Mining and developing nations:

does mining contribute to socioeconomic development?

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Abstract

The hypothesis that an active mining industry results in decreased economic benefits to developing countries has often been supported by the theory commonly referred to as the Resource Curse. Data from the World Bank provides some support to the argument that there is a negative relationship between natural resource exploitation and economic development, but more recently it appears this relationship does not hold true. With the advent of corporate social responsibility and sustainable development there is increasing evidence that affirms an alternate hypothesis; that an active mining industry results in increased socioeconomic benefits to developing countries. In order to test this hypothesis this study relies on analysis of macroeconomic data primarily obtained from the World Bank, and in order to analyse measures relating to social development and welfare, examination of alternative measures using the United Nations' Human Development Index and Millennium Development Goals. Investigation, using a sub-group of sub-Saharan developing countries as the sample selection, supports the alternative hypothesis.

1. Introduction and Hypothesis

Mining is often considered a controversial topic particularly when considering its effects on developing nations. Although there is usually some acknowledgement as to mining's contribution to foreign direct investment and fiscal revenues, the argument has often been that mining contributes very little to socioeconomic development, and in fact has a negative impact resulting in income inequality, social upheaval, labour displacement and environmental degradation.

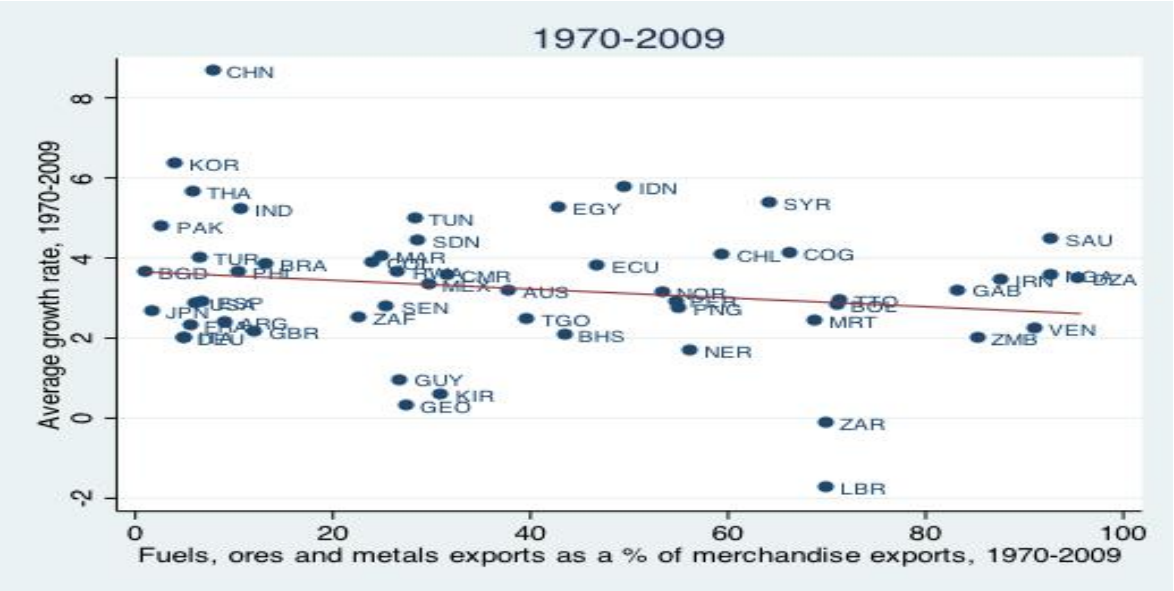
The purpose of this research paper is to consider two opposing hypotheses. With a focus on socioeconomic criteria, the aim is to determine whether theoretical and empirical evidence supports the hypothesis that an active mining industry results in decreased socioeconomic benefits to developing nations, or the alternative, that an active mining industry results in increased socioeconomic benefits to developing nations. In order to test these hypotheses key macroeconomic criteria will be analysed together with socioeconomic indicators such as income levels, education, health and poverty levels. Much of the macroeconomic data is derived from the World Bank whilst the United Nations Development Program's Human Development Index (HDI) and Millennium Development Goals (MDG) provide a useful means of measuring socioeconomic factors. The primary pattern expected in an acceptance of the hypothesis, using a sample of developing countries over a specified time-frame, would be that resource-rich developing countries have decreased levels of economic growth, income per capita and score lower on measures of social welfare, including education and poverty levels, gender equality, life expectancy and maternal mortality, than resource-poor countries. Conversely, a rejection of the hypothesis, one that is argued for in this paper, would indicate that resource-rich developing countries have increased levels of economic growth, income per capita and score higher on measures of social welfare than resource-poor countries.

2. Theory and Literature Review

The theory most commonly used to support the hypothesis that there is a negative correlation between resource-rich countries and economic development, and by extension socioeconomic development, is the Resource Curse theory. Sachs and Warner (2001: 837) provided

empirical evidence that suggests resource-rich countries have stagnated in economic growth since the early 1970s and that they have 'systematically failed to achieve export lead growth or any other types of growth'. To support this argument Figure 1 reflects the statistical relationship between mineral exports and growth. Although the graph presents empirical evidence that high growth countries with low mineral resources (China, Korea and other Asian countries) perform better than low growth countries with large mineral resources (Gabon, Venezuela and Zambia), the negative correlation is weak.

Figure 1: Statistical Relationship between Mineral Exports and Growth



Source: Frankel (2012)

A degree of consensus appears to have been reached by various scholars as to the reasons for the Resource Curse. These commonly include: 1) declining terms of trade – whereby the long-run price of mineral products fall relative to manufactured goods (Frankel, 2012); 2) volatility in commodities markets - making it difficult for governments to predict revenues and foreign exchange earnings (Ross, 1999); 3) Dutch Disease - whereby a country's

currency appreciates, due to say a mineral boom, thereby hurting exports of non-mineral products which in real terms then become more expensive (James & James, 2011); and 4) social concerns such as rent seeking behaviour, corruption and conflict (Nafziger & Auvinen, 2002).

There is a great deal of academic debate as to the validity of many of the arguments above. The primary weakness with the Resource Curse is that it fails to take into account mining's contribution to socioeconomic development. As such, this study will differ from previous studies in that a more thorough examination of socioeconomic indicators will be used to test the hypotheses.

Studies supporting the alternative hypothesis are numerous. Davis and Tilton (2005) dissect each of the arguments supporting the Resource Curse theory and find, for example, with respect to the declining terms of trade argument, that the downward trend in the ratio of prices of mineral products to manufactured goods may simply reflect improvements in the quality of manufactured goods rather than a long-term downward trend in commodity prices. Davis further states that empirical evidence shows no link between the terms of trade and the economic growth of the mineral economies of developing nations.

