Is there a Natural Resource Curse on Education Spending?

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Abstract

This paper contributes to a new line of research in the resource curse literature that addresses the link between resource wealth and fiscal policy by empirically investigating the relationship between natural resource dependence and public education spending. Using a large panel dataset of world countries covering the period from 1995 to 2009, we find robust evidence of a public education spending resource curse. The adverse effect of natural resource dependence on public education expenditures relative to GDP remains significant after controlling for additional covariates such as income, aid, and the age structure of the population. Our results further confirm the existence of indirect effects of resource dependence through a deterioration of government accountability and the crowding-out of more skilled-labour intensive sectors in the economy. Furthermore, our findings indicate that the resource curse effect on the government prioritization of education mainly stems from point-source natural resources. Our results have important implications for managing natural resource wealth in developing countries, as they could achieve particularly high returns by investing resource revenues in public goods such as education. While this paper underlines the importance of institutions and government accountability, our results also raise questions on the role of the extractives industry. The oil, gas and mining industry should consider increasing funding for education through Corporate Social Responsibility initiatives in this sector or through other innovative channels of development finance.

1.   INTRODUCTION

While in theory natural resource wealth provides a valuable source of revenues that could spur economic development, a large and buoyant literature documents the puzzling paradox that resource-rich countries seem to experience slower growth than their resource-poor counterparts. The debate on the existence of this so called "resource curse" effect on economic growth however, remains far from settled.

Moreover, in light of the global commodity price boom, there has been a rising interest in innovative ways to convert natural resource wealth into human development. It has been noted that a large number of resource-rich countries appear to have human development indicators far below the levels that would be predicted on the basis of their income. The 2013 Africa Progress Panel for example finds that most resource-rich countries in Africa have high levels of adult illiteracy and low levels of enrolment and school completion. These findings give rise to the idea that the resource curse extends beyond its hypothesized adverse impact on economic growth. In order to enable the population in resource-rich countries to benefit from their vast natural resource endowments, understanding the intricate dynamics of the resource curse from a broader point of view is of the utmost importance.

This paper will contribute to the literature by providing additional insights into the impact of natural resource wealth on government prioritization of human capital building. We focus on education as there is an increasing consensus on the importance of human capital formation for securing sustainable economic growth. Mankiw et al. (1992) for example show that augmenting the Solow model with human capital accumulation generates much better results. Education in turn, is a crucial determinant of human capital and therefore an important driver of economic growth. Both the quantity and quality of education have been found to boost economic growth (Barro, 2001; Barro and Lee, 1994; Cohen and Soto, 2007; Hanushek and Woessmann, 2007; Seetanah, 2009). Moreover, it has been argued that education allows for growth with equity (Tanzi and Chu, 1998) and that there are clear linkages between education and the reduction of poverty and inequality (Abdullah et al., 2013; Gregorio and Lee, 2002). Education has also been found to impact health outcomes and healthy behavior (Conti et al., 2010). Finally, Bravo-Ortega and De Gregorio (2005) find that high levels of human capital, measured as the average years of schooling among the over-25 population, have allowed some resource-rich countries to escape the resource curse.

By zooming into the effect of natural resource wealth on government expenditures, rather than overarching development outcomes, we avoid capturing factors that are beyond policy makers' control and are able to directly measure to what extent governments in resource-rich countries are committed to building human capital. Furthermore, several studies have found encouraging results with regards to the effectiveness of government spending on education. Using data from a sample of developing and transition countries, Gupta et al. (2002) find that increasing government education expenditures by one percentage point of GDP on average raises gross secondary enrolment rates by over three per cent. Baldacci et al. (2003) present evidence from a similar sample that suggests that raising education spending by 1 percentage point of GDP would increase enrollment rates by 6 percentage points in the current period and another 3 percentage points in the following period. The authors further note that increased education expenditures are associated with improved health status. Jung and Thorbecke (2003) confirm the growth-promoting benefits of public education expenditure and highlight its effectiveness in alleviating poverty. Blankenau et al. (2007) and Bose et al. (2007) conclude that education expenditures are

significantly associated with growth, contrary to other government outlays. Baldacci et al. (2008) find that education spending positively affects education capital which in turn contributes to economic growth. The results are replicated by Beraldo et al. (2009) who additionally find that the impact of public education expenditure is in fact larger compared to private spending.

Using a large panel dataset of 140 countries covering the period from 1995 to 2009, we find that natural resource dependence is associated with lower public education expenditures relative to GDP. This resource curse effect remains significant even after controlling for several additional factors that have been found to play an important role in explaining public education spending patterns. The results in our paper further demonstrate that this specific resource curse effect differs according to the type of natural resources. In particular, the dependence on point-source natural resources, with concentrated production and revenue patterns, rather than diffuse natural resources impedes government investment in education.

The remainder of this paper is organized as follows; the resource curse literature is discussed in Section 2. We describe the estimation strategy and data in Section 3. The fourth section presents empirical evidence on the relationship between natural resource dependence and public education spending. Finally, Section 5 extends the paper by zooming into the difference between point-source and diffuse natural resources and Section 6 concludes.

2.   THE NATURAL RESOURCE CURSE: REVISITING THE LITERATURE

The link between natural resource endowments and economic growth was first investigated in light of the contrasting growth experiences of several East Asian countries compared to much of Latin America and Sub-Saharan Africa. Auty (1993) introduced the phrase "resource curse" to refer to the paradox that natural resource wealth appears to generate poor economic growth rather than prosperity. This hypothesis was confirmed empirically by Sachs and Warner (1995; 1997; 2001), who show a significant and robust inverse relationship between the share of natural resource exports in GDP and economic growth. Their results have been replicated by Davis (2013) and elaborated by numerous other scholars. Auty (2001) for example finds that per capita income grows slower in countries with abundant natural resources. Bravo-Ortega and De Gregorio (2005) conclude that natural resources have a positive effect on income, but a negative effect on its growth rate. Papyrakis and Gerlagh (2004) distinguish between the direct and indirect effects of natural resource abundance. They find that while the former are positive, they are outweighed by the indirect negative effects. Arezki and Van der Ploeg (2007) on the contrary conclude that both direct and indirect effects of natural resource dependence on growth are negative. Collier and Goderis (2007) also report strong evidence of a resource curse on growth. The authors further disentangle the dynamics of the curse and find that while positive in the short run, the long term effects of commodity price booms are negative.

