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Articles
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The Tragedy and Reliability of Zambian Trade Data

Dale Mudenda,[1] Maio Bulawayo and Manenga Ndulo
University of Zambia and SAIPAR

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Trade is an essential engine of growth and poverty reduction. Yet trade data suffers from poor quality and inconsistencies. There are several reasons for this: trade data is collected with little coordination between the reporting agencies and the central statistical offices, inadequate resources located to the data gathering agencies undermines archival process of good data, normal statistical errors of measurement and observation, and various complexities associated with international trade such as trade misinvoicing. This study explored the poor quality and inconsistencies in Zambian trade data which might render efforts at policy formulation to boost intra-regional trade and resolve issues of growth and poverty intractable. The study computed an index to depict the extent of trade misinvoicing and hence the quality of Zambia's trade statistics in comparison with other African countries. The study documented the tendency to over-invoice exports and under-invoice imports. This is of great concern; particularly in the trade liberalisation era where the need for high quality trade data to inform constantly evolving regional and continental trade arrangements is more urgent than ever. Plausible interventions include, but are not limited to: increasing intra-country coordination between statistical and other data reporting agencies, increasing collaboration between local and partner country level data collection agencies, and encouraging open collaboration between data collection agencies and users.

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Introduction

The African Continental Free Trade Area (AfCFTA) agreement was ratified in 2012 with a view to "*create a single market for goods and services, facilitated by movement of persons in order to deepen the economic integration of the African continent and in accordance with the Pan African Vision*" (African Union, 2012: 4). Unlike the many other regional economic communities in Africa such as the Common Market for Eastern and Southern Africa (COMESA), Economic Community of West African States (ECOWAS), East African Community (EAC) and the Southern African Development Community (SADC) whose aim is to boost intra-regional trade, the aim of the AfCFTA is to boost intra-African trade beyond the regional communities. This is based on the premise that intra-African trade is low (Chidede and Sandrey, 2018). The rationale for the AfCFTA is clearly to remove tariff and non-tariff barriers and boost intra-African trade (United Nations Economic Commission for Africa (UNECA), 2018a).

Indeed, the argument for the creation of the AfCFTA is supported by official trade statistics. These indicate the relatively low level of intra-African trade. According to the International Trade Centre Trade Map (cited in Chidede and Sandrey, 2018: 2), intra-Africa imports averaged at about 13 per cent over the 2001-2017 period while intra-Africa exports averaged at about 15 per cent of all imports and exports of African countries over the same period. These statistics imply that there is a significant potential for boosting intra-African trade; particularly if the AfCFTA is effectively implemented.

However, official trade data against which trade arrangements are justified may be of poor quality (Ariyo, 1996: 2). This is for a number of reasons which may not necessarily be mutually exclusive: Firstly, the lack of coordination between domestic reporting agencies and the local central statistical offices, and between the local and trade partner data collection agencies (African Union, 2009: xiv); Secondly, inadequate resources for data collection and management (Adamu et al., 1998: 53; African Union, 2009: 33); Thirdly, the poor quality of trade data may simply be the result of normal statistical errors of measurement and observation (Adamu et al., 1998: 53; International Trade Centre, 2010: 6); Fourthly, the complexities of valuing international trade associated with unreliable shipping costs (Hummels and Lugovskyy, 2003: 3), re-exports (International Trade Centre, 2010a: 6), multiple (and fluctuating) exchange rates (International Trade Centre, 2010a: 7), product misclassification and the misdeclaration of the destination market (Nitsch, 2017: 1); Fifthly, the under- and over-invoicing of trade flows resulting from the above complexities or even from deliberate illegal attempts by importers and exporters to profit from incorrectly declaring the value of traded products (Nitsch, 2017: 1).

This study seeks to assess the quality of Zambian trade data (imports and exports) with respect to continental trade partners, within the misinvoicing framework. The study assesses the extent of trade misinvoicing relating to Zambian total trade flows with the rest of Africa at the aggregate, country and product levels using data on three broad product classifications. We specifically look at food, beverages and tobacco; textiles and clothing; and base metals.

The study is important in light of the structure of the Zambian trade flows and the country's commitment to the AfCFTA. The Zambian economy is dominated by the export sector. The performance of the economy is therefore heavily dependent on decisions made on the export and import of goods and services. In addition, the projections of fiscal revenues for the government depend on trade data. These will in turn depend on the quality of trade data.

Furthermore, policy makers and researchers use trade data for applied research and economic analysis. This is used to inform trade arrangements such

as the AfCFTA. Research results and underlying analyses can only be useful to the extent that they are based on comprehensive, timely and accurate trade data (Adamu et al., 1998).

The rest of the study is structured as follows. In section 2, we review the relevant empirical literature on the quality and inconsistencies of African trade data. In section 3, we outline the methodology adopted for the study. Section 4 highlights and discusses the main findings while section 5 concludes and gives policy recommendations.

Trade Statistics and the Irreversible Tragedy

Research has been carried out on the consistency and reliability of economic data in developing and developed countries. However, the problem of poor data and its lack of consistency is not much appreciated despite the importance of good data as an input into quality research and policy judgement.

There are major complaints that have been identified with the quality of African economic statistics. The major concern is in the external trade and agricultural statistics (Yeats, 1990a). These are general and specific concerns. The general concerns relate to the shortness of data in time series, the highly aggregated series that are not useful for analysis, the gaps in the time series data and the lack of timeliness in the production and dissemination of data (United Nations Development Programme, 2012: 1). The specific concerns are about basic recording problems in administrative data (McLennan, 2018). Thus there are both specific and general concerns that data is inconsistent, unreliable, and lacks validity, precision and accuracy (Adam et al., 1998).

Concerns about the reliability of African trade data were first brought out by Yeats in the 1990s. Yeats argued that Sub-Saharan Africa trade statistics cannot be relied on for analysis of trade flows. A major theme of Yeats' early work on African trade statistics was that if they are of any use, it is really to indicate the huge smuggling and under-reporting that takes place within Sub-Saharan Africa (Yeats, 1990a, 1990b).

The concern about African trade statistics is not so much about quantity but quality. According to Adamu et al. (1998), the problems of quality arise from administrative errors due to shipping costs, re-export of goods, multiple exchange rates, commodity classification and valuation problems; illicit activities resulting in over-invoicing or under-reporting of exports and imports and smuggling; and normal statistical errors of measurement and observation. Other drivers of the poor quality of African trade statistics include: time lags in compilation, the lack of a standardised reference period, and the lack of standardised units of measuring trade. (International Trade Centre, 2010b: 11).

Generating reliable statistics depends on correct reporting. Early researchers on the quality of trade statistics such as Morgenstern (1963), warned about the problem of misreporting and the careless use of trade statistics, seen in many publications. Ariyo (1996) laments the use of trade statistics by African Economic Research Consortium (AERC) researchers without even discussing or acknowledging the limitations of the data and their sources.

The tragedy of inaccurate and unreliable data is still prevalent among African countries in the 2020s. It is confirmed by Jerven (2014). Actually, Africa lags behind the rest of the world in the collection and management of (quality) trade data. Thus, Morgenstern's (1963) and Yeats' (1990a, 1990b) concerns on the quality and reliability of trade statistics are as relevant today as they were a couple of decades ago. All efforts to improve data have come to nought and failed to reverse the tragedy of bad quality trade data. This tragedy which should be overcome, however, seems irreversible unless drastic interventions are made.

Methodology

The study unpacks discrepancies in trade flows among trading partners. In general, observed exports from Zambia to another country, say Eritrea, accounting for freight costs and insurance (c.i.f), should match the observed imports of Eritrea from Zambia. If the exports from Zambia to Eritrea (c.i.f) are less than the claimed imports of Eritrea from Zambia, then the difference can be attributed to export under-invoicing by Zambia, or import over-invoicing by Eritrea. This assumes that trade statistics are accurate enough to be substituted for market values. In this study, we show that the accuracy of the assumption is questionable due to data inaccuracies across sources and destinations of products.

The net trade misinvoicing is computed, based on mirror accounts, as follows:

$$Xmis_{zj,t}^{y} = M_{jz,t}^{y} - (\gamma . X_{zj,t}^{y}) \qquad (1)$$

where *Xzjy* is exports of good y by country *z* to country *j* as recorded in country *z*'s data, *Mlz,ty* refers to imports of good *y* by country *j* from country z as recorded by partner j. The γ represents the cost of freight and insurance. The variable *Xmis* measures the discrepancy in Zambian exports to destination markets. The extent of misinvoicing is computed as:

$$Dmisinv = \frac{Xmis_{zj,t}^{y}}{X_{zj}^{y}} * 100 \qquad (2)$$

Trade misinvoicing can be estimated at three distinct levels. The first is for all trading partners taken together. Second, at partner country trade level and finally at product level. This study tests the accuracy of trade statistics using trade flows for three randomly selected broad product categories: food, beverages and tobacco; textiles and clothing; and base metals. If *Xmis>0* (i.e., a positive value) shows that export under-invoicing while *Xmis*<0 (a negative value) shows some over-invoicing of exports.

Data and Sources

The data for the study were obtained from the United Nations COMTRADE database through the World Integrated Trade Solutions. It was accessed from the website http://Comtrade.un.org/data/; The data are presented at product level, by country source and destination. Specifically, the harmonized system at six-digit level isused. The food, beverages and tobacco are aggregated from the HS chapters 16 to 24, textiles and clothing from chapters 50 to 62 and base metals from chapters 72 to 83. The computations, focusing on trade misinvoicing at the aggregate, country and product levels, are presented in the next section. Note, however, that the extent of misinvoicing at the product and country levels is determined only for exports.

Results and Discussion

Aggregate Level
The results are based on equation (1). The measure of import misinvoicing are presented in Table 1. In theory, the accuracy assumptions suggest a zero discrepancy, so that *Xmiszj,ty=0*. There are several observations that can be made from Table 1. First, there are negative discrepancies for export misinvoicing and positive discrepancies on the imports side. This suggests the existence of inconsistences in trade flows between Zambia and its African trading partners. Although part of the discrepancies could be explained by transport costs, the adjustment of the flows by the CIF could reduce their effect, indicating that the reporting of data may contribute to the gaps.

Table 1: Trade Data Discrepancies for All Selected Products

Year	Export Misinvoicing	Export Mis Index	Import Misinvoicing	Import Misinv Index
2002	-217,328	-83.6	12579	12.10
2003	-296,584	-90.3	43315	32.18
2004	-407,108	-84.2	36779	21.04
2005	146,203	30.4	36891	18.56
2006	-329,522	-63.8	90611	31.96
2007	-555,943	-76.9	113927	31.57
2008	-39,307	-5.0	218498	42.92
2009	-118,943	-23.5	100936	26.29
2010	-142,007	-21.4	211643	36.73
2011	-155,471	-16.1	186672	27.94
2012	-65,961	-8.6	129231	18.18
2013	-418,486	-42.6	71418	11.95
2014	-435,510	-55.0	42179	7.21
2015	-163,391	-27.6	82195	16.66
2017	148,297	29.8	12816	2.85
2018	895,089	142.0	-87306	-16.18

Source: Authors' Calculations from Comtrade Database

Secondly, the extent of the data inconsistency varied from year to year and across both imports and exports. For example, the extent of export misinvoicing ranged from an over-invoicing of US$ 555.9 million in 2008 to under-invoicing of US$895 million in 2018. A similar trend is observed for the export indicator in Column 3. These results suggest that there are significant amounts of exports and imports that are not reported across partner countries once a country's exports are subjected to mirror accounts. The aggregate pattern of misinvoicing may reflect some aggregation bias. Overall, there seems to be an over-invoicing of exports and an under-invoicing of imports.

Product Level
We look at the product level. Table 2 shows the possibility of misreporting at the product level. The results show large differences in trade misinvoicing across the three selected product categories. However, these differences exhibit large heterogeneities across the products and years. Across all the three product categories, Zambia tends to over-report exports.

The extent of the incomparability of trade flows across mirror accounts is larger for minerals and food and beverages. These are typically in excess of 100 per cent of the exports. The lowest misinvoicing is observed for textiles. This is typically less than 50 per cent. These large discrepancies are consistent with the assumption that trade data from developing countries is susceptible to higher errors in recording trade invoice values than that of developed countries. Furthermore, there is a possibility Zambia has weak information on market destinations of exports. This is because of the inherent weaknesses of the trade data collection agencies.

Table 2: Selected Product Level Heterogeneity in Export Misinvoicing

Year	Base Metals	Index (%)	Food Beverages	Index (%)	Textiles	Index (%)
2002	-188.3	-106.5	-28.3	-67.2	-35.3	-86.4
2003	-266.8	-107.4	-24.2	-54.8	-27.6	-79.9
2004	-305.2	-106.8	-64.2	-72.3	-102.3	-95.0
2005	-352.2	-104.4	-74.2	-70.8	-25.8	-69.5
2006	-387.3	-106.3	-74.7	-66.3	-23.6	-63.6
2007	-583.4	-107.2	-80.1	-69.1	-26.7	-58.1
2008	-633.1	-106.5	-85.2	-62.0	-8.5	-26.0
2009	-263.5	-102.1	-132.1	-68.8	-2.8	-10.1
2010	-382.4	-105.0	-181.4	-70.9	13.3	47.6
2011	-625.6	-103.6	-219.2	-73.6	1.9	4.0
2012	-239.8	-95.6	-322.7	-77.5	-32.3	-44.0
2013	-350.6	-102.9	-366.7	-77.0	-23.7	-32.4
2014	-285.5	-102.5	-304.5	-72.5	41.0	125.9
2015	-280.1	-102.9	-152.7	-58.1	16.5	47.3
2017	-132.7	-94.1	-187.8	-61.2	16.9	46.7
2018	-128.7	-61.1	-247.9	-67.7	23.3	99.7

Source: Authors' Calculations from Comtrade Database
Note: The index captures the difference ratio based on equation (2).

Country Level
We also look at the country level data. Table 3 presents the trade flows of declared export values by Zambia against the corresponding import values reported by the partner countries. Some general observations emerge from Table 3. Firstly, Zambia's exports of the selected products are concentrated with a few African countries.The exporter and importer records show that the top 10 destinations absorb over 75 per cent of the products.

Table 3: Average Distribution of Exports by Trading Partner 2010-2018

Country	Zambia Reported Figures		Partner Reported Figures		
Country	2010-2018	Share	Country	2010-2018	Share
South Africa	2,604.2	44%	Namibia	2,308.3	34%
Congo D R	813.9	14%	Egypt	1,796.2	27%
Zimbabwe	659.9	11%	South Africa	1,721.5	26%
Malawi	474.7	8%	Zimbabwe	251.8	4%
Kenya	248.6	4%	Tanzania	115.7	2%
Tanzania	240.5	4%	Kenya	97.5	1%
Mauritius	223.8	4%	Botswana	95.8	1%
Botswana	163.4	3%	Burundi	75.6	1%
Mozambique	123.7	2%	Mauritius	65.8	1%
Namibia	65.0	1%	Rwanda	61.9	1%
Egypt	64.6	1%	Malawi	55.2	1%
Rwanda	63.4	1%	Mozambique	19.3	0%
Others	142.4	2%	Others	98.0	1%
Total	5,888.0	100%	Total	6,743.4	100%

Source: Authors' Calculations from Comtrade Database

Second, for the selected products, the ranking of export destinations in the Zambian trade significantly differs from the importer data records. For example, while Congo DR and Kenya are reported to be among the top five destinations and South Africa (44% of total exports) as the top destination, the mirror account shows a shift in the ranking with Namibia topping the group (34%) and Egypt and Tanzania rising to the top five importers at the expense of Kenya and Congo DR.

Table 4 shows the extent of misinvoicing in these countries over the periods 2002 to 2007 and 2008 to 2018. The country-partner measures of misinvoicing reveal several general trends. Table 4 shows that three countries (Botswana, Congo DR and Rwanda) out of the 11 countries reported zero imports. This is despite Zambia recording exports to these countries in the period 2002 to 2007. Egypt, on the other hand, reports imports from Zambia without corresponding export records in the Zambian data.

Table 4: Partner Level Export Misinvoicing

Country	2002-2007	Index	2008-2018	Index
Botswana	**		-95,399.1	-56.9
Congo DR	**		**	
Egypt	**		1,855,740.0	334.0
Kenya	-18,195.0	-25.3	-178,564.0	-63.2
Malawi	-131,627.0	-1002.6	-474,673.0	-89.6
Mauritius	23,851.6	149.9	-214,031.0	-81.3
Namibia	-673.169	-25.7	2,003,170.0	2767.3
Rwanda	**		3147.952	10.9
South Africa	-758,184.0	-55.1	-1,245,926.0	-41.7
Tanzania	-86,967.4	-79.3	-140,034.0	-51.1
Zimbabwe	424,427.5	375.3	-535,397.0	-73
Others	-13,656.3	-0.63922	-55976.6	-0.35278

Source: Authors' Calculations from Comtrade Database

Furthermore, in the period 2002 to 2007, countries that reported some trade show large discrepancies in the extent of misinvoicing. This ranged from an export over-invoicing of 1,002 per cent for Malawi to an under-invoicing of 375per cent for Zimbabwe. Also, Zambia reports over-invoicing its exports to almost all countries in the period 2008 to 2018. However, the exports were under-invoiced in the markets of Namibia, Egypt and Rwanda over this period. The under-invoicing in the case of Egypt and Namibia arise from the huge base metal exports recorded in these countries' trade data. But this is not reported in Zambia.

