The impact of fiscal consolidations on human development

The Impact of Fiscal Consolidations
on Human Development[*]

Luca Agnello[#]   Vitor Castro[±]   João Tovar Jalles[+]   Ricardo M. Sousa[$]

Abstract

We find that fiscal austerity is associated with a reduction of human development standards, with the negative effect being particularly severe in the case of spending-driven consolidation episodes. Fiscal adjustments are especially damaging for human development in developing countries (namely, African and Latin American countries). Additionally, the empirical evidence shows that: (i) government stability is a crucial institutional determinant of human development; and (ii) while investment in physical capital can boost human development, government consumption and inflation are detrimentalto it.

JEL:Human development, fiscal consolidation, political, economic and social determinants, risk rating.
Keywords: C33, H30, H51, H52, I31.

[#] University of Palermo, Department of Economics, Business and Statistics (SEAS), Viale delle Scienze, 90128 Palermo, Italy. Email: luca.agnello01@unipa.it.
[±] University of Coimbra, Faculty of Economics, Av. Dias da Silva, 165, 3004-512 - Coimbra, Portugal; University of Minho, Economic Policies Research Unit (NIPE), Campus of Gualtar, 4710-057 - Braga, Portugal. Email: vcastro@fe.uc.pt.
[+] Centre for Globalization and Governance, Nova School of Business and Economics, Campus Campolide, Lisbon, 1099-032 Portugal.. email: joaojalles@gmail.com
[$] University of Minho, Department of Economics and Economic Policies Research Unit (NIPE), Campus of Gualtar, 4710-057 - Braga, Portugal; London School of Economics and Political Science, LSE Alumni Association, Houghton Street, London WC2A 2AE, United Kingdom. E-mails: rjsousa@eeg.uminho.pt, rjsousa@alumni.lse.ac.uk.

"We sinned against the dignity of the people in Greece, Portugal and sometimes Ireland."

- Jean Claude Juncker, 19 February 2015

1. Introduction

The investigation of the determinants of the level of income per capita or economic growth has been at the cornerstone of a large body of the theoretical and empirical literature(Blinder and Giorgiadis, 2010).

In the aftermath of the Great Recession andthe subsequent emergence of the sovereign debt crisis, a great deal of attention has shiftedtowards the need to understand the effects of fiscal consolidation packages on the income level and its distribution, or to assess the macroeconomic, political and institutional drivers of the duration of such fiscal adjustments(Mallick and Mohsin, 2007, 2010; Rafiq and Mallick, 2008; Agnello et al., 2013; Agnello and Sousa, 2014).

Despite this, the literature on the topic has neglected the impact of austerity packages on other crucial dimensions of the whole set of opportunities that are available to individuals, such as education, health and economic development. These can be captured by a broader measure of living standards, such as human development (Sen, 1999).

From a theoretical perspective, fiscal consolidations mayunnecessarily prolong economic recessions (IMF, 2013), thus, worseninglabour market conditions and leading to a substantial rise in unemployment (Agnello et al., 2014). This has the potential of generating long-lasting effects not only on real economic activity, but also on other dimensions of human development, such as education and health. For instance, Mallick and Granville (2005) show that fiscal consolidation only provides a temporary and unsustainable solution to poverty reduction.According to ILO (2014), fiscal consolidation measures have largely reduced the funds available for social programs, especially, those directed to the most vulnerable groups of women. Schaltegger and Weder (2014) also argue that the Eurozone sovereign debt crisis and the subsequent policy responses disproportionately affected the vulnerable population. Armingeon et al. (2014) find that fiscal

adjustment programs are typically associated with a retrenchment of public social expenditures (such as, government expenditures on education and health services, thus, the welfare state) even though this normally requires a broad pro-reform coalition, as austerity measures are electorally and politically risky.

In this context, it is well known that data about national income does not provide information about the composition of income or the real beneficiaries. Moreover, economic agents frequently value achievements, such as better education and health services, broader participation in economic, cultural and political activities of the local community, improvements in working conditions and security against crime and physical violence, that are not necessarily reflected in higher income or output growth (United Nations, 1990). Thus, it seems sensible to consider other dimensions of economic development, instead of merely income or its distribution, on the assessment of the effects of fiscal consolidation.

Against this background, our paper analyses, from an empirical point of view, the impact of fiscal austerity on human development. We find that fiscal consolidation episodes are associated with a deterioration of human development. Moreover, while human development substantially worsens when fiscal consolidation is achieved via spending cuts, it does not seem to be affected by tax-driven austerity measures.

Splitting the sample into sub-groups, our findings suggest that fiscal consolidation does not significantly impact human development process in OECD countries, but developing countries experience a large decline in human developmentduring periods of austerity.

When we consider the geographical dimension, we find that, in European countries, human development appears to be relatively immune to fiscal consolidation efforts. However, human development in Latin American and, especially, African countries is particularly vulnerable and strongly hit by fiscal adjustments.

Additionally, our results show that: (i) among the set of institutional variables that explain human development, government stability is particularly important; and (ii) macroeconomic

conditions matter and while government consumption and inflation are detrimental for human development, investment in physical capital tends to improve it.

Our work is highly indebted and simultaneously inspired by the research of Binder and Georgiadis (2010) and Antonakakis and Collins (2014a, 2014b). Binder and Georgiadis (2010) rely on the United Nations' Human Development Index and highlight that macroeconomic policies have a stronger impact on human development than economic conditions. In particular, the authors study the effects of government consumption, investment in physical and trade openness on human development and GDP per capita, while accounting for characteristics such as gender inequality, institutional quality and religious environment. They show that a rise in government consumption have an expansionary (contractionary) effect in countries with low (high) institutional quality. Antonakakis and Collins (2014a, 2014b) focus on data from the WorldHealth Organization (WHO) Mortality Databasefor Eurozone peripheral countries (i.e. Greece, Ireland, Italy, Portugal and Spain), which recently implemented fiscal consolidation efforts, and document a significant effect on suicide mortality.The authors use several proxies of fiscal consolidation (including the general government final consumption expenditure as a percentage of GDP, taxes, the budget deficit and a dummy variable that identifies fiscal consolidation episodes based on the work of Afonso (2010)) and control for both the cyclical nature of suicide mortality and changes in alcohol consumption, divorce rates and fertility rates. They conclude that the effects of fiscal austerity measures are age-, gender- and time-specific.

We try to contribute to this literature along various dimensions. First, we pay a special attention to the identification of fiscal consolidation episodes and use a statistical approach based on the work of Alesina and Ardagna (1998), which focuses on variation in the cyclically adjusted primary budget balance (CAPB).Second, we consider different dimensions of the fiscal consolidation program (namely, the timing, the duration and the composition) thereby, distinguishing between measures that are led by expenditure cuts and those that are driven by tax hikes. Third, we cover a large set of countries for which data on human development are available,

which allows us to include both countries that have undergone fiscal consolidation programs and those that did not experience periods of fiscal adjustment. Finally, we account for changes in a wide range of macroeconomic, political, social, risk and geographical drivers of human development.

The rest of the paper is organized as follows. Section 2 presents the related literature. Section 3 discusses the econometric methodology. Section 4 describes the data. Section 5 provides the empirical results. Finally, Section 6 concludes.

2. Literature Review

The long-run economic development has been at the core of theoretical and empirical research for several years.Not surprisingly, a vast number of works have tried to construct measures of wellbeing. Indeed, the 1990 Human Development Report and the seminal research by Fukuda-Parr and Shiva Kumar (2003) have set the stage for much of the subsequent investigation that followed.

According to UlHaq (1995), the Human Development Indicator (hereforth, HDI) index has three main features. First, it measures well-being and not just income. Second, it includes both economic and social dimensions of human development.Third, its coverage and methodology is flexible enough to allow a measure of multi-dimensional wellbeing. Alkire (2007), Comim et al. (2008) and Molina and Purser (2010) also point out that the HDI index allows for simple, replicable and comparable cross-country and within-country measures of human development. Ranis et al. (2005) show that under-five child mortality is highly correlated with – and a good proxy for – the HDI index. Wolfers (2009) finds that income per capita is highly correlated with HDI ranking. By contrast, Rodriguez (2009) emphasizes that the HDI index is more useful for comparisons of well-being at a given point in time than for assessing its driving forces over time. Along the same line, Srinivasan (1994) argues that the correlation between the set of indicators included in the HDI index is high, thus, casting doubts about the relevance of aggregating such information into a single

index. Behrman and Rosenzweig (1994) highlight that data for each of the sub-components of the HDI index is not always readily available.

Another strand of the literature has focused on modelling long-run social and economic trends, by looking at the dynamics of the GDP growth and life expectancy and health outcomes. In this context, the works on the GDP growth suggest that, accounting for initial level of GDP per capita, there is cross-country ("conditional") convergence over time (Barro 1991; Barro and Sala-i-Martin 1992). Quah (1996) claims that the empirical evidence supports the existence of "club convergence", as countries that are structurally different display divergence or weak convergence. Using data for India, the UK and the US, Kenny (2005) finds that there is long-term convergence of education, health and infrastructure measures. By contrast, Pritchett (1997) and Bourguignon et al. (2004) uncover large divergence across countries un-weighted by population, but the latter also find income converge when weighting by population.

As for the research on life expectancy and health outcomes, the majority of works tend for focus on child mortality rather than life-expectancy (Deaton, 2003, 2006). Cutler, Deaton and Lleras-Muney (2005) show that, despite the increase in life-expectancy over the past 30 years, the disparities between the developed and developing world have been unequally distributed. Moreover, changes in sanitation and water conditions and low-cost treatments for infectious and respiratory diseases are key determinants of the improvement in child mortality, after controlling for income. Deaton (2003) investigates the relationship between health outcomes and income, and suggests that by affecting various economic and social dimensions, such as education, control, rank or wealth, income is not independent of health status. Additionally, Deaton (2006) highlights that social factors play an important role at the provision of health services, and Molina and Purser (2010) focus on the level of female fertility and the female schooling attainment as explaining trends in the child mortality rate.

Nevertheless, some authors also analyse the relevance of improvements in life-expectancy for the dynamics of human development. For instance, Gladstone (2010) emphasizes the rise of the

old inactive population rises as a share of the young active population. Bloom and Friedman (1997), Bloom and Williamson (1998) and Bloom et al. (2003) also show that the drop in the economic dependency ratio has an impact on how human development evolves over time. Bloom et al. (2007) specifically highlight the drop in fertility rates and the increase in female labor market participation and schooling rates. Timmer and Akkus (2008) assess the gender determinants of long-term human development.

Being a broad measure that captures different economic and social faces and in the light of the ongoing debate about the ultimate consequences of fiscal austerity measures put in place in the aftermath of the financial turmoil of 2008-2009 and the subsequent sovereign debt crisis, it is natural to ask whether the fiscal/political context might also affect the dynamics of human development.