Commonly proposed explanations of this resource curse effect include the Dutch Disease (Van Wijnbergen, 1984; Sachs and Warner, 1995; 1997) and volatility in general (van der Ploeg and Poelhekke, 2009). Collier and Hoeffler (2003) and Ross (2006) further argue that the availability of natural resources makes states more vulnerable to conflict. This association is however, disputed by several other scholars (Basedau and Lay, 2009; Brunnschweiler and Bulte, 2009; Cotet and Tsui, 2013).

A large wave of literature has focused on the political and institutional foundations of the resource curse. Leite and Weidmann (1999) and several other scholars (Bhattacharyya and Hodler, 2010; Robinson, 2006; Torvik, 2002 ;) demonstrate the interrelationships between natural resources, rent-seeking and economic growth. Bulte et al. (2005) find evidence that suggests an important indirect effect of natural resources on human welfare that operates through the quality of institutions. Mehlum et al. (2006) show that the quality of institutions determines whether countries avoid the resource curse or not. Collier and Goderis (2007) similarly report that only badly governed countries suffer from the resource curse after a commodity price boom. Kolstad and Wiig (2009) state that impartiality enhancing institutions[1] in particular mitigate the negative effects of natural resources. As there is large variation between resource-rich countries, several scholars have favoured this type of conditional versions of the resource curse (Dunning, 2005). Sala-i-Martin and Subramanian (2003) and Isham et al. (2005) argue that only countries dependent on point-source natural resources suffer from the resource curse. Hodler (2006), Baggio and Papyrakis (2010) and Fum and Hodler (2010) state that the effect of natural resources is conditional upon ethnic fractionalization. Arezki and van der Ploeg (2007) find that the resource curse effect is less severe in countries that are relatively open. Andersen and Aslaksen (2008) demonstrate that the effect of natural resources is conditional upon electoral rule.

While the bulk of the literature continues to focus on the implications of vast natural resource endowments on economic growth or other measures of economic performance, a

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[1]   Impartiality enhancing institutions are defined as "institutions that reduce the possibility or attraction of favouritism versus acting in the general public interest" (Kolstad and Wiig, 2009).

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new line of research is investigating the resource curse from a broader point of view. Bulte et al. (2005) find that "the resource curse appears to spill over from economic growth to a broader set of development indicators". Several authors have established an important association between natural resource wealth and income inequality (Carmignani, 2013; Goderis and Malone, 2011; Gylfason and Zoega, 2002; Fum and Hodler, 2010). The relationship between natural capital and human capital accumulation has received particular interest as well. Gylfason et al. (1999) and Gylfason (2001) demonstrate that school enrolment tends to be inversely related to the share of natural capital in total national wealth. Kronenberg (2004) shows that this relationship holds for a sample of transition countries as well. Stijns (2006) similarly reports negative correlations for several indicators of natural resource abundance and human capital accumulation. Behbudi et al. (2010) demonstrate a negative relationship between natural resource abundance and secondary school attainment and adult and youth literacy rates. Cabrales and Hauk (2011) present empirical evidence that suggests that the effect of natural capital on enrolment is conditional upon the quality of political institutions. Blanco and Grier (2012) find that petroleum exports appear to have a negative effect on human capital in Latin-America, measured as the average years of (primary) schooling and Shao and Yang (2014) provide a theoretical rationale for the crowding-out effect of natural resource dependence on human capital. Other hypothesized adverse implications of natural resource dependence include elevated prevalence and higher mortality rates by HIV/AIDS because of a lack of effective public action (De Soysa and Gizelis, 2013).

This paper will contribute to the small but growing literature that focuses on government expenditure in resource-rich countries in light of the hypothesis that natural resource revenues differ from other government revenues (Segal, 2012). Sarr and Wick (2010) demonstrate a negative effect of natural resources on the provision of physical and social infrastructure. Bhattacharyya and Collier (2014) similarly argue that while natural resource rents provide an opportunity for resource-rich developing countries to acquire public capital crucial for economic development, there is clear evidence that natural resource rents are on the contrary associated with reduced investment in public capital. Finally, using world panel data, Cockx and Francken (2014) establish the existence of a public health spending resource curse.

3. ESTIMATION STRATEGY AND DATA

The debate on the existence of the resource curse has put forward important methodological concerns. Several authors have argued that as the research is prone to omitted variable bias it is paramount to move from cross-country to panel evidence (Collier and Goderis, 2007; Lederman and Maloney, 2008; Manzano and Rigobon, 2001; Van der Ploeg, 2008). We therefore base our analysis of public education expenditures upon a panel dataset of 140 countries[2] for the period of 1995 to 2009, constructed for the aim of this research. In line with Brunschweiler and Bulte (2009), Bhattacharyya and Hodler (2010), Bhattacharyya and Collier (2014) and Cockx and Francken (2014), we have subdivided the data into three five year periods; from 1995 to 1999, from 2000 to 2004 and finally from 2005 to 2009. The use of five year averages will allow us to handle annual volatility and measurement errors. The main descriptive statistics on the five year averages of the dependent and independent variables are summarized in Tables I and II respectively.

3.1. Public Education expenditures

To capture the government's commitment to education, we use the World Bank data on public spending on education as a percentage of GDP (*Public Education Expenditures*), which are derived from the UNESCO Institute for Statistics (UIS) who collect information annually from official national statistical authorities. Public expenditure on education consists of current and capital spending on both public and private education institutions, education administration and transfers or subsidies and includes expenditures funded by transfers from international sources to the government (UIS, 2014).