Perhaps the most relevant study regarding the mining sector's contribution to socioeconomic development in developing nations is that of McMahon and Moreira (2014). In a report commissioned by the World Bank the authors provide evidence that levels of socioeconomic development in mineral-rich countries have shown strong improvements over defined periods, faster than countries not dependant on extractive industries.

With the advent of sustainable development (SD), described by Hilson and Murck (2000) as the combination of socioeconomic growth and environmental protection, we have seen a shift in emphasis from looking at development purely from a macroeconomic level, to one that also analyses the contribution of mining to a developing country's regional development. The closely related concept, corporate social responsibility (CSR), defined as progress along the three dimensions of economic development, environmental protection and social cohesion (Jenkins and Yakovleva, 2006), is one that in the past decade has moved beyond a buzzword

to one, that in some cases, requires mandatory regulatory compliance by resource companies in various countries.

The theory lending weight to the alternative hypothesis is the Local Economic Development (LED) theory, a development process whereby all stakeholders work cooperatively with a common development strategy aimed at creating socioeconomic benefits within a specific region. Rodriguez and Pose (2002) outline a bottom-up approach to LED as outlined in Figure 2, ultimately aimed at enhancing regional development with the ultimate flow to the national level. Often referred to by different names, LED is an approach adopted by most mining companies in developing nations and as such could provide the theoretical support for the alternative hypothesis.

Figure 2: Main Differences between Traditional Top-Down Development Polices and Bottom-Up LED Approaches

Traditional development policies	Local economic development
1. Top-down approach in which decisions about the areas where intervention is needed are taken in the centre	1. Promotion of development in all territories with the initiative often coming from below
2. Managed by the central administration	2. Decentralized, vertical cooperation between different tiers of government and horizontal cooperation between public and private bodies
3. Sectoral approach to development	3. Territorial approach to development (locality, *milieu*)
4. Development of large industrial projects to stimulate other economic activity	4. Maximizing the development potential of each area to stimulate a progressive adjustment of the local economic system to the changing economic environment
5. Financial support, incentives and subsidies as the main factor for attracting economic activity	5. Provision of key conditions for the development of economic activity

Source: Rodriguez-Pose (2002)

3. Analysis

The first step in testing the hypotheses was the identification of a selection of countries relatively similar in a variety of characteristics ranging from demographics, political

structure, geography and income levels. For the purposes of this study a sub-set of developing sub-Saharan countries was tested. Particularly useful was the fact that the selection comprised countries that could easily be classified as either resource-rich or resource-poor, with resource wealth determined by the ratio of mineral exports to total exports. In addition data was readily available using data sources provided by the World Bank. An average cut-off ratio of 20 percent of total merchandise exports over the period 2002 to 2012 was used. Table 1 provides details of the selection which included 35 developing sub-Saharan countries in total, 10 of which could be classified as resource-rich.

Initial analysis looked at macroeconomic data. Figure 3 demonstrates that in terms of annual GDP growth, resource-rich countries outperformed resource-poor countries during the ten year period indicating that the economies of resource-rich countries expanded at much faster rates than those of resource-poor countries.

In terms of GDP per capita (Figure 4), the overall trend indicates that resource-rich countries had higher growth rates than resource-poor countries, albeit at declining rates. The empirical evidence indicates that on the whole, the standard of living in resource-rich countries developed faster than those of resource-poor countries. Therefore, purely from a macroeconomic basis, it could be surmised that the alternative hypothesis holds true.

Notwithstanding the above, there are inherent weaknesses with relying on macroeconomic criteria to measure development. As Boarini, Johansson and d'Ercole (2006) explain, measures pertaining to well-being, such as those relating to poverty, health and education, are not so accurately captured by GDP measures, and we need to rely on other measures to more accurately capture socioeconomic development.

The UN's Millenium Development Goals (MDG) are essentially a set of quantifiable targets for addressing aspects of human welfare such as poverty, education, equality, education and environmental sustainability. Whilst the UN provides a report each year on progress made in achieving the MDG targets, my analysis specifically looked at whether resource-rich countries made better progress than resource-poor countries in attaining these targets.

Table 1: Mining Exports as % of Total Merchandise Exports (Sub-Saharan Developing Nations)

Country Name	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Benin	0.1	0.2	0.4	0.5	0.7	1.2	1.8	0.7	0.9	0.0	0.0
Botswana	4.9	10.7	11.2	11.5	16.8	23.3	19.3	16.1	14.5	8.4	8.6
Central African Republic	22.1	36.6	36.8	17.8	15.7	26.6	35.8	62.0	58.7	62.2	62.0
Cote d'Ivoire	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.4	0.3	0.2	0.3
Cameroon	4.3	4.2	5.1	5.5	4.9	4.9	10.1	5.4	3.0	5.2	1.6
Congo, Rep.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.7	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Ethiopia	1.3	0.7	1.1	1.0	0.6	3.0	0.6	0.8	1.1	1.2	0.6
Gabon	1.8	8.1	5.5	3.6	3.2	3.6	2.2	3.0	3.0	3.0	3.0
Ghana	3.9	3.9	3.9	5.0	3.1	4.9	6.4	4.2	11.2	1.8	2.0
Guinea	71.6	71.0	77.6	74.6	56.7	82.2	59.2	59.0	59.0	59.0	59.0
Gambia, The	1.6	1.6	0.7	0.3	0.9	0.5	14.9	6.8	9.7	9.2	9.2
Guinea-Bissau	0.0	0.0	0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Kenya	2.2	3.0	5.5	1.9	2.5	2.9	3.2	2.0	2.0	2.0	2.0
Lesotho	0.1	0.1	0.0	0.0	0.0	0.0	2.5	0.1	0.1	0.1	0.1
Madagascar	1.4	1.4	2.5	3.9	3.6	3.3	3.2	3.0	9.5	10.3	19.5
Mali	0.1	0.1	0.1	0.1	0.2	0.8	0.8	0.8	0.7	3.2	3.4
Mozambique	45.1	54.9	61.6	59.4	59.9	64.0	57.3	3.9	54.4	50.6	39.0
Mauritania	61.9	57.9	59.8	68.6		55.4	59.9	67.8	30.4	8.8	58.3
Mauritius	0.2	0.3	0.4	0.5	0.8	0.7	0.9	0.7	0.4	0.7	0.9
Malawi	0.3	0.1	0.3	0.2	0.1	0.0	0.0	0.8	11.1	8.8	8.8
Namibia	10.9	7.3	19.7	14.8	26.0	35.0	31.3	26.8	27.8	27.6	29.3
Niger	45.4	50.3	35.5	36.1	35.8	52.6	44.8	59.8	59.6	68.9	56.2
Nigeria	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.2	1.1	0.3	0.4
Rwanda	35.1	26.6	34.2	35.7	31.5	46.4	47.6	25.2	36.9	43.2	33.6
Sudan	0.3	0.4	0.6	0.4	0.4	0.4	0.7	0.3	0.2	0.4	0.4
Senegal	9.4	3.4	3.9	2.8	6.9	4.1	4.3	3.4	3.8	4.1	4.8
Sao Tome and Principe	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1
Swaziland	0.2	0.2	0.2	0.4	0.2	0.5	0.5	0.5	0.5	0.5	0.5
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Togo	16.7	9.2	12.7	10.3	10.3	12.8	14.8	30.3	10.7	8.3	14.9
Tanzania	12.5	10.1	13.7	11.9	17.3	17.6	16.8	24.6	33.7	35.4	24.5
Uganda	2.1	0.4	0.4	2.7	2.4	2.3	2.2	2.5	1.9	1.1	1.1
South Africa	11.3	19.2	22.2	22.4	28.6	29.5	29.1	29.3	32.7	35.1	31.5
Zambia	69.8	67.5	63.1	71.7	84.8	83.0	85.4	81.1	86.0	80.7	80.7