However, the existing studies have typically focused on the distributional effects of fiscal policy. For instance, Wolff and Zacharias (2007) emphasize that income inequality is significantly reduced via an increase in net government spending. Smeeding (2000, 2002) find a positive relationship between fiscal consolidation and both income gap and poverty at the individual (inter-personal) level. Mulas-Granados (2005) shows that fiscal adjustments influence the trade-off between economic growth and income inequality. Using data for a panel of 18 industrialized countries over the period 1978-2009, Agnello and Sousa (2014) highlight that periods of fiscal consolidation are associated with a rise in income inequality. Moreover, while austerity measures that are driven by spending cuts are particularly detrimental for income distribution, tax hikes tend to be more equitative. Agnello et al. (2016) show that national fiscal consolidations can also be detrimental to the level income inequality across European regions, as adjustment programs increase the dispersion of regional income.

Some related work in this area suggests that political freedom (Zavaleta, 2007; Alkire, 2008) and political abilities (Whitehead and Gray Molina, 2003) help to capture some of the time-variation that we observe in a multivariate index of human development. Other authors look at the

effects of the economic crisis and the fiscal adjustments on health conditions in the Eurozone periphery, and find a negative effect (Gili et al., 2013; Roca et al., 2013; Vandoros et al., 2013; Zavras et al., 2013). Stuckler et al. (2009) uncover a favourable health trend during recessions and De Vogli (2014) shows that economic policies aimed at reducing income inequality and protecting the most disadvantaged groups of the population are effective at breaking the positive relationship between job losses and suicides. Kentikelenis et al. (2012), Fountoulakis et al. (2012), Karanikolos et al. (2013) and Antonakakis and Collins (2014a, 2014b) also find robust evidence of a positive link between fiscal consolidation and suicide mortality. In particular, Antonakakis and Collins (2014b) show that fiscal consolidation leads to an increase in suicide mortality, and this effect is gender, age and time-specific, that is, it affects more severely the male population, at the old age and over the long-run.

Moreover, it is important to highlight that while the purpose and ultimate goal behind any economic policy intervention is to contribute to a more efficient allocation of resources, the core of the policy analysis areas has been explored via the quantification of the impact of macroeconomic policies on issues such as poverty reduction or unemployment or, to a less extent, on specific dimensions of economic development such as health and well-being (Subramanian et al., 2002; Acemoglu et al., 2003; Andrés, 2005; Suhrcke et al., 2006). For instance, Binder and Georgiadis (2010) investigate the determinants of economic development in a panel of 84 countries over the period 1970-2005. The authors emphasize the role played by macroeconomic policies and the differences in countries' persistent characteristics, such as their social norms and institutions. Similarly, Islam (1995) and Evans (1996) emphasize the importance of the institutional and political environment.

Yet, some relevant questions are still unanswered. What are the effects of fiscal consolidation measures on human development? Does the length of the fiscal consolidation process matter for the dynamics of human development?How important is the composition of fiscal consolidation? Are government spending cuts more likely to affect human development than tax

8

hikes? Is the impact of fiscal consolidation on human development substantially different between developed and developing countries? Thus, we consider a 'hidden' dimension of fiscal consolidation that has not been explored so far: its impact on human development. This is an important gap that we try to fill with the current study.

3. Econometric Methodology

We employ adynamic panel data approach to test for the impact of fiscal consolidation on the growth rate of the human development index (*HDIgr*). Therefore, we estimate the following model:

$$HDIgr_{it} = \alpha_i + \gamma HDIgr_{it-1} + \beta Consol_{it} + \delta' \mathbf{Pol}_{it} + \theta' \mathbf{Eco}_{it} + \lambda' \mathbf{DR}_{it} + \varphi' \mathbf{RR}_{it} + \varepsilon_{it}, (1)$$

where $Consol_{it}$ is a proxy for the fiscal consolidation variable for country i at time t, $\mathbf{Pol}_{it}$ is a vector of political variables, $\mathbf{Eco}_{it}$ is the set of macroeconomic determinants, $\mathbf{DR}_{it}$ is a vector that controls for social variables (i.e. demographic and religious variables), $\mathbf{RR}_{it}$ comprises information about the several dimensions of a country's rating risk, α_i represents fixed-effects that capture unobserved country-specificdeterminants, and ε_{it} isa white-noise residual satisfying the usual assumptions of zero mean and constant variance.

Since human development displays persistence over time, a dynamic specification is more appropriate than a static model. For this reason, we include the lagged dependent variable among the set of control variables. An important advantage of such a dynamic model is that it allows usto distinguish between the short-term effectof each control variable (which is captured by the correspondingcoefficient in Equation (1), i.e. the parameter β and the parameter vectors δ, θ, λ and φ) and its long-term effect (which can be computed as $\beta/(1-\gamma)$, $\delta/(1-\gamma)$, $\theta/(1-\gamma)$, $\lambda/(1-\gamma)$ and $\varphi/(1-\gamma)$, where γ is the coefficient associated with the laggeddependent variable in Equation (1)).

We develop our analysis by considering the traditional fixed-effects (FE) panel data estimator, which makes it possible for us to control for unobserved heterogeneity across countries. Thus, it accounts for the (systematic) effects of time-invariant variables on the dependent variable.[1] While this estimator is usually biased and inconsistent when the model is dynamic, it is consistent as T becomes large. Given the relatively long time dimension of our sample (1970-2013), the bias due to the correlation between the lagged dependent variable and the country-specific effects is not problematic. Nevertheless, as a robustness check, we assess the sensitivity of our results after accounting for potential outliers. Additionally, we employ the Instrumental Variable-Generalised Least Squares (IV-GLS), the Arellano and Bond (1991)'s difference-GMM estimators and the system-GMM estimator by Blundell and Bond (1998) to control for possible endogeneity concerns. Finally, we also confirm that our results are invariant to the statistical definition used in the identification of the fiscal consolidation episodes.

4. Data

We start by using a panel dataset consisting of 182 sovereign states for which data are available for a reasonably long time-series dimension However, the presence of missing values for the human development index reduces the number of countries to at most 91. Absence of information about political variables further limits the number of cross-sectional units to 81. Finally, the lack of data for fiscal variables, in particular, for the cyclically-adjusted budget balance (which is crucial for the identification of fiscal consolidation episodes) implies a reduction in the number of countries included in the sample to 72. These are listed in Table A of the Appendix.

The Human Development Index(HDI) is a measure of the average achievement in key dimensions of human development, namely: 1) a long and healthy life; 2) being knowledgeable; and

---

[1] Binder et al. (2010) discuss a state-dependent dynamic panel data model with multivariate conditioning. With the aim of assessing the effects of economic policies on human development, Binder and Georgiadis (2010) consider a panel autoregressive distributed lag model and an error-correction representation that features long-run homogeneity for countries that share the same conditioning factors and country-specific short-run dynamics. The authors highlight the numerous advantages of this panel modelling framework, but acknowledge that it is appropriate when the number of regressors is small and the time-series dimension of the dataset for each country is large.

3) a decent standard of living. The HDI index is the geometric mean of normalized indices for each of the three dimensions is data are provided by the United Nations Development Programme.[2]

Several fiscal consolidation variables are considered in the analysis. In order to identify fiscal consolidation episodes, we follow Alesina and Ardagna's (1998) approach. The authors focus on periods of fiscal consolidation (stimulus) as years in which the cyclically-adjusted budget balance improves (deteriorates) by at least 1.5 per cent of GDP. This procedure discards small, albeit prolonged, consolidation/stimulus episodes and rather tracks sharp and large adjustments in the fiscal stance. In this way, it avoids picking up years of "cyclical" adjustment in the budget balance, therefore, years of "business as usual" (Alesina and Ardagna (2010)).[3] Having identified these events, we focus on the following set of variables:

- *Consolidation*: It is a dummy variable that takes the value of one in all the yearsduring which a fiscal consolidation program is implemented, and zero otherwise.

- *Dur_Consol*: It is a variable that simply counts, for each year, the duration (in years) of the fiscal consolidation program since it has been implemented.

- *Spend_Consol*: It is a dummy variable that takes the value of one in all the years during which a spending-driven fiscal consolidation is implemented, and zero otherwise. This is defined as the change in primary expenditure (as a percentage of GDP) that is larger than 50% of the overall change in the CAPB (as a percentage of GDP).

---

[2] For a more detailed description of the human development index, see Binder and Georgiadis (2010).

[3] We should add that our results are invariant to the statistical definition used to identify fiscal consolidation episodes. In fact, the empirical findings remain qualitatively unchanged when we rely instead on Giavazzi and Pagano's (1996) approach (under which a fiscal episode consists of a change in the CAPB of at least 2 percent of GDP in one year or at least 1.5 percent on average in the last two years). For brevity, these results are not reported in the paper, but are available upon request. Moreover, Alesina and Ardagna (2010) consider an alternative definition of fiscal consolidation (stimulus), which is defined as a period in which the cyclically-adjusted budget balance improves (deteriorates) by at least 1 per cent of GDP over two consecutive years. We focus on large single-year fiscal adjustments instead of these large multi-year fiscal adjustments, which, by being based on a more restrictive definition, imply a substantial reduction in the number of episodes.

- *Dur_Spend_Consol*: It is a variable that merely counts, for each year, the duration (in years) of a spending-driven fiscal consolidation program since it has been implemented.

- *Tax_Consol*: It is a dummy variable that takes the value of one in all the years during which a tax-driven fiscal consolidation is implemented, and zero otherwise.This is defined as the change in government revenue (as a percentage of GDP) that is larger than 50% of the overall change in the CAPB (as a percentage of GDP).

- *Dur_Tax_Consol*: It is a variable that simply counts, for each year, the duration (in years) of a tax-driven fiscal consolidation program since it has been implemented.

The set of political conditionings (***Pol***) is provided by the International Country Risk Guide (ICRG) and the Polity IV database and includes the following variables:

- *GovStab*: Government stability, which measures the government's ability to carry out its declared program(s) and its stability to stay in office.[4]We expect higher government stability to be associated with stronger human development.

- *Polity2*: This variable describes the strength of democracy of a country and should be positively linked with the growth of the HDI index.[5]

The set of macroeconomic variables (***Eco***) is gathered from the International Monetary Fund's (IMF) International Financial Statistics (IFS) and includes:[6]

- *GovCons_pc*: The log of per capita public consumption, which captures aspects of aspects of fiscal policy that may affect human development.

---

[4] The assigned risk rating is the sum of three sub-components (i.e. government unity, legislative strength and popular support), each with a maximum score of four points and a minimum score of zero points. A score of four points equates to "Very Low Risk" and a score of zero points denotes "Very High Risk".

[5] This variable is computed as the difference between the country's score in an "Autocracy" index and its score in a "Democracy" index. This leads to a polity scale ranging from -10 (strongly autocratic) to +10 (strongly democratic).

[6] For a review of the theoretical mechanisms via which government consumption, investment and external trade can affect long-run GDP, see Binder et al. (2010).

- *GovInv_pc*: The log of per capita public investment, i.e. public gross-fixed capital formation, which also tracks the dynamics of a component of fiscal policy that can influence human development.

- *PrivInv_pc*: The log of per capita private investment, i.e. private gross-fixed capital formation, which encompasses different policy incentives for saving and investment decisions of the private sector that can have an impact on human development.

- *Openness*: The log of the degree of openness, i.e. imports plus exports over GDP, which takes into account various policy measures aimed at stimulating international trade, with potential effects on the growth of HDI index.

- *Inflation*: Inflation rate (in percentage) which, by affecting disproportionally those at the bottom of the income distribution, can negatively impinge on human development.

