 1% ($p > .10$).

Trends in health expenditure in bailout countries

Throughout the financial crisis, the majority of bailout countries experienced declining public health expenditure as a percentage of total government expenditure, with the notable exceptions of Cyprus and Romania. The analysis reveals that the financial crisis affected levels of spend in each country to differing degrees. Ireland appears to have suffered the deepest reductions in government health expenditure as a percentage of total government expenditure. Hungary and Romania experienced the smallest decrease and increase respectively, with neither change statistically significant.

The results also suggest that the distributional burden of cost, may have shifted from the state (government expenditure) onto individuals (private expenditure) in only three countries — Hungary, Ireland and Portugal. Figure 1 illustrates the distribution of the total health expenditure increases and decreases across countries, with the greatest shift in cost occurring in Ireland. Figure 1 illustrates that in Cyprus, Greece, Latvia and Romania private health expenditure as a percentage of total health expenditure declined during the financial

crisis, suggesting that the distributional burden of cost moved towards the government.

To establish if there was an adjustment period, a sensitivity analysis was performed to check for robustness of the results. To do so, estimates for the first year of the bailout in each country were removed and the comparison of means test was re-estimated to examine if removing government health spending in the first year of receiving a bailout impacted the direction or magnitude of the results. No significant difference was observed in comparison to the results reported in Table 2.

Discussion

Historically, countries in receipt of loans from the IMF have implemented significant cuts to healthcare sector spending [30]. The comparison of means results presented in this paper, demonstrate that the majority of bailout countries experienced reductions in government health expenditure as a percentage of total government expenditure in the years post the financial crisis. The results also suggest that the distributional burden of paying for healthcare may not have shifted from the state onto individuals across all bailout countries. However, a shift in the proportion of government and private spending changes the distribution of payment for healthcare, with a deviation from government to private spending. Should this trend persist it could reduce the progressivity of the affected health systems.

The first part of this discussion explores the countries where the distributional burden of paying for healthcare may have shifted towards the government, where private health expenditure decreased as a percentage of total health expenditure and public health expenditure increased. In Fig. 1, these countries are located in the northwest quadrant i.e. Cyprus, Greece, Latvia and Romania. The second part of this discussion explores the countries where the distributional burden of paying for healthcare may have shifted onto individuals, where private health expenditure increased as a percentage of total health expenditure and public health expenditure as a percentage of total health expenditure decreased. In Fig. 1, these countries are located in the southeast quadrant i.e. Hungary, Ireland and Portugal.

Government health expenditure increased significantly in Cyprus post-financial crisis. However, as Cyprus has received financial assistance since 2014, the effect of the bailout on public expenditure may be unobservable at present. In addition, the current restructuring of the health system in Cyprus includes implementing a national health insurance scheme [31]. Such schemes traditionally require greater levels of government health expenditure and are more expensive for the state to run [32]. However, despite the increase in government health expenditure as a percentage of total health expenditure, measures were introduced to fulfil EU-IMF economic adjustment programme requirements [33]. Measures include user

charges and co-payments along with raising the means test threshold for public health cover [33]. However, given the trend across certain bailout countries of reductions in government healthcare expenditure as a percentage of total health expenditure, Cyprus could experience a reduction in public health expenditure in the future. This, in combination with the introduction of user charges and co-payments, could see the distributional burden of cost shift from the state to individuals in the years ahead.

The results of the comparison of means analysis (Table 2) also indicated that Romania also saw increased government health expenditure as a percentage of total health expenditure after receiving a bailout, although the increases were not statistically significant. Historically, however, Romania had modest levels of government health expenditure prior to the onset of and throughout the financial crisis. For example, in 2009 government health expenditure accounted for 3% of GDP which is low compared with Western Europe (average 8% of GDP) [34]. Furthermore, Romania has witnessed a reduction in the number of citizens contributing to its social health insurance scheme, as inability to pay for healthcare is becoming a larger problem [35], requiring more government expenditure on health.

In Greece, although government health expenditure as a percentage of total government expenditure declined, government health expenditure still accounted for a greater share of total health expenditure, with private health expenditure diminishing by 12%. The reduction in both government and private health expenditure represents an overall reduction in health expenditure. Increases in the level of user charges were introduced for outpatient and hospital admissions [36], with cost sharing for pharmaceuticals rising from 13.3% to 18% [36]. Access to healthcare is an issue of concern for the Greek population with unmet healthcare needs increasing after the enactment of austerity measures [37], with the odds of experiencing unmet needs due to cost 44% higher in 2011 than 2006 [37].