Source: World Bank Development Indicators **Developing Mining Countries** **Developing Non-Mining Countries**

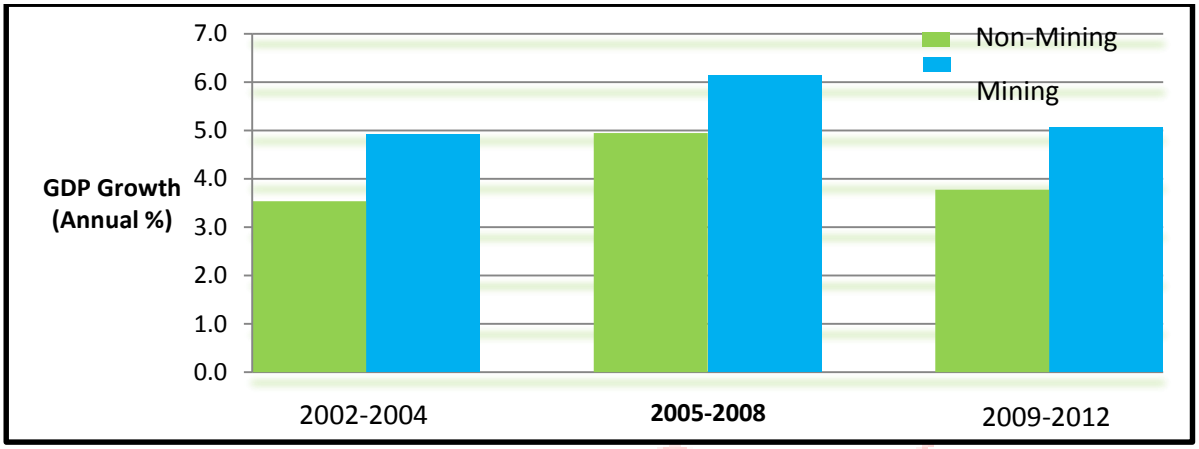
Using a selection of MDG criteria, Figures 5 and 6 represent the percentage increase over the past thirty years in life expectancy at birth for males and females respectively, whilst Figure 7 represents the percentage decrease in maternal mortality. What is particulalry striking from this anaysis is that over the past decade resource-rich sub-Saharan developing countries have

shown much greater improvements in attainment of MDG targets. This appears to reinforce the bottom-up approach derived from LED theory, specifically with respect to CSR and SD. These are concepts which mining companies have only really seriously championed and put into practice over the past decade, including in some cases due to mandatory statutory requirements (Hilson, 2012). During this period, there appears to be a strong positive relationship between socioeconomic development and developing countries which are abundant in mineral wealth. This can be attributed to the increasing implementation of CSR practices in these
countries.

Perhaps most telling are the results from the UNDP's HDI measures which measure human well-being across factors pertaining to income, education and health. Figure 8 shows that resource-rich countries clearly outperformed resource-poor countries over the past twenty years when measured against these criteria.

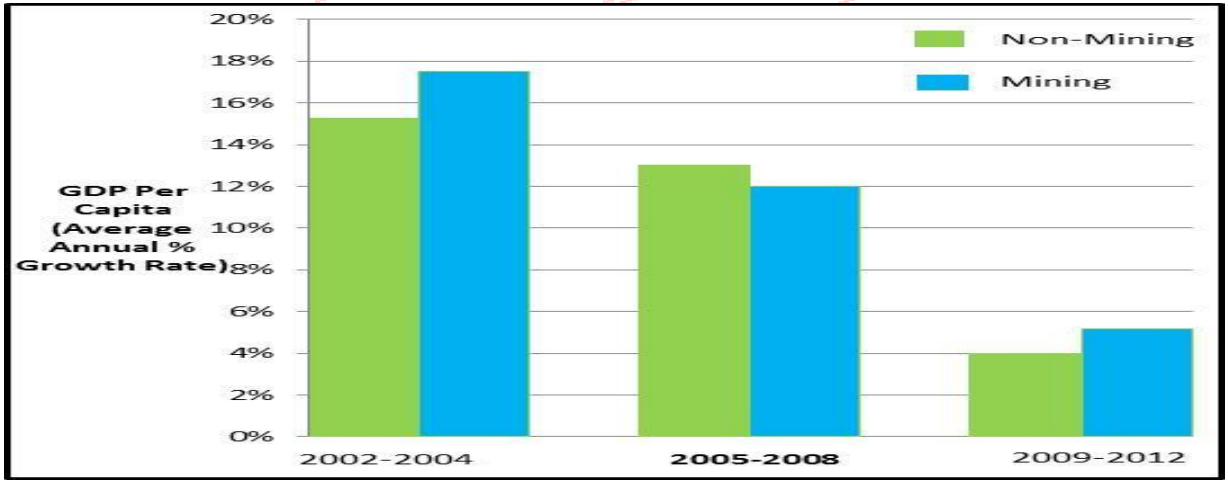
Figure 9 reinforces this with evidence that indicates a much larger proportion of sub-Saharan resource-rich countries have improved in HDI rank as compared to their resource-poor counterparts. Again, the improvement is more emphasized over the past decade, supporting the theoretical bottom-up approach to development.