To control for demographic and religious issues (**DR**), we also include the following variables among the set of regressors:

- *UrbanPop*: The log of urban population, which can be thought as a proxy for the size of the population, and is collected from the World Bank's World Development Indicators (WDI).[7]

- *ReligiousTensions*: It measures the degree of the religious tensions, which can be an obstacle to human development, and is provided by the International Country Risk Guide (ICRG).[8]

Finally, we control for the rating risk (**RR**) at the economic, financial and political levels.[9] High economic, financial and political risk are associated with environments of uncertainty, which

---

[7] Binder and Georgiadis (2010) consider the role of social inequality (as proxied by gender inequality), as it can be an obstacle of the progress of human development to its potential (United Nations, 1995).

[8] This variable is measured in a scale from 0 to 6. Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; and the desire of a religious group to express its own identity, separate from the country as a whole. Sala-i-Martin et al. (2004) show that religious affinities are a robust driver of economic growth.

can be detrimental for economic growth, thus, human development. The data for the respective variables were collected from the International Country Risk Guide (ICRG) and are defined as follows:

- *EcoRiskRating*: The economic risk rating index includes annual inflation rate, budget balance as a percentage of GDP, current account as a percentage of GDP, GDP per head and real GDP growth.

- *FinRiskRating*: The financial risk rating index includes current account as a percentage of exports of goods and services, exchange rate stability, foreign debt as a percentage of GDP, foreign debt service as a percentage of exports of goods and services, and net international liquidity as months of import cover.

- *PolRiskRating*: The political risk rating index includes the investment profile (that accounts for factors affecting the risk to investment that are not covered by other economic and financial risk components), government stability (which attempts to capture the extent to which the government is able to carry out its policies, as well as its ability to stay in office), and a measure of socioeconomic conditions (to assess the socio-economic pressures, which could constrain government action or fuel social discontent).

5. Empirical Results

In this section, we present and discuss the empirical results. We start by investigating whether fiscal consolidation impacts on human development (section 5.1). We then broadenthe scope of our analysis by assessing the extent to which such relationship depends on the composition of fiscal consolidation i.e. whether austerity packages that are led by spending cuts or by tax hikes matter for human development (section 5.2). Additionally, we explore the sensitivity of the results

---

[9]In general terms, if the points awarded are less than 50% of the total, that component can be considered as very high risk. If the points are in the 50-60% range it is high risk, in the 60%-70% range moderate risk, in the 70-80% range low risk and in the 80-100% range very low risk.

to different samples of countries (sections 5.3 and 5.4). Finally, we consider alternative estimators (section 5.5).

5.1. *Human Development and Fiscal Consolidation*

We begin by analysing the effect of fiscal consolidation on human development. The results are summarized in Table 1. In Column 1, we test for the dependence of the human development process on the occurrence of fiscal consolidation episodes. Then, we assess the statistical significance of a set of political (Column 2), macroeconomic and social variables (Columns 3 and 4), and country risk indicators (Column 5). Finally, we replace the fiscal consolidation dummy variable *Consolidation* with the discrete variables *Dur_Consol*(Column 6)to control for the influence of the length of the fiscal consolidation program (i.e. to account for the *duration effects*).

Column 1 indicates that the implementation of fiscal consolidation programs generates an adverse outcome for human development. In particular, the negative sign of the coefficient associated with the consolidation dummy variable (-0.0675) suggests that fiscal adjustments are detrimental for human development: the growth rate of the HDI index falls by around 0.07 percentage points when a fiscal consolidation episode occurs. This evidence is consistent with the view that although pressures to control the public deficit may force governments to implement large fiscal adjustment plans with the aim of improving the cyclically-adjusted budget balance, cuts in growth-enhancing public expenditure -such as, capital investment and social spending- and tax hikes typically affect low-income classes and the most vulnerable categories of the population. Thus, by negatively impacting on living standards, health services and educational attainment (i.e. the three key dimension of the human development index), austerity measures undermine the human development process.

Looking at the estimates reported in Columns 2-5, we note that the negative effect of fiscal consolidation on human development remains sizeable and highly significant even when additional control variables are gradually included in the model. More specifically and depending on the

model specification, fiscal austerity programs lead to a fall of the HDI growth rate that ranges between -0.11 to -0.13 percentage points.

Among the set of institutional variables, we uncover an important role for government stability. The high statistical significance of the coefficient associated with the variable *GovStab* suggests that a stronger ability of the government to stay in office and to carry out its policies is beneficial for the development of nations.

Despite not being statistically significant, we also note that the coefficient associated with the variable *Polity2* enters with positive sign. This is consistent with the view that, by promoting dignity and fundamental rights of an individual, democracy instils social justice and can be regarded as a potential driver of social and economic development (United Nations, 2002).

The results summarized in Columns 3-4 suggest that macroeconomic conditions also matter for human development. In particular, government consumption enters the model with a negative sign, while the coefficients associated with the public and private investment in physical capital are positive, thus, corroborating the findings of Barro and Sala-i-Martin (2003). In addition, inflation negatively impacts on human development, which is consistent with the view that low inflation provides a stable framework for long-term decision making and boosts the development of nations.

The evidence that the macroeconomic environment is fundamental to human development is also confirmed by the results reported in Column 5. In fact, the sign and the significance of the coefficient associated with the economic risk rating indicator show that the better the economic assessment (i.e. the higher the value of the index), the larger the amount of money that institutional and international investors (i.e. banks, commercial partners and multinational corporations) decide to save and/or invest in a specific country with positive effects for human development. Interestingly, our estimates also show that the economic risk outweighs both political and financial risks (with are never statistically significant). Thus, it seems that a poor political risk rating is compensated by a better economic risk rating. As a result, a one point increase in the economic risk

rating index significantly increases the growth rate of human development by about 0.02 percentage points.

The results concerning the social variables show that their statistical significance varies across model specifications (Columns 4-6). As such, they do not provide a clear cut answer about the importance of urban population and religious tensions in terms of shaping human development.

In Column 6, it can be seen that long-lasting austerity programs are harmful for human development. In fact, the duration of fiscal consolidation measures has a negative and significant effect on the dependent variable. The major conclusions regarding the role of political and economic factors remain unchanged.

Finally, all Columns show that human development growth exhibits a reasonable degree of persistence, as the coefficient associated to the lagged dependent variable is highly significant. This evidence holds regardless of the model specification and, therefore,it supports the use of the dynamic panel framework. Moreover, it can be seen that the coefficient associated with the lagged dependent variable ranges between 0.51 and 0.71, which implies that the long-termeffects of the various control variables on the growth of human development are, approximately, 1.41 to 1.96 times larger than the short-term effects.

[Insert Table 1 here]

5.2. Human Development and Composition of Fiscal Consolidation

Our previous empirical findings show that the adoption of fiscal austerity plans is detrimental for human development *per se*. However, one interesting question remains: to which extent dosuch negative effects depend on whether fiscal consolidation is led by tax hikes and spending cuts? To address this question, we distinguishbetween spending- and tax-drivenausterity programmes depending on which side of the fiscal stance (i.e. either tax hikes or expenditure cuts as a percentage of GDP) prevails. Then, we replacethe fiscal consolidation dummy variable with the

17

two alternative dummy variables presented in Section 4 (i.e. *Spend_Consol* and *Tax_Consol*) and re-estimate model (1).

The results are shown in Tables 2and 3.Interestingly, we find that the HDI growth rate substantially declines when fiscal consolidation is achieved via spending cuts (Table 2), while it is not significantly affected by tax-driven austerity programmes (Table 3). More specifically, regardless the model specification, the coefficients associated with spending-driven consolidations are always highly significant and negative: Columns 1-5 show that during periods of large adjustments in government spending, the change of the HDI growth rate ranges between -0.13 and -0.21 percentage points, i.e. higher than the estimates reported in Table 1. By contrast, the coefficients linked with tax-driven fiscal adjustments and reported in Table 3 are smaller and notstatistically significant, thereby, suggesting that their impact on human development growth is negligible.

From a policymaking point of view, these results suggest that development-friendly fiscal consolidations can be pursued by ending with the austerity programmes that mainly focus on expenditure cuts, notably in social areas (such as pensions, health services or family benefits) in favour of fiscal packages consisting of measures aimed at increasing public revenues (for instance, by taxing higher income categories and property wealth more strongly). The estimates reported in Column 6 of Tables 2 and 3 support our conclusion that, regardless the composition of consolidation plans, excessively prolonged periods of consolidation are detrimental for HDI.

Finally, we note that our main conclusions regarding the importance of political and economic determinants of human development remain qualitatively unchanged and validate the general predictions of the baseline model (Table 1). Similarly, the statistical significance of the lagged dependent variable corroborates the use of a dynamic model specification, and the coefficient magnitudes of such variable confirm that the long-termimpact of spending-driven fiscal consolidation episodes (as well as of other control variables) is almost twice as large as its short-term effect.

[Insert Table 2 here]

[Insert Table 3 here]

5.3. A Look at the Composition of Human Development: Education, Health and GNI

In this Section, we look at the composition of the human development index. As highlighted before, this index is computed using three indices: (i) the education index; (ii) the life expectancy index; and (iii) the Gross National Income (GNI) index. The education index captures the "knowledge" dimension of human development and is based on indicators, such as the mean years of schooling and the expected years of schooling. A "long and health life" dimension of human development is tracked by the life expectancy index, using information about life expectancy at birth. Finally, the GNI index assesses the existence of a "decent standard of living" on the basis of data on GNI per capita (PPP in US dollars).

To investigate the effects of fiscal consolidation on the composition of human development, we re-estimate Equation (1) by replacing the human development index with each sub-component of human development.A summary of the main findings is provided in Tables 4 (i.e.the education index), 5 (i.e. the life expectancy index) and 6 (i.e. the GNI index).

Table 4 confirms that fiscal consolidation has a detrimental and significant impact on the education index, which is stronger in the case of spending-driven fiscal adjustments than tax-driven austerity programmes. In what concerns the life expectancy index (Table 5), we do not uncover any significant effect of fiscal consolidation on human development. In fact, neither the fiscal consolidation dummy variables, nor the duration of the fiscal adjustments is significant. Finally, Table 6 shows that fiscal consolidation negatively impinges on GNI, even though the composition of fiscal adjustments does not seem to significantly affect human development. Finally, it should be noted that all Tables reveal that the lagged dependent variable is statistically significant, which corroborates the use of a dynamic panel framework.

19

All in all, these results suggest that fiscal adjustments are particularly damaging for the education dimension of human development, less so for GNI and do not seem to cause a deterioration of life expectancy. Despite this, these findings need to be interpreted with caution, as the use of each sub-component of the human development index in the econometric framework implies a substantial reduction of the number of usable data points.

[Insert Table 4 here]

[Insert Table 5 here]

[Insert Table 6 here]

5.3. Evidence for OECD and Non-OECD countries

In Tables 7 and 8, we replicate the estimation of model (1) for developed (OECD) and developing (non-OECD) countries. Some interesting differences between the two groups emerge. While fiscal consolidation does not normally affect the human development process in OECD countries, developing countries experience a significant decline in the growth rate of HDI during austerity periods. This might be the result of the more growth-friendly nature of fiscal consolidation programmes adopted by developed countries.