Table I : Descriptive statistics on 5 year average Public Education Expenditures as a % of GDP (source: World Bank)

	Obs.	Countries	Mean	Std. Dev.			Minimum	Maximum
				Overall	*Between*	*Within*		
World	349	140	4.4369	1.7293	1.657404	0.5435	1.0005	13.8767
Africa	106	41	4.3238	2.1895	2.1284	0.6542	1.2930	13.8767
Asia	86	37	3.9387	1.3799	1.3763	0.5019	1.0517	6.9626
Eastern Europe	33	16	4.5615	1.1098	1.0445	0.4559	3.1643	8.1404
Western Europe	52	18	5.6037	1.2036	1.1531	0.4562	3.0563	8.3851
Latin Am. + Caribbean	56	22	4.0061	1.4902	1.4141	0.5142	1.0005	7.5948
North America	5	2	4.3093	1.2238	1.5467	0.2496	2.7936	5.4331
Oceania	11	4	5.7853	0.9756	0.8173	0.6623	4.8210	8.1321

3.2. The determinants of public education spending

3.2.1. Natural resources

While large natural capital endowments in theory provide an opportunity to build human capital as the revenues can serve as a new source of finance, the World Bank (2011) notes that "natural resources may in general hinder the process of human capital creation that is the basis of long term growth". There are various explanations as to why natural resource wealth could negatively affect public education spending. A first line of argument stems from fiscal theories of governance, according to which the source of revenue is an important determinant of public expenditures. Moore (2001) refers to natural resource revenues as "unearned" state in-

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[2] Countries with populations of fewer than 150 000 individuals were excluded from the analysis. For a complete overview of countries covered in the baseline regression analysis see Appendix B.

come, to indicate that it entails little organizational and political effort in working with citizens and therefore allows for a certain degree of state autonomy and unaccountability. This disconnect could decrease the need to gain citizens' support, which consequently diminishes incentives to be responsive to citizens' needs and provide public goods such as education. Bornhorst et al. (2009) and McGuirk (2013) find that large natural resource endowments reduce domestic revenue efforts. Second, Gylfason (2001) and Shao and Yang (2014) argue that the expansion of natural resource-based industries tends to lower the demand for high-skilled labour and provides limited incentives to invest in education. Moreover, the authors state that natural resource wealth can give rise to a disregard for human capital development and myopic behavior as the long-term value of education is underestimated. Papyrakis and Gerlagh (2004) similarly argue that natural resource wealth creates a false sense of security and weakens the perceived need for growth-promoting strategies such as investment in education. Finally, the large fluctuations in commodity prices render government revenues in resource dependent countries highly volatile. Such volatility contributes to poor planning and leads to boom and bust in public spending (Lane, 2003; van der Ploeg and Poelhekke, 2009).

As export-based proxies to measure natural resource wealth have often been subject of debate (Brunschweiler and Bulte, 2008; Lederman and Maloney, 2008), we prefer to derive our indicator of natural resource dependence from the World Bank database on the Changing Wealth of Nations, which comprises a set of "comprehensive wealth" accounts, including elaborate estimates for natural capital for over 150 countries. In line with Cockx and Francken (2014), the World Bank (2011) and Gylfason (2001) we use the share of natural capital in total national wealth (*Resource Dependence*) to take into account a country's structural reliance on natural resources.

Indirect effects

In line with the previously mentioned explanations for the hypothesized adverse effect of natural resource wealth on public education spending, we specifically take into account the following proposed indirect effects of natural resource dependence.

Unaccountability

According to the fiscal sociology paradigm, the fiscal link between citizens and their government is a strong determinant of government accountability (and Lien, 1985; Bird et al., 2008; Moore, 2004; North and Weingast, 1989). As mentioned above, natural resource wealth represents an important source of unearned state income. In the presence of a sure source of income, governments can acquire a certain degree of autonomy as they no longer need to be responsive to citizens' policy preferences to induce a greater willingness to pay taxes. McGuirk (2013) in fact hypothesizes that in the presence of high natural resource rents, leaders lower the burden of taxation in order to reduce demand for accountability. Moreover, Collier (2006) finds that lower domestic tax effort in resource-rich countries diminishes the incentive for public scrutiny of the government. Ross (2003) further argues that governments that have access to large natural resource revenues tend to use them to quell dissent, again contributing to reduced accountability.

Government accountability can be expected to affect both the level and the composition of public spending. Besley and Case (1995) show that accountability has a significantly positive effect on total government expenditures per capita. Persson and Tabellini (2004) conclude that more accountable regimes are associated with more public goods and larger welfare

programs. Delavallade (2006) finds that "lack of freedom", which reflects unaccountability, distorts public spending away from social expenditure towards sectors that generate high rents.

We will study this proposed indirect effect of natural resource dependence by including the Polity IV indicator on executive constraints (*Accountability*). This measure captures institutionalized constraints on the decision-making powers of chief executives. Limitations may be imposed by any "accountability groups", which are usually legislatures in Western democracies and a strong independent judiciary in many states. This measure captures the checks and balances between various parts of the decision-making process. In addition, we consider the possibility that the effect of resource dependence is conditional upon the degree of accountability by adding an interaction term to our regression.

Electoral competition

A substantial literature investigates the hypothesis that natural resource wealth impedes democratization (Jensen and Wantchekon, 2004; Ross, 2001; Tsui, 2011). Collier and Hoeffler (2005a) conclude that natural resource rents undermine electoral competition thereby facilitating patronage politics and reducing public goods provision in the process. Mulligan and Tsui (2008) develop a theoretical model where different sources of income have different effects on the level of electoral competition. The authors demonstrate that the discovery of natural resources leads to an equilibrium outcome where the political structure is less competitive.

Electoral competition has been argued to affect the public economy and fiscal policy. Comiskey (1993) finds a robust positive relationship between electoral competition and the growth of public spending as a percentage of GDP. Zooming into the sectoral decomposition of government expenditures, Brown and Hunter (1999) and Kaufman and Segura-Ubiergo (2001) confirm that democracies in Latin America tend to spend more on education. Hecock (2006) finds that greater electoral competition leads to increased spending on primary education. Stasavage (2005) develops a game-theoretic model which suggests that the need to obtain an electoral majority may have prompted African governments to spend more on education. The author confirms this hypothesis empirically with regards to government education spending relative to GDP.

We consider the possibility of an indirect effect through electoral competition by including the Polity IV project indicator on the Competitiveness of Executive Recruitment (*Electoral Competition*). According to Gurr (1974) competitiveness refers to "the extent that prevailing modes of advancement give subordinates equal opportunities to become superordinates". The indicator equals zero if transfers of power are unregulated. Hereditary succession, designation or a combination of both corresponds to a value of 1. Dual systems or transitional arrangements, where one of the executives is chosen by hereditary succession and the other by competitive election, and competitive elections are assigned the values of 2 and 3 respectively. Similar to Mehlum et al. (2006) and Collier and Goderis (2007) and in line with Andersen and Aslaksen (2008) and Bhattacharyya and Collier (2014), who find that the resource curse effect is conditional upon electoral rule, we investigate whether the impact of natural resource wealth alters conditional on the degree of electoral competition. To this end, we study the interaction effect between natural resource dependence and electoral competition.