Figure 3: GDP Growth (Annual %) – Sub-Saharan Developing Nations



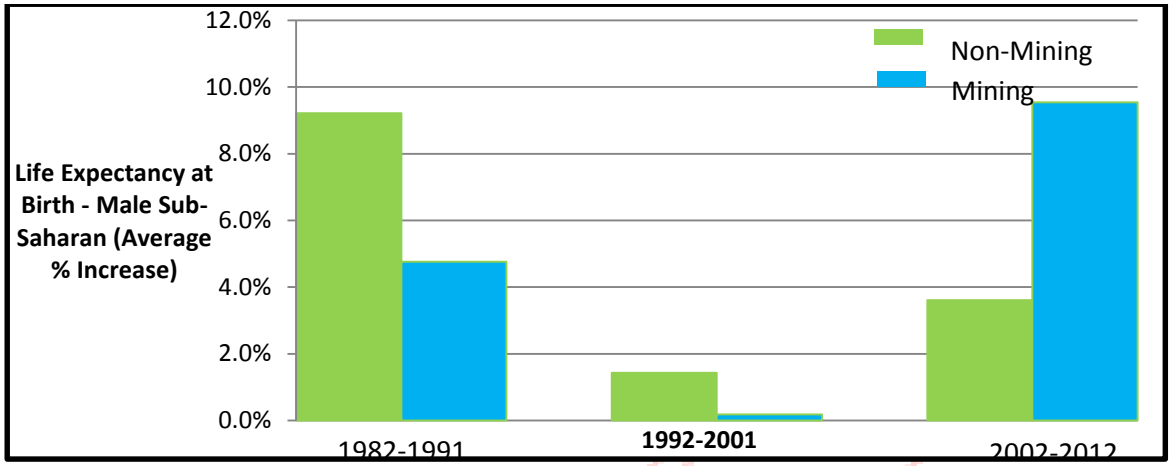
Source: World Bank Data (2014), http://data.worldbank.org/

Figure 4: GDP Per Capita (Average Annual % Growth Rate) – Sub-Saharan Developing Nations



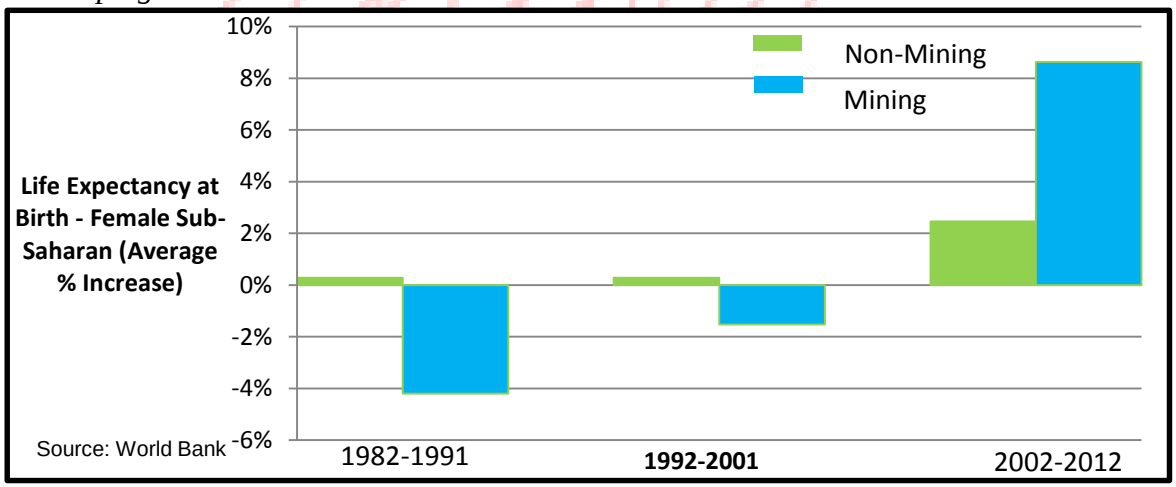
Source: World Bank Data (2014), http://data.worldbank.org/

Figure 5: Life Expectancy at Birth – Male (Average % Increase) – Sub-Saharan Developing Nations



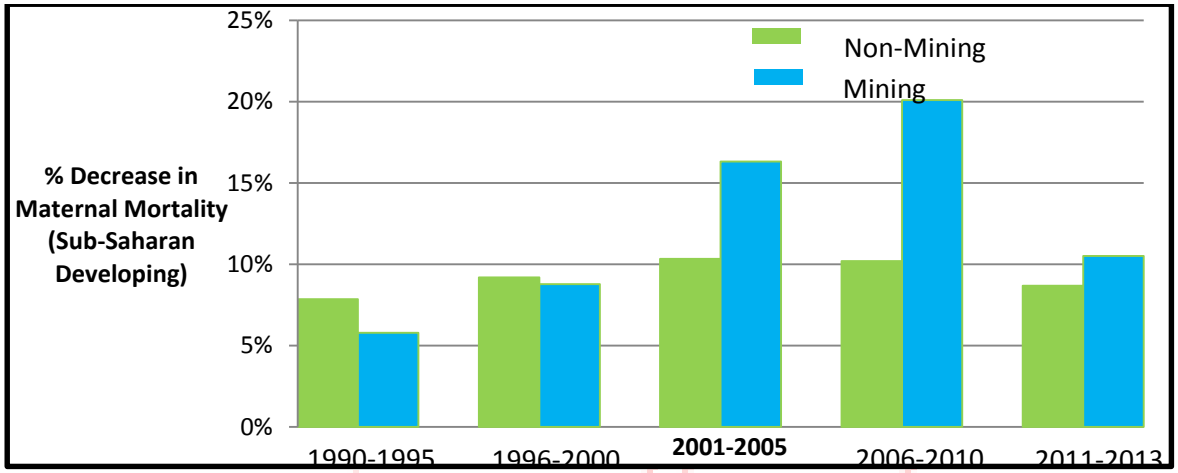
Source: World Bank Data (2014), http://data.worldbank.org/products/wdi

Figure 6: Life Expectancy at Birth – Female (Average % Increase) – Sub-Saharan Developing Nations