As for the importance of the core set of economic, political and institutional determinants, we find that while the economic environment (as reflected by the economic risk rating index) matters for both country groups, political stability is an important driver of human development in non-OECDcountries only. Nevertheless, the evidence concerning the contribution of macroeconomic variables to HDI growth is less clear-cut: although those tend to enter with the correct sign, their statistical significance varies across the two samples and alternative model specifications. This makes it difficult to provide specific policy prescriptions aimed at improving human development in OECD and non-OECD countries.

[Insert Table 7 here]

[Insert Table 8 here]

5.4. Regional Analysis

We now extent the analysis presented in section 5.3 by assessing whether the strength of the relationship between fiscal consolidation and human development growth varies across regions. For the sake of space, each column of Table 9only reports the coefficients associated to the fiscal consolidation dummy variables obtained after the estimation of model (1) for different country sub-samples (i.e. advanced economies (ADV), emerging markets(EME) and low-income countries (LIC)) and then by specific geographical regions (namely, Asia-Pacific (AP), Europe (EUR), MiddleEast and Central Asia (MECA), Sub-Saharan Africa (AFR) and Western Hemisphere (WH)).

Even though results should be interpreted cautiously due to the limited number of observations, we confirm that fiscal consolidation plans, and particularly those led by expenditure cuts, are harmful for human development in emerging countries. By contrast, the human development process in advanced economies and, notably, in European countries (Column 5) seems to be resistant to fiscal adjustments. Among the group of developing countries, human development in African countries is hit more strongly by fiscal consolidation episodes than Asia-Pacificcountries.

[Insert Table 9 here]

5.5. Robustness

In this section, we subject our results to robustness checks that include the inspection of potential outliers and accounting for endogeneity. On the former, we use the Least Absolute Deviation (LAD) robust estimator. On the latter, we use a panel Instrumental Variable-Generalised Least Squares (IV-GLS) approach, which is then complemented by Arellano and Bond (1991)'s

difference Generalised Methods of Moments (GMM) and the system-GMM estimator by Blundell and Bond (1998). As is standard in the literature, the set of instruments includesthe first lag of the right-hand side variables and the second lag of the dependent variable.

The results are shown in Tables10 and 11 for a selection of our fiscal consolidation variables, namely, the fiscal consolidation dummy variable, its composition (i.e. spending versus tax-driven fiscal adjustments) and its duration. The baseline equation includes the core of political, economic and social determinants of human development. While the magnitude of the coefficient estimates in Columns 1-4 is slightly reduced once outliers have been excluded from the sample, the negative impact of fiscal consolidation and its duration remain statistically significant. Moreover, we confirm that fiscal adjustments that are driven by cuts in government spending have a particularly detrimental effect on the growth rate of HDI.

When we account for possible endogeneity, the results are qualitatively similar but now the magnitude of the estimated coefficient of interest is higher. Particularly in the case of the difference-GMM and the system-GMM estimators (see Table 11), the coefficient estimates for the impact of spending-driven fiscal consolidations almost doubles compared to the obtained estimates in Table 1.

[Insert Table 10 here]

[Insert Table 11 here]

6. Conclusion

With the emergence of the sovereign debt crisis, unprecedented fiscal austerity measures and bailout packages started to be implemented in many developed countries. These fiscal consolidation programs included large spending cuts, privatization of publicly owned assets, tax hikesand structural reforms, and were designed with the aim of achievingfiscal sustainability of public debt, promoting economic growth and restoring competitiveness.Despite this, today, many policymakers

not only question the effectiveness of such measures, but also admit that they caused suffer to various economic and social dimensions of human development.

In the current work, we investigate the impact of fiscal consolidation on human development. Our results clearly show that fiscal austerity leads toa significant fall in the growth rate of the HDI index. This negative effect is particularly strong in the case of spending-driven consolidation episodes, even though tax-driven austerity measures do not seem to affect human development in a significant manner. Fiscal consolidation is also especially deleterious in developing countries (namely, African and Asia-Pacific countries), which end up experiencing a large deterioration of human development during austerity times.

Additionally, the empirical evidence suggests that: (i) government stability is a crucial politico-institutional determinant of human development; and (ii) among the set of macroeconomic indicators, government investment in physical capital is beneficial for human development, but government consumption and inflation have a detrimental effect.As a result, the ability of the government to conduct its policy in a stable political environment has a positive impact on human development. Moreover, low inflation and high government investment ratestend to boost humandevelopment.

From a policy perspective, our findings suggest that fiscal consolidation programs that are led by tax hikes are less likely to cause a deterioration of human development than spending-driven fiscal consolidation. Therefore, governments should favor measures, such as more progressivity of taxation or higher property taxes (i.e. measures aimed at increasing public revenue) and refrain from cutting social expenditure and expenditure in education and health (i.e. measures designed to reduce government spending). Otherwise, human development will no longer be the "hidden" face of fiscal austerity, but rather its most "visible" one.

References

Acemoglu, D., Johnson, S., and J.A. Robinson, 2003. Disease and development in historical perspective. *Journal of the European Economic Association*, 1 (2/3), 397-405.

Afonso, A., 2010. Expansionary fiscal consolidations in Europe: New evidence. *Applied Economics Letters*, 17(2), 105-109.

Agnello, L., and R.M. Sousa, 2014. How does fiscal consolidation impact on income inequality? *Review of Income and Wealth*, 60(4), 702-726.

Agnello, L., Castro, V., and R.M. Sousa, 2013. What determines the duration of a fiscal consolidation program? *Journal of International Money and Finance*, 37, 113-134.

Agnello, L., Castro, V., Jalles, J., and R.M. Sousa, 2014. Fiscal adjustments, labour market flexibility and unemployment. *Economics Letters*, 124(2), 231-235.

Agnello, L., Fazio, G., and R.M. Sousa, 2016. National fiscal consolidations and regional inequality in Europe. *Cambridge Journal of Regions, Economy and Society*, 9(1), 59-80.

Alesina, A., and S. Ardagna, 1998. Tales of fiscal adjustments. *Economic Policy*, October, 13(27), 489-545.

Alesina, A., and S. Ardagna, 2010. Large changes in fiscal policy: Taxes versus spending. In: Brown, J.R., Ed.. *Tax Policy and the Economy*, Vol. 24. National Bureau of Economic Research, The University of Chicago Press.

Alkire, S., 2007. The missing dimensions of poverty data: Introduction to the special issue. *Oxford Development Studies*, 35(4), 347-359.

Alkire, S., 2008. Choosing dimensions: The capability approach and multidimensional poverty. In: Kakwani, N., and J. Silber (Eds.). *The many dimensions of poverty*, 89-119. Basingstoke: Palgrave-MacMillan.

Andrés, A.R., 2005. Income inequality, unemployment, and suicide: A panel data analysis of 15 European countries. *Applied Economics*, 37(4), 439-451.

Antonakakis, N., and A. Collins, 2014a. The impact of fiscal austerity on suicide: On the empirics of a modern Greek tragedy. *Social Science & Medicine*, 112, 39-50.

Antonakakis, N., and A. Collins, 2014b. Fiscal consolidation and suicide mortality: Evidence from the Eurozone periphery. University of Portsmouth, Working Paper.

Arelano, M., and S. Bond, 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277-297.

Armingeon, K., Guthmann, K., and D. Weisstanner, 2014. Choosing the path of austerity: How policy coalitions shape welfare-policy choices in periods of fiscal consolidation. Paper presented at the ECPR General Conference in Glasgow, September 2014.

Barro, R., 1991. Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106, 407-443.

Barro, R.J., and X. Sala-i-Martin, 1992. Convergence. *Journal of Political Economy*, 100, 223-251.

Barro R.J., and X. Sala-i-Martin, 2003. *Economic growth*. Second Edition, MIT Press.

Behrman, J., and M. Rosenzweig, 1994. Caveat emptor: Cross-country data on education and thelabor force. *Journal of Development Economics*, 44(1), 147-171.

Binder, M., and G. Giorgiadis, 2010. Determinants of human development: Insights from state-dependent panel models. United Nations Development Programme, UNDP Human Development Research Paper No. 24.

Binder, M., Georgiadis, G., and S. Sharma, 2010. Growth effects of financial globalization. Goethe University Frankfurt, mimeo.

Bloom, D.E., and J.G. Williamson, 1998. Demographic transitions and economic miracles in emerging Asia. *World Bank Economic Review*, 12(3), 419-455.

Bloom, D.E., and R.B. Freeman, 1987. Population growth, labor supply, and employment in developing countries. National Bureau of Economic Research, NBER Working Paper No. 1837.

Bloom, D.E., Canning, D., and J. Sevilla, 2003. The demographic dividend: A new perspective on the economic consequences of population change. RAND Monograph Report.

Bloom, D.E., Canning, D., Frank, G., and J. Finlay, 2007. Fertility, female labor force participation and the demographic dividend. National Bureau of Economic Research, NBER Working Paper No. 13583.

Blundell, R., and S. Bond, 1998. Initial conditions and moment restrictions in dynamicpanel data models. *Journal of Econometrics*, 87, 115-143.

Bourguignon, F., Levin, V., and D. Rosenblatt, 2004. Declining international inequality and economic divergence: Reviewing the evidence through different lenses. *Économie Internationale*, 100, 13-25.

Comim, F., Qizilbash, M., and S. Alkire, 2008. *The capability approach: Concepts, measures and applications*. Cambridge: Cambridge University Press.

Cutler, D., Deaton, A., and A. Lleras-Muney, 2006. The determinants of mortality. *Journal of Economic Perspectives*, 20(3), 97-120.

Deaton, A., 2003. Health, inequality, and economic development. *Journal of Economic Literature*, 41, 113-158.

Deaton, A., 2007. Global patterns of income and health: Facts, interpretations and policies. WIDER Annual Lecture 10, Helsinki: UN-WIDER.

De Vogli, R., 2014. The financial crisis, health and health inequities in Europe: The need for regulations, redistribution and social protection. *International Journal for Equity in Health*,13:58, 1-7.

Evans, P., 1996. Using cross-country variances to evaluate growth theories. *Journal of Economic Dynamics and Control*, 20, 1027-1049.

Fountoulakis, K.N., Grammatikopoulos, I.A., Koupidis, S.A., Siamouli, M., and P.N. Theodorakis, 2012. Health and the financial crisis in Greece. *The Lancet*, 379(9820), 1001-1002.

Fukuda-Parr, S., and A.K. Shiva Kumar, 2003. *Readings in human development: Concepts, measures and policies for a development paradigm*. Oxford: Oxford University Press.

Giavazzi, F., and M. Pagano, 1996. Non-keynesian effects of fiscal policy changes: International evidence and the Swedish experience. *Swedish Economic Policy Review*, 3(1), 67-103.

Gili, M., Roca, M., Basu, S., McKee, M., and D. Stuckler, 2013. The mental health risks of economic crisis in Spain: Evidence from primary care centres, 2006 and 2010. *The European Journal of Public Health*, 23(1), 103-108.

Gladstone, J., 2010. The new population bomb. *Foreign Affairs*, January/February. New York: Council on Foreign Relations.

Gray Molina, G., and M. Purser, 2010. Human development: Trends since 1970: A social convergence story. United Nations Development Program, UNDP Human Development Research Paper No. 2.