Structure of the economy

Resource wealth has been found to affect the structure of the economy. Large natural capital endowments have been associated with the decline of the non-natural resource sec-

tor[3] (Manzano and Rigbon, 2001).

We hypothesize that the structure of the economy in turn affects public spending on education. The importance of different sectors in the economy is likely to determine the demand for skilled labor which will influence the demand for education and to the extent that public education expenditure is demand driven, subsequent spending.

Assuming that especially growth in the service industry[4] will spur demand for education, we capture this potential indirect effect by including the value added in services as a share of GDP (*Services*). Data are derived from the World Bank and are based upon World Bank and OECD National Accounts. Services are defined according to the International Standard Industrial Classification of All Economic Activities (ISIC) and includes sale, retail, hotels and restaurants, transport, financial, real estate, government and social and personal service activities.

Volatility

Natural resource wealth can be argued to give rise to particularly volatile revenues. This volatility could in turn potentially influence public spending on education, as it complicates long term planning and has been found to induce a certain degree of myopic behaviour (Van der Ploeg and Poelhekke, 2009), which could give rise to a disregard for building human capital.

Similar to Van der Ploeg and Poelhekke (2009) and in line with Cockx and Francken (2014), we derive our measure of volatility as follows:

$$(1) \qquad Volatility_{i\tau} = \sqrt{\frac{\sum\left(GDP\ pc\ growth_{it} - \overline{GDP\ pc\ growth_{i.}}\right)^2}{N_\tau}}$$

Where GDP pc stands for Gross Domestic Product Per Capita, i represents a country, t time, τ the five year period and N the number of observations.

Conflict

As mentioned above, while it remains subject of debate (Basedau and Lay, 2009; Brunnschweiler and Bulte, 2009; Cotet and Tsui, 2013), it has commonly been argued that countries that rely heavily on natural resources tend to be more vulnerable to conflict (Collier and Hoeffler, 2003; Lujala, 2010; Ross, 2004; 2006). Moreover, the occurrence of conflict could alter government priorities and subsequent expenditures.

We consider this indirect effect by adding a dummy variable (*Conflict*) that equals one for every 5 year period during which conflict was reported to take place in the country according to the UCDP/PRIO armed conflict dataset. Conflict is defined here as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related

[3]   According to the Dutch Disease theory, a resource boom can give rise to an expansion of both the natural resource sector and the non-traded sector. Some authors have therefore proposed that natural resource wealth is associated with faster service sector growth. We dismiss this hypothesis however, as it is based on the assumption that the "spending effect" (increased income from the resource boom is assumed to raise aggregate demand for non-traded goods) dominates the "resource movement effect" (factors of production are shifted towards the booming resource-sector), which is unlikely to hold especially since Corden (1984) mentions that a complication that is overlooked is that the spending effect isn't necessarily positive as it will depend on the resource movement effect via income distribution. Le Billon (2001) additionally stresses that the decline of the resource-sector will be set in motion because efforts are increasingly allocated to rent-seeking activities.

[4]   Using the value added in both the manufacturing and services doesn't alter our main results. However, we find that the value added in services is a better predictor of public education expenditures.

deaths" (UCD/PRIO, 2014) Alternatively, to capture the long-term effects of conflict, we counted the years in which no conflict was reported (Peace).

3.2.2.   Income

According to Wagner's law there exists a positive association between economic development and government public spending as a percentage of GDP over time. Busemeyer (2007) finds a strong positive association between income and public education spending for 21 OECD countries. Akanbi and Schoeman (2010) confirm this positive effect of GDP per capita on education spending for a sample of 15 African countries. Moreover, to the extent that income is a measure for the degree of economic development, it can be expected to influence the demand for skilled labour and therefore the demand for education. We take into account the effect of income by including the logarithm of World Bank data on GDP per capita reported in constant 2005 US Dollar, at the start of every five year period (*GDP*).

3.2.3.   Aid

By mobilizing additional resources for financing education, aid can be assumed to relax macroeconomic budget constraints. Moreover, we hypothesize that as donors stress the importance of education, government priorities could be affected and shift more towards this particular sector. Another line of thought is related to concerns about fungibility of aid, in which case aid would have a depressing effect on domestic spending on education. Van de Sijpe (2012) however finds that aid leads to at most, a small displacement of domestic spending in the education sector.

To capture the effect of aid, we include five year averages of the OECD/DAC Creditor Reporting System (CRS) data on one year-lagged commitments of Official Development as a percentage of GDP (*Aid*). We assume zero-values for countries for which aid flows are not reported in the OECD/DAC database.

3.2.4.   Age distribution

It can be argued that public expenditure on education is driven by demand factors, which will in turn be influenced by the demographic structure of a country (Boix, 1998). Besley and Case (2003) and Archibald and Feldman (2006) for example include controls for the proportion of the population aged 65 and above as well as aged 5 to 17 in their analysis of government spending and public education expenditures respectively. Alesina et al. (1999) find that the percentage of the population aged 65 and above has a negative effect on the share of public spending going to education. Poterba (1998) finds that a higher share of the population aged 65 years and above is associated with a significant reduction in per child educational spending. These results are confirmed by Harris et al. (2001), Rizzo (2006) and Grob and Wolter (2007).

There is however, an alternative hypothesis on the impact of an older population on education expenditures that potentially explains the mixed results. Poterba (1998) point to the possibility of intergeneration externalities that may lead older voters to support educational spending even though it does not benefit them directly. Richman and Stagner (1986) argue that a rising number of elderly may in fact exert a positive effect on education spending, to the extent that the elderly want to seek to raise the training of young workers, so that they generate a larger pool of resources from which transfers can be funded and to improve the quality of services they receive.

We control for the effect of the demographic structure of a country on public educa-

tion spending by including the proportion of the population aged 65 and above (*Pop.>65*) in our regression analysis. The data are gathered from the World Bank World Development Indicators (WDI) database.