In Latvia, there was a similar trend to the one observed in Greece with government health expenditure as a percentage of total government expenditure and private health expenditure as a percentage of total health expenditure decreasing in the years post the financial crisis. The lack of financial resources following the financial crisis resulted in reductions in coverage and increasing user charges and co-payments. These measures have reduced the numbers accessing care [38]. Ensuring adequate funding for the health system through increased public health expenditure is identified as critical to ensuring availability of necessary healthcare services and preventing deterioration of health status in the future [39].

The significant increase in private health expenditure as a percentage of total health expenditure in conjunction with the reduction in government health expenditure in Hungary suggests that the distributional burden of paying for healthcare

may have shifted from the state onto individuals in the years post the financial crisis [40]. The sustainability of this in Hungary is worrisome, for example, capacity for long-term care in both the inpatient and outpatient setting is considered insufficient [40]. Furthermore, with the ageing population of Hungary and indeed Europe, sustained investment is required for the healthcare system to cope with the projected increase in the numbers of elderly citizens and their healthcare needs [41] in addition to high levels of multi-morbidities [42].

In Ireland, the shift in the distributional burden of paying for healthcare from the state onto individuals is the largest across all bailout countries. The decline in government health expenditure as a percentage of both total government and total health expenditure has resulted in reductions in the breadth and depth of healthcare coverage offered under the public health system [23]. Already limited access to care, owing to excessive waiting lists and affordability issues, has resulted in unmet healthcare needs [43]. Those unable to pay out of pocket for healthcare with private expenditure are reliant on a public system that is operating with less available resources [23]. The decline in government health expenditure will have adverse effects for the health system in the long run. Legacy issues will be exacerbated with Ireland's ageing population [41]. Thus achieving the goals of reducing waiting lists, improving continuity of long-term care and patient centeredness will all be negatively affected by the reductions in government health expenditure.

Portugal experienced a similar situation, though less extreme than in Ireland. The significant reduction in government health expenditure as a percentage of total health expenditure, coupled with the significant increase in private health expenditure suggests a shift in the distributional burden of paying for healthcare from the state onto individuals. The reduction in government health expenditure as a percentage of total health expenditure has resulted in user charges for primary and ambulatory care increasing and a 2.8% increase in all hospital user charges since January 2013 [44]. Increases in user charges were employed to control demand and avoid overutilization of health services [45], resulting in a net reduction in the numbers accessing care [46]. There is evidence that this trend has continued since austerity measures came into effect in 2011, particularly for vulnerable population groups. The increased cost burden placed on private expenditure could affect health seeking behaviours, particularly amongst the most vulnerable in society [44].

This study focused on the bailout countries and, when interpreting the results, one should be mindful of other contextual issues not controlled for in the analysis. For instance, changes in population levels and composition, may also influence levels of health expenditure. For example, during the recession, the population levels increased in Cyprus and Ireland [47], whereas population levels declined in the remaining countries [47]. In addition, differences in complexity

between national health systems may also account for differences in health expenditure pre and post the financial crisis. The health systems of Ireland, Latvia and Portugal are primarily Beveridge models of healthcare financed mainly through taxation [48, 49], with such schemes traditionally requiring less government health expenditure and are less expensive for the state to run [32]. Conversely, a Bismarkian model of social health insurance providing universal care is employed in Greece, Hungary and Romania [50–52]. Such financing models traditionally require greater levels of government expenditure and are more expensive for the state to run [32]. Cyprus is in a unique position in that it is in the process of implementing a comprehensive national health insurance scheme to substitute a highly fragmented health sector and to improve service between public and private sectors and is not controlled for this in analysis.

Furthermore, this analysis only includes recipients of an IMF/Troika bailout. We acknowledge, other countries such as Italy and Spain, implemented policies aimed at controlling public healthcare spending since the financial crisis (co-payments and user charges) [53, 54] but these are beyond the scope of this study.