IMF, 2013. Transitions and tensions, *World Economic Outlook*, October. International Monetary Fund, IMF. Washington, DC.

ILO, 2014. *Global employment trends 2014: Risk of a jobless recovery?* International Labour Organization.

Islam, N., 1995. Growth empirics: A panel data approach. *Quarterly Journal of Economics*, 110, 1127-1170.

Karanikolos, M., Mladovsky, P., Cylus, J., Thomson, S., Basu, S., Stuckler, D., Mackenbach, J. P., and M. McKee, 2013. Financial crisis, austerity, and health in Europe. *The Lancet*,381(9874), 1323-1331.

Kenny, C., 2005. Why are we worried about income? Nearly everything that matters is converging. *World Development*, 33(1), 1-19.

Kentikelenis, A., Karanikolos, M., Papanicolas, I., Basu, S., McKee, M., and D. Stuckler, 2012. Health and the financial crisis in Greece - Authors' reply. *The Lancet*, 379(9820), 1002.

Mallick, S.K., and B. Granville, 2005. How best to link poverty reduction and debt sustainability in IMF–World Bank models?*International Review of Applied Economics*, 19(1), 67–85.

Mallick, S.K., and M. Mohsin, 2007. On the effects of inflation shocks in a small open economy. *Australian Economic Review*, 40(3), 253-266.

Mallick, S.K., and M. Mohsin, 2010. On the real effects of inflation in open economies: theory and empirics. *Empirical Economics*, 39(3), 643-673.

Mulas-Granados, C., 2005. Fiscal adjustments and the short-term trade-off between economic growth and equality. *Hacienda Pública Española/Revista de Economia Pública*, 172(1), 61-92.

Pritchett, L., 1997. Divergence, big time. *Journal of Economic Literature*, 11(3), 3-17.

Quah, D., 1996. Twin peaks: growth and convergence in models of distribution dynamics. *The Economic Journal*, 106(437), 1045-1055.

Rafiq, M.S., and S.K. Mallick, 2008. The effect of monetary policy on output in EMU3: a sign restriction approach. *Journal of Macroeconomics*, 30, 1756-1791.

Ranis, G., Stewart, F., and E. Samman, 2005. Human development: Beyond the HDI. Yale University , Economic Growth Center Paper No. 916.

Roca, M., Gili, M., Garcia-Campayo, J., and M. Garca-Toro, 2013. Economic crisis and mental health in Spain. *The Lancet*, 382(9909), 1977-1978.

Rodriguez, F., 2009. What does the human development index really measure? *Freakonomics Blog*, http://freakonomics.blogs.nytimes.com/2009/06/01/anotherperspective-on-the-human-development-index/#more-12489.

Sala-i-Martin, X., Doppelhofer, G., and R.I. Miller, 2004. Determinants of long-term growth: A Bayesian Averaging of Classical Estimates (BACE) approach. *American EconomicReview*, 94, 813-835.

Schaltegger, C. A., and M. Weder, 2014. Austerity, inequality and politics. *European Journal of Political Economy*, 35, 1-22.

Sen, A.K., 1999. *Development as freedom*. New York: Random House.

Smeeding, T., 2000. Changing income inequality in OECD countries: Updated results from the Luxembourg Income Study (LIS). Luxembourg Income Study, LIS Working Paper No. 252.

Smeeding, T., 2002. Globalization, inequality and the rich countries of the G-20: Evidence from the Luxembourg Income Study. Luxembourg Income, LIS Study Paper No. 320.

Srinivasan, T.N., 1994. Human development: A new paradigm or reinvention of the wheel? *American Economic Review*, 84(2), 238-243.

Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., and M. McKee, 2009. The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis. *The Lancet*, 374 (9686), 315-323.

Subramanian, S.V., Belli, P., and I. Kawachi, 2002. The macroeconomic determinants of health. *Annual Review of Public Health*, 23, 287-302.

Suhrcke, M., McKee, M., Sauto Arce, R., Tsolova, S., and J. Mortensen, 2006. Investment in health could be good for Europe's economies. *British Medical Journal*, 333(7576), 1017-1019.

Timmer, P., and S. Akkus, 2008. The structural transformation as a way out of poverty: Analytics, empirics and politics. Center for Global Development Working Paper No. 150.

UlHaq, M., 1995. The birth of the human development index. In: Fukuda-Parr, S., and A.K. Shiva Kumar(Eds.). *Readings in human development: Concepts, measures and policies for a development paradigm.* Oxford: Oxford University Press.

United Nations, 1990. *Human Development Report*, United Nations: New York.

United Nations, 1995. *Human Development Report*, United Nations: New York.

United Nations, 2002. *Human Development Report*, United Nations: New York.

Vandoros, S., Hessel, P., Leone, T., and M. Avendano, 2013. Have health trends worsened in Greece as a result of the financial crisis? A quasi-experimental approach. *The European Journal of Public Health*, 23(5), 727-731.

Whitehead, L., and G. Gray Molina, 2003. Political capabilities over the long run. In: Houtzager, P., and M. Moore (Eds.). *Changing paths: International development and the new politics of inclusion.* Ann Arbor: University of Michigan Press.

Wolfers, J., 2009. What does the human development index measure? *Freakonomics Blog*, http://freakonomics.blogs.nytimes.com/2009/05/22/what-does-the-humandevelopment-index-measure/.

Wolff, E.N., and A. Zacharias, 2007. The distributional consequences of government spending and taxation in the U.S., 1989 and 2000. *Review of Income and Wealth*, 53(4), 692-715.

Zavaleta, D., 2007. The ability to go about without shame: a proposal for international comparable indicators on shame and humiliation. *Oxford Development Studies*, 35(4).

Zavras, D., Tsiantou, V., Pavi, E., Mylona, K., and J. Kyriopoulos, 2013. Impact of economic crisis and other demographic and socio-economic factors on self-rated health in Greece. *The European Journal of Public Health*, 23(2), 206-210.

Table 1. Baseline model.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
HDI_gr(-1)	0.7134***	0.6220***	0.5546***	0.5494***	0.5115***	0.5094***
	(0.0344)	(0.0437)	(0.0525)	(0.0543)	(0.0529)	(0.0527)
GovStab		0.0203***	0.0195**	0.0221***	0.0225***	0.0228***
		(0.0075)	(0.0086)	(0.0079)	(0.0078)	(0.0079)
Polity2		0.0040	0.0108	0.0129	0.0113	0.0112
		(0.0049)	(0.0081)	(0.0083)	(0.0089)	(0.0089)
GovCons_pc			-0.1379**	-0.1382**	-0.1134*	-0.1155*
			(0.0583)	(0.0564)	(0.0601)	(0.0596)
GovInv_pc			0.1082**	0.1128**	0.0641	0.0654
			(0.0494)	(0.0461)	(0.0387)	(0.0393)
PrivInv_pc			0.0322	0.0328	0.0427	0.0433
			(0.0680)	(0.0695)	(0.0615)	(0.0610)
Openness			0.0125	0.0078	-0.0095	-0.0097
			(0.0538)	(0.0581)	(0.0622)	(0.0614)
Inflation			-0.0018	-0.0023*	-0.0007	-0.0007
			(0.0011)	(0.0012)	(0.0014)	(0.0014)
UrbanPop				-0.0640	-0.1459	-0.1476
				(0.1009)	(0.0987)	(0.0997)
ReligiousTensions				-0.0579**	-0.0519	-0.0522
				(0.0266)	(0.0315)	(0.0316)
EcoRiskRating					0.0171***	0.0173***
					(0.0042)	(0.0042)
FinRiskRating					0.0029	0.0029
					(0.0028)	(0.0028)
PolRiskRating					-0.0042	-0.0042
					(0.0028)	(0.0028)
Consolidation	-0.0675*	-0.1238***	-0.1338***	-0.1288***	-0.1126***	-
	(0.0348)	(0.0328)	(0.0413)	(0.0427)	(0.0360)	-
Dur_Consol	-	-	-	-	-	-0.0701***
	-	-	-	-	-	(0.0171)
Constant	0.2266***	0.1320***	0.2924	1.6686	2.4363	2.4634
	(0.0282)	(0.0418)	(0.2994)	(1.5373)	(1.5459)	(1.5586)
Observations	2,647	2,198	1,730	1,730	1,726	1,726
R-squared	0.5351	0.4254	0.3799	0.3846	0.3683	0.3693
Number of countries	91					
		81	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2. Spending-driven fiscal consolidation episodes.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
HDI_gr(-1)	0.7115***	0.6177***	0.5488***	0.5437***	0.5082***	0.5089***
	(0.0347)	(0.0446)	(0.0533)	(0.0549)	(0.0536)	(0.0541)
GovStab		0.0199***	0.0190**	0.0218***	0.0223***	0.0220***
		(0.0074)	(0.0085)	(0.0078)	(0.0078)	(0.0078)
Polity2		0.0044	0.0115	0.0138	0.0121	0.0119
		(0.0051)	(0.0083)	(0.0086)	(0.0090)	(0.0090)
GovCons_pc			-0.1366**	-0.1375**	-0.1141*	-0.1150*
			(0.0605)	(0.0587)	(0.0620)	(0.0625)
GovInv_pc			0.1008**	0.1056**	0.0603	0.0644*
			(0.0474)	(0.0443)	(0.0378)	(0.0381)
PrivInv_pc			0.0374	0.0388	0.0475	0.0447
			(0.0694)	(0.0710)	(0.0631)	(0.0638)
Openness			0.0134	0.0124	-0.0075	-0.0157
			(0.0538)	(0.0583)	(0.0626)	(0.0608)
Inflation			-0.0016	-0.0022*	-0.0007	-0.0006
			(0.0012)	(0.0012)	(0.0014)	(0.0014)
UrbanPop				-0.0776	-0.1498	-0.1517
				(0.0997)	(0.0990)	(0.0996)
ReligiousTensions				-0.0586**	-0.0527*	-0.0540*
				(0.0267)	(0.0314)	(0.0312)
EcoRiskRating					0.0165***	0.0167***
					(0.0042)	(0.0042)
FinRiskRating					0.0024	0.0024
					(0.0028)	(0.0028)
PolRiskRating					-0.0040	-0.0038
					(0.0028)	(0.0028)
Spend_Consol	-0.1257***	-0.1867***	-0.2113***	-0.2095***	-0.1654***	-
	(0.0400)	(0.0513)	(0.0685)	(0.0691)	(0.0601)	-
Dur_Spend_Consol		-	-	-	-	-0.0798**
		-	-	-	-	(0.0333)
Constant	0.2280***	0.1345***	0.2701	1.8612	2.5170	2.5789
	(0.0289)	(0.0414)	(0.2991)	(1.5186)	(1.5475)	(1.5560)
Observations	2,647	2,198	1,730	1,730	1,726	1,726
R-squared	0.5360	0.4268	0.3814	0.3864	0.3688	0.3670
Number of countries	91	81	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Tax-driven fiscal consolidation episodes.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
HDI_gr(-1)	0.7137***	0.6247***	0.5582***	0.5527***	0.5136***	0.5133***
	(0.0348)	(0.0445)	(0.0537)	(0.0555)	(0.0533)	(0.0529)
GovStab		0.0200***	0.0200**	0.0228***	0.0222***	0.0227***
		(0.0073)	(0.0084)	(0.0078)	(0.0077)	(0.0077)
Polity2		0.0033	0.0105	0.0128	0.0109	0.0107
		(0.0049)	(0.0081)	(0.0083)	(0.0089)	(0.0088)
GovCons_pc			-0.1327**	-0.1332**	-0.1087*	-0.1097*
			(0.0572)	(0.0558)	(0.0596)	(0.0588)
GovInv_pc			0.1123**	0.1168**	0.0669*	0.0676*
			(0.0481)	(0.0452)	(0.0372)	(0.0374)
PrivInv_pc			0.0235	0.0247	0.0356	0.0355
			(0.0699)	(0.0717)	(0.0622)	(0.0613)
Openness			-0.0036	-0.0063	-0.0221	-0.0209
			(0.0509)	(0.0561)	(0.0600)	(0.0602)
Inflation			-0.0016	-0.0021*	-0.0005	-0.0005
			(0.0012)	(0.0012)	(0.0014)	(0.0014)
UrbanPop				-0.0724	-0.1530	-0.1519
				(0.1024)	(0.0995)	(0.0996)
ReligiousTensions				-0.0591**	-0.0542*	-0.0536*
				(0.0262)	(0.0312)	(0.0312)
EcoRiskRating					0.0176***	0.0179***
					(0.0042)	(0.0042)
FinRiskRating					0.0027	0.0029
					(0.0029)	(0.0028)
PolRiskRating					-0.0038	-0.0040
					(0.0028)	(0.0028)
Tax_Consol	0.0122	-0.0306	-0.0387	-0.0306	-0.0468	-
	(0.0493)	(0.0416)	(0.0490)	(0.0485)	(0.0471)	-
Dur_Tax_Consol	-	-	-	-	-	-0.0473**
	-	-	-	-	-	(0.0192)
Constant	0.2181***	0.1234***	0.3511	1.8654	2.5759	2.5452
	(0.0282)	(0.0411)	(0.2948)	(1.5568)	(1.5553)	(1.5572)
Observations	2,647	2,198	1,730	1,730	1,726	1,726
R-squared	0.5342	0.4215	0.3755	0.3805	0.3652	0.3661
Number of countries	91	81	72	72	72	72