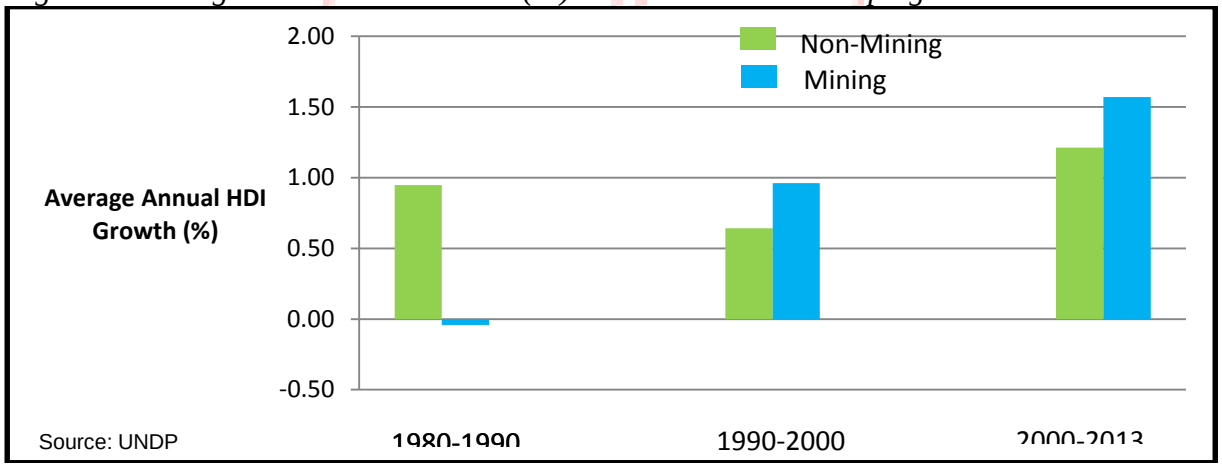
Source: World Bank Data (2014), http://data.worldbank.org/products/wdi

Figure 7: Percentage Decrease in Maternal Mortality – Sub-Saharan Developing Nations



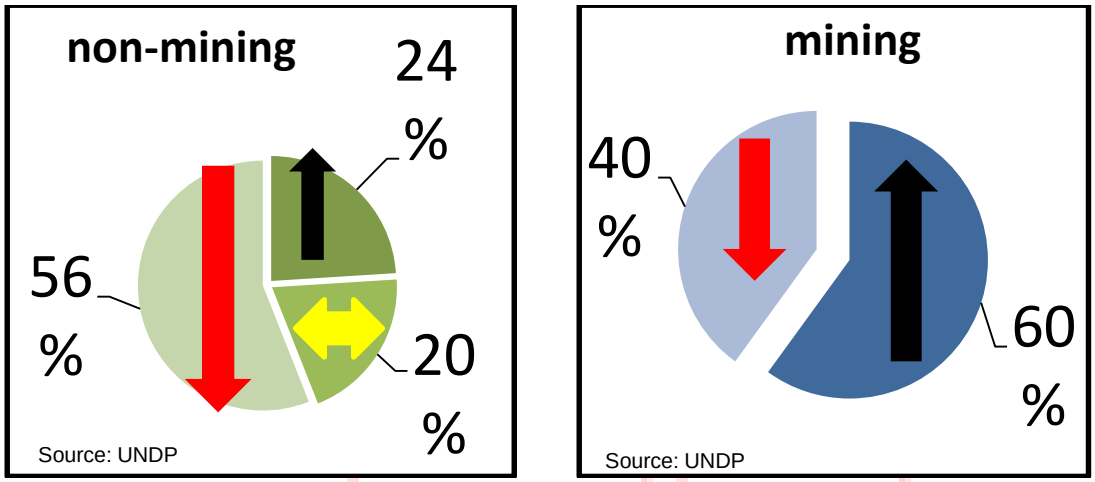
Source: World Bank Data (2014), http://data.worldbank.org/products/wdi

Figure 8: Average Annual HDI Growth (%) – Sub-Saharan Developing Nations



Source: UNDP (2014), http://hdr.undp.org/en/data

Figure 9: Change in HDI Rank – Sub-Saharan Developing Nations



Source: UNDP (2014), http://hdr.undp.org/en/data

Despite the fairly robust empirical evidence supporting the alternative hypothesis, the question that needs to be considered is how much of the marked improvements can actually be attributed to a robust mining industry. McMahon concludes that the mining industry contributes to socioeconomic and human development by: 1) contributing to local development – through job creation, CSR programs, local infrastructure development, foundations and targeted tax payments, 2) improving human development and governance, 3) providing large infrastructure that can be used by other industries, 4) contributing to industrial development through linkages and employment and by serving as the engine of growth, and, 5) driving macroeconomic growth either through foreign direct investment and/or tax revenues.

The McMahon study also supports the LED, bottom-up approach and these conclusions were reached using both statistical evidence and through comprehensive case studies of five resource-rich countries, including Ghana, South Africa, Peru, Indonesia, and Chile. The International Council on Mining and Metals reached the same conclusions with fairly robust case studies detailing the contribution of the mining sector to the socioeconomic development of Chile, Tanzania, Ghana and Peru (ICMM, 2011). For example, Antofagasta and Tarapacá

are the most important mining regions in Northern Chile. The statistical evidence shows that the HDI for Antofagasta (0.884), based on data collected for 2011, is much higher than that of Chile as a whole (0.805). For comparison purposes Antofagasta's HDI score is equivalent to the HDI score of France. The positive impact of CSR activities practiced by mining companies in the large mining sector was examined by the United Nations Conference on Trade and Development (2010). Specifically, a case study prepared on the Los Pelambres project in Northern Chile, a joint venture owned by Antofagasta Minerals and two Japanese consortiums, showed that through the company's CSR body, the Minera Los Pelambres Foundation, that CSR activities have proved particularly useful in improving the welfare of the region. The Foundation focused on three areas of development: 1) education, 2) entrepreneurship and value-added activities, and, 3) water issues associated with improving the productivity of the lands of regional farmers.

4. Conclusion

Whilst there is some evidence to suggest that the Resource Curse theory may have historically supported the hypothesis that an active mining industry results in decreased socioeconomic benefits to developing nations, the evidence in this report clearly indicates that this has not been the case over the past two decades. Analysis shows that resource-rich nations have outperformed resource-poor nations in both macroeconomic measures as well as in indicators of social development and welfare over this period. The relatively recent improvement in performance of resource-rich nations can largely be attributed to mining companies utilizing a bottom-up approach in their investment strategies. Mining companies have come to the realisation that their own profitability is inherently linked to their investment in regional development, which when combined with CSR and SD programs, can ultimately lead to mutually beneficial outcomes with ultimate flow-on effects to the wider economy.