Examining the effect of the bailouts on health outcomes is beyond the scope of the analysis presented here. Nevertheless, it is important to acknowledge that health impacts and health systems tend to be more severely affected when economic impacts are more severe and prolonged austerity measures are implemented [55]. With many governments in Europe, either of their own volition or at the behest of the IMF or Troika, adopting severe austerity policies in response to the financial crisis, with real term cuts to funding in many countries [30], negative consequences for healthcare systems are anticipated. Closures of health facilities in Greece has witnessed an increase in the number of people who were not seeking care even though they believed it to be medically justified [56]. While the major cuts imposed by the Troika in Portugal as part of its conditions for a financial rescue package, stipulated large increases in the rate of co-payments [33, 36], with several services, such as nurse consultations subject to user charges for the first time [56]. A Portuguese study reported changes in health seeking behaviours, with those surveyed showing a 15% reduction in those that did not acquire pharmaceuticals and 9% not attending a necessary medical consultation, both because of a lack of financial resources [44]. Despite evidence that such charges reduce both necessary and unnecessary utilisation of care [57], they have been extended in Italy, Latvia, Romania and Spain [58]. Furthermore, rising levels of self-reported unmet need, a comparative measure of access, through the period of austerity may have negative consequences for health in the future [58]. Moreover, as rising unmet need tends to be concentrated in deprived groups therefore widening the disparities in accessing healthcare across Europe [58]. This may be a new

challenge for countries that had a functioning system in place prior to the financial crisis [56].

While the analysis presented here has shown changes in the distributional burden of payment between government and private spend, questions for future research should examine the effect of the changes in distribution and whether it is impacting on levels of unmet need and healthcare access in health systems across Europe.

Conclusion

While the reductions in government health expenditure, following the financial crisis, may provide a temporary solution to one problem, i.e. controlling public finances and meeting IMF targets, they can have long term adverse consequences. The short-sighted nature of reducing government health expenditure as a way to control public finances and generate short term monetary savings are likely to be negated by possible poorer health outcomes and increasing health need over time unless current patterns are reversed. Furthermore, current ageing populations present greater challenges moving forward leading to a growing demand for long-term services and supports and often being accompanied by chronic disease and multiple comorbidities. Thus it is anticipated that as economies and health systems are recovering they will face increased demands for healthcare and by extension require greater levels of health expenditure. Further longitudinal research is required to investigate the longer term effects of the impact of reductions in government health expenditure following the financial crisis and the recovery responses.

Funding information Conor Loughnane received financial support from the Health Service Executive for conducting this analysis.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical consideration This article does not contain any studies with human participants or animals performed by any of the authors.

References

- Keegan C, Thomas S, Normand C, Portela C (2013) Measuring recession severity and its impact on healthcare expenditure. *Int J Health Care Finance Econ* 13(2):139–155