Table II: Descriptive statistics

	Obs.	Countries	Mean		Std. Dev		Minimum	Maximum
				Overall	Between	Within		
3.2.1 Resource Dependence	349	140	26.4046	30.6927	29.0247	7.809399	0	243.9587
3.2.1.1 Accountability	326	131	5.1972	1.8813	1.8199	.5139091	1	7
3.2.1.2 Democracy	323	130	6.0351	3.7277	3.6349	.9326408	0	10
3.2.1.3 Services	337	138	55.6697	13.0609	13.2896	2.753028	21.9663	92.2521
3.2.1.4 Volatility	340	138	11.6430	21.6533	22.2531	12.95648	0.0602	187.7653
3.2.1.5 Peace	349	140	30.6363	24.1666	23.8671	4.85975	0	62
3.2.2 GDP	349	140	8.0732	1.70389	1.6658	.110585	4.8481	11.1964
3.2.3 Aid	349	140	5.1829	9.3034	11.0192	2.348509	0	103.6711
3.2.4 Pop.>65	349	140	7.6083	5.1116	5.0274	.4947741	1.0005	21.0439

Source : World Bank, Polity IC, UCD/PRIO

In sum, the baseline empirical model is of the following form:

(2)
$$Public\ Education\ Expenditure_{it}$$
$$= \beta_0 + \beta_1 Resource\ Dependence_{it} + \beta_2 GDP_{it} + \beta_3 Aid_{it} + \beta_4 (Pop. > 65)_{it} + \alpha_i + \varepsilon_{it}$$

where i represents a country, t time, α the country fixed effect and ε the error term.

4.   RESULTS AND DISCUSSION

4.1.   The impact of natural resource dependence on public education expenditures

Before proceeding to the results, here are some remarks about the data analysis. In line with Manzano and Rigobon (2001), Murshed (2004), Collier and Goderis (2007), Haber and Menaldo (2009) Bhattacharyya and Collier (2014) and Cockx and Francken (2014), we have opted to include country-specific fixed effects, as these will effectively control for all unobservable time-invariant country characteristics. To address any remaining within-country correlation, we use cluster-robust standard deviations. We check for collinearity with the diagnostic tools developed by Belsley, Kuh and Welsch (1980) and find that the conditioning numbers are well below the suggested cut-off value of 30, indicating that there are no problems with collinearity. Finally, to identify outliers, we use the multivariate outlier detection method of Billor, Hadi and Velleman (2001). The tables below display the results of the regression applied to the entire sample as well as to the restricted sample.

Table III: Results fixed effects regressions on Public Education Expenditures

		excl. outl.		excl. outl.		excl. outl.		excl.outl.
Res. Dep.	-0.0155** (0.023)	-0.0262*** (0.001)	-0.0129* (0.066)	-0.0198*** (0.009)	-0.0151** (0.023)	-0.0129** (0.047)	-0.0155** (0.018)	-0.0121* (0.057)
GDP			0.7381** (0.022)	0.6963** (0.023)	0.7263** (0.021)	0.7670** (0.014)	0.5038 (0.177)	0.6070 (0.102)
Aid					0.0510*** (0.001)	0.0484 (0.161)	0.0513*** (0.001)	0.0489* (0.082)
Pop.>65							0.0961 (0.162)	0.0861 (0.205)
Obs.	349	328	349	337	349	338	349	344
Countries	140	132	140	137	140	137	140	138
Within R^2	0.0496	0.0777	0.0708	0.0880	0.1185	0.1007	0.1242	0.1036
Between R^2	0.0523	0.0684	0.0910	0.1445	0.0975	0.1507	0.0913	0.0968
Overall R^2	0.0465	0.0610	0.0987	0.1597	0.1140	0.1791	0.1034	0.1043

Notes:
Res. Dep. stands for *Resource Dependence*.
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.

The results of the baseline regression specification summarized in Table III confirm the existence of a resource curse effect on public education spending. The share of natural capital in total national wealth (*Resource Dependence*), has a significantly negative effect on public education expenditures relative to GDP. This adverse effect is robust to excluding outliers and remains highly significant even after controlling for the level of income, aid and demographic and time-invariant country characteristics. According to these estimations, keeping all else equal, a ten per cent increase in the share of natural capital in total national wealth is on average associated with a decrease in public spending on education of approximately 0.16 per cent of GDP. Keeping in mind that the world average expenditure on education was 4.44 per cent of GDP, this represents a considerable decrease in government funding for education. Results not reported in this paper[5] further indicate that this resource curse effect on education spending is particularly strong in Africa.

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[5]   Additional information can be obtained from the corresponding author upon request.

Conform to Wagner's law the regression results support the hypothesis of a positive relationship between the level of income and public spending on education. We find a highly significant, positive effect of the logarithm of GDP per capita (*GDP*) on educational spending in all but one of the regression specifications. Our results further indicate that a higher share of ODA commitments in GDP (*Aid*) is on average associated with higher public education expenditures. The effect of *Aid* however, loses significance when excluding outliers. We don't find evidence for the hypothesized role of the age structure of the population as a determinant of public education spending. This is however, in line with the results from Miller (1996) and Ladd and Murray (1999) who don't find a robust significant negative effect of the share of elderly in a fixed-effects model.

Table IV: Results fixed effects regressions on Public Education Expenditures

		excl. outl.		excl. outl.		excl. outl.		excl. outl.
Resource Dependence	-0.0193*** (0.001)	-0.0162*** (0.005)	-0.0165*** (0.004)	-0.0137** (0.015)	-0.0093 (0.150)	-0.0061 (0.312)	-0.0137** (0.025)	-0.0137** (0.025)
GDP	0.2997 (0.383)	0.3950 (0.245)	0.5156 (0.133)	0.6115* (0.074)	0.5100 (0.147)	0.6297* (0.071)	0.3458 (0.292)	0.3458 (0.292)
Aid	0.0449*** (0.001)	0.0481*** (0.002)	0.0453*** (0.003)	0.0488*** (0.004)	0.0404** (0.017)	0.0441** (0.014)	0.0360** (0.024)	0.0360** (0.024)
Pop.>65	0.0772 (0.222)	0.0676 (0.273)	0.0581 (0.339)	0.0485 (0.414)	0.0147 (0.821)	0.0101 (0.874	0.0251 (0.694)	0.0251 (0.694)
Accountability	0.2968*** (0.003)	0.2829*** (0.005)					0.2856*** (0.005)	0.2856*** (0.005)
Electoral Competition			0.4310*** (0.000)	0.3980*** (0.001)				
Services					0.0414*** (0.008)	0.0368** (0.018)	0.0346** (0.026)	0.0346** (0.026)
Obs.	326	323	323	320	337	334	316	315
Countries	131	130	130	129	138	137	129	128
Within R^2	0.2349	0.2177	0.2281	0.2086	0.1573	0.1426	0.2628	0.2628
Between R^2	0.0897	0.0905	0.1019	0.1001	0.0990	0.0971	0.0882	0.0904
Overall R^2	0.0991	0.0999	0.1162	0.1146	0.1070	0.1059	0.0963	0.0972

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.