5. Limitations

The analysis presented in this report relies on linkages and associations between data and trends. There is currently no systematic means to measure the actual contribution of mining

to socioeconomic development on a country-by-country basis. An ideal test would be to develop an index which combines the direct contribution of mining to national economies together with mining's direct and indirect contribution to a country's welfare. Such an index would capture economic data, including details on mineral exports and production, and combine these with welfare measures thereby enabling a ranking of countries and the relative importance of mining to each of these economies.

Further limitations are that this study does not take into account some of the negative effects that are potentially associated with mining activities, those which are more difficult to measure. These include environmental degradation, civil unrest and various forms of social upheaval. For example, a large environmental disaster could significantly affect a country's development both from an economic and social perspective for many years.

References

Boarini, R., Johansson, A. & d'Ercole, M. (2006) Alternative Measures of Well-Being', *OECD Economics Department Working Papers*, No. 476. Available at http://www.oecd-ilibrary.org/docserver/download/5l9x4l1zv8vd.pdf?expires=1409490631&id=id&accname=guest&checksum=0A28DF232DE456FFB97157FFF71FBF6A (last accessed August 31, 2014).

Davis, G.A. & Tilton, J.E. (2005) 'The Resource Curse', *Natural Resources Forum*, vol. 29, no. 3: 233-242.

Frankel, J.A. (2012) 'The Resource Curse: A Survey of Diagnoses and Some Prescriptions', *Harvard Kennedy School Faculty Research Working Papers*, RWP12-014. Available at http://dash.harvard.edu/bitstream/handle/1/8694932/RWP12-014_Frankel.pdf?sequence=1 (last accessed August 8, 2014).

Frankel, J.A. (2010) 'The Natural Resource Curse: A Survey', *National Bureau of Economic Research*, No. w15836. Available at http://www.nber.org/papers/w15836.pdf (last accessed August 7, 2014).

Hilson, G. (2012) 'Corporate Social Responsibility in the Extractives Industry: Experiences from Developing Countries', *Resources Policy*, vol. 37, no. 2: 131-137.

Hilson, G. & Murck, B. (2000) 'Sustainable Development in the Mining Industry: Clarifying the Corporate Perspective', *Resources Policy*, vol. 26, no. 4: 227-238.

International Council on Mining and Metals (2011) 'Approaches to Understanding Development Outcomes from Mining'. Available at http://www.icmm.com/publications/approaches-to-understanding-development-outcomes-from-mining (last accessed August 4, 2014).

International Council on Mining and Metals (2007) 'Ghana Country Case Study: The Challenge of Mineral Wealth'. Available at https://www.icmm.com/document/301 (last accessed September 8, 2014).

International Council on Mining and Metals (2011) 'Mining: Partnerships for Development Toolkit'. Available at http://www.communitymining.org/attachments/178_Mining%20Partnership%20Development%20Toolkit.pdf?phpMyAdmin=cde87b62947d46938306c1d6ab7a0420 (last accessed August 4, 2014).

International Council on Mining and Metals (2007) 'Tanzania Country Case Study: The Challenge of Mineral Wealth'. Available at http://www.icmm.com/document/302 (last accessed September 8, 2014).

International Council on Mining and Metals (2011) 'The Role of Mining in National Economies'. Available at http://www.icmm.com/the-role-of-mining-in-national-economies (last accessed August 4, 2014).

James, A.G. & James, R.G. (2011) 'Do Resource Dependant Regions Grow Slower Than They Should?', *Economic Letters*, vol. 111, no. 3: 194-196.

Jenkins, H. & Yakovleva, N. (2006) 'Corporate Social Responsibility in the Mining Industry: Exploring Trends in Social and Environmental Disclosure', *Journal of Cleaner Production*, vol. 14, no. 3: 271-284.

McMahon, G.J. & Moreira, S. (2014) 'The Contribution of the Mining Sector to Socioeconomic and Human Development', *Extractive Industries for Development Series*, no. 30, World Bank Group. Available at http://documents.worldbank.org/curated/en/2014/04/19435144/contribution-mining-sector-socioeconomic-human-development (last accessed August 4, 2014).

Nafziger, E.W. & Auvinen, J. (2002) 'Economic Development, Inequality, War and State Violence', *World Development*, vol. 30, no. 2: 153-163.

Rodriguez-Pose, A. (2002) 'The Role of the ILO in Implementing Local Economic Development Strategies in a Globalized World', *International Labour Organisation*, Available at http://www.ilo.org/empent/Publications/WCMS_111545/lang--en/index.htm (last accessed August 7, 2014).

Ross, M.L. (1999) 'The Political Economy of the Resource Curse', *World Politics*, vol. 42, no. 2: 297-322.

Sachs, J.D. & Warner, A.M. (2001) 'The Curse of Natural Resources', *European Economic Review*, vol. 45, nos. 4-6: 827-838.

United Nations Conference on Trade and Development (2010). 'Corporate Social Responsibility in Latin America'. Available at http://unctad.org/en/docs/dtlktcd20102_en.pdf (last accessed November 9, 2014).

United Nations Development Program. (2014). 'Human Development Index'. Available at http://hdr.undp.org/en/content/human-development-index-hdi (last accessed September 2, 2014).

United Nations. (2014). 'Millennium Development Goals and Beyond 2015'. Available at http://www.un.org/millenniumgoals/reports.shtml (last accessed September 2, 2014).

World Bank. (2014). 'World Development Indicators'. Available at http://data.worldbank.org/indicator (last accessed September 9, 2014).

