The resource curse in mineral-based economies: the case of the Copperbelt in Zambia

Overview

Rich in mineral deposits, Zambia’s Copperbelt province was once the source of a relatively prosperous copper mining. Among the world’s top ten copper producers, Zambia should have been an example of economic success among developing Sub-Saharan African nations. But over-dependence on copper has turned prosperity into economic and environmental hardship. Now the Copperbelt has the largest share of the poor (18%) in Zambia. What went so wrong?

World Bank studies show that economically, resource dependent countries grow more slowly than resource poor countries. This paradox is known as the “resource curse” and the Copperbelt is a case in point. The oil shocks of the 1970s, coupled with the eventual crash in global copper prices, were too much of a burden for Zambia’s fragile economic growth base. By the end of the 1990s Zambia faced a near total collapse of its mining industry. With a lack of diversification into other sectors, Zambia’s past economic reliance on its copper mining industry means that there is now an overall poverty rate of 80%, a life expectancy falling from 45 to 40 years just between 1996 and 1998 and a quarter of the population with no access to education. Poverty alleviation is urgently needed in Zambia.

With no immediate options for alternative livelihoods, many unemployed miners have had to find work by exploiting the area’s natural forest resources. Clearing wood for charcoal production to meet high urban demand for cheap energy has resulted in excessive rates of deforestation. Burning charcoal heavily pollutes the air and water. It has also created further problems. Since charcoal burning takes place informally it is not subject to taxation, unlike mining which is the major supplier of tax revenues to the Zambian administration. Projects that help to achieve improvements in living standards over time are funded by public revenues i.e. tax. Without access to a significant amount of public revenues to fund targeted poverty alleviation projects, Zambia’s development and economic growth is likely to be further hindered.

Issues facing policy-makers:

• Why is there a need to use revenue from the mining industry to gradually diversify the Zambian economy? Is it possible to find a cure for Zambia’s resource curse?

• What are the driving forces of deforestation in the Copperbelt? What role does the mining industry play in this process?

• Why is the provision of alternative livelihoods crucial for halting deforestation in the Copperbelt region?
The approach

In order to obtain further insights into the link between poverty and environment for the Copperbelt and Zambian economy, our study comprised a threefold approach:

1. **A review of “resource curse” literature.** By investigating and reading all the relevant papers and reports written about the resource curse, we can underpin the main explanations behind the negative association between resource richness and economic growth across different countries over the last four decades. This includes the underperformance of the Zambian economy with her disproportionately extensive mining sector. As a general pattern, Zambian governments succumbed to continuous demands by mine workers for wage increases, directed investment into “white elephant”-type projects, and failed to diversify the economy away from copper.

2. **Modelling the relationship between prices in the mining industry and the size/activities of the informal charcoal production sector in Zambia.** The economics of the mining industry are complex. Prices for copper are affected by global demand; copper quality; competition from copper mines in other countries (global supply); availability of cheaper copper substitutes and the cost of extraction (which increases the longer a mine has been in operation). Using an economic model helps us to predict the effects of falling copper prices on: i) workers in the Copperbelt province, ii) the amount of public revenue available to the Zambian government and iii) the local environment.

3. **Household survey** in which we analyzed the behaviour of ex-miners in relation to unsustainable activities in the forest sector. Four hundred households were interviewed in four regions: 300 in Lufwanyama and the rest...
spread equally between Masaiti and Kitwe. Detailed household data were collected to help us understand the Copperbelt economy in more detail. We also examined socio-economic links between household welfare, mining and charcoal production.

These are the results:

1. Zambia is a victim of the “resource curse”

Zambia’s rich natural resources did not guarantee a path of sustained economic growth. Figures 1 and 2 show how Zambia’s economy contracted at an annual rate of 4% for a 21 year period between 1975 and 1996. Average household income levels are almost half that of 1960 levels. Figures 1 and 2 also highlight the extent of dependence of the Zambian economy on the primary sector, specifically copper. By depending on one industry, Zambia has been at the mercy of the copper mining “boom and bust” cycle. Fluctuating copper prices, soaring labour costs and volatile world markets should have signaled governments to reduce dependence on copper. Balanced growth is therefore an important consideration for Zambia.

2. Falling copper prices and the failure of the mining industry is a driving force of deforestation in the Copperbelt.

Falling copper prices reduce the amount of money that can be made from the mining sector (the ‘profitability potential’). One way that mine managers can cut costs is to employ less people. When mines offer less opportunities for employment and there are no other options for formal employment, local workers resort to informal charcoal burning in order to sustain their livelihoods. As forests are largely common resources (i.e. available for anyone to use), charcoal production becomes one of the easiest means to supplement household income in the Copperbelt. As wood is needed for charcoal production, Zambia now faces the environmental consequences of deforestation. Unsustainable timber harvesting has negative impacts upon local water availability, flood and drought control, carbon sequestration and soil erosion.

3. The failure of the mining industry means less public money to use towards poverty alleviation in Zambia.

As mining revenues decrease (either because of declining copper prices or lower quality and quantity of ores extracted), the potential of governments to tax formal production and collect public revenues diminishes as well. Charcoal burning takes place informally, since it is on the whole an unmonitored activity and as such not subject to taxation. Since investment remains mainly publicly-driven (as is the case in most African countries), a reduction in public revenues inhibits the capacity of the economy to save, invest and steadily increase welfare levels.
4. Miners and ex-miners are more likely to engage in charcoal production.

While we were unable to prove any causal mechanisms between mining, charcoal production, taxation and welfare, a number of interesting points did emerge from the household survey:

- Charcoal production does not seem to increase household income levels which indicates that it is also detrimental to household welfare.
- Mining and ex-miners are more likely to engage in charcoal production.
- Wealthy households do not need to engage in charcoal burning. Therefore it is primarily an income-earning activity for poor households.

Solutions for policy makers

This study has focused on the underlying mechanisms that have led to Zambia’s resource curse. As a result we offer preliminary solutions. Nevertheless, the advantage of this “general” approach is that the results also apply to other African mineral-based economies.

In short, we advise the following solutions:

1. **Diversify the economy** using the rents and revenues from the mining industry.
   By encouraging local industry to expand into a number of different geographic markets or attracting different industries into the region, environmental degradation can be minimized. Promotion of business enterprises based on sustainable use and value addition of non-timber forest products is one option for diversifying Copperbelt livelihoods away from charcoal.

2. Establish a “**resource**” fund which is monitored by international agencies such as the World Bank (to avoid corruption) which can be used for specific investments of high social return.

3. Introduce a **charcoal tax** to: a) discourage illegal charcoal production and b) generate revenues to make charcoal production more sustainable. Regulating charcoal production would help to control the extent of deforestation. Under such an initiative, the profits for charcoal burners and the incentive to engage in charcoal production would decrease.

4. **Corporate responsibility** of mining companies is needed to ensure that they contribute to the diversification of skills of Copperbelt residents through education and training. This will enable mine workers and their dependants to diversify their household income sources. Successful economic development is a process. Zambia should not view copper as the only mainstay of the economy, but as a stepping stone into broad-based development.

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