Discussion

This study has documented evidence regarding the inconsistencies prevalent in African trade data. Using the misinvoicing framework, the study has demonstrated these inconsistencies using trade data on Zambia's trade with the rest of the African continent. At the aggregate level, the study has found evidence of a tendency by traders to over-invoice exports and under-invoice imports. This is consistent with evidence from similar empirical contexts in Africa (Nitsch, 2017; Global Financial Integrity, 2018; UNECA, 2018b).

At the country and product levels, the study also found a general tendency to over-invoice exports; although it is important to note that the degree of misinvoicing varies significantly across countries and product categories. For example, a UNCTAD (2016) study found evidence of trade misinvoicing in primary commodities traded by Chile, Cote d'Ivoire, Nigeria, South Africa and Zambia.

The above inconsistencies may be a reflection of the inadequate domestic capacity in data collection, management and reporting, inadequate coordination with other country-level partner agencies, and the inability to stem deliberate trader-initiated mis-declaration of trade volumes. The lack of capacity to produce high quality trade data may further be a reflection of inadequate funding to reporting and statistical agencies (Adamu et al.,1998).

The inconsistencies significantly undermine the relevance of this data for research and policy purposes. This is particularly critical at a time when there are several attempts, such as the AfCFTA, to increase intra-African trade. The successful formulation, implementation and evaluation of such trade-enhancing initiatives is contingent on the ability of statistical agencies on the continent to produce high quality trade statistics.

Conclusion and Policy Implications

Trade is an important engine for economic growth and development. However, the data on which a significant body of empirical research, policies and trade arrangements are based, are often inconsistent and of poor quality and, therefore, unreliable. These problems of trade data are documented in, among other things, the misinvoicing literature.

Thus, this study sought to document the inconsistency and inferior quality of African trade statistics by analysing the extent of trade mis-invoicing in Zambia's trade with the rest of Africa. The analysis, focusing on three classes of products (food, beverages and tobacco; textiles and clothing; and base metals), was conducted at the aggregate, country, and product level. For the product classes of interest, our study documents the tendency to over-invoice exports and under-invoice imports. However, the study found wide variations in the extent of trade misinvoicing across products and countries.

The poor trade data may imply poor quality of research output and policy-making. In the trade liberalisation era, the need for high quality trade data to inform constantly evolving regional and continental trade arrangements is more urgent than ever. In order to improve the quality of trade data, one can suggest the following interventions. Firstly, there is need to increase funding to and coordination between local statistical and other relevant data reporting agencies. This is to increase their ability to collect timely data and detect illicit trade flows. Secondly, there should be increased coordination between domestic and partner country-level data collection agencies; and lastly policy makers should encourage open collaboration between data collection agencies and users as a mechanism for validating the quality of trade data.

End notes
[1] Corresponding author: dalemu7@gmail.com

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Returns to Technical and Vocational Education and Training: Evidence from Zambia

Maka B Tounkara, Chrispin Mphuka,* Oliver Kaonga and Bona Chitah

University of Zambia.

The study seeks to investigate the returns to technical and vocational education and training (TVET) in Zambia using the 2014 Labour Force Survey (LFS). We adopt the modified Mincerian model and the fixed effects approach. We find that individuals who possessed TVET skills with certification, regardless of their gender or their place of residence, significantly earned more than their counterparts in wage employment without any TVET skills. We also find that males with vocational skills with certification significantly earned more than their female counterparts with the same TVET skills with certification, a sign of labour market discriminatory bias by employers. Moreover, we observe that individuals residing in rural areas with TVET skills with certification significantly earned more than their counterparts in urban areas with the same TVET skills with certification because employers may want to lure TVET graduates to relocate from urban areas to rural areas. However, individuals with TVET skills without certification did not significantly earn more than their colleagues in wage employment without TVET skills. In some cases, individuals with TVET training but without certification were observed to be worse off than their counterparts without TVET training in wage employment. Given the above evidence, it is imperative that the Zambian government significantly increases spending towards vocational training as well as invest in TVET infrastructure in order to improve TVET enrolment rates. This will enhance the employability of Zambians across the country and generate substantial returns to TVET skills. However, there is need for a deliberate policy that will ensure that females with the same vocational skills as their male counterparts earn the same returns. There is also need for deliberate awareness campaigns on the benefits of TVET training in order to reduce the stigma around TVET.

1.0 Introduction

Over the years, successive governments have grappled with how best to alleviate poverty and youth unemployment in Zambia. This, to date, still remains

a developmental challenge. The Labour Force Survey (LFS) of 2014 indicates that males accounted for 53.4% of the total unemployed youths, whereas females accounted for 46.6%. Urban areas have recorded the highest youth unemployment. The promotion of Technical and Vocational Education and Training (TVET) has been viewed by many to be the cornerstone of Zambia's development agenda and a viable option that can be used to not only reduce youth unemployment but also enhance the employability of youths. Despite this, TVET has been perceived in some sections of society to be a route taken by individuals with less ambition. Moreover, despite the potential of TVET as an instrument of economic growth, government expenditure towards the provision of TVET over the years has been dismal and is very small when compared to other African countries (World Bank, 2016) as evidenced in the table below.

Table 1: Country Comparison of TEVET Expenditure as a Share of Total Government Expenditure

Country	%	Year
Central African Republic	7.4	2008
Gambia	2.6	2009
Ghana	1.1	2008
Liberia (recurrent)	8.5	2012
Malawi (recurrent)	3.4	2007
Rwanda (recurrent)	9.6	2012
Sierra Leone (recurrent)	3.4	2007
South Sudan (recurrent)	1.1	2009
Swaziland (recurrent)	2.4	2007
Uganda	4	2004
Zambia	0.6	2013

Source; Education Public Expenditure Review in Zambia, World Bank, 2015

There is ample evidence suggesting high returns accruing to TVET graduates relative to graduates with general education[3]. Empirical evidence from studies such as Moenjak and Worswick (2003), Ahmed (2016), El-Hamidi (2006), Strawinski et al. (2016), and Neuman and Ziderman (1991) all suggest relatively high returns to vocational education. Despite this sufficient evidence in favour of vocational education, TVET enrolment rates have only marginally increased in Zambia in the recent past. This is partly due to the TVET infrastructural deficit

and the stigma associated with TVET graduates. Moroever, access to vocational education in Zambia still remains low and is below that observed for middle income countries which averages between 20% and 30% of those in education (2010-2014 TEVET Sector Plan).

There is no doubt that TVET has the potential to improve and promote positive labour market outcomes. Despite this potential, there is no empirical study in Zambia that has been conducted to shed more light on the returns to vocational skills across gender or between urban and rural TVET graduates. This study therefore attempts to fill this gap. We use the 2014 LFS to establish whether indeed there are returns to vocational education in Zambia.

We use the modified Mincerian ordinary least squares (OLS) and the fixed effects approach in order to allow for causal estimates of returns to vocational skills as well as to control for unobservables such as ability that may bias the estimates. We find that individuals who possessed TVET skills with certification significantly earned more than their counterparts in wage employment without any TVET skills by about 31.6%. This is regardless of their gender or where they resided. Further, we find that males with vocational skills with certification significantly earned more than their female counterparts with the same TVET skills with certification. We also observed that individuals residing in rural areas with TVET skills with certification also significantly earned more than their counterparts in urban areas with the same TVET skills with certification. However, we found that individuals with TVET skills without certification did not significantly earn more than their colleagues in wage employment without TVET skills. In some cases, individuals with TVET training but without certification were observed to be worse off than their counterparts without TVET training.

The rest of the paper is organized as follows. Section 2 discusses the empirical literature and human capital framework. Section 3 presents the data and methodology that was adopted for the study. Section 4 presents the results of the study. These are discussed in section 5. We conclude the paper with section 6.

2.0 Literature Review

Human capital theory is a dominant paradigm of education and training investments. It postulates that education and training are investments that foster greater productivity in individuals, and this becomes a fundamental attribute towards the differentiation in productivity and income earnings of individuals (Brewer et al., 2010; Krafft, 2013). The basic tenets of human capital theory express the view that human resource comprises an asset – similar to other

assets. In this regard, developing the capacity of human resource can sustain the productivity of human resource in the form of capital through investments into human capital. Ultimately the returns on such investments are anticipated through the productivity gains arising out of increased work performance and probable earnings of human capital.

A number of studies have been conducted to ascertain returns to vocational skills and whether a wage differential exists between students who attended vocational education and general education. These have produced mixed results. A study by Mahirda and Wahyuni (2016) used the Indonesian Family Life Survey (IFLS) to conduct a comparative assessment of whether or not a wage differential existed between students who attended general vocational senior secondary education and general high school in Indonesia. The study observed that there was no significant difference in returns to schooling between graduates who attended vocational high school education and workers who attended general high school.

Likewise, Malamud and Pop-Eleches (2008) used a regression discontinuity design to examine the relative earnings impact of the 1973 educational reforms in Romania. These shifted a large proportion of students from vocational education to general education. They observed similar earnings and levels of labour force participation between graduates from vocational schools and their counterparts who attended general schooling. Similarly, Lechner (2000) adopted a machining technique to analyse the impact of the public sector sponsored continuous vocational training and retraining in East Germany using the data from the Germany Socio-Economic Panel (GSOEP, 1990-1996). The study found that there were no positive earnings and employment effects of the programme in the short run.

There is also evidence that contradicts the above empirical findings. For example, a more recent study by Ahmed (2016) in India utilized two rounds of the national sample survey data. The study observed that vocational education and training (VET) occupations were associated with a decent wage premium in the Indian labour market. In other words, there was a significant positive return to vocational educational on earnings.

Further, a study by El-Hamidi (2006) which employed the ordered logit model found that male graduates with vocational training had higher returns compared to their male counterparts with general education in Egypt. This was not the case for women with vocational training. Moenjak and Worswick (2003) investigated the factors influencing the choice between upper secondary vocational and general education and the relative wage differential between the two forms of schooling. They found that for both women and men, graduates

with vocational education significantly earned higher returns than those with upper secondary school education.

Strawinski et al. (2016) carried out a study to assess the returns to vocational education before and after the 1999 educational reforms in Poland. They observed that graduates who attained secondary-vocational education received relatively higher earnings compared to their counterparts with a secondary general education.

Early empirical work on returns to vocational skills also corroborate the above findings. For example, Neuman and Ziderman (1991) utilized the 1983 census in Israel and found that individuals with vocational education employed in a field related to the vocational training they pursued earned more than their counterparts with either general secondary education or individuals with vocational education but employed in a field not related to their vocational training. Prior to this study, Bellew and Moock (1990) analysed the costs and benefits of vocational education in Peru. They observed that monetary returns and occupational profiles of graduates from vocational and general education were almost identical. However, interestingly, the study found that the returns for self-employed graduates with secondary vocational training were significantly lower than the returns of self-employed graduates with secondary general education.

Kahyarara and Teal (2008) investigated the returns to vocational training and academic education in Tanzania. They found interesting results. More specifically, allowing for the effects of firm size, they found that the returns to graduates with vocational education after attaining primary school were much higher than the returns to workers with either primary schooling or O-Level education. The vocational returns were observed to be lower when compared to graduates with A-level education and above. Moreover, it was observed that the returns to vocational/technical training after A-level education could be negative partly due to the combination of the quality of work and the work environment (Kahyarara and Teal, 2008).

The study by Krafft (2018) adopted a different approach. It utilized an Egyptian panel data set and compared the returns to formal vocational secondary education to the returns associated with informal vocational skills acquired through avenues such as internships. The study observed that there were significant returns to formal vocational secondary education for older adults. This was not the case for recent graduates whose returns were found to be limited or almost zero, even when compared to individuals with no formal education. The study, however, found that the returns to vocational skills with respect to craft skills acquired through internships were significantly large even for recent graduates.

The current study differs from the foregoing studies because it not only attempts to investigate the wage differential between vocational training and general education, but also the wage differential between TVET graduates in rural and urban areas as well as the wage differential between males and females with the same level of vocational training.

3.0 Data and Methodology

3.1 Data

The study utilized the Zambia Labour Force Survey[4] (LFS) of 2014. This is a nation-wide cross sectional household survey designed largely to capture labour force characteristics such as employment status, skills training, education, and literacy levels for the working population aged 15 years and above. A total of 11,520 households in all the ten provinces of Zambia, in both rural and urban areas, were captured in the 2014 LFS at two stages. The first stage involved the selection of 576 enumeration areas using the 2010 census as a sampling frame. The second stage involved the selection of 20 households from each enumeration area. It should be noted that the 2014 LFS did not capture populations designated in institutions such as military camps, refugee camps, prisons or hospitals (Labour Force Survey, 2014). The LFS is, however, still representative. It is nation-wide and captures all employment attributes in all the ten provinces of Zambia. The LFS is   a viable tool that can be used to produce national, provincial and district estimates.

In this study, the key dependent variable of interest was the returns to employment. This was measured by the log of monthly wage in kwacha. To be specific, the study's primary objective was to compare returns to individuals with TVET vocational training in wage employment and returns to individuals who are in wage employment but with no TVET skills. Other variables of interest which have been empirically established to influence the size of income or wage were years of schooling and experience.

3.2 Estimation Strategy

The study employed a variant of the standard Mincer equation. This has been widely used in the empirical literature to estimate or explain wage income as a function of years of experience and schooling. This   still remains a yardstick for explaining wage determination provided it is adjusted or other covariates affecting the wage or income are accommodated (Lamieux, 2006). The standard traditional Mincer equation is expressed as:

$$lnW_i = \beta_0 + \beta_1 S_i + \alpha_1 E_i + \alpha_2 E_i^2 + \varepsilon_i \tag{1}$$

Where i represents an individual, W, S, and E denotes the individual's monthly wage, years of schooling, and years of experience respectively. The stochastic error term ε_i represents a catchall term for all missing relevant variables affecting monthly wage. It is assumed to be normally distributed.

We adopt the modified Mincer equation similar to the one adopted by Krafft (2018) to ascertain the determinants of the wage as shown below:

$$lnW_i = \beta_0 + \beta_1 S_i + \alpha_1 E_i + \alpha_2 E_i^2 + \sum_j^n \theta_j T_{ij} + \gamma_i L_i + \delta_i A_i + \varepsilon_i \tag{2}$$

Where i denotes an individual, j denotes the TVET skill training, T_{ij} is the dummy variable for TVET skills training taking wage employment but with no TVET skills as the base category, L_i is the dummy variable for literacy levels with illiteracy as the base category, and A_i is the dummy variable representing whether an individual resides in an urban area taking rural area as the base category.

Disaggregating the level of education for purposes of determining differences in earnings by education level, equation (2) can be written as follows:

$$lnW_i = \beta_0 + \beta_1 S_i + \alpha_1 E_i + \alpha_2 E_i^2 + \sum_j^n \emptyset_i LE_{ij} + \sum_j^n \theta_j T_{ij} + \gamma_i L_i + \delta_i A_i + \varepsilon_i \tag{3}$$

Where LE_{ij} is the level of education j of individual i taking no education as the base category.

The above modified linear Mincer equations are not devoid of problems of estimation. More specifically, the returns to wage employment may be correlated with other factors such as ability, individual self-selection, and wage expectations. These are omitted from equations (2) and (3). The estimates of the returns to TVET education may, therefore, be biased upwards (Patrinos, 2016; Kraft, 2013). Notwithstanding the above limitations of the standard Mincer equation, we also employ the fixed effects approach. This is in order to establish the causal relationship of returns to TVET skills. It should be noted that one attractive statistical feature of the fixed effects model is that it eliminates all unobservable characteristics that are constant across individuals and households. Thus, we estimate the returns to TVET skills for individual i from household z using the following fixed effects model:

$$lnW_{ih} = \beta_0 + \beta_1 S_{ih} + \alpha_1 E_{ih} + \alpha_2 E_{ih}^2 + \sum_j^n \emptyset_i LE_{ihj} + \sum_j^n \theta_j T_{ihj} + \gamma_i L_{ih} + \delta_i A_{ih} + \mu_h + \varepsilon_i \qquad (4)$$

Where μ_h is the household fixed effects which allows all the omitted unobservable variables that do not change with time across households and individuals to be netted out.