Appendix A: GDP Growth (Annual %) – Sub-Saharan Developing Nations

Country Name	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Benin	4.4	3.9	3.1	2.9	3.8	4.6	5.0	2.7	2.6	3.5	5.4
Botswana	6.1	4.6	2.7	4.6	8.0	8.7	3.9	-7.8	8.6	6.2	4.3
Central African Republic	3.6	-5.4	6.0	0.9	7.6	8.1	3.9	8.9	6.6	3.3	4.1
Cote d'Ivoire	-1.4	-1.6	1.8	1.3	0.7	1.7	2.2	3.6	2.4	-4.7	9.5
Cameroon	4.0	4.0	3.7	2.3	3.2	2.8	3.6	1.9	3.3	4.1	4.6
Congo, Rep.	4.6	0.8	3.5	7.8	6.2	-1.6	5.6	7.5	8.8	3.4	3.8
Comoros	4.1	2.5	-0.2	4.2	1.2	0.5	1.0	1.8	2.1	2.2	3.0
Ethiopia	1.5	-2.2	13.6	11.8	10.8	11.5	10.8	8.8	12.6	11.2	8.7
Gabon	-0.3	2.5	1.3	3.0	1.2	5.6	1.0	-2.9	6.7	7.1	5.6
Ghana	4.5	5.2	5.6	5.9	6.4	6.5	8.4	4.0	8.0	15.0	8.8
Guinea	5.2	1.2	2.3	3.0	2.5	1.8	4.9	-0.3	1.9	3.9	3.9
Gambia, The	-3.3	6.9	7.1	-0.9	1.1	3.6	5.7	6.4	6.5	-4.3	6.1
Guinea-Bissau	2.0	-4.9	-0.7	4.9	-2.0	6.0	3.2	3.0	3.5	5.3	-1.5
Kenya	0.5	2.9	5.1	5.9	6.3	7.0	1.5	2.7	5.8	4.4	4.6
Lesotho	0.5	4.7	2.3	2.7	4.3	4.7	5.7	3.4	7.1	2.8	6.5
Madagascar	-12.7	9.8	5.3	4.6	5.0	6.2	7.1	-4.0	-0.4	1.0	2.4
Mali	4.2	7.4	2.2	6.1	8.6	4.3	5.0	4.5	5.8	2.7	-0.4
Mozambique	8.8	6.0	8.8	8.7	6.3	7.3	6.8	6.3	7.1	7.3	7.2
Mauritania	0.7	6.0	5.7	9.0	18.9	1.6	3.5	-1.2	4.3	4.0	7.0
Mauritius	2.1	3.7	5.7	1.2	3.9	5.9	5.5	3.0	4.1	3.9	3.2
Malawi	1.7	5.5	4.9	2.8	2.1	9.5	8.3	9.0	-9.5	4.3	1.9
Namibia	4.8	4.2	12.3	2.5	7.1	5.4	3.8	-1.5	6.6	6.0	6.7
Niger	3.0	5.3	0.1	4.5	5.8	3.1	9.6	-0.7	8.4	2.3	10.8
Nigeria	3.8	10.4	33.7	3.4	8.2	6.8	6.3	6.9	7.8	4.7	6.7
Rwanda	13.5	1.5	6.9	9.0	8.6	7.6	11.2	6.2	6.3	7.5	7.3
Sudan	6.4	7.7	3.9	7.5	10.1	11.5	3.0	3.2	3.5	-3.3	-10.1
Senegal	0.7	6.7	5.9	5.6	2.5	4.9	3.7	2.4	4.3	2.1	3.5
Sao Tome and Principe	2.0	6.7	4.5	1.6	12.6	2.0	9.1	4.0	4.5	4.9	4.0
Swaziland	1.8	2.2	2.9	2.5	3.3	3.5	2.4	1.3	1.9	-0.7	1.9
Seychelles	1.3	-6.3	-2.5	9.0	9.4	10.4	-2.1	-1.1	5.6	5.0	2.9
Togo	-0.9	5.0	2.1	1.2	4.1	2.3	2.2	3.5	4.0	4.9	5.9
Tanzania	7.2	6.9	7.8	7.4	6.7	7.1	7.4	6.0	7.0	6.4	6.9
Uganda	8.7	6.5	6.8	6.3	10.8	8.4	8.7	7.3	5.9	6.6	3.4
South Africa	3.7	2.9	4.6	5.3	5.6	5.5	3.6	-1.5	3.1	3.6	2.5
Zambia	3.3	5.1	5.4	5.3	6.2	6.2	6.0	6.0	7.6	6.8	7.3

Source: World Bank Development Indicators

Developing Mining Countries **Developing Non-Mining Countries**

Appendix B: GDP Per Capita (Current US$) – Sub-Saharan Developing Nations

Country Name	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Benin	378.7	464.0	511.3	532.6	557.2	632.4	739.3	712.6	689.6	745.9	750.5
Botswana	3006.6	4098.8	4829.5	5294.4	5341.4	5711.7	5747.0	5178.4	6980.4	7697.4	7254.6
Central African Republic	263.2	297.6	326.2	340.9	365.5	413.5	474.4	464.5	456.6	494.9	479.5
Cote d'Ivoire	688.9	812.4	903.0	940.8	983.3	1102.9	1282.3	1238.7	1207.8	1241.6	1244.0
Cameroon	648.3	790.9	892.5	914.6	964.6	1069.9	1211.3	1102.5	1090.6	1204.7	1220.0
Congo, Rep.	919.7	1039.4	1347.9	1718.1	2120.1	2233.3	3059.2	2401.3	2920.4	3414.1	3153.7
Comoros	451.7	568.8	619.1	644.3	654.0	734.8	816.5	803.5	795.5	871.7	830.5
Ethiopia	110.2	117.6	134.3	159.8	191.6	240.5	321.6	375.3	337.4	350.9	466.6
Gabon	3836.8	4601.6	5328.5	6282.0	6756.3	7994.3	10577.9	7919.7	9362.1	11791.6	10929.9
Ghana	311.6	376.0	426.3	501.9	929.9	1099.1	1234.4	1096.5	1326.1	1594.0	1645.5
Guinea	326.1	374.4	390.9	306.7	287.9	411.5	437.8	435.2	435.4	454.0	493.5
Gambia, The	442.5	361.2	415.8	434.5	441.9	522.3	612.0	553.1	566.3	517.8	510.3
Guinea-Bissau	305.6	342.1	375.8	403.0	398.2	465.3	555.7	536.8	526.5	595.8	494.3
Kenya	398.4	439.6	462.0	523.6	612.2	721.5	785.7	771.3	793.0	816.4	932.5
Lesotho	348.3	510.4	645.5	710.5	736.4	816.8	826.8	858.7	1083.0	1225.6	1134.9
Madagascar	262.7	317.4	245.7	275.5	293.0	379.1	472.4	417.2	413.0	454.5	443.2
Mali	307.2	388.8	421.2	444.3	496.7	561.5	665.1	661.1	673.7	738.6	696.2
Mozambique	217.5	234.8	278.8	313.1	328.7	362.4	434.5	414.1	387.0	510.5	570.4
Mauritania	460.3	527.1	600.1	694.3	939.2	1008.0	1107.3	860.9	977.2	1117.0	1042.8
Mauritius	3939.3	4587.7	5177.4	5054.3	5373.6	6182.2	7600.0	6929.0	7587.0	8749.6	8861.8
Malawi	223.5	198.1	208.9	213.2	234.2	266.0	302.5	345.2	359.6	364.1	266.6
Namibia	1716.4	2489.0	3298.0	3582.3	3886.4	4246.7	4023.7	4070.0	5113.2	5614.9	5930.5
Niger	183.7	222.9	240.2	258.3	266.6	302.3	366.6	352.7	359.8	388.3	394.8
Nigeria	457.5	510.4	645.9	804.2	1014.8	1130.9	1376.0	1090.7	2293.9	2518.6	2722.3
Rwanda	186.6	202.3	225.8	273.7	321.9	373.5	457.2	494.7	519.1	574.9	622.6
Sudan	407.0	471.5	557.2	669.4	862.3	1083.5	1253.1	1190.8	1439.5	1617.5	1694.6
Senegal	513.4	642.6	732.3	772.5	808.0	947.9	1093.8	1018.0	998.6	1083.3	1023.3
Sao Tome and Principe	585.8	687.1	734.0	797.2	851.2	882.9	1090.4	1134.1	1128.0	1355.4	1400.0
Swaziland	1131.3	1704.2	2211.1	2339.3	2636.2	2690.6	2616.9	2679.3	3261.6	3420.2	3289.7
Seychelles	8340.3	8491.5	10173.6	11086.9	12014.4	12155.7	11123.0	9707.3	10842.8	12117.8	11689.3
Togo	287.8	318.3	358.9	381.8	387.4	432.5	528.3	514.8	503.2	580.3	589.5
Tanzania	310.6	326.5	349.6	375.0	369.4	421.3	503.6	504.2	524.7	530.4	608.8
Uganda	238.2	236.1	286.0	313.8	334.6	400.0	448.1	451.1	471.7	440.8	551.2
South Africa	2425.3	3624.7	4659.6	5185.8	5407.3	5851.0	5511.2	5658.4	7175.6	7830.5	7314.0
Zambia	349.3	398.5	486.7	625.9	908.4	953.1	1175.4	998.4	1225.0	1408.4	1463.3