- IMF – International Monetary Annual Report 2016. (2017). <http://www.imf.org/external/pubs/ft/ar/2016/eng/>. Accessed 10/02/17 2017
- IMF Annual Report 2015. (2016). <http://www.imf.org/external/pubs/ft/ar/2015/eng/>. Accessed 23/09/16 2016
- From stabilization to sustainable growth: annual report of the executive board for the financial year ended April 30, 2014. (2016). <http://www.imf.org/external/pubs/ft/ar/2014/eng/>. Accessed 23/09/16 2016
- IMF Annual Report 2013: Promoting a More Secure and Stable Global Economy - Table of Contents, Highlights. (2016). <http://www.imf.org/external/pubs/ft/ar/2013/eng/>. Accessed 23/09/16 2016
- IMF Annual Report 2012 - Table of Contents, Highlights. (2016). <http://www.imf.org/external/pubs/ft/ar/2012/eng/>. Accessed 23/09/16 2016
- IMF Annual Report 2011 - Table of Contents, Highlights. (2016). <http://www.imf.org/external/pubs/ft/ar/2011/eng/>. Accessed 23/09/16 2016
- IMF Annual Report 2010 - Table of Contents, Highlights. (2016). <http://www.imf.org/external/pubs/ft/ar/2010/eng/>. Accessed 23/09/16 2016
- Europeanã C (2009) Economic crisis in Europe: causes, consequences and responses. *Eur Econ* 7:2009
- KPV O'Sullivan, T Kennedy (2013) What caused the Irish banking crisis? <https://doi.org/10.1108/13581981011060808>
- Karanikolos M, Mladovsky P, Cylus J, Thomson S, Basu S, Stuckler D, Mackenbach JP, McKee M (2013) Financial crisis, austerity, and health in Europe. *Lancet* 381(9874):1323–1331
- Armingeon K, Baccaro L (2018) Political economy of the sovereign debt crisis: the limits of internal devaluation. *Ind Law J* 41(3):254–275. <https://doi.org/10.1093/indlaw/dws029>
- Zaman G, Georgescu G (2009) The impact of global crisis on Romania's economic development. *Ann Univ Apulensis: Ser Oeconomica* 11(2):611
- Egedy T (2012) The effects of global economic crisis in Hungary. *Hung Geograph Bull* 61(2):155–173
- Koyama Y (2010) Economic crisis in the Baltic states: focusing on Latvia. *Econ Ann* 55(186):89–114
- cyprusprofile (2018) Cyprus Banking Crisis: Causes and Consequences - Cyprus Profile. @cyprusprofile. <http://www.cyprusprofile.com/en/articles/view/cyprus-banking-crisis-causes-and-consequences-bailout>. Accessed 15/02/18 2018
- Barr B, Taylor-Robinson D, Scott-Samuel A, McKee M, Stuckler D (2012) Suicides associated with the 2008–10 economic recession in England: time trend analysis. *BMJ* 345:e5142
- Karanikolos M, Heino P, McKee M, Stuckler D, Legido-Quigley H (2016) Effects of the global financial crisis on health in high-income Oecd countries: a narrative review. *Int J Health Serv* 46(2):208–240
- Hessel P, Vitoras S, Avendano M (2014) The differential impact of the financial crisis on health in Ireland and Greece: a quasi-experimental approach. *Public Health* 128(10):911–919
- Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D (2011) Health effects of financial crisis: omens of a Greek tragedy. *Lancet* 378(9801):1457–1458
- Budhdeo S, Watkins J, Atun R, Williams C, Zeltner T, Maruthappu M (2015) Changes in government spending on healthcare and population mortality in the European union, 1995–2010: a cross-sectional ecological study. <https://doi.org/10.1177/0141076815600907>
- Pappa E, Kontodimopoulos N, Papadopoulos A, Tountas Y, Niakas D (2013) Investigating unmet health needs in primary health care services in a representative sample of the Greek population. *Int J Environ Res Public Health* 10(5):2017–2027
- Burke S, Thomas S, Barry S, Keegan C (2014) Indicators of health system coverage and activity in Ireland during the economic crisis 2008–2014—from 'more with less' to 'less with less'. *Health Policy* 117(3):275–278. <https://doi.org/10.1016/j.healthpol.2014.07.001>
- Turner B (2017) The new system of health accounts in Ireland: what does it all mean? *Irish J Med Sci*(1971-) 186(3):533–540