4.0 Results

4.1 Summary Statistics

Table 2 provides descriptive statistics of the variables of interest in this study

Table 2: Descriptive Statistics

Variable**	Statistic
Mean age in years	20.72 (17.00)
Mean years of schooling	6.43 (4.00)
Average Gross monthly wages in Kwacha	2550.65 (3297.00)
Log of wages	7.29
Level of education (%)	
No education	17.81
Primary	38.43
Secondary	24.45
Tertiary	24.51
TVET skills training (%)	
Trained with certification	27.67
Trained with no certification	42.90
No skill training	92,94
Literacy Levels* (%)	63.18
Region of residence (%)	
Rural	59.16
Sex of respondent (%)	
Female	50.83

Source: Authors' computations

*Can read and write in English language

** Standard deviation in parenthesis.

It can be observed from Table 2 that the average age of the sample is 20.7 years and the active working age population have an average of 6.4 years of schooling. Furthermore, the individuals in the sample have a gross average monthly wage of K2,550.65. It can further be observed from Table 2 that about 17.9%, of the individuals in the sample have no education, 38.4% have attended primary education, 24.5% attended secondary education, and 2.5% have tertiary education respectively.

Table 2 also reveals that about 2.8% of the individuals in the sample have TVET skill training with certification. About 4.3% and 92.9% of the sample units have TVET skills with no certification and no skills training at all respectively. Thus, the majority of the individuals in the sample with skills have not attended formal vocational educational training in Zambia. Table 2 also shows that of those sampled, about 63.2% can read and write in any language, suggesting fairly high literacy levels across the country. Moreover, of those sampled, 50.8% were women and 59.2% of the individuals resided in the rural parts of Zambia.

4.2 Return to Vocational Skills and General Education
We attempted to estimate the returns to vocational skills in Zambia. Table 3 provides the estimated results of our modified Mincerian equation (2). We can observe from specification 1 that an additional year of schooling results in a monthly wage increase of about 23.4% on average to all the individuals in the sample, that is both males and females. This finding is statistically significant at the 10% level. It is consistent with our a priori expectations of a positive impact of an additional year of schooling on returns to technical education. Disaggregating the data by gender, we still observe from Table 3, that an additional year of schooling is associated with an average increase of about 21.8% and 26.6% in wages to males and females respectively (see specification 2 and 3). Besides, regardless of whether or not an individual resides in the rural or urban area, an additional year of schooling results in an average increase in returns to technical education of about 24.2% and 23% to individuals residing in rural and urban areas respectively (See specification 4 and 5).

Table 3: OLS Model 2 Estimates of Returns to Vocational Skills and Education

	(1)	(2)	(3)	(4)	(5)	
Variables	OLS All	OLS Male	OLS Female	OLS Rural	OLS Urban	
Years of schooling	0.234***	0.218***	0.266***	0.242***	0.230***	
	(0.005)	(0.006)	(0.009)	(0.009)	(0.006)	
Years of experience	0.041***	0.037***	0.049***	0.032***	0.044***	
	(0.004)	(0.004)	(0.007)	(0.007)	(0.004)	
Experience Squared	-0.001***	-0.000***	-0.001***	-0.001***	-0.001***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
No TVET skill training Base category						
TVET skill with certification	0.315***	0.369***	0.135	0.484***	0.277***	
	(0.049)	(0.056)	(0.101)	(0.120)	(0.054)	
TVET skill no certification	0.028	0.010	0.041	0.046	0.026	
	(0.065)	(0.070)	(0.170)	(0.117)	(0.078)	
Literacy Level	-0.217***	-0.174**	-0.381***	-0.318***	-0.135	
	(0.068)	(0.088)	(0.107)	(0.096)	(0.096)	
Urban	0.036	0.094**	-0.069			
	(0.031)	(0.037)	(0.058)			
Constant	4.652***	4.773***	4.475***	4.746***	4.624***	
	(0.069)	(0.092)	(0.106)	(0.097)	(0.099)	
Observations	3,387	2,379	1,008	904	2,483	
R-squared	0.476	0.439	0.561	0.537	0.433	

Standard errors in parentheses

   *** $p<0.01$, ** $p<0.05$, * $p<0.1$

   Source: Authors' Computations

Table 3 indicates that experience is positively correlated with the rate of return. To be precise, specification 1 suggests that an additional year of experience results in an average increase of 4.1% in the rate of return for all individuals in the sample. The preceding finding is not significantly different when the data is disaggregated into males and females. An additional year of experience leads to an increase in the rate of return of about 3.7% and 4.9% for males and females respectively (see specification 2 and 3). Furthermore, an additional year of experience results in an average rate of return of about 3.2% and 4.4% for individuals residing in rural and urban areas respectively (see specification 4 and 5).

The modified Mincerian equation (2) estimates the association between TVET skill training and the rate of return. In Table 3, we observe that individuals in the sample possessing a TVET skill with certification have an average rate of return of about 31.5% higher than the rate of return for individuals in the sample in wage employment devoid of TVET skills (see specification 1). Similarly, when the data is disaggregated into males and females, specification 2 and 3 suggests that males and females with TVET certificates earn higher rates of return of about 36.9% and 13.5% respectively when compared to their respective counterparts in wage employment with no TVET training. Likewise, individuals with certified TVET skills residing in rural and urban areas earn rates of return of about 48.4% and 27.7% respectively more than their respective counterparts with no TVET training (see Specification 4 and 5).

Furthermore, Table 3 indicates a positive correlation between the rate of return and undergoing TVET skill training. More specifically, specification 1 suggests that individuals who are not certified but have undergone TVET skill training earn a rate of return of about 2.8% more than their counterparts in wage employment lacking TVET skills. In specification 2 and 3, the results suggest that uncertified males and females with TVET training earn respective rates of return of about 1% and 4.1% more than their respective counterparts in wage employment with no TVET training. Additionally, uncertified individuals with TVET training living in rural and urban areas earn respective rates of return of about 4.6% and 2.6% more when compared to their counterparts in rural and urban areas in wage employment who have not undergone TVET training (see specification 4 and 5).

The coefficient of the dummy variable urban in specification 1 suggests that all individuals residing in urban areas earn a higher rate of return of about 3.6% when compared to individuals living in rural areas. Similarly, specification 2 suggests that males residing in urban areas earn a rate of return of about 9.4% more than their counterparts working in rural areas. However, this is not the case for females residing in urban areas. These earn approximately 6.9% less

than their female counterparts residing in rural areas (see specification 3). Specifications 1 through 5 in table 3 shockingly reveal that being literate has a negative impact on the rates of return. This surprising result may be attributed to bias arising from omitted variables such as ability and individual self-selection.

Table 4 provides the estimated results of the modified Mincerian model (3). This disaggregated education into levels. The average rates of return to TVET skills with certification are not significantly different from the average returns observed in Table 3. It can be observed from specification 2 in Table 4 that certified individuals with TVET skills earn an average rate of return of about 31.5% more than their counterparts without TVET training in wage employment. However, we note from specification 2 that individuals without certification who have undergone TVET training earn an average rate of return of about 1.9% less than their counterparts without TVET training.

Table 4: OLS Model 3 Estimated Results of Returns to Vocational Skills

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	OLS All	OLS Levels All	OLS Male	OLS Female	OLS Rural	OLS Urban
No education (Base category)						
Primary		-0.237***	-0.246**	-0.160	-0.012	-0.456***
		(0.090)	(0.112)	(0.150)	(0.121)	(0.128)
Secondary		0.499***	0.432***	0.670***	0.656***	0.292**
		(0.094)	(0.115)	(0.163)	(0.133)	(0.129)
Tertiary		1.639***	1.544***	1.903***	2.110***	1.340***
		(0.096)	(0.119)	(0.164)	(0.139)	(0.132)
Years of experience	0.041***	0.034***	0.031***	0.040***	0.029***	0.037***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.004)
Experience squared	-0.001***	-0.000***	-0.000***	-0.001***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No TVET skill training (Base category)						
TVET skill with certification*	0.315***	0.317***	0.369***	0.099	0.589***	0.262***
	(0.049)	(0.050)	(0.057)	(0.105)	(0.118)	(0.056)
TVET skill no certification*	0.028	-0.019	-0.054	0.040	0.017	-0.035
	(0.065)	(0.065)	(0.070)	(0.177)	(0.112)	(0.079)

Literacy levels**	-0.217***	0.316***	0.283***	0.264**	0.219**	0.391***
	(0.068)	(0.066)	(0.084)	(0.109)	(0.089)	(0.094)
Urban	0.036	0.170***	0.226***	0.076		
	(0.031)	(0.031)	(0.037)	(0.059)		
Years of schooling	0.234***					
	(0.005)					
Constant	4.652***	5.958***	6.067***	5.800***	5.856***	6.262***
	(0.069)	(0.081)	(0.101)	(0.139)	(0.110)	(0.114)
Observations	3,387	3,492	2,447	1,045	958	2,534
R-squared	0.476	0.459	0.429	0.531	0.555	0.401

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' Computations

We can also observe from specification 3 and 4 in Table 4 that males and females who have undergone TVET training with certification earn respective average rates of return of about 36.9% and 9.9% more than their male and female colleagues without TVET training in wage employment. Similarly, females with TVET training but without certification earn an average rate of return of about 4% more than their female working counterparts without TVET training (see specification 4). However, this is not the case for males without certification but with TVET training. In particular, we note from specification 3 that males with TVET training without certification earn an average rate of return of about 5.4% less than their male counterparts without any TVET training in wage employment.

Furthermore, we observe from specification 5 and 6 in Table 4 that individuals possessing TVET skills with certification residing in rural and urban areas earn respective average rates of return of about 58.9% and 26.2% more than their colleagues working in rural and urban areas respectively without any TVET training. Similarly, individuals who have undergone TVET training without certification residing in rural areas earn an average rate of return of about 1.7% more than their counterparts in wage employment and without TVET training in rural areas. However, this is not the case for individuals in urban areas who have undergone TVET training without certification. More specifically, individuals in urban areas with TVET skills without certification earn an average rate of return of about 3.5% less than their counterpart in wage employment lacking any TVET skill training. Finally, we note from specification 2 through to 6 that years of experience and literacy levels have a positive impact on the average rates of return.

4.3 Household Fixed Effects Results

In order to establish a causal relationship of returns to TVET skills and to eliminate the bias resulting from the omitted variables such as ability and individual self-selection, we also estimated the fixed effects model. It has, however, been argued by some scholars that although the fixed effects model is able to eliminate bias associated with household characteristics, bias resulting from individual characteristics such as ability and individual self-selection are likely to remain (Kraft, 2013). Table 54 shows the estimated results of the fixed effects model (Equation 4 discussed in the previous section) when education is disaggregated into levels. As can be observed from specification 2 through to 6 in Table 5, the rate of return to individuals with or without TVET skills training when education is disaggregated into levels is not significantly different from the one observed in Table 4. More specifically, the rate of return to certified individuals with TVET skills is about 31.6% more than individuals in wage employment without TVET training (see specification 2). However, specification 2 reveals that uncertified individuals with TVET skills earn a rate of return of about 1.4% lower than their counterparts with no TVET training.

Table 5: Fixed Effects - Estimates of Returns to Vocational Skills

VARIABLES	(1) Schooling All	(2) Levels All	(3) Levels Males	(4) Levels Females	(5) Levels Rural	(6) Levels Urban
No education (Base category)						
Primary		-0.186**	-0.221**	-0.153	0.017	-0.387***
		(0.088)	(0.112)	(0.149)	(0.114)	(0.127)
Secondary		0.498***	0.438***	0.680***	0.648***	0.294**
		(0.092)	(0.115)	(0.163)	(0.125)	(0.128)
Tertiary		1.606***	1.546***	1.916***	2.087***	1.306***
		(0.095)	(0.118)	(0.165)	(0.133)	(0.131)
Years of experience	0.041***	0.036***	0.032***	0.042***	0.027***	0.039***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.006)	(0.004)
Experience squared	-0.001***	-0.000***	-0.000***	-0.001***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No TVET skill training (Base category)						
TVET skill with certification	0.318***	0.316***	0.365***	0.096	0.595***	0.261***
	(0.049)	(0.050)	(0.057)	(0.106)	(0.118)	(0.056)

TVET skill no certification	0.033	-0.014	-0.054	0.047	0.027	-0.032
	(0.064)	(0.064)	(0.070)	(0.175)	(0.111)	(0.078)
Literacy levels	-0.209***	0.290***	0.282***	0.245**	0.184**	0.370***
	(0.066)	(0.064)	(0.084)	(0.109)	(0.083)	(0.091)
Urban	0.041	0.174***	0.219***	0.082		
	(0.033)	(0.033)	(0.037)	(0.060)		
Years of schooling	0.223***					
	(0.005)					
Constant	4.740***	5.956***	6.059***	5.790***	5.882***	6.254***
	(0.069)	(0.081)	(0.101)	(0.139)	(0.104)	(0.113)
Observations	3,387	3,492	2,447	1,045	958	2,534

Standard errors in parentheses
    *** p<0.01, ** p<0.05, * p<0.1
    Source: Authors' Computations

Furthermore, it can be seen from specification 3 in Table 5 that males possessing TVET skills with certification earn an average rate of return of about 36.5% more than their male counterparts in wage employment with no TVET skill training. specification 3 indicates that males with TVET skill training without certification earn an average rate of return of 5.4% lower than their male counterparts in wage employment with no TVET training.

Specification 4 in Table 5 also indicates that females who have undergone TVET training with certification earn an average rate of return of about 9.6% higher than their female counterpart in wage employment with no TVET skills training. Additionally, in contrast to the case for males, females who have undergone TVET training without certification earn an average rate of return of about 4.7% more than their female counterparts with no TVET training.

In specification 5 and 6, we observe that certified individuals with TVET training residing in rural and urban areas earn average rates of return of about 59.5% and 26.1% more than their respective counterparts in rural and urban areas in wage employment without TVET training respectively. Similarly, individuals residing in rural areas with TVET training without certification earn an average rate of return of about 2.7% more than their counterparts in wage employment but without TVET training. However, this is not the case for urban areas. In particular, individuals who have undergone TVET training without certification earn an average rate of return of about 3.2% less than their counterparts without any TVET training.

The literacy results in Table 5 contrast those observed in Table 2. More specifically, as can be observed from specifications 2 through to 6, being able to read and write has a positive impact on the average rate of return regardless of gender or area of residence. Besides this, it can further be noted from

specification 1 through to 6 that an additional year of experience is positively correlated with the average rates of return.

In both Tables 4 and 5, we observe that the higher the level of education, the higher the average rate of return relative to individuals without formal education.

5.0 Discussion of Results

The OLS results in Table 3 suggest that an additional year of schooling has a significant impact on the average rate of return to technical education regardless of gender or whether the individual resides in a rural or urban area. It is, however, worth noting that females earned relatively more than their male counterparts. More specifically, females earned an average rate of return of about 26.6% compared to males who earned an average rate of return of about 21.8% as a result of an additional year of schooling. Overall, we note that an additional year of schooling has a positive significant impact on returns to both males and females. Furthermore, we note that individuals residing in rural areas earned slightly more than their counterparts in urban areas. To be specific, an additional year of schooling resulted in an increase of about 24.2% and 23% in the average rate of return to individuals working the rural and urban areas respectively. Overall, higher levels of schooling should be encouraged because it has a positive significant impact on the average rate of returns.

Furthermore, the results in Table 3 also suggest that an additional year of experience had a significant impact on the average rate of return for both males and females. This was also the case with individuals residing in rural and urban areas. We observe, however, that females benefitted more than males from an additional year of experience. Moreover, Table 3 results suggest that an additional year of experience significantly benefitted individuals residing in urban areas more relatively to their counterparts in rural areas.

The results in Table 3 suggest that individuals possessing TVET skills with certification significantly earned more than their colleagues in wage employment without any TVET skills. More specifically, individuals with TVET skills with certification significantly earned a rate of return of about 31.5% more than their colleagues in employment without any TVET training. This finding is consistent with empirical evidence by Moenjak and Worswick (2003), Strawinski et al. (2016), Ahmed (2016), Kahyarara and Teal (2007), and Neuman and Ziderman (1991). It therefore supports the growing calls for increased spending on vocational training in Zambia. A closer inspection of the results presented in Table 3 suggests that males with TVET skills with certification significantly earned

more (about 36.9%) than their female counterpart possessing the same skills with certification who earned an insignificant average rate of return of about 13.5%. This finding suggests an imbalance and gender pay gap between males and females with the same qualifications, a sign of labour market discriminatory behavior or bias by employers. This finding is consistent with that observed by El-Hamidi (2006). Table 3 results further revealed that regardless of whether the individual possessing the TVET skills with certification resided in the rural or urban area, they significantly earned more than their counterparts in the respective areas in wage employment without any TVET training. It should be noted, however, that certified individuals with TVET skills residing in rural areas significantly earned more (about 48.4%) as compared to 27.7% which their colleagues in urban areas with the same skills and qualification earned. Therefore, the results seem to suggest that qualified TVET individuals with certification benefitted more from TVET skills if they resided in rural areas relative to their colleagues in urban areas.