Source: World Bank Development Indicatc **Developing Mining Countries** **Developing Non-Mining Countries**

Appendix C: Human Development Index Trends, 1980-2013

	Human Development Index (HDI)									Average annual HDI (%)	
	Value										
Country	1980	1990	2000	2005	2008	2010	2011	2012	2013	1990-2000	2000-2013
Mauritius	0.558	0.621	0.686	0.722	0.741	0.753	0.759	0.769	0.771	1.01	0.90
Seychelles	..	..	0.743	0.757	0.766	0.763	0.749	0.755	0.756	..	0.14
Botswana	0.470	0.583	0.560	0.610	0.656	0.672	0.678	0.681	0.683	-0.40	1.54
Gabon	0.540	0.619	0.632	0.644	0.654	0.662	0.666	0.670	0.674	0.21	0.50
South Africa	0.569	0.619	0.628	0.608	0.623	0.638	0.646	0.654	0.658	0.14	0.36
Namibia	0.550	0.577	0.556	0.570	0.598	0.610	0.616	0.620	0.624	-0.36	0.89
Ghana	0.423	0.502	0.487	0.511	0.544	0.556	0.566	0.571	0.573	-0.30	1.26
Congo	0.542	0.553	0.501	0.525	0.548	0.565	0.549	0.561	0.564	-0.98	0.92
Zambia	0.422	0.407	0.423	0.471	0.505	0.530	0.543	0.554	0.561	0.39	2.19
Sao Tome and Principe	..	..	0.495	0.520	0.537	0.543	0.548	0.556	0.558	..	0.92
Kenya	0.446	0.471	0.455	0.479	0.508	0.522	0.527	0.531	0.535	-0.34	1.25
Swaziland	0.477	0.538	0.498	0.498	0.518	0.527	0.530	0.529	0.530	-0.77	0.48
Rwanda	0.291	0.238	0.329	0.391	0.432	0.453	0.463	0.502	0.506	3.31	3.35
Cameroon	0.391	0.440	0.433	0.457	0.477	0.493	0.498	0.501	0.504	-0.15	1.18
Nigeria	..	..	..	0.466	0.483	0.492	0.496	0.500	0.504	..	..
Madagascar	..	..	0.453	0.470	0.487	0.494	0.495	0.496	0.498	..	0.73
Comoros	..	..	..	0.464	0.474	0.479	0.483	0.486	0.488	..	..
Tanzania	0.377	0.354	0.376	0.419	0.451	0.464	0.478	0.484	0.488	0.59	2.04
Mauritania	0.347	0.367	0.433	0.455	0.466	0.475	0.475	0.485	0.487	1.67	0.91
Lesotho	0.443	0.493	0.443	0.437	0.456	0.472	0.476	0.481	0.486	-1.06	0.72
Senegal	0.333	0.384	0.413	0.451	0.474	0.483	0.483	0.484	0.485	0.72	1.25
Uganda	0.293	0.310	0.392	0.429	0.458	0.472	0.477	0.480	0.484	2.38	1.63
Benin	0.287	0.342	0.391	0.432	0.454	0.467	0.471	0.473	0.476	1.33	1.52
Sudan	0.331	0.342	0.385	0.423	0.447	0.463	0.468	0.472	0.473	1.20	1.59
Togo	0.405	0.404	0.430	0.442	0.447	0.460	0.467	0.470	0.473	0.63	0.74
Côte d'Ivoire	0.377	0.380	0.393	0.407	0.427	0.439	0.443	0.448	0.452	0.33	1.08
Gambia	0.300	0.334	0.383	0.414	0.432	0.440	0.436	0.438	0.441	1.37	1.08
Ethiopia	..	..	0.284	0.339	0.394	0.409	0.422	0.429	0.435	..	3.35
Malawi	0.270	0.283	0.341	0.368	0.395	0.406	0.411	0.411	0.414	1.88	1.50
Mali	0.208	0.232	0.309	0.359	0.385	0.398	0.405	0.406	0.407	2.89	2.13
Guinea-Bissau	..	..	..	0.387	0.397	0.401	0.402	0.396	0.396	..	..
Mozambique	0.246	0.216	0.285	0.343	0.366	0.380	0.384	0.389	0.393	2.84	2.49
Guinea	..	..	..	0.366	0.377	0.380	0.387	0.391	0.392	..	..
Central African Republic	0.295	0.310	0.314	0.327	0.344	0.355	0.361	0.365	0.341	0.13	0.61
Niger	0.191	0.218	0.262	0.293	0.309	0.323	0.328	0.335	0.337	1.86	1.95

Source: UNDP

Developing Mining Countries **Developing Non-Mining Countries**