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 4. Education index.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Education_gr(-1)	0.5935***	0.5917***	0.5934***	0.5936***	0.5962***	0.5950***
	(0.0451)	(0.0449)	(0.0454)	(0.0458)	(0.0455)	(0.0453)
GovStab	0.0360***	0.0366***	0.0355***	0.0351***	0.0356***	0.0366***
	(0.0127)	(0.0128)	(0.0126)	(0.0125)	(0.0127)	(0.0129)
Polity2	0.0283**	0.0283**	0.0293**	0.0290**	0.0272**	0.0270**
	(0.0116)	(0.0116)	(0.0117)	(0.0116)	(0.0116)	(0.0115)
GovCons_pc	0.0071	0.0045	0.0098	0.0085	0.0138	0.0123
	(0.1365)	(0.1358)	(0.1404)	(0.1415)	(0.1351)	(0.1337)
GovInv_pc	0.0764	0.0784	0.0708	0.0770	0.0831	0.0842
	(0.0785)	(0.0796)	(0.0768)	(0.0766)	(0.0756)	(0.0761)
PrivInv_pc	-0.1051	-0.1049	-0.1015	-0.1058	-0.1178	-0.1180
	(0.1453)	(0.1442)	(0.1500)	(0.1509)	(0.1459)	(0.1445)
Openness	0.0635	0.0629	0.0616	0.0493	0.0420	0.0437
	(0.1170)	(0.1166)	(0.1163)	(0.1142)	(0.1138)	(0.1145)
Inflation	0.0034*	0.0033*	0.0034*	0.0035*	0.0036*	0.0035*
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
UrbanPop	-0.6255***	-0.6298***	-0.6352***	-0.6380***	-0.6342***	-0.6340***
	(0.1515)	(0.1538)	(0.1532)	(0.1546)	(0.1540)	(0.1547)
ReligiousTensions	-0.0066	-0.0067	-0.0083	-0.0104	-0.0104	-0.0095
	(0.0446)	(0.0449)	(0.0435)	(0.0433)	(0.0441)	(0.0445)
EcoRiskRating	0.0086	0.0090	0.0078	0.0081	0.0098	0.0103
	(0.0067)	(0.0066)	(0.0070)	(0.0070)	(0.0068)	(0.0068)
FinRiskRating	0.0027	0.0026	0.0019	0.0019	0.0027	0.0029
	(0.0047)	(0.0046)	(0.0046)	(0.0046)	(0.0046)	(0.0046)
PolRiskRating	0.0002	0.0001	0.0007	0.0010	0.0007	0.0004
	(0.0043)	(0.0043)	(0.0042)	(0.0042)	(0.0042)	(0.0043)
Consolidation	-0.2069***					
	(0.0707)					
Dur_Consol		-0.1266***				
		(0.0352)				
Spend_Consol			-0.2403***			
			(0.0875)			
Dur_Spend_Consol				-0.1124***		
				(0.0406)		
Tax_Consol					-0.1500	
					(0.1293)	
Dur_Tax_Consol						-0.1114*
						(0.0622)
Constant	9.6280***	9.6918***	9.8194***	9.9100***	9.8069***	9.7805***
	(2.3081)	(2.3436)	(2.3396)	(2.3651)	(2.3555)	(2.3614)
Observations	1,726	1,726	1,726	1,726	1,726	1,726
R-squared	0.3931	0.3938	0.3923	0.3912	0.3910	0.3918
Number of countries	72	72	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Life expectancy index.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Health_gr(-1)	0.5525***	0.5528***	0.5528***	0.5527***	0.5523***	0.5526***
	(0.2065)	(0.2065)	(0.2065)	(0.2065)	(0.2065)	(0.2064)
GovStab	0.0133	0.0132	0.0133	0.0133	0.0132	0.0131
	(0.0110)	(0.0110)	(0.0111)	(0.0111)	(0.0110)	(0.0111)
Polity2	0.0105	0.0105	0.0105	0.0106	0.0107	0.0107
	(0.0122)	(0.0122)	(0.0122)	(0.0122)	(0.0122)	(0.0122)
GovCons_pc	-0.1214	-0.1212	-0.1217	-0.1222	-0.1219	-0.1216
	(0.0997)	(0.0999)	(0.0999)	(0.1003)	(0.1000)	(0.0999)
GovInv_pc	0.0808	0.0801	0.0800	0.0794	0.0792	0.0792
	(0.0563)	(0.0562)	(0.0560)	(0.0561)	(0.0561)	(0.0561)
PrivInv_pc	0.0510	0.0514	0.0520	0.0530	0.0532	0.0529
	(0.0823)	(0.0829)	(0.0826)	(0.0830)	(0.0833)	(0.0831)
Openness	-0.0719	-0.0708	-0.0697	-0.0685	-0.0694	-0.0695
	(0.0769)	(0.0762)	(0.0765)	(0.0759)	(0.0757)	(0.0757)
Inflation	0.0026	0.0026	0.0026	0.0025	0.0026	0.0026
	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)
UrbanPop	0.1910*	0.1925*	0.1940*	0.1944*	0.1910*	0.1921*
	(0.1060)	(0.1064)	(0.1065)	(0.1063)	(0.1058)	(0.1060)
ReligiousTensions	-0.1450**	-0.1446**	-0.1443**	-0.1441**	-0.1447**	-0.1446**
	(0.0613)	(0.0611)	(0.0611)	(0.0611)	(0.0612)	(0.0611)
EcoRiskRating	0.0050	0.0050	0.0050	0.0049	0.0048	0.0047
	(0.0042)	(0.0042)	(0.0042)	(0.0042)	(0.0041)	(0.0041)
FinRiskRating	0.0008	0.0009	0.0009	0.0009	0.0007	0.0008
	(0.0029)	(0.0029)	(0.0030)	(0.0030)	(0.0029)	(0.0029)
PolRiskRating	-0.0060	-0.0061	-0.0062	-0.0062	-0.0061	-0.0060
	(0.0046)	(0.0047)	(0.0046)	(0.0047)	(0.0046)	(0.0047)
Consolidation	0.0309					
	(0.0272)					
Dur_Consol		0.0119				
		(0.0117)				
Spend_Consol			0.0060			
			(0.0372)			
Dur_Spend_Consol				-0.0067		
				(0.0260)		
Tax_Consol					0.0534	
					(0.0411)	
Dur_Tax_Consol						0.0225
						(0.0193)
Constant	-1.6445	-1.6714	-1.6980	-1.7043	-1.6416	-1.6591
	(1.5773)	(1.5736)	(1.5758)	(1.5707)	(1.5689)	(1.5666)
Observations	1,812	1,812	1,812	1,812	1,812	1,812
R-squared	0.4061	0.4061	0.4060	0.4060	0.4062	0.4061
Number of countries	72	72	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. GNI index.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Income_gr(-1)	0.2738***	0.2736***	0.2706***	0.2718***	0.2737***	0.2742***
	(0.0881)	(0.0881)	(0.0877)	(0.0879)	(0.0869)	(0.0872)
GovStab	0.0042	0.0046	0.0040	0.0037	0.0039	0.0041
	(0.0119)	(0.0120)	(0.0120)	(0.0121)	(0.0119)	(0.0119)
Polity2	-0.0074	-0.0075	-0.0064	-0.0068	-0.0078	-0.0079
	(0.0093)	(0.0093)	(0.0092)	(0.0092)	(0.0092)	(0.0092)
GovCons_pc	-0.3100***	-0.3117***	-0.3132***	-0.3143***	-0.3075***	-0.3075***
	(0.0748)	(0.0748)	(0.0757)	(0.0753)	(0.0735)	(0.0734)
GovInv_pc	0.1558***	0.1570***	0.1507***	0.1560***	0.1602***	0.1606***
	(0.0501)	(0.0499)	(0.0508)	(0.0507)	(0.0518)	(0.0514)
PrivInv_pc	0.1691**	0.1695**	0.1781**	0.1742**	0.1629**	0.1623**
	(0.0766)	(0.0767)	(0.0794)	(0.0784)	(0.0747)	(0.0746)
Openness	-0.0154	-0.0161	-0.0069	-0.0167	-0.0270	-0.0267
	(0.0881)	(0.0880)	(0.0911)	(0.0891)	(0.0857)	(0.0858)
Inflation	-0.0161***	-0.0162***	-0.0162***	-0.0162***	-0.0159***	-0.0159***
	(0.0036)	(0.0036)	(0.0036)	(0.0036)	(0.0036)	(0.0036)
UrbanPop	0.2118	0.2090	0.2085	0.2008	0.1981	0.2001
	(0.1630)	(0.1630)	(0.1603)	(0.1606)	(0.1642)	(0.1634)
ReligiousTensions	-0.0043	-0.0044	-0.0037	-0.0058	-0.0073	-0.0069
	(0.0414)	(0.0414)	(0.0418)	(0.0416)	(0.0415)	(0.0414)
EcoRiskRating	0.0336***	0.0338***	0.0326***	0.0329***	0.0340***	0.0342***
	(0.0100)	(0.0100)	(0.0100)	(0.0101)	(0.0100)	(0.0101)
FinRiskRating	0.0119**	0.0118**	0.0113**	0.0113**	0.0114**	0.0116**
	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0051)	(0.0050)
PolRiskRating	-0.0068	-0.0069	-0.0068	-0.0064	-0.0061	-0.0062
	(0.0061)	(0.0061)	(0.0061)	(0.0061)	(0.0062)	(0.0062)
Consolidation	-0.1318*					
	(0.0692)					
Dur_Consol		-0.0801**				
		(0.0383)				
Spend_Consol			-0.2359			
			(0.1443)			
Dur_Spend_Consol				-0.1104		
				(0.0792)		
Tax_Consol					-0.0073	
					(0.1099)	
Dur_Tax_Consol						-0.0264
						(0.0534)
Constant	-3.7726	-3.7255	-3.7041	-3.5547	-3.5309	-3.5701
	(2.6413)	(2.6383)	(2.5907)	(2.5998)	(2.6642)	(2.6531)
Observations	1,806	1,806	1,806	1,806	1,806	1,806
R-squared	0.2313	0.2318	0.2329	0.2311	0.2293	0.2295
Number of countries	72	72	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Evidence for OECD countries.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
HDI_gr(-1)	0.6696***	0.6602***	0.4994***	0.4879***	0.4484***	0.4477***
	(0.0509)	(0.0552)	(0.0704)	(0.0703)	(0.0737)	(0.0736)
GovStab		-0.0016	0.0006	0.0003	0.0127	0.0127
		(0.0040)	(0.0063)	(0.0062)	(0.0097)	(0.0096)
Polity2		-0.0003	-0.0070	-0.0030	-0.0146	-0.0143
		(0.0063)	(0.0100)	(0.0093)	(0.0097)	(0.0097)
GovCons_pc			-0.1485*	-0.1079	-0.0490	-0.0478
			(0.0796)	(0.0833)	(0.0799)	(0.0809)
GovInv_pc			-0.0265	-0.0345	-0.0164	-0.0175
			(0.0429)	(0.0419)	(0.0417)	(0.0419)
PrivInv_pc			0.1678**	0.1587**	0.0727	0.0721
			(0.0682)	(0.0703)	(0.0610)	(0.0615)
Openness			-0.2404**	-0.1907*	-0.2215*	-0.2206*
			(0.1019)	(0.1000)	(0.1133)	(0.1132)
Inflation			-0.0353	-0.0624	0.0199	0.0191
			(0.0675)	(0.0639)	(0.0445)	(0.0443)
UrbanPop				-0.4150***	-0.3273*	-0.3283*
				(0.1317)	(0.1666)	(0.1666)
ReligiousTensions				0.0061	0.0103	0.0109
				(0.0167)	(0.0198)	(0.0197)
EcoRiskRating					0.0226***	0.0226***
					(0.0057)	(0.0057)
FinRiskRating					0.0052	0.0052
					(0.0034)	(0.0034)
PolRiskRating					-0.0077*	-0.0077*
					(0.0042)	(0.0042)
Consolidation	-0.0315*	-0.0389*	0.0107	0.0054	0.0115	-
	(0.0178)	(0.0209)	(0.0254)	(0.0246)	(0.0197)	-
Dur_Consol	-	-	-	-	-	0.0005
	-	-	-	-	-	(0.0158)
Constant	0.1813***	0.2020***	1.2016*	8.0870***	6.2240**	6.2330**
	(0.0298)	(0.0682)	(0.6551)	(2.3875)	(3.0154)	(3.0140)
Observations	1,016	908	655	655	654	654
R-squared	0.4218	0.4086	0.3327	0.3397	0.3721	0.3720
Number of countries	33	32	26	26	26	26