Next, we assess the role of the different proposed indirect effects of natural resources; accountability, electoral competition, the structure of the economy and the related demand for skilled labour, macroeconomic volatility and the occurrence of conflict. Table IV summarizes the main regression results.

The indicator of executive constraints (*Accountability)* is significant at the one per cent level. In line with our hypothesis, the positive coefficient implies that a higher score, which corresponds to more restrictions on executive actions and greater accountability, is associated with higher government spending on education. We further note that there is some indication that the impact of resource dependence is weaker when governments are subject to more constraints and held accountable. The interaction term between *Accountability* and *Resource Dependence* is significantly positive for the entire sample (see Table A1, Appendix A).

Our results strongly suggest that the need to obtain citizens' support in elections induces higher public spending on education, as the positive coefficient for *Electoral Competition*

is highly significant. Moreover, in line with Mehlum et al. (2006) and Collier and Goderis (2007), our results suggest that the effect of natural resource dependence alters conditional upon the level of electoral competition. The interaction effect with natural resource dependence is significantly positive for the entire sample, indicating that the resource curse effect on public education spending is weaker when there exists strong electoral competition (see Table A1, Appendix A).

We assess the role of the structure of the economy and its related demand for skilled labor in stimulating education spending by introducing a variable that captures the importance of the service industry. The positive coefficient for the value added in services as a share of GDP (*Services*) is highly significant. Hence, these results indicate that the importance of the service industry in the economy exerts a positive influence on public education expenditures. For the purpose of this paper however, it is interesting to note that by adding this indicator, the effect of natural resource dependence declines both in magnitude and significance. This suggests that part of the adverse effect of natural resource dependence on public education spending can be explained by the crowding out of more skilled-labour intensive sectors.

We don't find any evidence for the hypothesis that macroeconomic volatility hampers government spending on education. Nor do our results indicate that the occurrence of conflict adversely affects the importance attributed to education.

As *Electoral Competition* is no longer significant, when *Accountability* and *Services* are included in the regression analysis (see Table A2, Appendix A), we conclude that the results suggest that unaccountability and the crowing out of skilled-labour intensive sectors act as main transmission channels of the adverse impact of natural resource dependence on public health spending. In sum, we start from the following equation to investigate the direct and indirect effects of natural resource dependence in line with the methodology from Papyrakis and Gerlagh (2004).

(3) $Public\ Education\ Expenditure_{it}$
$$= \beta_0 + \beta_1 Resource\ Dependence_{it} + \beta_2 GDP_{it} + \beta_3 Aid_{it} + \beta_4 (Pop. > 65)_{it}$$
$$+ \beta_5 Accountability_{it} + \beta_6 Services_{it} + \alpha_i + \varepsilon_{it}$$

Next, we estimate the effect of natural resource dependence on the value added in services:

(4) $$Accountability_{it} = \partial_0 + \partial_1 Resource\ Dependence_{it} + \theta_i + \pi_{it}$$

(5) $$Services_{it} = \gamma_0 + \gamma_1 Resource\ Dependence_{it} + \varphi_i + \mu_{it}$$

Where i represents a country, t time, θ_i and φ_i the country fixed effects and π_{it} and μ_{it} the error terms.

Substituting this into equation 2 yields:

(6) $Public\ Education\ Expenditure_{it}$
$$= \beta_0 + (\beta_5 \delta_0 + \beta_6 \gamma_0) + [\beta_1 + (\beta_5 \delta_1 + \beta_6 \gamma_1)] Resource\ Dependence_{it} + \beta_2 GDP_{it}$$
$$+ \beta_3 Electoral\ Competition_{it} + \beta_4 Aid_{it} + \beta_5 (Pop. > 65)_{it} + \beta_6 Services_{it} + \alpha_i$$
$$+ (\beta_5 \theta_i + \beta_6 \varphi_i) + \varepsilon_{it} + (\beta_5 \pi_{it} + \beta_6 \mu_{it})$$

Where $\beta_1 Resource\ Dependence_{it}$ is the direct effect of resource dependence on

public spending on education and $(\beta_5 \, \delta_1 + \beta_6 \, \gamma_1) Resource \, Dependence_{it}$ represents the indirect effect that operates through increased unaccountability and the diminished importance of the service industry. The results suggest that the latter represents about 20 per cent of the total resource curse effect on public education spending.

4.2.   Robustness checks

We conduct several tests to examine the robustness of our results. First, we include time-fixed effects in our baseline regression model (see Appendix, Table A3). By incorporating these dummy variables, we control for unobserved effects that vary over time as well as over countries. As the coefficient for resource dependence decreases neither in magnitude or significance, we find that the adverse effect of natural resource dependence is robust to controlling for time fixed effects.

Second, we want to control for the possibility that education spending depends on previous education expenditures. We therefore use the annual data for all our variables and develop a dynamic regression specification where we include the lag of education expenditures as an explanatory variable. To fully capture the dynamic nature of our 15 year panel, we are obliged to refrain from using our preferred measure of natural resource dependence, the share of natural capital in total wealth, and replace it with a similar indicator; the share of natural resource rents[6] in GDP. Similar measures have been used by authors such as Atkinson and Hamilton (2003), Collier and Hoeffler (2005b), de Soysa and Neumayer (2007).

As traditional panel data estimators are no longer consistent, we apply the instrumental variables first difference estimator proposed by Anderson and Hsiao (1982) in line with Lederman and Maloney (2008) (see Appendix A, Table A4). We find no evidence of a dynamic relationship in public spending on education, as the lagged dependent variable is not statistically significant. Moreover, controlling for this dynamic relation doesn't alter our main results; the negative coefficient for natural resource dependence remains highly significant.

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[6]   Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.