25. Zhang P, Zhang X, Brown J, Vistisen D, Sicree R, Shaw J, Nichols G (2010) Global healthcare expenditure on diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 87(3):293–301. <https://doi.org/10.1016/j.diabres.2010.01.026>
26. Gerdtham U-G, Jönsson B (2000) International comparisons of health expenditure: theory, data and econometric analysis. In: *Handbook of health economics*, vol 1 Elsevier, pp 11–53
27. WHO (2017) Global Health Expenditure Database. <http://apps.who.int/nha/database/Select/Indicators/en>. Accessed 20/07/16 2016
28. Statistics /OECD Health Statistics /Health expenditure and financing /Health expenditure indicators (2017) @OECD_Pubs. http://www.oecd-ilibrary.org/social-issues-migration-health/data/oecd-health-statistics/system-of-health-accounts-health-expenditure-by-function_data-00349-en
29. Smucker MD, Allan J, Carterette B (2007) A comparison of statistical significance tests for information retrieval evaluation. In: *Proceedings of the sixteenth ACM conference on Conference on information and knowledge management*. ACM, pp 623–632
30. Reeves A, McKee M, Basu S, Stuckler D (2014) The political economy of austerity and healthcare: cross-national analysis of expenditure changes in 27 European nations 1995–2011. *Health Policy* 115(1):1–8. <https://doi.org/10.1016/j.healthpol.2013.11.008>
31. Correia T, Dussault G, Pontes C (2015) The impact of the financial crisis on human resources for health policies in three southern-Europe countries. *Health Policy* 119(12):1600–1605
32. van der Zee J, Kroneman MW (2007) Bismarck or Beveridge: a beauty contest between dinosaurs. *BMC Health Serv Res* 7(1):94. <https://doi.org/10.1186/1472-6963-7-94>
33. Thomson S, Figueras J, Evetovits T, Jowett M, Mladovsky P, Maresso A, Cylus J, Karanikolos M, Kluge H (2014) Economic crisis, health systems and health in Europe: impact and implications for policy. WHO Regional Office for Europe,
34. Holt E (2010) Romania's health system lurches into new crisis. Elsevier,
35. Tambor M, Pavlova M, Rechel B, Golinowska S, Sowada C, Groot W (2014) The inability to pay for health services in Central and Eastern Europe: evidence from six countries. *Eur J Pub Health* 24(3):378–385
36. Maresso A, Mladovsky P, Thomson S, Sagan A, Karanikolos M, Richardson E, Cylus J, Evetovits T, Jowett M, Figueras J (2015) Economic crisis, health systems and health in Europe. Country experiences
37. Zavras D, Zavras AI, Kyriopoulos, II, Kyriopoulos J (2016) Economic crisis, austerity and unmet healthcare needs: the case of Greece. In: *BMC Health Serv Res*, vol 16. doi:<https://doi.org/10.1186/s12913-016-1557-5>, 309
38. Mladovsky P, Srivastava D, Cylus J, Karanikolos M, Evetovits T, Thomson S, McKee M (2012) Health policy responses to the financial crisis in Europe. *EU Observatory*
39. Mitenbergs U, Taube M, Misins J, Mikitis E, Martinsons A, Rurane A, Quentin W (2011) Latvia: health system review. *Health systems in transition* 14 (8):xv–xxii, 1–191
40. Gaál P, Szigeti S, Csere M, Gaskins M, Panteli D (2010) Hungary health system review. *Health Syst Transit* 13(5):1–266
41. Rechel B, Grundy E, Robine J-M, Cylus J, Mackenbach JP, Knai C, McKee M (2013) Ageing in the European union. *Lancet* 381(9874):1312–1322
42. Palladino R, Tayu Lee J, Ashworth M, Triassi M, Millett C (2016) Associations between multimorbidity, healthcare utilisation and health status: evidence from 16 European countries. *Age Ageing* 45(3):431–435
43. Connolly S, Wren M-A (2017) Unmet healthcare needs in Ireland: analysis using the EU-SILC survey. *Health Policy* 121:434–441. <https://doi.org/10.1016/j.healthpol.2017.02.009>
44. Sakellarides C, Castelo-Branco L, Barbosa P, Azevedo H (2014) The impact of the financial crisis on the health system and health in Portugal. *European Observatory on Health Systems and Policies Copenhagen: WHO Regional Office for Europe*
45. Barros PP (2012) Health policy reform in tough times: the case of Portugal. *Health Policy* 106(1):17–22. <https://doi.org/10.1016/j.healthpol.2012.04.008>
46. Legido-Quigley H, Karanikolos M, Hernandez-Plaza S, de Freitas C, Bernardo L, Padilla B, Sá Machado R, Diaz-Ordaz K, Stuckler D, McKee M (2016) Effects of the financial crisis and Troika austerity measures on health and health care access in Portugal. *Health Policy* 120(7):833–839. <https://doi.org/10.1016/j.healthpol.2016.04.009>
47. Population, total | Data. (2018). <https://data.worldbank.org/indicator/SP.POP.TOTL>. Accessed 17/01/2018 2018
48. Barros PP, Machado SR (2011) Portugal. *Health system review. Health Syst Transit* 13(4):1–156
49. Mitenbergs U, Taube M, Misins J, Mikitis E, Martinsons A, Rurane A, Quentin W (2012) Latvia: Health system review. *Health systems in transition* 14 (8):xv–xxii, 1–191
50. Gaál P, Szigeti S, Csere M, Gaskins M, Panteli D (2011) Hungary health system review. *Health Syst Transit* 13(5):1–266
51. Vladescu C, Scintee SG, Olsavszky V, Hernandez-Quevedo C, Sagan A (2016) Romania: health system review. *Health Syst Transit* 18(4):1–170
52. Economou C (2010) Health systems in transition. *Health* 12(7)
53. Gallo P, Gené-Badia J (2013) Cuts drive health system reforms in Spain. *Health Policy* 113(1):1–17
54. De Belvis AG, Ferrè F, Specchia ML, Valerio L, Fattore G, Ricciardi W (2012) The financial crisis in Italy: implications for the healthcare sector. *Health Policy* 106(1):10–16
55. Karanikolos M, Heino P, McKee M, Stuckler D, Legido-Quigley H (2016) Effects of the global financial crisis on health in high-income Oecd countries. <https://doi.org/10.1177/00207314166637160>
56. McKee M, Karanikolos M, Belcher P, Stuckler D (2012) Austerity: a failed experiment on the people of Europe. *Clin Med* 12(4):346–350
57. Newhouse JP, Group RCIE (1993) *Free for all?: lessons from the RAND health insurance experiment*. Harvard University Press,
58. Reeves A, McKee M, Stuckler D (2015) The attack on universal health coverage in Europe: recession, austerity and unmet needs. *Eur J Pub Health* 25(3):364–365