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 8. Evidence for non-OECD countries.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
HDI_gr(-1)	0.7173***	0.6120***	0.5462***	0.5395***	0.5036***	0.5002***
	(0.0365)	(0.0502)	(0.0563)	(0.0587)	(0.0574)	(0.0571)
GovStab		0.0317***	0.0291**	0.0327***	0.0281**	0.0285**
		(0.0106)	(0.0124)	(0.0112)	(0.0110)	(0.0110)
Polity2		0.0047	0.0145*	0.0170*	0.0143	0.0143
		(0.0059)	(0.0086)	(0.0091)	(0.0097)	(0.0097)
GovCons_pc			-0.1336**	-0.1325**	-0.1184*	-0.1211*
			(0.0648)	(0.0604)	(0.0668)	(0.0660)
GovInv_pc			0.1170**	0.1219**	0.0733	0.0753
			(0.0564)	(0.0511)	(0.0453)	(0.0458)
PrivInv_pc			0.0188	0.0177	0.0402	0.0406
			(0.0691)	(0.0708)	(0.0662)	(0.0657)
Openness			0.0478	0.0454	0.0290	0.0251
			(0.0619)	(0.0704)	(0.0742)	(0.0731)
Inflation			-0.0014	-0.0020	-0.0010	-0.0010
			(0.0012)	(0.0012)	(0.0014)	(0.0014)
UrbanPop				-0.0777	-0.0882	-0.0947
				(0.1126)	(0.1214)	(0.1232)
ReligiousTensions				-0.0731**	-0.0704*	-0.0710*
				(0.0305)	(0.0373)	(0.0374)
EcoRiskRating					0.0170***	0.0175***
					(0.0056)	(0.0056)
FinRiskRating					-0.0030	-0.0030
					(0.0044)	(0.0044)
PolRiskRating					-0.0010	-0.0010
					(0.0037)	(0.0037)
Consolidation	-0.0951*	-0.1943***	-0.2147***	-0.2083***	-0.1830***	-
	(0.0568)	(0.0513)	(0.0553)	(0.0579)	(0.0486)	-
Dur_Consol	-	-	-	-	-	-0.0978***
	-	-	-	-	-	(0.0194)
Constant	0.2675***	0.1404***	0.1655	1.7927	1.4982	1.6037
	(0.0353)	(0.0503)	(0.3578)	(1.7057)	(1.8926)	(1.9160)
Observations	1,631	1,290	1,075	1,075	1,072	1,072
R-squared	0.5460	0.4329	0.3972	0.4039	0.3813	0.3816
Number of countries	58	49	46	46	46	46

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 9. Alternative sampling and regional analysis.

Variables	(ADV)	(EME)	(LIC)	(AFR)	(EUR)	(AP)	(MECA)	(WH)
Consolidation	0.0023	-0.1994***	-0.1768**	-0.3205**	-0.0633*	0.1086*	-0.2751*	0.0026
	(0.0249)	(0.0573)	(0.0768)	(0.1123)	(0.0361)	(0.0590)	(0.1119)	(0.0650)
Dur_Consol	-0.0210	-0.1004***	-0.0893***	-0.2193**	-0.0380	0.0310	-0.1046**	-0.0090
	(0.0195)	(0.0249)	(0.0284)	(0.0765)	(0.0263)	(0.0407)	(0.0376)	(0.0258)
Spend_Consol	-0.0199	-0.2702**	-0.3278**	-0.5270**	-0.0733	0.0423	-0.4577	-0.0563
	(0.0374)	(0.1099)	(0.1505)	(0.1963)	(0.0546)	(0.1293)	(0.2959)	(0.0581)
Dur_Spend_Consol	-0.0213	-0.1307**	-0.1731*	-0.2464	-0.0225	-0.0066	-0.4372	-0.0477
	(0.0225)	(0.0488)	(0.0899)	(0.1644)	(0.0389)	(0.0869)	(0.2248)	(0.0449)
Tax_Consol	0.0474	-0.1497*	-0.0225	-0.0563	-0.0341	0.1764	-0.2018	0.0343
	(0.0725)	(0.0842)	(0.0851)	(0.0782)	(0.0482)	(0.1969)	(0.1273)	(0.0882)
Dur_Tax_Consol	-0.0116	-0.0772**	-0.0402	-0.0241	-0.0357	0.0377	-0.0865**	0.0012
	(0.0266)	(0.0309)	(0.0333)	(0.1021)	(0.0398)	(0.0740)	(0.0279)	(0.0291)

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Country groups: advanced economies (ADV), emerging markets (EME) and low-income countries (LIC); Geographical regions: Asia-Pacific (AP), Europe (EUR), Middle East and Central Asia (MECA), Sub-Saharan Africa (AFR) and Western Hemisphere (WH).