5.   Extension: point source and diffuse natural resources

It has been argued that the type of resource matters. In particular, several authors have made the distinction between point-source and diffuse natural resources based on the concentration of production and revenue patterns. Sala-i-Martin and Subramanian (2003) argue that only point-source natural resources, that are extracted from a narrow geographic or economic zone and typically generate rents that are easily appropriable, are associated with poor economic growth. Isham et al. (2005) corroborate these findings and conclude that only countries dependent on point-source natural resources are subject to "heightened economic and social divisions and weakened institutional capacity", which in turn impedes their ability to manage shocks and economic transitions. Van der Ploeg and Poelhekke (2009) demonstrate that the detrimental volatility associated with the resource curse increases only with higher shares of point-source natural resources in GDP. Bhattacharyya and Hodler (2010) in turn argue that point-source dependence can result in high inequality, facilitates the appropriation of resource revenues and breeds corruption. Mavrotas et al. (2011) conclude that point-source rather than diffuse resource exporting countries are prone to growth failure due to institutional failure. Finally, Bhattacharyya and Collier (2014) show evidence of a resource curse effect on the provision of public capital in the case of point-source natural resources, but not in the case of agricultural and forestry resources.

To explore whether the resource curse effect on public education expenditures differs according to the type of natural resources, we create two new variables based on the World Bank database on the Changing Wealth of Nations; *Point-source Resource Dependence* and *Diffuse Resource Dependence*. Our definition of point-source natural resources coincides with the World Bank definition of subsoil assets and includes oil, natural gas, coal and minerals. Diffuse natural resources are defined in this paper as the sum of crops, pasture, and timber and non-timber forest. We measure dependence by looking at the share of both types of resources in total national wealth.

In line with Bhattacharyya and Collier (2014), we first test the hypothesis by including point-source and diffuse resource dependence separately and we finally control for both resources in the same regression. The results are summarized in Table V.

Table V: Results fixed effects regressions on Public Education Expenditures

		excl. outl.		excl. outl.		excl. outl.
Point-source Resource Dependence	-0.0274*** (0.000)	-0.0202** (0.050)			-0.0289*** (0.000)	-0.0208** (0.042)
Diffuse Resource Dependence			-0.0057 (0.471)	-0.0093 (0.277)	-0.0073 (0.329)	-0.0084 (0.287)
GDP	1.1490*** (0.005)	1.0754** (0.012)	0.8554** (0.047)	0.7940* (0.066)	1.1766*** (0.004)	1.0598** (0.015)
Aid	0.0486*** (0.005)	0.0499*** (0.006)	0.0443** (0.012)	0.0357 (0.198)	0.0492*** (0.002)	0.0512*** (0.002)
Pop.>65	0.0450 (0.503)	0.0505 (0.457)	0.0506 (0.462)	0.0446 (0.519)	0.0192 (0.769)	0.0281 (0.673)
Obs.	349	344	340	336	340	336
Countries	140	137	137	136	137	135
Within R^2	0.1350	0.1065	0.0889	0.0823	0.1543	0.1255
Between R^2	0.1033	0.0963	0.0952	0.1013	0.1120	0.1078
Overall R^2	0.1142	0.1072	0.1131	0.1199	0.1260	0.1200

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.

We find that the effect of point-source resource dependence is highly significant and has a considerably larger impact on public education expenditures compared to the previously established effect of natural resource dependence as a whole. Keeping all else equal, a ten per cent increase in the share of point-source natural resources in total national wealth is on average associated with a decrease in public education spending of 0.27 per cent of GDP. In line with the literature, we find no evidence of a natural resource curse effect on public education spending for diffuse resource dependence. Finally, when controlling for both resources in the same regression, we find similar results. Other coefficients also seem to be plausibly estimated and are similar to earlier findings.

6. CONCLUSION

While education is widely perceived as a key driver of sustainable economic growth and human development and human capital development could contribute to much-needed diversification in resource-rich countries, several authors posit that "natural capital crowds out human capital" (e.g. Gylfason, 2001; Shao and Yang, 2014).

By studying whether this finding is reflected in government spending, this paper contributes to a new line of research in the resource curse literature that addresses the link between natural resource wealth and fiscal policy. In particular, we provide empirical evidence on the relationship between natural resource dependence and public education spending. Not only is this focus on expenditures rather than overarching outcomes novel in the literature, it enables us to capture the impact of natural resource wealth on government priorities as education expenditures are under direct government control.

Using a global panel dataset covering the period from 1995 to 2009, we find clear evidence of a public education spending resource curse. There is a significant adverse association between natural resource dependence and public education expenditures relative to GDP that is robust to controlling for additional covariates such as income, aid, and the age structure of the population. Our results further confirm the existence of indirect effects of natural resource dependence through a deterioration of government accountability and the crowding-out of more skilled-labour intensive sectors in the economy. We also find that government accountability and electoral competition can mitigate this mentioned resource curse effect. Furthermore, our findings indicate that the resource curse effect on the government prioritization of education mainly stems from point-source natural resources that are extracted from a narrow geographic or economic zone and give rise to easily appropriable rents.

Our results have important implications for managing natural resource wealth in developing countries, as they could achieve particularly high returns by investing resource revenues in public goods such as education. While this paper underlines the importance of institutions and government accountability, our results also raise questions on the role of the extractives industry. The oil, gas and mining industry should consider increasing funding for education through Corporate Social responsibility initiatives in this sector or other innovative channels of development finance.

7.　Sources

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Appendix A : Additional regression results

TableA1: Results fixed effects regressions on Public Education Expenditures
(including interaction effects)

		excl. outl.		excl.outl.
Resource Dependence	-0.0334***	-0.0311**	-0.0230***	-0.0244**
	(0.000)	(0.021)	(0.000)	(0.024)
GDP	0.4569	0.4868	0.6853**	0.7102**
		(0.151)	(0.046)	(0.041)
	(0.176)			
Aid	0.0408**	0.0433**	0.0466***	0.0476
	(0.014)		(0.007)	(0.009)
		(0.018)		
Pop.>65	0.0689	0.0650	0.0458	0.0436
	(0.252)	(0.275)	(0.423)	(0.441)
Accountability	0.1806	0.1863		
	(0.192)	(0.222)		
Electoral Competition			0.2472	0.2266
			(0.146)	(0.300)
Res.Dep.*Acc.	0.0032**	0.0029		
	(0.045)	(0.219)		
Res.Dep.*Electoral Competition			0.0044**	0.0050
			(0.013)	(0.215)
Obs.	326	322	323	320
Countries	131	129	130	129
Within R²	0.2523	0.2274	0.2447	0.2172
Between R²	0.0921	0.0957	0.1075	0.1034
Overall R²	0.1035	0.1029	0.1248	0.1197

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.
Res. Dep and Elect. Comp. stand for Resource Dependence and Electoral Competition respectively.