Table 3 results further revealed that individuals who underwent TVET training without certification did not significantly earn more than their counterparts in wage employment without TVET training. Therefore, notwithstanding the opportunity cost and cost implications of undergoing TVET training of at least two years, the results suggest that individuals should endeavor to not only undergo TVET training but also acquire certification for them to reap significant relative benefits in terms of income from the TVET training. Furthermore, Table 3 results suggest that high literacy levels significantly negatively affect the average rate of return regardless of gender or whether the individual resides in a rural or urban setting. This finding contradicts logic and empirical evidence regarding the impact of being able to read and write. It is worth noting that all the afore-mentioned results should be interpreted cautiously owing to the limitations associated with the estimated results in Table 3 of the modified Mincerian equation resulting from the omitted variable bias.

The OLS results presented in Table 4 concur with most of the findings presented in Table 3. We noted from Table 4 that individuals possessing TVET skills with certification significantly earned more than their counterparts in wage employment without any TVET training. Furthermore, Table 4 results also indicate that males with TVET training with certification significantly earned more than their female counterparts with the same skills and qualification. This highlighted the gender pay gap between males and females. Moreover, individuals with TVET training with certification residing in rural areas significantly earned more than their counterparts with the same TVET qualification residing in urban areas. This could be due the fact that employers may want to attract TVET graduates to relocate from urban areas to rural areas.

We observed in Table 4 that all individuals possessing TVET skills without certification earned about 1.9% less than their counterparts in wage employment without any TVET training. This suggests that individuals who just possessed TVET training without certification were actually worse off than their colleagues without TVET skills. This finding, however, is not significant at all conventional levels of significance. Uncertified males with TVET skills earned about 5.4% less than their male counterparts in wage employment without any TVET skills. Thus, there was no significant benefit in terms of returns to males who just underwent TVET training without certification when compared to their male colleagues without TVET training. Further, the results in Table 4 suggest that individuals with TVET skills without certification residing in urban areas are not only worse off when compared to their colleagues with the same TVET skills or qualification residing in rural areas; they are also worse off when compared to individuals residing in the same area (urban) in wage employment without any TVET skills. Thus, it does not pay to just undergo TVET training without certification when one resides in urban areas.

Table 4 results indicated that there are significant benefits in terms of returns, the higher the level of education. These findings support efforts aimed at encouraging individuals to attain higher levels of education. Moreover, in contrast to Table 3 results regarding the impact of literacy levels, Table 4 indicated that individuals who were able to read and write significantly earned more than their counterparts who were illiterate. This finding is consistent with logic and empirical findings. It further renders support to policies that advance literacy programmes in both rural and urban areas.

The fixed effects results presented in Table 5 are very similar to the OLS results presented in Table 4. This is with regards to the impact of all the variables on returns. For example, Table 5 revealed that all the individuals with TVET skills with certification earned a significant return of about 31.6% relative to their counterparts in wage employment without TVET training. Furthermore, males possessing TVET skills with certification significantly earned more (about 35.6%) than their female colleagues with the same TVET skills with certification who earned about 9.6%. This finding highlights the gender pay gap between males and females with vocational skills. Besides the above finding, we noted from Table 5 that all individuals with TVET skills without certification earned about 1.4% less than their colleagues in wage employment without any TVET training. This suggests that individuals who just possessed TVET training without certification were actually worse off than their colleagues without TVET skills. As the case was in Table 4, this finding, however, is not significant at all conventional levels of significance. Further, Table 5 indicated that males with TVET skills without certification were worse off when compared to their female

counterparts who possessed the same skills without certification. Similarly, individuals residing in urban areas with TVET skills without certification were worse off than their colleagues with the same skills without certification residing in rural areas. Table 5 revealed that there were significant returns to higher levels of education. And that individuals who were able to read and write significantly earned more than their counterparts who were illiterate.

6.0 Conclusion

This article sought to establish the returns to vocational skills in Zambia using the LFS of 2014. The findings from both the OLS and fixed effects estimations revealed that individuals who possessed TVET skills with certification, regardless of their gender or where they resided, significantly earned more than their counterparts in wage employment without any TVET skills. We further observed that both the OLS results and fixed effects results indicated that males with vocational skills with certification significantly earned more than their female counterparts with the same TVET skills with certification. Moreover, we also observed that individuals residing in rural areas with TVET skills with certification also significantly earned more than their counterparts in urban areas with the same TVET skills with certification.

We, however, observed that individuals with TVET skills without certification did not significantly earn more than their colleagues in wage employment without TVET skills. In some cases, individuals with TVET training but without certification were observed to be worse off than their counterparts without TVET training. This suggests that government and individuals should rethink taking the route of just providing or obtaining TVET skills without certification because of the opportunity cost and direct costs associated with TVET training.

In terms of the returns to schooling and experience, we observed that additional years of schooling and experience had a significant impact on returns. Similarly, high levels of education under both the OLS and fixed effects results were associated with significant returns. Furthermore, fixed effects results suggested that literate individuals significantly earned more than illiterate individuals in the sample, although the preliminary OLS results suggested the opposite.

Given the above evidence, it is imperative that the Zambian government significantly increases spending toward vocational training as well as investing in TVET infrastructure in order to improve TVET enrolment rates. This will enhance the employability of Zambians across the country and generate substantial returns to TVET skills. However, there is need for a deliberate policy that will ensure that females with the same vocational skills as their male counterparts earn the same returns. There is also need for deliberate awareness campaigns on the benefits of vocational training in order to reduce the stigma around TVET.

Endnotes

[1] This is training that prepares graduates for work in a specific craft, trade, or as a technician. This training is designed to allow graduates to acquire specific skills meeting specific industry standards in order competently to carry out a specific task.

[2] Designated credentials awarded to signal an individual's legitimacy and competence to carry out a specific task.

[3] These are graduates who only possess a General Certificate of Education (GCE) or O-Level Education (also known as grade 12 certificate). These individuals have no further tertiary training or education.

[4] The Labour Force Survey (LFS) is designed to be conducted every two years by the Central Statistical Office in conjunction with the Ministry of Labour and Social Security and the International Labour Organization.

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Plea Bargaining, Reconciliation and Access to Justice in Zambia: Exploring The Invisible Link

O'Brien Kaaba* and Tony Zhou**

This article looks at the criminal justice system in Zambia in relation to efficiency and plea bargaining. Using publicly available data, it demonstrates that the institutions under the criminal justice sector are struggling to cope with heavy caseloads. The majority of cases in this context are disposed of through plea bargaining, thereby avoiding full trial. Only a few proceed to full trial. In this respect, it can be seen that plea bargaining serves two ends: it enables deserving cases to have space for trial and it allows the rest of the cases to be disposed of efficiently, without resort to trial. This, however, is not always appreciated by policy makers and legislators as they pass laws that negate or impede the effectiveness of plea bargaining. The paper concludes that plea bargaining is an essential ingredient of an efficient criminal justice system, without which the system would collapse under an impossible case load, and that it is also consistent with traditional African conceptualization of justice, particularly the concept of Ubuntu.

Key words: Criminal justice; efficiency; plea bargaining; trial; Ubuntu; Zambia Police

Introduction

The justice sector of a country may contribute to national stability and development. It helps resolve disputes by allocating liability for social disharmony. There is evidence that an efficient justice system contributes to economic development (Kondylis and Stein, 2018: 2). To have an efficient justice system requires that reforms to the system are based on empirical evidence and accurate statistics. Uninformed reforms may unintentionally end up injuring the same systems they intended to help.

This article looks at the criminal justice system in Zambia in relation to efficiency and plea bargaining. Using publicly available data, it demonstrates that the institutions under the criminal justice sector are struggling to cope with heavy caseloads. The majority of cases in this context are disposed of through plea bargaining, thereby avoiding full trial. Only a few proceed to full trial. In this

*University of Zambia
** SAIPAR Research Affiliate and U.S. Fulbright Researcher

respect, it can be seen that plea bargaining serves two ends: it enables deserving cases to have space for trial and it allows the rest of the cases to be disposed of efficiently, without resort to trial. This, however, is not always appreciated by policy makers and legislators as they pass laws that negate or impede the effectiveness of plea bargaining.

The body of this paper is divided into six parts. The first section is an overview of the Zambian criminal justice system. It uses publicly available information to emphasize the need for continued strides in efficiency within the justice sector. The second section discusses the benefits and downsides of plea bargaining as a general practice. The practice is then formally characterized into a simple economic model within the third part of the paper. The fourth section further analyses the Zambian legal framework for plea bargaining, as well as discusses the recent introduction of potentially contravening policies. The fifth section deploys an economic model to verify both the prior effectiveness of plea bargaining and the impeding effects of mandatory minimums to the Zambian criminal justice system. Lastly, these conclusions are consolidated with existing concepts of reconciliation within the Ubuntu system of law in the sixth part of this paper.

State of the Criminal Justice System in Zambia: What do the numbers say?

Statistics show that the criminal justice system is struggling to cope under the current heavy case load. On average, the Zambia Police receive about 60,000 reports of crime per year (Zambia Police, 2017: 1). A research by the Danish Institute for Human Rights in 2012 put the annual crime incidence above 100,000 (Kerrigan et al, 2012: 148). This suggests that the police are under-reporting crime. However, only about 44 per cent of the reported cases lead to the identification of perpetrators or arrests (Zambia Police Service, 2017: 1). In the majority of cases, the offenders are never brought to justice. It should be noted, however, that the incidents of crime reported to police is a gross under representation of the prevalence of crime in the country. A survey by the Governance Department in 2009 established that only 11.2 per cent of the people surveyed reported crimes to police while 88.8 did not (Governance Secretariat, 2010: 67). John Hatchard has suggested three reasons for the low reporting of crime. First, the underdeveloped communication infrastructure, especially in rural area, which makes police stations (which are often only found in urban areas) inaccessible, may deter many people from reporting (Hatchard, 1984: 167). Second, there is widespread preference to deal with criminal matters using traditional conflict resolution mechanisms. This is important because the traditional redress for crime has predominantly been reconciliation and compensation for the victim and/or his/her family. So, where people consider that the courts are simply places of punishment but without compensation and

reconciliation, they would be reluctant to report crime to the police (Hatchard, 1984: 167). This is significant for rural areas where communities tend to be closely knit and desire to restore relations. Third and finally, people may not consider a crime worth reporting either because they consider the crime to be minor or they have no faith that the police will apprehend the culprit (Hatchard, 1984: 167).

Where the police act on the reports of crime and manage to arrest suspects, it seems that 28 per cent of cases end at the police station by defendants pleading guilty and paying an admission of guilt fee, while 20 per cent end at the police station through various ways such as reconciliation and cases being withdrawn by the complainants (Human Rights Commission, 2014: 24). Therefore, in only 52 per cent of arrests are cases dispatched to court for determination.

The Courts are hardly coping with the number of cases as they are characterized by endless backlogs. The 2009 research by Governance Secretariat found that it took an average of 146 days (against a target of 60 days) to dispose of a criminal matter in the Subordinate Court and 293 days (against a target of 130 days) to do the same in the High Court (Human Rights Commission, 2014: 59). These, however, only refer to cases that have been cause listed. The period from arrest to actual commencement of trial may be longer. The statistics also do not desegregate between cases that have gone to full trial and those that ended through plea bargaining or entry of guilty pleas.

Table 1: Average Time Taken to Dispose of Criminal Cases

Court	Target Days	Actual Days Taken
Local Court	30	102
Subordinate Court	60	138
High Court	130	330
Supreme Court	150	640

Source: Adapted from the Governance Secretariat, 2009 State of Governance Report-Zambia (2010)

Similarly, a 2014 survey by the Human Rights Commission found that about 30 per cent of remandees waited for judgment for a period of more than one year from the time trial concludes (Human Rights Commission, 2014: 23). The consequence of all these backlogs is to cause a severe strain on the holding capacity of correctional facilities. As of 2016, of the 21,000 prisoners in correctional facilities, almost 40 per cent were remandees (Zambia Law Development Commission, 2017: 12). To put these figures in context, the current prison capacity is for 8,500 inmates (Zambia Law Development Commission, 2017: 12). At 21,000 it means the facilities are holding in excess of 300 per cent of their capacity.

Table 2: Time Taken by Remandees Waiting for Judgment

Time	Per cent
Less than 1 month	32.5
1-3 Months	14.6
4-6 Months	12.1
7-9 Months	5.8
10-12 Months	5.3
Over 1 year	29.6
Total	**100**

Source: Human Rights Commission, A Survey Report on the Application of Bond and Bail Legislation in Zambia (2014)

It is worth noting that criminal cases are not the only cases competing for time and space before the Courts. Given the lack of Court specialization, civil cases also draw from the same pool of resources in direct trade-off. Preliminary data from a research by SAIPAR shows that even in relation to civil cases, the Courts are severely constrained and have a lot of backlogs, as the table below shows (SAIPAR, 2018: 43).

Table 3: High Court Exact Disposition Times of Civil Cases by Mode of Commencement

Mode of Commencement	Duration in Days
Writ of Summons	1,420
Originating Summons	447
Originating Notice of Motion	389
Petition	317
Appeal	629

Source: Southern African Institute for Policy and Research, Measuring Court Efficiency in Zambia (August 2018)

The strain on the Courts is quite evident despite the fact that only about 10 per cent of criminal cases proceed to full trial. About 90 per cent are resolved through some form of plea bargaining and thus do not necessitate the full scale of judicial resources normally allocated to a trial (Kerrigan, 2012: 82). This description of present-day judicial strain must furthermore account for the possibility of future changes in relevant factors. Assuming that the 88.8 per cent of Zambian citizens who currently do not report the crimes that they encounter begin to find a way to do so, and that the police gradually improve their investigation skills and manage to apprehend greater per centages of suspects,

one would predict the case load in criminal justice institutions will increase astronomically. One would subsequently recognize the threat of institutional burden, if not entire collapse, should corresponding goals for judicial efficiency not be met. This underlying dynamic shapes the following section's cost-benefit discussion of plea bargaining as a mechanism for justice.

Plea Bargaining: A Cost-Benefit Analysis

The preceding section has hinted that Courts are given a semblance of effectiveness as a result of many cases that do not proceed to full trial. Without mechanisms that dispose of cases without trial, Courts would literally grind to a halt under an impossible workload. Plea bargaining is the main mechanism for disposing of cases without resort to trial. But what is plea bargaining?

Plea bargaining is a procedure whereby an accused person waives his/her right to trial in exchange for a more lenient sentence or lesser charge than would ordinarily have been imposed had the accused been found guilty following trial. There are generally two ways plea bargaining is accomplished. It could either be done in a direct way whereby the prosecutor offers a charge reduction (which carries a relatively lower sentence or gives the judge more sentencing discretion) or indirectly through the formal offer of recommendations for a reduced sentence (Langbein, 1978: 8).

In the context of the history of the common law, plea bargaining is relatively new, and was unknown before the 19th century (Langbein, 1979: 261). Prior to that, trials characterized the criminal justice system as the main case dispositive mechanism. Then trials were short and never lasted more than a few minutes. It is estimated that a single Court could try between 12 and 20 criminal cases per day and give judgment in all those cases the same day (Langbein, 1979: 261). Trial was so efficient that judges discouraged defendants from pleading guilty in order to put their case to trial and test the evidence against them (Langbein, 1979: 261). It was unheard of for trial to last more than a day.

Trial was able to proceed in this swift manner because lawyers played no major role in trials and the judge called the witnesses himself, while the trial itself was not rigidly structured (Langbein, 1978: 10). Trial was no more than an "altercation" between the accused and the witnesses. However, increasing pressure for safeguards against convicting innocent people led to the development of stringent procedures in the rule of evidence and invariably increased the role of lawyers in the criminal justice system. This slowly led to the evolution of the current complex and time-consuming criminal trials that inevitably made trial as the normal dispositive mechanism of cases unworkable (Langbein, 1978: 11).

The pervasiveness of plea bargaining, the rarity of full trials and the limited capacity of criminal justice institutions have led to the growing strong consensus in present-day judiciaries and academia that governments "cannot afford to fund criminal justice systems that adjudicate more than a small fraction of prosecutions through ordinary trials." (Brown, 2016: 104). The intersectional field of law and economics produced a seminal model explaining why plea bargaining is optimal in terms of social resource allocation (Landes, 1971). On the state side, litigation funds saved on bargained out cases can be better channeled into budgets for enforcement or into more complex cases. On the side of the defendant, the diminished need for expensive legal fees and mitigated effects of risk are likewise valuable. These results are consistent with the reasoning in several legal judgments. In the *Santobello* (1971) case the US Supreme Court affirmed that plea bargaining is "an essential component of the administration of justice" without which the criminal justice system would grind to a halt. It is the primary procedure for disposing of criminal cases. Similarly, in the *Natsvlishvili* (2014) case the European Court of Human Rights acknowledged that the "plea bargaining process leads to expedited trial proceedings in every country that has such processes in place."