Table 10. Robustness to the use of alternative estimators: Outlier-robust and IV-GLS.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Outlier -robust						IV-GLS					
HDI_gr(-1)	0.4553***	0.4534***	0.4504***	0.4422***	0.4562***	0.2251***	0.5190***	0.5174***	0.5160***	0.5363***	0.5192***	0.5405***
	(0.0588)	(0.0589)	(0.0600)	(0.0533)	(0.0590)	(0.0706)	(0.0556)	(0.0555)	(0.0553)	(0.0559)	(0.0560)	(0.0566)
GovStab	0.0263***	0.0264***	0.0261***	0.029***	0.0259***	0.0442***	0.0271***	0.0272***	0.0271***	0.0228***	0.0269***	0.0231***
	(0.0079)	(0.0079)	(0.0079)	(0.0080)	(0.0078)	(0.0105)	(0.0068)	(0.0068)	(0.0068)	(0.0069)	(0.0068)	(0.0069)
Polity2	0.0096	0.0094	0.0098	0.0105	0.0092	0.0088	0.0128**	0.0127**	0.0136**	0.0105*	0.0125**	0.0095
	(0.0079)	(0.0080)	(0.0081)	(0.0075)	(0.0079)	(0.0098)	(0.0059)	(0.0059)	(0.0060)	(0.0058)	(0.0059)	(0.0058)
GovCons_pc	-0.1596***	-0.1599***	-0.1604***	-0.0398	-0.1580***	-0.1477	-0.1436***	-0.1453***	-0.1445***	-0.0866	-0.1436***	-0.1707
	(0.0560)	(0.0568)	(0.0560)	(0.1310)	(0.0557)	(0.1424)	(0.0541)	(0.0540)	(0.0544)	(0.2088)	(0.0544)	(0.2100)
GovInv_pc	0.1284**	0.1274**	0.1257**	-0.0511	0.1298**	-0.0081	0.1185**	0.1172**	0.1168**	-0.0311	0.1198**	-0.0012
	(0.0554)	(0.0555)	(0.0539)	(0.0600)	(0.0557)	(0.0691)	(0.0546)	(0.0544)	(0.0543)	(0.1112)	(0.0551)	(0.1100)
PrivInv_pc	0.0194	0.0205	0.0232	-0.0157*	0.0166	-0.0171	0.0191	0.0218	0.0221	-0.0089	0.0181	-0.0087
	(0.0426)	(0.0431)	(0.0421)	(0.0072)	(0.0424)	(0.0131)	(0.0444)	(0.0442)	(0.0441)	(0.0080)	(0.0444)	(0.0075)
Openness	-0.0585	-0.0576	-0.0548	-0.0533	-0.0662	-0.1121***	-0.0289	-0.0275	-0.0271	-0.0156	-0.0369	-0.0282
	(0.0461)	(0.0459)	(0.0469)	(0.0433)	(0.0440)	(0.0403)	(0.0578)	(0.0576)	(0.0582)	(0.0659)	(0.0560)	(0.0633)
Inflation	-0.0011	-0.0011	-0.0011	0.0001	-0.0010	-0.0003	-0.0007	-0.0008	-0.0007	-0.0000	-0.0006	0.0001
	(0.0014)	(0.0014)	(0.0014)	(0.0016)	(0.0014)	(0.0021)	(0.0016)	(0.0016)	(0.0017)	(0.0015)	(0.0017)	(0.0015)
UrbanPop	-0.2208***	-0.2229***	-0.2240***	-0.3304***	-0.2260***	-0.3607***	-0.2077***	-0.2095***	-0.2089***	-0.1909**	-0.2133***	-0.1912**
	(0.0823)	(0.0833)	(0.0834)	(0.0737)	(0.0823)	(0.1241)	(0.0802)	(0.0803)	(0.0805)	(0.0908)	(0.0802)	(0.0908)
ReligiousTensions	-0.0633**	-0.0639**	-0.0644**	-0.0359	-0.0655**	-0.0435*	-0.0513**	-0.0513**	-0.0514***	-0.0516**	-0.0533***	-0.0522**
	(0.0296)	(0.0298)	(0.0296)	(0.0218)	(0.0295)	(0.0238)	(0.0196)	(0.0196)	(0.0194)	(0.0202)	(0.0196)	(0.0203)
EcoRiskRating	0.0201***	0.0203***	0.0195***	0.0163***	0.0205***	0.0185***	0.0166***	0.0168***	0.0160***	0.0175***	0.0169***	0.0188***
	(0.0049)	(0.0049)	(0.0050)	(0.0048)	(0.0049)	(0.0048)	(0.0044)	(0.0043)	(0.0044)	(0.0044)	(0.0044)	(0.0044)
FinRiskRating	0.0017	0.0017	0.0016	0.0057**	0.0016	0.0048	0.0020	0.0020	0.0017	0.0041	0.0019	0.0044
	(0.0032)	(0.0032)	(0.0032)	(0.0024)	(0.0032)	(0.0033)	(0.0029)	(0.0029)	(0.0029)	(0.0030)	(0.0029)	(0.0031)
PolRiskRating	-0.0017	-0.0018	-0.0016	-0.0032	-0.0014	-0.0041	-0.0027	-0.0028	-0.0027	-0.0046*	-0.0024	-0.0045*
	(0.0030)	(0.0030)	(0.0030)	(0.0028)	(0.0030)	(0.0042)	(0.0023)	(0.0023)	(0.0023)	(0.0024)	(0.0023)	(0.0024)
Consolidation	-0.0835**						-0.0801*					
	(0.0316)						(0.0427)					
Dur_Consol		-0.0510***						-0.0538**				
		(0.0147)						(0.0225)				
Spend_Consol			-0.1239**						-0.1413***			
			(0.0540)									
Dur_Spend_Consol				-0.0511**						-0.0613***		
				(0.0228)						(0.0226)		
Tax_Consol					-0.0322						-0.0066	
					(0.0554)						(0.0668)	
Dur_Tax_Consol						0.0103						-0.0199
						(0.0245)						(0.0220)
Constant	3.6701***	3.7019***	3.7356***	5.1600***	3.7692***	5.7163***						
	(1.3491)	(1.3612)	(1.3593)	(1.1729)	(1.3462)	(2.0553)						
Observations	1,711	1,710	1,710	1586	1,711	907	1,769	1,769	1,769	1731	1,769	1731
R-squared	0.3828	0.3825	0.3795	0.3576	0.3806	0.2149	0.3856	0.3865	0.3868	0.3795	0.3839	0.3774
Number of countries	72	72	72	71	72	70	72	72	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11. Robustness to the use of alternative estimators: Difference-GMM and system-GMM.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Difference-GMM						System-GMM					
HDI_gr(-1)	0.4256***	0.4248***	0.4199***	0.4142***	0.4154***	0.4173***	0.5941***	0.5933***	0.5929***	0.5915***	0.5872***	0.5881***
	(0.0881)	(0.0874)	(0.0904)	(0.091)	(0.0902)	(0.091)	(0.0684)	(0.0677)	(0.0692)	(0.069)	(0.0697)	(0.069)
GovStab	0.0506*	0.0498*	0.0485*	0.0463*	0.0498*	0.0510*	0.0533***	0.0531***	0.0548***	0.0531***	0.0513***	0.0515***
	(0.0263)	(0.0262)	(0.0261)	(0.026)	(0.0259)	(0.026)	(0.0172)	(0.0174)	(0.0173)	(0.018)	(0.0177)	(0.018)
Polity2	0.0516*	0.0515	0.0561*	0.0591*	0.0570*	0.0564*	0.0397*	0.0398*	0.0392*	0.0399*	0.0428**	0.0429**
	(0.0308)	(0.0310)	(0.0307)	(0.031)	(0.0289)	(0.029)	(0.0201)	(0.0202)	(0.0206)	(0.021)	(0.0201)	(0.020)
GovCons_pc	-0.2739	-0.2754	-0.2340	-0.2193	-0.3255*	-0.3148*	-0.2581*	-0.2641**	-0.2235*	-0.2340*	-0.2982**	-0.2921**
	(0.1844)	(0.1814)	(0.1797)	(0.183)	(0.1820)	(0.180)	(0.1357)	(0.1305)	(0.1286)	(0.128)	(0.1331)	(0.129)
GovInv_pc	0.4186**	0.4124**	0.3676**	0.3494*	0.4507**	0.4497**	0.3794***	0.3799***	0.3557***	0.3565***	0.4003***	0.3996***
	(0.1863)	(0.1835)	(0.1822)	(0.181)	(0.1819)	(0.181)	(0.1163)	(0.1134)	(0.1127)	(0.111)	(0.1164)	(0.114)
PrivInv_pc	-0.0965	-0.0887	-0.0996	-0.0966	-0.0832	-0.0900	-0.1469**	-0.1422**	-0.1525**	-0.1441**	-0.1274*	-0.1316*
	(0.0694)	(0.0699)	(0.0690)	(0.067)	(0.0736)	(0.073)	(0.0676)	(0.0676)	(0.0631)	(0.064)	(0.0669)	(0.067)
Openness	0.0228	0.0276	0.0251	0.0327	0.0002	0.0042	-0.2063**	-0.2037**	-0.2233**	-0.2107**	-0.2180**	-0.2185**
	(0.1652)	(0.1692)	(0.1569)	(0.170)	(0.1510)	(0.152)	(0.0893)	(0.0892)	(0.0906)	(0.089)	(0.0897)	(0.090)
Inflation	-0.0183	-0.0185	-0.0197	-0.0206	-0.0175	-0.0172	-0.0313	-0.0314	-0.0320	-0.0328	-0.0294	-0.0296
	(0.0170)	(0.0169)	(0.0175)	(0.018)	(0.0165)	(0.016)	(0.0197)	(0.0198)	(0.0204)	(0.021)	(0.0186)	(0.019)
UrbanPop	-1.3781***	-1.3857***	-1.2842***	-1.3114***	-1.3405***	-1.3522***	-0.2086**	-0.2110**	-0.2060**	-0.2130**	-0.2095**	-0.2077**
	(0.4496)	(0.4548)	(0.4424)	(0.454)	(0.4482)	(0.449)	(0.0900)	(0.0904)	(0.0876)	(0.090)	(0.0958)	(0.094)
ReligiousTensions	-0.2041*	-0.2041*	-0.1809	-0.1869	-0.2077*	-0.1985*	-0.0787	-0.0794	-0.0640	-0.0693	-0.0881	-0.0832
	(0.1136)	(0.1130)	(0.1211)	(0.117)	(0.1082)	(0.109)	(0.0795)	(0.0804)	(0.0782)	(0.080)	(0.0811)	(0.080)
EcoRiskRating	0.0316***	0.0321***	0.0291***	0.0297***	0.0313***	0.0315***	0.0156**	0.0160**	0.0145*	0.0150*	0.0165**	0.0164**
	(0.0088)	(0.0088)	(0.0087)	(0.009)	(0.0081)	(0.008)	(0.0076)	(0.0075)	(0.0076)	(0.008)	(0.0072)	(0.007)
FinRiskRating	0.0091	0.0092	0.0070	0.0079	0.0064	0.0068	-0.0009	-0.0009	-0.0013	-0.0013	-0.0034	-0.0034
	(0.0090)	(0.0090)	(0.0089)	(0.009)	(0.0096)	(0.009)	(0.0084)	(0.0084)	(0.0084)	(0.009)	(0.0089)	(0.009)
PolRiskRating	0.0028	0.0027	0.0026	0.0024	0.0044	0.0031	-0.0070	-0.0071	-0.0086	-0.0086	-0.0059	-0.0065
	(0.0128)	(0.0129)	(0.0128)	(0.013)	(0.0126)	(0.013)	(0.0076)	(0.0077)	(0.0076)	(0.008)	(0.0081)	(0.008)
Consolidation	-0.0750						-0.0704					
	(0.0921)						(0.0935)					
Dur_Consol		-0.0545						-0.0426				
		(0.0535)						(0.0460)				
Spend_Consol			-0.4379***						-0.3571***			
			(0.1176)									
Dur_Spend_Consol				-0.2258***						-0.1544**		
				(0.066)						(0.068)		
Tax_Consol					0.2769***						0.2491**	
					(0.0892)						(0.0960)	
Dur_Tax_Consol						0.0954**						0.0914**
						(0.042)						(0.040)
Constant							4.4712**	4.4868**	4.6320**		4.5759**	
							(1.8393)	(1.8495)	(1.8418)		(1.9101)	
Observations	1,699	1,699	1,699	1,699	1,699	1,699	1,775	1,775	1,775	1,775	1,775	1,775
Number of countries	72	72	72	72	72	72	72	72	72	72	72	72

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table A: List of countries included in the analysis.

1	Argentina	16	Cote d'Ivoire	31	Italy	46	Netherlands	61	South Africa
2	Australia	17	Czech Republic	32	Japan	47	New Zealand	62	Sudan
3	Austria	18	Egypt	33	Jordan	48	Nicaragua	63	Switzerland
4	Bangladesh	19	Estonia	34	Kazakhstan	49	Nigeria	64	Tanzania
5	Belgium	20	Ethiopia	35	Kenya	50	Norway	65	Thailand
6	Bolivia	21	Finland	36	Korea	51	Pakistan	66	Turkey
7	Brazil	22	France	37	Lithuania	52	Peru	67	Uganda
8	Bulgaria	23	Germany	38	Madagascar	53	Philippines	68	Ukraine
9	Burkina Faso	24	Ghana	39	Malaysia	54	Poland	69	United Kingdom
10	Cameroon	25	Greece	40	Mali	55	Portugal	70	United States
11	Canada	26	Haiti	41	Mexico	56	Romania	71	Yemen
12	Chile	27	Honduras	42	Moldova	57	Russia	72	Zambia
13	China	28	India	43	Morocco	58	Saudi Arabia		
14	Colombia	29	Indonesia	44	Mozambique	59	Singapore		
15	Congo, Republic of	30	Israel	45	Myanmar	60	Slovak Republic		