TableA2: Results fixed effects regressions on Public Education Expenditures

	excl.outl.		excl. outl.		excl.outl.		excl. outl.
Resource Dependence	-0.0133 (0.029)	-0.0133** (0.029)	-0.0123*** (0.005)	-0.0091* (0.064)	-0.0156** (0.019)	-0.0112* (0.055)	-0.0154** (0.020)	-0.0111* (0.057)
GDP	0.5316* (0.097)	0.5316* (0.097)	0.3249*** (0.008)	0.3863*** (0.002)	0.5132 (0.175)	0.6478* (0.086)	0.4739 (0.188)	0.5798 (0.109)
Aid	0.0352** (0.031)	0.0352** (0.031)	0.0368*** (0.006)	0.0546*** (0.000)	0.0508*** (0.001)	0.0540*** (0.001)	0.0507** (0.001)	0.0537*** (0.001)
Pop.>65	0.0102 (0.867)	0.0102 (0.867)	0.0125 (0.723)	0.0171 (0.630)	0.0954 (0.167)	0.0825 (0.226)	0.0909 (0.202)	0.0783 (0.266)
Accountability	0.2715* (0.066)	0.2715* (0.066)						
Electoral Competition	0.0593 (0.726)	0.0593 (0.726)						
Services	0.0317** (0.046)	0.0317** (0.046)						
Volatility			-0.0018 (0.395)	-0.0023 (0.280)				
Conflict					-0.1402 (0.464)	-0.2504 (0.166)		
Peace							0.0028 (0.645)	0.0036 (0.548)
Obs.	311	310	340	336	348	345	349	346
Countries	127	126	138	136	140	139	140	139
Within R^2	0.2792	0.2792	0.1269	0.1121	0.1263	0.1216	0.1247	0.1160
Between R^2	0.1001	0.1013	0.0920	0.1051	0.0949	0.0985	0.0966	0.1002
Overall R^2	0.1113	0.1117	0.1129	0.1231	0.1071	0.1102	0.1076	0.1098

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.
Res. Dep and Elect. Comp. stand for Resource Dependence and Electoral Competition respectively.

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Table A3: Results fixed effects regressions on
Public Education Expenditures incl. time fixed effects

		excl. outl.
Resource Dependence	-0.0162**	-0.0134**
	(0.016)	(0.042)
GDP	0.4089	0.3805
	(0.427)	(0.453)
Aid	0.0464***	0.0362
	(0.003)	(0.224)
Pop.>65	0.0815	0.0619
	(0.317)	(0.445)
Time fixed effects		
2000-2004	0.1368	0.1688
	(0.205)	(0.132)
2005-2009	0.0755	0.1324
	(0.710)	(0.501)
Obs.	349	344
Countries	140	138
Within R^2	0.1321	0.1139
Between R^2	0.0907	0.0973
Overall R^2	0.1029	0.1039

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.

Table A4: Results first difference instrumental variables regressions on Public Education Expenditures

		excl. outl.
Public Education Expenditures $_{t-1}$	0.1313 (0.571)	0.1378 (0.552)
Resource Dependence	-0.0387*** (0.000)	-0.0387*** (0.000)
GDP	-1.8454*** (0.001)	-1.8561*** (0.001)
Aid	0.0004 (0.958)	0.0010 (0.887)
Pop.>65	0.1694 (0.293)	0.1668 (0.302)
Obs.	698	697
Countries	124	123
Within R^2	0.0251	0.0268
Between R^2	0.5531	0.5518
Overall R^2	0.0257	0.0243

Notes:
*, **, *** denote statistical significance at 10%, 5% and 1% respectively.
Reported p-values are based on cluster-robust standard errors.

APPENDIX B : LIST OF COUNTRIES

Albania	France	Moldova	Uruguay
Algeria	Gabon	Mongolia	Vanuatu
Angola	Gambia, The	Morocco	Venezuela, RB
Argentina	Georgia	Mozambique	Vietnam
Armenia	Germany	Namibia	Zambia
Australia	Ghana	Nepal	
Austria	Greece	Netherlands	
Azerbaijan	Guatemala	New Zealand	
Bahrain	Guinea	Nicaragua	
Bangladesh	Guinea-Bissau	Niger	
Belarus	Guyana	Norway	
Belgium	Honduras	Oman	
Belize	Hong Kong SAR, China	Pakistan	
Benin	Hungary	Panama	
Bhutan	Iceland	Peru	
Bolivia	India	Philippines	
Botswana	Indonesia	Poland	
Brazil	Iran, Islamic Rep.	Portugal	
Brunei Darussalam	Ireland	Romania	
Bulgaria	Israel	Russian Federation	
Burkina Faso	Italy	Rwanda	
Burundi	Jamaica	Saudi Arabia	
Cambodia	Japan	Senegal	
Cameroon	Jordan	Sierra Leone	
Canada	Kenya	Singapore	
Central African Republic	Korea, Rep.	Slovak Republic	
Chad	Kuwait	South Africa	
Chile	Kyrgyz Republic	Spain	
China	Lao PDR	Sri Lanka	
Colombia	Latvia	St. Lucia	
Comoros	Lesotho	Swaziland	
Congo, Rep.	Liberia	Sweden	
Costa Rica	Lithuania	Switzerland	
Cote d'Ivoire	Luxembourg	Syrian Arab Republic	
Croatia	Macao SAR, China	Tajikistan	
Cyprus	Macedonia, FYR	Thailand	
Czech Republic	Madagascar	Togo	
Denmark	Malawi	Trinidad and Tobago	
Dominican Republic	Malaysia	Tunisia	
Ecuador	Maldives	Turkey	
Egypt, Arab Rep.	Mali	Uganda	
El Salvador	Malta	Ukraine	
Ethiopia	Mauritania	United Arab Emirates	
Fiji	Mauritius	United Kingdom	
Finland	Mexico	United States	