There are generally two features of the common law criminal justice system that make plea bargaining possible. The first one is that the law or the constitution giving defendants the right to trial does not preclude them from waiving the right and readily pleading guilty. There are many reasons, besides the possibility of leniency, that would incentivize an accused to plead guilty. These may include uncertainty about the outcome of trial, trial expenses, and also the need to avoid opening the defendant's private life to the public through trial (Adelstein, 2018)

The second factor is that in many jurisdictions, prosecutors enjoy wide discretion in selecting appropriate charges. This tool entails that prosecutors have something of value, putting them in a strong and advantageous position to extract a compromise from the accused and therefore avoid trial. This, coupled with the power to make recommendations for sentencing to the judge (where applicable), places the prosecutor in an influential position to offer potential charge or sentence discounts to an accused person in exchange for the defendant's waiving their right to trial (Idhiarhi, 2017).

Although the value of plea bargaining is widely acknowledged, it has been criticized for several short-comings. Four of such shortcomings can be highlighted and contended with here. The first criticism is that in plea bargaining that takes the form of charge bargaining, the defendant gets convicted not for what he did, but for something less opprobrious (Langbein, 1978: 16). Defendants, therefore, get punished for less serious crimes than they actually committed, and, therefore plea bargaining produces inaccurate outcomes relative to the gravity of their crimes (Adelstein, 2018: 12).

Punishing the guilty as severely as they deserve, however, runs the chance of wrongfully punishing the innocent. In contrast with the first criticism, an extension of the aforementioned Landes model demonstrates how plea bargaining can be used as a guilt screening mechanism for a prosecutor's office (Grossman and Katz, 1983). This economic argument is hinged on the fact that a defendant knows whether he is actually guilty or not, whereas the prosecutor is only able to estimate the defendant's likelihood of guilt. Therefore, innocent defendants will correctly tend to dismiss attempts to plea bargain whereas guilty defendants will be more likely to accept. A defendant's declining an offer could be useful to prosecutors in deciding whether to continue to pursue the case, as well as to benchmark the accuracy of law enforcement in apprehending suspects.

Second, plea bargaining is criticized for insulating the criminal justice system from the public, because its proceedings are held in secret and are not constrained by the procedural safeguards of trial (Manikis and Grbac, 2017). Trials routinely take place in the open court. Thus, trials are accessible to the citizen, who by attending trial, indirectly participates in the criminal justice system, thereby clothing it with legitimacy. This fosters transparency and accountability in the criminal justice system. Plea bargaining, which usually occurs in the background, away from the public gaze, only involves defence lawyers and prosecutors and thereby negates these values.

Thirdly, plea bargaining is criticized for dwarfing the *deterrence value* that a criminal trial and its subsequent sentencing holds in preventing crime from happening in the first place. In criminal trials, the majesty of the state and its full power is displayed and deployed against the defendant (without annihilating the defendant's right to a fair trial) (Adelstein, 2018: 13). Plea bargaining, on the other hand, often takes place away from the public eye and is characterized by informality. Violators are reasoned to be less wary of the enforcement of the law when it lacks a performative characteristic.

Some economists stand in support of the deterrence criticism, albeit from a different angle. One paper finds that existing sentencing guidelines for the violation of certain laws may be pre-set to create an optimal level of disincentive toward potential violators without being too draconian (Polinsky and Rubinfeld, 1989: 1-8). The frequent use of bargaining, however, may offset the calculated balance and dilute the disincentive, thus encouraging more lawbreaking. Another paper likewise emphasizes this point – even the possibility of a struck plea bargain reduces the face value of the threat carried by a crime's corresponding sentence (Zambia Law Development Commission, 2017).

The counterargument to the issue of deterrence is that with the Courts overloaded, it is far less likely that someone will be convicted for their crime. Guilty defendants may bank on the fact that a prolonged trial may obscure the facts of the case and they may be erroneously found innocent, or that their

charges may be altogether dropped by an overloaded office of the prosecutor. Plea bargaining allows prosecutors to channel their limited resources toward the cases at hand without being stretched too thin.

Finally, plea bargaining is criticized in that the incentives it presents or the pressure it exerts on the defendant may lead innocent people to readily plead guilty. This is because the sentencing discounts it presents to defendants may be enormous such that even "innocent defendants who think there is a chance of erroneously being convicted at trial will plead guilty to crimes they did not commit." (Miceli, 1996).

Another economist adds nuance to the scope of this criticism, suggesting that "higher levels of crime and a greater social emphasis on ensuring that guilty individuals are punished lead to a greater use of plea bargaining, while lower levels of crime and a greater social emphasis on ensuring that innocent individuals are not punished leads to less use of plea bargaining" (Givati, 2011: 1). This is important because it demonstrates that plea bargaining cannot be categorically criticized, but rather that there are only *certain* conditions under which it may lead innocent people to readily plead guilty. The implied onus is to then improve the plea bargaining process in respective legal systems to favour circumstances that are more conducive to the principles of justice.

Ultimately, the shortcomings of plea bargaining are widely acknowledged. To mitigate them it is often suggested that there is need to make the plea-bargaining process more transparent and subject to judicial oversight. Both the victim and the defendants need to play some role in the process and the judiciary should ensure that the process is fair. The European Court of Human Rights took such a view and held that plea bargaining needs at least two safeguards: a) the bargain should be accepted by the defendant in full awareness of all the facts of the case and the legal consequences and in a genuinely voluntary manner; and b) "the content of the bargain and the fairness of the content of the bargain and the fairness of the manner in which it had been reached between the parties had to be subjected to sufficient judicial review" (Natsvlishvili, 2014).

A Simple Economic Model of Plea Bargaining

Plea bargaining has been robustly studied within the intersected field of law and economics. As mentioned in the previous section, Landes most famously modeled a state of affairs in which prosecutors sought to maximize the sum of expected punishments upon defendants given a fixed budget constraint of judicial resources (Landes, 1971). Additions were made to the Landes model by exploring the continuous cost of time that defendants face both pre-trial and during trial (Adelstein, 1978). Further examinations have been made upon plea

bargaining situations with multiple defendants (Kobayashi and Lott, 1992). One defendant's bargained sentence may be altered depending on his ability to induce confessions from other defendants. Lastly, a heuristic known as Nash bargaining may be used to examine a court settlement, with the haggling over a criminal sentence highly resembling any two parties' negotiation over the distribution of a shared, finite resource (Basu, 2000: 109-131).

All of the aforementioned economic models of plea bargaining hold two features in common: 1.) A simple decision-making tree in which the prosecutor first offers the defendant a bargained sentence, upon which the defendant decides whether to accept or to reject, and 2.) A mechanism describing how the rational defendant makes said decision. In this section, we deploy a bare-bones model containing the above two features in order to draw a few conclusions within the context of the Zambian court system. The simple model is created as follows:

There exist two actors – Prosecutor (P), and Defendant (D) – in a decision tree.

P must propose a bargained sentence S_{PB} that is between the range S_0, indicating 0 years in prison, and S_T, indicating the number of years in prison as recommended by statute (a.k.a the punishment the defendant would receive were he to be found guilty in trial). Thus, $0 = S_0 < S_{PB} < S_T$. Faced with P's plea bargain, D's decision node subsequently contains the options to accept or to reject.
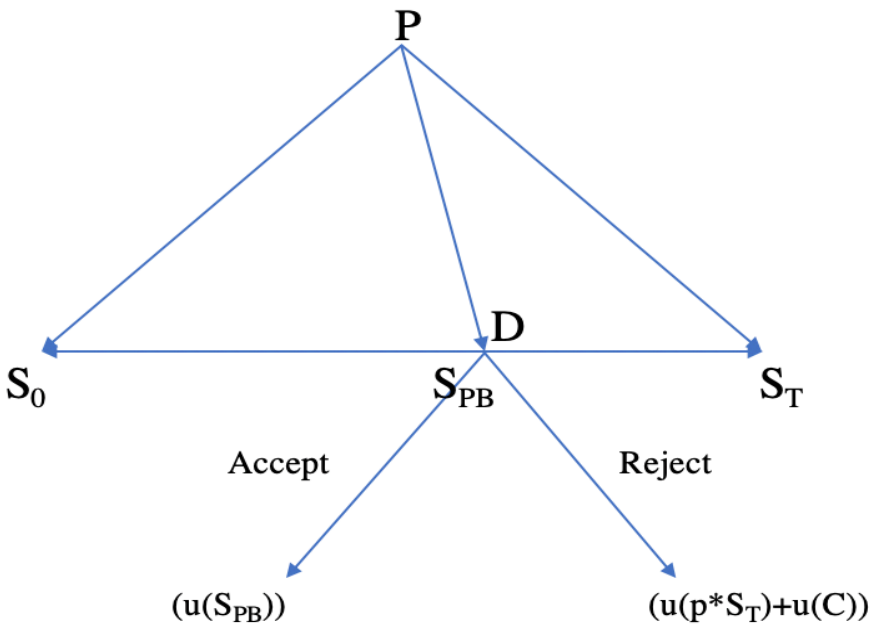

Figure 1: Plea Bargaining Decision Tree

We must consider the outcomes in order to model whether D will accept or reject a plea bargain. If D chooses to accept, then he must suffer the bargained prison sentence S_{PB}. The expected value of the outcome can be described as $u(S_{PB})$, with $u()$ being D's utility function. It is important to note that all outputs of $u()$ are negative granted that D is seeking to weigh the lesser of the punishments. Next, if D chooses to reject, then he must go to trial. In trial, he is said to uniformly suffer the cost C, which represents aggregated costs of trial (money spent on lawyer, time spent in courtroom, emotional strain, etc). D also holds probability p ($0<p<1$) in which he is convicted, upon which he would be thrown in prison for S_T. Conversely, he holds probability (1-p) for being found innocent, upon which he would be set free and receive a neutral utility of 0. Consequently, the expected value of deciding to reject the plea bargain would be $u(C)+u(p*S_T)$. The decision-making mechanism of a rational defendant would then dictate he accept if:

$$u(S_{PB}) > u(p*S_T) + u(C)$$

We furthermore stipulate the constraint that $u()$ must be a well-behaved, convex function. Once again, note that $u()$ is a dis-utility function producing negative outputs, therefore requiring it to be convex rather than concave. This accommodates the classical assumption that the average individual is risk averse, or that $p*u(S_T) > u(p*S_T)$. This can be explained via the anecdote that the defendant would prefer to have a 100% chance of being convicted to a sentence of 5 years in prison versus a 50% chance of being convicted to a sentence of 10 years in prison. In addition, the constraint also accounts for the diminishing marginal dis-utility of increased sentences. Whereas an added 10 years in prison would be greatly harmful to a defendant if he had to weigh between a sentence of 5 years versus 15 years, it would matter far less when weighing between a sentence of 100 years and 110 years.

Using the rational defendant's decision-making mechanism, we can bracket a range of plea bargain values S_{PB} between S_0 and S_T such that the plea bargain will be accepted. The upper bound of this range is hence designated as S_{PB-Max}. It follows from the above analysis that for any given D with $u()$, S_{PB-Max} can be solved for using specific values of p, S_T, and C.

Figure 2: Demonstrating values of S_{PB} upon which D will choose "Accept"

For simplification purposes, this model does not enter into the prosecutor's side of the equation in determining the particular value of the S_{PB} offer that ought to be selected. Rather, it deploys the normative assumption that any increase in the range of a defendant's accepted S_{PB} values for a given S_T is desirable for the prosecutor because it makes plea bargaining *easier*. This can be alternatively measured as the ratio of $((S_{PB\text{-}Max}-S_0)/S_T)$. Increases in $S_{PB\text{-}Max}$ must be held relative to the given S_T in order to account for different crimes holding different trial sentencing guidelines; the obvious conclusion would otherwise be that plea bargaining is inherently easier in cases where defendants are accused of more serious crimes.

Why does an increased range of a defendant's accepted S_{PB} values relative to S_T make plea bargaining easier? This normative statement is justified on the grounds that prosecutors hold greater room for error in deciding the particular S_{PB} offer to make. Often, due to external justice-based considerations, prosecutors are not able to offer too low a plea bargain. Prosecutors may also want to offer different plea bargains across multiple defendants on the same case and must be able to distinguish between each defendant. Lastly, and perhaps most realistically, prosecutors could erroneously estimate the probability, p, by which a defendant will be convicted. This means that the prosecutor may offer too high a S_{PB} relative to how the defendant perceives p in his own decision-making mechanism. Having a higher $((S_{PB\text{-}Max}-S_0/S_T)$, or range of acceptable S_{PB} values, grants more flexibility in each of these departments.

Legal Framework on Plea Bargaining and Reconciliation in Zambia

There are generally three ways plea bargains can be accomplished under Zambian law. The first is the formal process of plea bargaining specifically provided for by the law; the second, an informal way of plea bargaining, relies on the charging discretion of the prosecutor; and the third one is dependent on the Court exercising its power to foster reconciliation. Each of these is discussed in turn.

Formal plea bargaining is new in Zambia. It was introduced in 2010 following the enactment of the Plea Negotiations and Agreement Act No. 20 of 2010. Under this Act, plea bargaining or negotiation:

> *Means any negotiation carried out between an accused person or the accused person's legal representative, and a public prosecutor in relation to the accused person pleading guilty to a lesser offence than the offence charged or to one of the multiple charges in return for any concession or benefit in relation to which charges are to be proceeded with (Section 2, Plea Negotiations and Agreements Act, 2010).*

This definition of plea bargaining is restrictive in the sense that it simply allows a charge bargain. It does not extend to bargaining of the sentence. A prosecutor and an accused can, therefore, only agree to a lesser crime but not to any specific sentence as that remains entirely in the hands of the judge.

The Act empowers both the prosecutor and an accused person to enter into a plea agreement at any stage prior to the judgment (section 4(1)and(2) Plea Negotiations and Agreements Act, 2010). Where an agreement is reached, it is required that it should be in writing and the accused person should undertake to make a guilty plea to an offence which is disclosed in the agreement and the facts on which the plea is based (sections 4(3)(i) and 7, Plea Negotiations and Agreements Act, 2010).

Before commencing any plea negotiation, the concerned prosecutor is required to inform the accused about his/her right to legal representation. A plea bargain can only be had with the accused's legal representative (Section 6, Plea Negotiations and Agreements Act, 2010). The prosecutor is required to "inform" the victim or the immediate family members of the victim of the substance of, and reasons for the plea agreement (Section 8(1)(a) Plea Negotiations and Agreements Act, 2010). The victim is only entitled to be "informed" and, therefore, only envisioned to play a passive role in the whole plea negotiation process. He or she cannot object or make any representations. The crafting of the provision also entails that the victim is only informed when the plea agreement is concluded and not when it is in process nor about its desirability.

Although the victim is entitled to be present when the Court considers the plea agreement (Section 8(1)(b) Plea Negotiation and Agreements Act, 2010), that does not entitle the victim to object to the agreement or make representations to the Court. The procedure of formal plea bargaining in its current form, therefore, effectively leaves out the victims of crime from the process of plea bargaining. To compound the position of the victim, the Act requires the plea-bargaining process to be kept secret and all information to be kept confidential until it is presented in Court (Section 18(1) Plea Negotiations and Agreements Act, 2010). Violation of this provision is criminalized (Section 18(2), Plea Negotiations and Agreements Act, 2010).

Although a plea agreement may be successfully completed between an accused and the prosecution, that does not bind the Court to accept the agreement. The Court has power to reject the agreement where the agreement is "contrary to the interests of justice and public interest." (Section 10, Plea Negotiations and Agreements Act, 2010). Before accepting a plea agreement, the Court is obligated to determine the following:

(a)   No inducement was offered to the accused person to encourage the accused person to enter into the plea agreement;

(b)   The accused person understands the nature, substance and consequences of the plea agreement;

(c)   There is a factual basis upon which the plea agreement has been made; and

(d)   Acceptance of the plea agreement would not be contrary to the interests of justice and public interest (Section 11, Plea Negotiations and Agreements Act, 2010).

The Court therefore has an oversight role over the plea-bargaining process. Where the Court rejects a plea agreement, that is not a bar to any subsequent plea agreement in the same matter (Section 12(3), Plea Negotiations and Agreements Act, 2010). Both the accused ant the prosecutor may withdraw from the plea agreement at any time before sentence is handed (Section 15(1)and(2), Plea Negotiations and Agreements Act, 2010).

This formal plea bargaining is hardly used in Zambia. Undoubtedly, this is because it is time consuming and would slow down the dispositive rate of cases, as compared with informal plea bargaining.

Informal plea bargaining is accomplished under two provisions of the Criminal Procedure Code (Chapter 88 of the Laws of Zambia). The relevant provisions are sections 213 (for offences triable in the Subordinate Court) and 273 (for offences triable in the High Court). Under both provisions, the prosecutor simply makes an oral application to the Court to amend the charge and if granted the accused retakes plea, usually to a lesser charge. The mechanism has the advantage of being expeditious as there are no stringent formal procedures surrounding it. It is, therefore, hardly surprising that this is the kind of plea bargaining that is dominant in Zambia. Its downside is that it lacks transparency and accountability as it envisions no role for the victim and the public and has very little or no room for judicial oversight. However, despite this weakness, it is the mechanism that is at the heart of expeditious disposition of criminal cases in Zambia.

The third and final way a plea agreement can be struck is through the Courts fostering reconciliation. This only applies in the Subordinate Court. For criminal cases tried in the Subordinate Court, the Court is mandated to promote reconciliation by encouraging and facilitating the settlement of minor offences in an amicable manor (Section 8, Criminal Procedure Code). The offences that can be settled in this manner include assaults, offences of a personal or private nature which are not felonies and which are not aggravated in degree (Section 8, Criminal Procedure Code). Where reconciliation is effected, the Court may order compensation for the victim and or such other terms as the Court sees fit and thereafter the Court shall stay the proceedings. Although anecdotal evidence suggests this mechanism is widely used, there are no publicly available accurate statistics about its use.

Although plea bargaining plays a significant role in expediting disposition of criminal cases, the response of government to perceptions of increased crime since Independence in 1964 has been to indirectly undermine plea bargaining. This has usually been through legislating mandatory minimum sentences for certain crimes. This can be gleaned from the fact that in 1965 over 77 per cent of all prison sentences were for less than six months, but by 1977 more than 62 per cent of the sentences were six months or more (Hatchard, 1984: 171).

A more recent example of the policy drive towards the imposition of longer mandatory minimum prison sentences is the amendment to the Penal Code in 2005 (Penal Code (Amendment) Act No. 15 of 2005). The amendment significantly increased the mandatory minimum sentences for sexual offences. For example, the crime of indecent assault carries a minimum sentence of 15 years (Section 137(1)), defilement 15 years (Section 138(1)), and incest 20 years (Section 159). Not only would longer prison sentences exert pressure on the already limited prison capacity to take more inmates and for longer periods, but it makes it very unlikely for plea bargaining to work. Where a prosecutor has little or no discretion to prefer a similar charge with a shorter prison term, many defendants would naturally proceed to trial as they have nothing to lose. As a result, that may clog the Courts and contribute to the already existing backlogs. The following section will argue this point in more detail.

Plea Bargaining and Some Economic Implications

We can draw three conclusions relevant to the local context by interacting the simple model of plea bargaining with some of the previous section's descriptions of plea bargaining processes in Zambia.

First, it is reasonable to conclude that defendant D's aggregate cost of trial, or C, is very high already. The statistics on court congestion and trial delays indicate that defendants are expected to spend a long time in the justice system, regardless of whether they are convicted guilty or found innocent. Likewise, prior sections of this paper have found trial procedures to be intimidating and inaccessible, and lawyer costs to be inflated beyond the means of an average defendant. Some defendants go to trial without ever retaining a lawyer – a choice that makes the courtroom seem even more daunting. Emotional distress, albeit difficult to quantify, is also predicted to bear significant weight in contributing to the high aggregate cost.

The implication of C being high in Zambia is that $((S_{PB\text{-}Max}\text{-}S_0)/S_T)$ is already high in the status quo, or that prosecutors should already have significant flexibility in forging a plea bargain with the defendant. The statistic of 90% of cases being pleaded out only confirms this conclusion.

Second, when examining instances of formal plea bargaining in the Zambian system, the model predicts the introduction of mandatory minimum sentencing to produce ambiguous effects upon $((S_{PB-Max}-S_0)/S_T)$. As recalled from the previous section, the formal process only allows for charge bargaining, in which a higher charge is supplanted for a lower charge if the defendant chooses not to go to trial. The relative positioning of minimum sentences on the higher and lower charges ultimately decides whether $((S_{PB-Max}-S_0)/S_T)$ increases or decreases.

The placement of a mandatory minimum on the higher charge (assumed to be higher than the charge's sentencing recommendation in the status quo) can be modeled via the usage of a new variable S_T' to calculate S_{Pb-Max} such that $S_T' > S_T$. We must keep the original S_T in place for purposes of comparison across the intervention of the mandatory minimum but also introduce the new value S_T' in order to reflect the higher sentence at trial that the defendant uses to decide whether to accept or reject the plea bargain. The subsequent increase in S_{PB-max} also increases $((S_{PB-Max}-S_0)/S_T)$, thus extending the relative range of acceptable offers that a prosecutor could make. On the other hand, the placement of a mandatory minimum on the lower charge can be modeled as an increase in S_0 from its original value of 0. Unilaterally increasing S_0 diminishes $(S_{PB-Max}-S_0)$, and thus diminishes $((S_{PB-Max}-S_0)/S_T)$ as a whole. An ambiguous effect thus arises when mandatory minimums are enacted on both the higher charge and the lower charge. The change upon $((S_{PB-Max}-S_0)/S_T)$ in any individual case depends upon the opposing magnitudes of change stemming from each charge.

Third, when examining instances of informal plea bargaining in the Zambian system, the model predicts the introduction of mandatory minimum sentencing to result in a decrease of $((S_{PB-Max}-S_0)/S_T)$. The previous section states that the informal process allows for sentence bargaining, in which the charge the defendant is accused of remains the same, but the prosecutor could recommend a lower sentence in exchange for pleading guilty.

The introduction of a mandatory minimum in a situation of sentence bargaining can be modeled as an increase in S_0 from its previous value of 0 to a non-zero value. This would simply diminish the absolute range $S_{Pb-Max}-S_0$, as well as the entire term $((S_{PB-Max}-S_0)/S_T)$. In fact, there may exist a scenario in which the mandatory minimum value of S_0 exceeds S_{Pb-Max}, and a successful S_{PB} offer may be impossible altogether! A mandatory minimum deployed in such circumstances would be a clear inhibitor to the prosecutor's usage of plea bargaining as a tool of justice.

Plea Bargaining, Reconciliation and Ubuntu: In Search of an Autochthonous Criminal Justice Concept

The importance of plea bargaining for the efficiency of the criminal justice system is by now obvious. The bulk of criminal cases are disposed of through this procedure. The safeguards of trial entail that courts can only process a few cases effectively. In a sense, plea bargaining can be said to be the engine that ensures that those cases that deserve trial are given space in the courts. Without plea bargaining, the entire criminal justice system may crumble under a heavy case load. Statistics discussed above speak to this.

This section attempts to supply an underlying philosophical concept that could reconcile the role of plea bargaining in the criminal justice system with the value systems of the Zambian people. This is not to argue that plea bargaining is a perfect mechanism. The shortcomings noted above need to be corrected in order to ensure it is victim centered and transparent and prosecutors are held accountable for the exercise of their discretion in the bargaining process. Further, judges would need to play an oversight role over the process but without making plea bargaining cumbersome and time consuming and so of little value in swift disposal of cases. The proposed concept is that of Ubuntu.

The concept of Ubuntu is widespread in Sab-Sharan Africa and is considered to have been at the heart of traditional moral consciousness. It is applied here, not so much in a revisionist and backward-looking sense, but in an attempt to make it relevant to circumstances of the current criminal justice challenges in Zambia. In a sense, it is an attempt to see it in its best light.

Ubuntu denotes that people are interconnected and accomplish full humanness and happiness through cultivating mutually beneficial relationships. It is a concept that disavows self-centeredness and embraces the inter-connectedness of human beings, that is, "a person is a person through other persons" (Mnyongani, 2012: 365). The concept of Ubuntu is a moral exhortation to nurture one's humanness, personhood or virtue, through social and sympathetic communal relationships (Metz, 2010: 254). In a sense, Ubuntu could be considered to be the potential for being fully human. In the Ubuntu sense the humanness of a person is not static but dependent on a person's moral disposition and qualities. A person's humanness, therefore, can fluctuate from the lowest (of being as good as a beast) to the highest (Mokgoro, 1998). It is this moral quality that separates humans from beasts. Where a person lives in constant harmony with other human beings, his or her humanness is elevated.

Ubuntu can be seen as a transcendental call towards common interests, to forego self-centeredness. It is a call towards the community, to cultivate relations of mutual support for the good of each of the people a person lives in community with (Cornell, 2012: 231). Former South African Constitutional Court judge,

Yvonne Mokgoro, summarized the concept of Ubuntu as follows:

> *Generally ubuntu translates as humaneness. In its most fundamental sense, it translates as personhood and morality. Metaphysically, it expresses itself in umuntu ngumuntu ngabantu, describing the significance of group solidarity on survival issues so central to the survival of communities. While it envelopes the key values of group solidarity, compassion, respect, human dignity, conformity to basic norms and collective unity, in its fundamental sense it denotes humanity and morality. Its spirit emphasizes respect for human dignity, marking a shift from confrontation to conciliation (State v Makwanyane, 1995).*

Thaddeus Metz has argued that the concept of Ubuntu has two elements embedded in it: "identity" and "solidarity." (Metz, 2011: 538). To identify with others entails thinking or seeing oneself as integrated in the life of others. It is to think as a "we", to orient one's behavior towards the realization of shared ends. To fail to identify with each other entails alienation and undermining each other (Metz, 2011: 538).

Solidarity is shown through people undertaking mutual aid and acting in ways that are expected to benefit each other (Metz, 2011: 538). It is further shown in attitudes, emotions and motives that show positive disposition towards others. To fail to show solidarity is to show disinterest in whether others flourish and may mean ill-will, hostility and cruelty (Krog, 2008: 355; Metz, 2011: 538). Identity and solidarity are present together in Ubuntu and are at the heart of the concept.

How does this concept of Ubuntu relate to the criminal justice system? There are at least two factors that connect Ubuntu to the criminal justice system. The first is that when one commits a crime (such as rape, murder, kidnapping, theft and assault), such a person can be said to have acted in an unfriendly manner, in a manner that destroys the harmony of the community. By so doing, the culprit is distancing himself or herself from the person whom he has injured, thereby destroying the "we-ness" or togetherness. He or she subordinates the other person instead of identifying with the person and showing solidarity (Metz, 2010: 257).

When this happens, the community as a collective has a duty to restore this impaired harmony. To achieve this, the community or the political authority of the community may impose some burdensome compensation or burdensome rehabilitation on the culprit as a way of expressing disapproval, but more importantly, to help the culprit realize his wrong and reconcile with the community he has injured (Metz, 2018). Metz argues that under Ubuntu, the goal of punishment is reconciliation, to restore community harmony. Therefore, the burden or punishment imposed on the offender must be proportional to the

harm done, but above all, must not foreclose the possibility of reconciliation and resuming harmonious relations. In the case of Zambia, this approach would be consistent with the findings of the anthropologist, Max Gluckman, concerning judicial processes among the Lozi people of Western Zambia. Despite the Barotse judicial process being formal, it was tailored to ensure that, as far as possible, social and family relations were preserved and not broken. Gluckman observed that "Throughout a court hearing… the Judges try to prevent the breaking of relationships and to make it possible for the parties to live together amicably in the future" (Gluckman, 1969).

The second point, flowing from the first, is that when applied to the criminal justice system, Ubuntu would entail sentencing an offender in a manner that avoids unfriendly opposites, that is, sentencing offenders in a manner that forecloses the possibility of reconciliation (Metz, 2010). Society's response to an individual's wrong doing should not lead to further divisions and ill-will. That way harmony cannot be restored. In Metz's view, under Ubuntu, the kind of sentence that is acceptable is that which is "only necessary to counteract another's own proportionate unfriendliness." (Metz, 2010: 258). Punishment should not be intended to annihilate an individual or to degrade his or her capacity for identity and solidarity. Punishment should always leave room for reform and reconciliation, for re-growing one's humanness.

To this effect, the laws prescribing mandatory minimum sentences are considered inconsistent with the concept of Ubuntu. This is because it precludes judges from the "need to attend to the specifics of the offender, his victim and the broader social context in order to prescribe what is likely to foster reconciliation." (Metz, 2018). Mandatory minimum sentences in Zambia – especially those prescribing the death penalty for murder, aggravated robbery, and treason – are considered to be an extremely unnecessary punishment to rebut the offender's unfriendly behavior. The existence of such minimums indicate that the sentence is never designed in a manner that fits circumstances to ensure the possibility of rehabilitating the humanness of the offender and reintegrating him or her into the community. That carries away the ability of the offender to contribute to the well-being of the society in the future. The removal, and possible annihilation, of the offender is thus performed without any tangible benefit to either the victim or the society.

On the other hand, plea bargaining seems to fit the concept of Ubuntu well in the Zambian context. Where there is a mandatory minimum sentence, the prosecutor lacks the discretion that would enable him or her to negotiate with the defendant the compromise that would allow the defendant to readily accept his or her guilt; that is, his or her blame for injuring society. The subsequent outcome of a carefully crafted plea bargain offer may be better tailored for the benefit of all parties.

Concluding Remarks

Plea bargaining is at the heart of an efficient criminal justice system. In Zambia, it is responsible for disposition of more than 90 per cent of criminal cases that come before the Courts. In this sense, plea bargaining is the engine that facilitates access to justice in the Zambian criminal justice system. This efficiency, however, is impaired indirectly by legislation that is often not based on empirical research. Specifically, mandatory minimum sentences mean that plea bargaining in the Zambian context is more difficult to accomplish.

It was further argued that the practice of plea bargaining is consistent with the moral concept of Ubuntu which is still a widely recognized normative framework in the Zambian context. Ubuntu fosters cohesion, solidarity and harmonious living. A person who injures society has the burden to repair the relationship, but the injured society also has the duty of not annihilating the offender's potential for repairing his humanness, and to allow him to return to society and contribute to its harmony. Plea bargaining contributes to the achievement of Ubuntu goals.

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Resource Nationalism and Zambia's Oscillating Mining Taxation Regime

Edna Kabala, Rosemary Mapoma and John Lungu
Copperbelt University

The parcelling and privatisation of the large state-owned mining conglomerate Zambia Consolidated Copper Mines (ZCCM) involved the signing of Development Agreements (DAs) between the Zambian government and the new private investors. These DAs were concessionary to the new investors, offering low taxation rates, tax exemptions and deductions. But in 2008, under political pressure from the opposition, then President Mwanawasa abrogated the DAs with a new Mines and Minerals Act, removing exemptions and deductions and increasing taxation rates. This action set in motion a decade long period of contestation over mining taxation in Zambia, with the introduction and retraction of numerous mining taxation policies. This paper endeavours to explore the motivations, constraints, and economic and political implications of these oscillating mining taxation policies, in an effort to better understand the dynamics of resource nationalism in Zambia

Key words: Resource nationalism, development agreements, mining taxation

1.0 Introduction

Resource nationalism has in recent years become a topical issue in state development and investor policy debates especially in sub-Saharan Africa. Resource nationalism describes the desire by nationals of resource rich countries to derive more economic and developmental benefits from their natural resources. It further addresses the resolution of governments in resource rich countries to exercise a greater degree of control in the respective non-renewable resource sectors of their economies. The important drivers of resource nationalism are unequal distribution of mining wealth, low contributions to government revenues from mine companies, an upturn in international commodity prices and poor development performance in mineral rich African countries (Saunders and Caramento, 2018).

New developmental approaches and outcomes have surfaced based on debates around the new strategies that have strengthened new forms of

intervention. For instance, some policy makers and academic practitioners in the global south have looked to the 'developmental state model' that is based on the success of the East Asian developmental experience. Others have noted that some states such as those in sub-Saharan Africa are prone to variations of neopatrimonialism, predatory tendencies and weakened states due to neoliberalism (Saunders and Caramento, 2018). Despite notable differences in prevailing conditions between the nature of the state in sub-Saharan Africa and East Asia, especially between the 1970s and 1980s, common views emerge on the need to subordinate some forms of international capital to the macroeconomic development imperatives of the affected countries.

For sub-Saharan countries such as Zambia, resource nationalism has been apparent in the extractive sector, especially the mining and metals industry. Key areas of contestation have emerged on issues including ownership and mining sector governance, fiscal regimes, production, and human and environmental rights. In recent times, the reality of resource nationalism has been manifested through attempts to institute mining taxation regimes that deliver taxation benefits back to the national economy. This has resulted in repeated changes in Zambia's mining tax regime, at times with detrimental economic and social implications. A notable characteristic of the changing tax regimes is that different approaches were introduced whenever there was a new political regime. This demonstrates lack of national consensus and strategy on how to exact benefits from natural resource exploitation. The changes in mining taxation arise from general dissatisfaction with the stream of benefits obtained from the mining industry relative to the government's development agenda. Historically, Zambia's development and the citizens' standards of living have been closely linked to mineral resource exploitation. Therefore, any decline in benefits from mining are widely felt in the country and the communities around the extractive industry. This complicates the extraction of benefits from the sector as it has socio-political implications. There are many other reasons why taxation in Zambia's mining sector is not consistently straightforward to implement. On one hand, mining requires huge investments. Therefore, investors in mining expect to reap benefits first before being subjected to taxation. On the other hand, politicians and citizens in the country expect that mining should contribute to socio-economic development and alleviation of poverty as a matter of urgency. Contestations in mining tax regimes in Zambia therefore often lie in the mismatch between the expectations of mining companies and the government and its citizens. Admittedly, mining companies require a stable political atmosphere to make a profit. On the other hand, successive governments in Zambia have displayed a desire to craft tax regimes that immediately optimize benefits including jobs, tax returns and social investments in mining communities (Nyangu, 2020).

Formulation of mining tax policies requires a broad, long-term, consistent and sustainable perspective. Oscillations in mining taxation often indicate a challenge in managing the long-term perspective alongside short-term political expectations that meet the prompt revenue needs of the government. Revenues from mineral resources tend to be volatile and are heavily debated in what can be called an unstable policy space. The Zambian political space has been changing, resulting in no specific approach on how taxation in mining should be managed in the long run. Every new government sets its own rules on how to extract benefits from the sector. Consequently, changes in the mining tax regimes take mining companies by surprise. This erupts into contentious negotiations on how opportunities for employment and revenue in the sector can be optimally realised (Adam & Simpasa, 2009). This paper attempts to discuss Zambia's awakening to the reality of resource nationalism, focusing on the country's oscillating mining taxation. It also discusses recent conflicts related to ownership and management of resources amidst inadequate returns in the form of dividends to shareholders and employment from the mining sector. The paper will first give a brief overview of Zambian mineral governance during the colonial period and also a description of mineral resource governance after independence in 1964. This will be followed by a discussion of Zambia's desperation to keep the economy running demonstrated by privatisation after the failure of the nationalisation policies of the 1960's and 1970's. The paper will then highlight the implications of privatising the Zambia Consolidated Copper Mines (ZCCM) and subsequent changes to the country's mining taxation regime through the Mwanawasa, Sata and Lungu governments' administrations aimed at improving the country's mining taxation regime in order to provide welfare benefits for the citizens.

2.0 Mineral Resource Governance: mining during the colonial period

Zambia was colonised through concessions between the British South Africa (BSA) Company and Kings Lewanika and Mpezeni of the Lozi and Ngoni people respectively. As a consequence of this colonisation, the BSA company held mineral rights in the country (Martins, 1972). Commercial copper mining started with the opening of Roan Antelope Mine in Luanshya owned by the Roan Selection Trust (RST). RST also operated the Bwana Mkubwa mine near Ndola, and the Mufulira and Chibuluma Mines. The Anglo-American Corporation (AAC) opened mines in Kitwe and Chingola. Industrial copper mining transformed the Northern Rhodesian (later Zambian) economy from being an agricultural economy to a predominantly mining economy. Copper output grew from six tons in 1930 to 579 tons in 1960. From 1954 to 1961, the copper industry contributed an average of 46.5 per cent to GDP as table 1 shows.

Table 1 Origin of GDP 1954-1961 (% Distribution)

Industry	1954	1955	1956	1957	1958	1959	1960	1961
Agriculture	13.0	10.4	10.2	13.3	13.3	11.9	11.4	12.6
Mining	52.4	56.8	54.0	39.0	32.6	45.4	47.5	44.0
Manufacturing	4.0	3.9	4.4	6.4	7.1	5.6	5.5	5.9
Construction	6.1	6.2	6.7	8.6	9.7	5.8	4.5	4.1

Source: Baldwin (1966:35)

Table 1 above shows the dominance of the mining sector between 1954 and 1961. In the same period agriculture contributed an average of 11.9% to the GDP. Manufacturing contribution was quite low fluctuating around 5.4%. This was mainly because manufacturing establishments were being concentrated in Southern Rhodesia (now Zimbabwe). The rapid development of the mining industry and European capitalist agriculture left an everlasting imprint on the country's economy. During this period there were no real contestations as to who received the most benefits from mining. The two international mining companies the RST and the AAC paid a corporation tax of 45% and export tax of 40% to the colonial government while mineral royalty taxes were paid at the rate of 13.5% to the BSA company (Curry, 1984; O'Faircheallaigh, 1986). The mining companies were able to pay these taxes without contestation with the state. One can assume that this is because the companies themselves were domiciled in Britain and they also had shares in the BSA Company.

3.0 Mineral governance after Independence in 1964

At independence in 1964, Zambia embarked on its first negotiations to change the tax regime affecting the mining companies. This was necessitated by the fact that during the colonial era and in the early years of independence, mineral rights were still in the hands of the BSA company to whom mineral royalties accrued. After independence, all prospecting concessions that were in existence and previously owned by foreign nationals were cancelled. Existing mineral rights as well as trade in minerals came under state control. Companies that were in operation before 1964 were granted prior claim on some of their previous concessions. However, companies that were deemed inactive were required to apply for the concessions in open competition. The Matero Reforms of 1969 enabled the government to obtain mineral rights and so also the opportunity to embark on changing the tax regime in order to raise revenues for infrastructure development. The immediate post-independence mineral tax structure inherited from the colonial period, had three major components:

the royalty tax of 13.5% based on the London Metal Exchange copper price, the export tax of 40% if and when the copper price exceeded US$300 per long ton at the London Metal Exchange and a corporate income tax of 45% (Curry, 1984; O'Faircheallaigh, 1986). While the first two taxes were revenue based, the corporation tax was a profit-based tax. O'Faircheallaigh concludes "this three-fold tax regime produced a total effective tax rate of 74.4%" (O'Faircheallaigh, 1986). After nationalisation of the copper mines the government changed the tax regime. The new tax structure became effective in 1970. The mineral royalty and the export tax were replaced with the mineral tax of 51% on the value of production and a corporation tax of 45%. Although these measures raised much needed revenue for the government, the mining companies argued that such high taxes on production and profit discouraged investments and growth of the industry (Curry, 1984). It was during this period that contestations of the mining tax regimes started. Mineral royalty tax which was part of the mineral tax, was to be paid to government as opposed to the BSA company. This became a sticking issue for the RST and the AAC.

During the 1960s and 1970s, there was massive demand for metals on the global market, which made Zambia's mines highly profitable. This decade was characterised by high international mineral prices as well as high metal production. For Zambia, high copper prices meant the mines earned substantial profits. The mineral tax regime was highly effective in capturing a large share of these profits—approximately about 70% for the government. Between 1965 and 1970, mineral tax receipts peaked, contributing between 52 and 71% of government revenue and equivalent to 15–19% of GDP. These were exceptionally high figures for a non-oil exporting country. Consequently, the Zambian government had access to substantial financial resources in the first decade of independence. These proceeds from the mining sector largely financed the extraordinary expansion in public services and in the role of the state (Whitworth, 2015).

Given the good performance of the mining sector, the government hoped to significantly improve the standards of living of the people as well as to diversify the local economy. The desire to diversify the Zambian economy involved major industrialisation efforts by the government. Mining became a state-directed activity with the view to transform Zambia into a beacon of national development and industrialisation through a distribution of mining rents. The government hoped to redistribute the benefits from mining through employment creation for local people and increased expenditure on social services, especially education, health and nutrition for mining communities. The government also wished to register higher budget revenues from having a direct stake in the business (Open Society Institute of Southern Africa, 2009). Throughout this period, mineral

prices were rising due to the rapid growth in international demand for primary raw minerals. This demand was further created by metal-based growth in both the newly industrialising and industrial countries.

In 1968, President Kaunda had advanced the nationalism agenda in the manufacturing sector through the Mulungushi Economic Reforms. In these reforms a distinction was made between enterprises. Enterprises were categorised as State Enterprises; Zambian Private Enterprises; Foreign Controlled Enterprises and Resident Expatriate Enterprises. This categorisation was guided by Kaunda's philosophy of humanism. The focus of this categorisation was on dealing with the dominance of European and Asian business communities in national economic activity. The rationale behind this was that many of the foreign business players had been residents of Zambia for many years, but refused to take up Zambian citizenship. Since independence, Dr. Kaunda's government made repeated appeals to members of the foreign business communities to identify with the nation and indigenise some of their businesses with immediacy. This led many foreign business owners to take up Zambian nationality with pledges to direct their efforts to train indigenous Zambians for skilled and executive positions (Macmillian, 2008). The Matero reforms emphasized the need for the state to have an over 51 per cent stake in mining companies. Accordingly, the government took controlling interests in the RST and the AAC.

However, a considerable number of foreign inhabitants chose to remain outside the national family as proposed by the reforms. These attracted negative feelings. The government believed that such businessmen were out to take advantage of the economic boom created by the Transitional and the First National Development Plans. It was believed that such businessmen retained their interests outside Zambia in countries such as South Africa, Britain, Europe and India. The anticipation was that they were ready to exit the country once they recorded huge profits, leaving nothing for the Zambian people. The drive towards economic nationalism and economic independence was also a direct response to Southern Rhodesia's Unilateral Declaration of Independence (UDI) and the failure of the United Kingdom to mount an adequate response to it.

In essence, these major economic reforms were implemented to meet the desire for Zambians to directly control economic activities, as well as to benefit from the proceeds of the country's copper industry. The Zambian government was developmentally oriented, ensuring that the realised rents from mining activities of newly state-owned mining companies were channelled towards meaningful development. Mining revenues constituted a large share of government revenue that was used to finance Zambia's national development agenda (Open Society Institute of Southern Africa, 2009). In 1969, Zambia's

gross domestic product (GDP) had grown impressively as a result of the high international commodity prices. In fact, Zambia's GDP per capita exceeded that of South Africa, Korea and Brazil.

In 1970, the Mines Department, the regulator of mining companies operating through the Ministry of Trade, Industry and Mines, set out to prepare a new register of mineral titles. This was done to maintain records of all the valid prospecting rights in Zambia. International companies that were entirely new on the Zambian mining scene also actively expressed interest in acquiring prospecting rights (Davies, 1975).

These reforms did not go unchallenged. Internally, there was disagreement about aspects of these policy changes. Although the formation of the opposition United Progressive Party (UPP) was motivated principally on the grounds of inadequate representation of the 'Bemba group' in government, in its early days, the Kapwepwe driven UPP supported the nationalism agenda for Zambia's extractive sector (Larmer, 2007). It however emphasised that benefits from the copper mines should go to individuals rather than to the state. This made Kapwepwe popular not only in Northern Province but also on the Copperbelt. The move by Kaunda to nationalise the mining industry can be interpreted also as part of the fight to undercut the UPP's leadership under Kapwepwe and gain political dominance. The fight for political hegemony between the Kaunda faction and the Kapwepwe faction led to the dissolution of the UPP through the declaration of the one party state by Kaunda in 1972. The implementation of one party rule and arguments for nationalisation under the humanist political ideology served the Kaunda faction's aim to retain political dominion. The one party state and the nationalisation agenda under this regime may thus be argued to not only embody a vehicle to deliver economic development in Zambia, but also to dominate political control of the country (Mushingeh, 1993).

Despite the opposition, the country recorded major progress in the first decade of independence with improved educational, housing, health and infrastructural provision countrywide. Mining companies contributed to establishing hospitals and recreation clubs in all mining settlements. Later in 1982, the two nationalised mining companies Roan Copper Mines (formerly RST) and the Nchanga Consolidated Copper Mines (NCCM) were consolidated into the Zambia Consolidated Copper Mines (ZCCM). The overall operations of the mining activities now fell under the Zambia Consolidated Copper Mines (ZCCM). ZCCM had an effective and operational welfare policy with a wider range of amenities than those provided by private mining companies before it. The welfare policy advanced by ZCCM ensured that there was subsidized housing, water, electricity and transport for miners and sometimes, other inhabitants of the mining communities. The policy also stretched benefits to miners' newly

born infants by providing necessities like nappies and free education for all the miners' children through the company's mine schools. The mines management ensured that the benefits of policies were far reaching and trickled down to even non-miners in mining settlements (Lungu, 2008). The copper mining revenues also financed the development of other sectors including agriculture.

These developments led to some national benefits from copper mining revenue including improvement in local infrastructure, linkages to other sectors and the generation of foreign exchange earnings and government revenue (African Forum and Network on Debt and Development, 2009). Although thinly and unevenly spread across the country, the gains from mining extended through ZCCM also comprised the creation of mine employment, tangible road maintenance and environmental management services to Copperbelt communities. High-standard schools were built where excelling children of miners and sometimes non-miners were enrolled. These students were later sent to top universities all around the world to train, mainly in mining disciplines. Artisan training colleges were also set up for miners and school leavers who were to be employed by the mines (Sikamo, et al., 2016). These benefits from mining were considered to be a contribution towards improved standards of living for average Zambians. (Fraser & Lungu, 2007). The contributions ZCCM made mitigated against any changes to the tax regime. There were basically no contestations on the benefits from mining as ZCCM was state owned. However, the years of independent Zambia's shared glory through high copper prices was short lived. In 1974, copper prices drastically collapsed as a result of the first oil crisis. Zambia still desired to maintain good standards of living for a majority of citizens and was forced to borrow to finance the large bill for social provision. The low copper prices meant that the country could not even afford to finance its parastatal companies, nor afford to provide needed funds for a large workforce in the public service. The crises led to immense poverty both at national and household level (Lungu, 2008).

In 1979, the second oil crisis presented a further challenge to the Zambian economy. The country recorded a severe debt that crippled hopes of economic recovery using the copper financing model of development. Despite the many political declarations to this effect, the hopes of industrialising through the use of mining rents failed miserably for the country (Open Society Institute of Southern Africa, 2009). ZCCM's priority of continuing to finance national programmes at the expense of its own operations resulted in major losses for the entire economy. ZCCM carried a financial burden which overwhelmed it, resulting in undercapitalization. The conglomerate failed to replace worn and obsolete machinery. Diminishing investment in technological upgrades for operative mining equipment made it even more difficult to mine at deeper levels. To make things worse, mineral grades were becoming poorer, requiring

larger quantities of ore to break even. Inevitably, production declined while production costs increased. This led to reductions in employment levels in the mines. Meanwhile, the international price of copper remained low while the oil price was skyrocketing. Business prospects of the mines became bleak. This was a disaster for the national economy, given its heavy reliance on copper mining (Sikamo, et al., 2016).

This situation led the International Monetary Fund (IMF) and the World Bank to begin to push the country towards economic liberalisation as a precondition for loans. The reasoning was that the Zambian government was unable to fund its budget based on the mining revenues. As a consequence, in 1983, the country entered its first World Bank structural adjustment programme. From then on, the two international finance institutions took a major role in directing Zambia's economic policies (Fraser & Lungu, 2007).

The austerity measures accompanying the IMF and World Bank loans resulted in food price rise protests and riots in 1987. As a result, the government of Zambia rejected the conditions of the loan and set itself on a 'New Economic Recovery Programme.' The New Economic Recovery Programme limited debt-service payments to 10% of net export earnings. However, by September 1987, almost all of Zambia's donors collectively decided to starve the country of the much needed assistance since Zambia had refused to pay the IMF's preferred rate on the loan. This led to further build up of arrears with no incoming income. Within eighteen months of continued economic struggle, Zambia was awakened to the fact that the price of future support was compliance to donor priorities. The Zambian government then realigned its position and accepted to re-engage the World Bank and the IMF since it had no choice under the prevailing economic circumstances. Subsequently, the government devalued the currency, removed price controls and even cut off existing subsidies on food.

The economy, however, continued to decline and in 1989, there were repeated urban food riots and industrial unrest reflecting the unpopularity of the ruling party UNIP and Kaunda. In 1990, the Movement for Multiparty Democracy (MMD) was formed, headed by ZCTU leader Frederick Chiluba. The MMD won the elections in 1991 (Bratton & Van de Walle, 1997; Baylies & Szeftel, 1992)). In their manifesto, the MMD promised to liberalise the economy and privatise state owned enterprises. The ascendancy to power of the MMD ensured a return to neo-liberal approaches to economic management. The realities on the ground, the pressure from the donor countries and the international finance institutions, and the change in political thinking made the state rethink the country's development strategy. Because the country's economy has historically hinged on copper mining, the privatisation of the mines was critical to the country's development agenda. It was thought then that privatisation of the copper mines would once again attract foreign investment into the sector.

4.0 Desperation to keep the Economy Running: The Privatisation Era

The original momentum of the MMD was attributed to trade union-led resistance to structural adjustment, and by the time of Zambia's first elections, the unions had also made considerable alliances within the business community, human rights groups and civil society. The MMD operated on a manifesto that promised to liberalise the economy as well as secure a new democratic dispensation. During this time, the Mine Workers Union (MUZ) endorsed privatisation partly due to the fact that trade unionists suffered from decline in nationalised companies, like everyone else. MUZ also supported the MMD because they saw the need for new investments and perceived the dismantling of state-owned industries as a way to challenge UNIP's power base. Furthermore, both the trade unions and MMD were convinced that the only way to recover the shattered economy was to win back the trust of international banks and investors. This entailed accepting the demands of donors (Simutanyi, 2008; Fraser & Lungu, 2007).

Donors also had high hopes that an energetic, reforming government could lead the first move away from nationalisation towards a popular privatisation process in Africa. They aimed to support Zambia in transitioning into a 'success story' by buying the MMD an extended political honeymoon (Lungu, 2008; Fraser & Lungu, 2007). This implied giving the country aid designed to cushion the social and political impact as the donors pushed through a massive programme of economic shock therapy. Over the first few years, there was a generous inflow of aid to Zambia. This led to about 40% of the Zambian government budget being donor supported (Lungu, 2008; Rakner, et al., 2001).

However, the considerable donor support came at a cost. There were attached conditionalities that were related to the privatisation programme that started in 1992. The privatisation process was designed to sell 280 state owned companies. By June 1996, 137 companies had been sold in a process that was highly recommended by the World Bank as a model for other countries, given its speed and thoroughness. Yet, others condemned this speedy process citing possibilities of inevitable looting, deindustrialisation, deepening debt and poverty that they saw would emanate from it (Rakner et al., 2001). During the entire process, foreign firms bought the largest and most viable firms with very little profit remaining in Zambia. In 2002, the World Bank eventually admitted that despite massive lending and the accelerated adjustment programme, the supply response from the extensive privatization of small and medium enterprises was very limited (Lungu, 2008; Rakner, et al., 2001).

From the onset, the crown jewels of privatisation in Zambia were identified as the copper mines. As early as 1993, Zambia's second Privatisation and Industrial Reform Credit from the World Bank required that the government studied options for privatising ZCCM (Fraser & Lungu, 2007).

Meanwhile, government had sought delays for technical and political reasons with the issues becoming sticking points in relations with donors. Both the government and donors accused each other of bad faith in the process. MUZ expressed concerns that unbundling of ZCCM into several companies would only leave less attractive assets with an insecure future for the Zambian economy. MUZ was also concerned about the disintegration of ZCCM leading to more liabilities for the Zambian government. Better still, they concluded, to encourage one serious investor to take over all the liabilities and the facilities. Notwithstanding the concerns that MUZ had, the introduction of intra-company competition would drive down conditions of service for their members (Simutanyi, 2008; Lungu 2008).

The deadlock was broken by a window of opportunity for debt cancellation unveiled by the World Bank in 1996. The World Bank introduced the Highly Indebted Poor Countries Initiative to which Zambia had qualified. However, with Zambia's qualification, there was still more pressure for the government to push through with the privatisation programme which was more controversial. In many cases, the state stalled in an effort to still preserve some resources with a national identity and to try to appease domestic interests. Eventually, the state gave in and chose debt relief over domestic policies. Throughout the process of privatisation, the state was being encouraged to create an 'investor-friendly' policy regime. To this effect, the World Bank placed a condition in the second Privatisation and Industrial Reform Credit (PRIC) loan in 1993 that reforms to the Investment Act be made. The most significant policy changes were embedded in the 1995 Investment Act and the Mines and Minerals Act of 1995 (Fraser & Lungu, 2007).

The Investment Act established the Zambia Investment Centre (ZIC) (Fraser & Lungu, 2007). It laid down the procedures and the process for buying into the Zambian economy and provided the general incentives that would apply to all investors. On the other hand, the Mines and Minerals Act of 1995 provided for incentives for investors in mining and permitted government to enter into development agreements with specific companies. Under the development agreements, government could extend even more incentives including reduction in royalty rates (Lungu, 2008; Simutanyi, 2008).

5.0 Implications of ZCCM Privatisation on Zambia's Mining Taxation Regime

The privatisation of the copper mining industry at the end of the 1990s ushered in foreign ownership of large-scale mining companies that bought mining rights from the Zambian state. The mines were privatised at a time when they were incurring heavy financial losses and copper prices were at historic lows. The Zambian government was thus in a weak negotiating position and had to offer generous tax concessions to buyers of the loss making mines. In addition, the huge maintenance backlog at the privatised mines implied that the new mine owners were to invest substantial amounts targeted towards clearing the backlog. This was alongside the additional investment the new mine owners had to make (Whitworth, 2015). Thus, privatisation of the mines was characterised by agreements that stipulated very favourable terms to buyers when it came to tax obligations in the form of company tax and mining royalties. These agreements made between the Zambian government and the new owners of the privatised mining assets were referred to as Development Agreements (DAs) and were signed between 1997 and 2004.

Interestingly, in place of a uniform tax regime, DAs that were unique to each mining company were considered more relevant. These individualised DAs were highly confidential (Manley, 2012; Rakner, 2017)). The DAs were kept secret to the extent that even access within government including the tax authority appeared to have been extremely limited. The implication of the DAs being highly classified was that there was no room for meaningful consultations, open public discussions or disclosures of the terms of the agreements (Rakner, 2017). Depending on the mine in question, each agreement included a stabilisation clause inhibiting the government from increasing the burden of tax on the mining company, and allowed withholding of corporate tax by carrying forward losses for 15 to 20 years (Fraser & Lungu, 2007). Further, a significant feature of the DAs was that the government agreed not to make any amendments to the tax regimes negotiated for a period up to 20 years. This presented an unusual feature in the debate on mining tax regimes. In the case of most tax regimes, there is an allowance for accelerated depreciation of investment to be deducted from taxable profits, allowing tax losses to be carried forward to future years. Yet, Zambia's regime allowed for investment to be fully depreciated in the year of investment, instead of being spread over a number of years (Whitworth, 2015). As stated earlier the incentives given varied depending on when the negotiations were finalised (see Table 2).

Table 2: Incentives Given to the Various Mining Companies in their Respective Development Agreements

Name of Company / Year of Agreement	Royalty Tax Rate	Provision for Capital Investment Deductions	Corporate Tax Rate	Provision of Carry-over Losses	Customs Duty	VAT	Foreign Currency Retention	Withholding Tax	Stability Period
Konkola Copper Mines *2000*	0.6	100%	25%	Can carry forward losses	Exempt (Excise duty on power (0%)	Refund on net input VAT (0%)	100%	On dividends (0%)	20 years
Mopani Copper Mines *2000*	0.6	100%	25%	As above	As above	As above	100%	On dividends (0%). After stability period (10%)	20 years
NFC (Africa Ltd) *1998*	*	100%	35%	As above	As above including no customs duties on personal effects	As above	100%	0%	15 years
Chambishi Metals *1998*	2.0	100%	35%	As above	Exempt on machinery and equipment. Excise duty on power (10%)	As above	100%	0%	15 years

* The NFCA Development Agreement states that the company will pay royalties at the 'rate prevailing'. This is not further clarified, but might imply the company has no concession in this area and would have been paying at the rate in the Mining Act – 3%

Source: Various Development Agreements

Shortly after the DAs were instituted, a copper boom followed creating a deepening crisis of legitimacy both for the Zambian government and the new mine owners (Fraser & Lungu, 2007). The lack of increases in tax revenues relative to GDP and, hereunder, the portion of tax revenues that come from company taxes and mining royalties, were a key challenge for political authorities in Zambia. Subsequently, the government's inability to earn revenues from the mines motivated national and transnational civil society organisations as well as opposition parties to pressurise the government into renegotiating the agreements. There was heated public debate over the mining taxation regime in nationalistic terms. This was similar to debates that were trending in South Africa linked to Black Economic Empowerment (BEE) and as well as land reform debates in Zimbabwe. Zambia then adopted a similar version of BEE which was embedded in the 2006 Citizen Economic Empowerment Act. This occurred just before the 2008 Mines and Minerals Development Act was enacted. The Citizen Economic Empowerment Act was key because to some extent, it responded to some of the political pressures that were implied in the mining tax revision (Rakner, 2017).

6.0 Political Responses, Legislation and Mineral Governance since 1995

After privatisation, Zambia's effective tax rate paid by the mining firms was the lowest relative to other countries in the world. The unfair terms of the DAs brought dissatisfaction to the Zambian population. There was political mobilisation which resulted in two new legislative acts that cancelled the DAs and led to the implementation of new restrictive taxation regimes (Rakner, 2017). Subsequently, under the leadership of MMD and republican president, Levy Mwanawasa, the DAs were revoked in April, 2008.

The Mines and Minerals Development Act No. 7 of 2008 ruled that no special agreements were to be entered into by the government for the development of large-scale mining licenses. Furthermore, the Act cancelled the existing DAs and recommended a series of changes that were to be made to the tax code. Mining firms were now expected to operate under a common legislative framework regulated primarily by the Mines and Minerals Development Act No. 7 of 2008. Some of the striking changes included the institution of a windfall tax with rates of 25%, 50% and 75% above certain copper price thresholds and decreased tax deductibility on capital from 100% to 25%. Furthermore, with the admission that taxation levels were too low, tax increases were made in 2007. This led to the increase in royalty tax to 3% from 0.6% and corporate income tax to 30% from 25%.

The windfall tax however, was never fully implemented in practice. In 2009, there was a sharp decline in the copper price. This led the Zambian government to remove the windfall tax completely. In turn, the government increased tax deductibility on capital from 25% to 100%.

There was a wind of political change in the 2011 presidential electoral process. Michael Sata, leading the Patriotic Front (PF), emphasised nationalistic strategies and solutions to a range of problems. These problems were widely accepted by urban and rural Zambians and included urban disorder, inequality, precarious employment in the mines, corruption and the dependence of Mwanawasa's administration on Western – and, increasingly, Chinese – sponsorship (Fraser, 2017). In particular, Sata's anti-Chinese election rhetoric resonated among many Zambians. Many people felt that China was benefiting from Zambian resources, at the expense of Zambians. The general sentiment was that the copper mines and mining activities delivered more benefits to the people of Zambia when they were still run by the government. Through the 'More money in your pockets' slogan, many people in Zambia believed that the national economy would benefit more from available resources under a PF government. (Mulowa, 2011). As a result, the PF led by Sata was ushered into power in 2011 removing the MMD that had ruled the country for 20 years. In

2012, the PF government instituted new tax reforms by increasing the royalty tax from 3% to 6%. The hedging and operating income were to be treated separately for income tax purposes. Under the same political regime, in 2013, the government further decreased the rate of capital allowances from 100% per annum to 25% per annum. The government also reduced the export duty on copper from 15% to 10%, and set the tax on hedging income at 35% (Nyangu, 2020). Two years later some changes were made removing the variable income tax on profit and the uniform 6 % royalty rate. These were replaced by a royalty system only that was set at 8% for underground mines and 20% for open cast mines (Fjeldstad et al., 2016).

Following the death of President Michael Sata in 2014, the country took to the polls and President Edgar Lungu was ushered in as President of Zambia. Lungu promised to continue the agenda to deliver benefits from the extractive industries to the people of Zambia. The election of Lungu demonstrated a rejection of neo-liberal policies in favour of nationalistic populism meant to address class disparities. Lungu was to deliver pro-poor policies, deliver mining revenue benefits countrywide and maintain the popularity of PF. In July 2015, the PF government reduced the royalty tax to 6% for underground mines and 8% for open cast mines. Further, the government reintroduced a corporate tax set at 30% as well as a variable income tax at 15% on profits above 8% of gross sales (Rakner, 2017).

In February 2016, parliament then approved a new tax regime in which the variable profit tax was revoked and the existing royalty system was replaced by a price-based system. With pressure from the mining lobby, the royalty tax was now set to vary between 4% and 6% depending on the price of copper. The sliding scale would apply for both open cast and underground mines (Rakner, 2017). However, Manley noted from his analysis that the Zambian government would fail to capture sufficient mineral rent when mineral prices rise (Manley, 2012). This was due to the fact that a price-based royalty does not have price brackets and rates at prices higher than USD 6,000 per tonne of copper cathode. Also, the removal of the variable profit tax would eliminate a useful mechanism for ensuring flexibility in the tax take. Conversely, a tax regime that is progressive is to a larger extent sensible. This may hold better given that Zambia remains highly exposed to the risks of falling mining revenues. Most notably, previous regimes used the variable profit tax to provide this progressivity. Since independence Zambia's mining taxation regime has been oscillating as demonstrated in Table 3:

Table 3: Changes in the Mining Tax Regime in Zambia – 1964 to 2016

	1964	1966	1970	1983	1986	2000	2008	2009	2012	2015	2016
Royalty	13.5	13.5				0.6	3	3	6	6-9	4-6
Export tax		40		4-8	13						
Mineral tax			51	51	51						
Corporate Income Tax	37.5		45	45	45	25	30	30	30	30	30
Variable income tax							15	15	15	15	
Windfall tax							25-75				
Capital allowance	5	5	100	100	100	100	25	100	100	25	25
Reference price	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Ring fencing	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Loss carry-forward	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tax haven owner	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Share of govt ownership			51	100	100	10-20	10-20	10-20	10-20	10-20	10-20
Fiscal stability	No	No	Yes	No	No	Yes	No	No	No	No	No

Source: Adapted based on Lundstol and Isaksen (2018). All figures in per centages.

In President Lungu's administration, there were more recent notable proposals to change the mineral taxation regime. The Minister of Finance, Mrs Margaret Mwanakatwe, in her presentation of Zambia's 2019 budget indicated Zambia's intention to introduce mining duties and raise royalties in an attempt to reduce the country's fiscal deficit. In particular, Mrs. Mwanakatwe indicated plans to increase the country's sliding scale for royalties by 1.5 per centage points. The scale is adjusted so royalties are paid at higher levels as commodity prices climb and are reduced as prices fall. Introduction of a fourth tier rate at 10% on the sliding scale mineral royalty regime which would apply when copper prices rise beyond USD 7,500 per metric tonne was also noted in the budget address. Mineral royalty tax in 2019 was to be non-deductible for income tax purpose. The mining sector also saw an introduction of an import duty at the rate of 5% on copper and cobalt concentrates. The 2019 budget additionally proposed the introduction of a 15% export duty on gold and precious stones. In addition, the suspension of the export duty on manganese ores and concentrates was to be lifted and the duty was raised from 10% to 15% (GRZ – National Budget, 2019).

In general, the 2019 budget increased the mining companies' obligations to pay taxes. These increases would make a difference to Zambia's ability to benefit from mineral resources that are largely depleting.

The 2019 budget also proposed a shift from Value Added Tax (VAT) to Sales Tax. The sales tax proposal was devised to deal with the challenge of VAT refunds that had accrued to mining and exporting firms. VAT refunds had been contentious and government noted that it had been failing to meet the obligation on these payments. The pending VAT refunds had reached approximately K1.4 billion per month by the time of the sales tax pronouncements. The argument for stalling VAT refunds was that refunds imposed an unsustainable drain on public coffers and that they comprised the most daunting public treasury management challenge. Government argued that maintaining VAT refunds was difficult because the system was prone to fraud, constraining retained mineral revenue benefits to the national economy. The government alleged that mining companies inflated the cost of goods and services and made double claims on one receipt. Thus, an essential solution was to retain some mineral revenue benefits through the proposed introduction of the sales tax. Furthermore, VAT refunds were noted to mostly accrue to the mines and exporting firms since the neutrality principal in tax entailed that taxes would be charged where they are consumed. The introduction of the sales tax meant that VAT refunds would be eliminated and production was to be taxed along the value chain rather than only at consumption. The input sales tax incurred at the purchase of inputs was no longer going to be refunded with these changes.

The sales tax was set at 9%. It was however resisted by the mining companies. The mining companies felt that it was too high and envisaged an increase in production costs and a reduction in reinvestment. The mining companies argued that the sales tax would only increase the costs of production in the extractive industry and reduce the export competitive edge of affected firms. Consequently, the mines retaliated with threats of job losses. First Quantum announced its decision to reduce its workforce by 1,250 at both its Kansanshi and Sentinel mines, on December 21, 2019 (*Zambia Daily Mail,* 2019). Similarly, Konkola Copper Mines planned to suspend operations at its Nchanga Mine which would have culminated into loss of jobs. Mopani Copper Mines planned to suspend operations at Mindolo North and Central shaft in Kitwe which would have resulted in downsizing its workforce by 600. An additional 1,500 miners employed by contractors stood to lose their jobs if the plan was implemented. The Zambia Chamber of Mines estimated over 21,000 job losses as a result of the tax reform. This projected impact was described as both a looming human tragedy and an economic catastrophe for Zambia. The implementation of the new sales tax was postponed several times. Initially, the implementation was

scheduled for 1 April 2019. It was later moved to 1 July 2019 and then deferred to 1 September 2019. This continued postponement confirmed that the sales tax proposal would be problematic to implement and required further discussion. Later, Zambia announced that it would retain value-added tax but strengthen its administration and make changes to the tax environment for mining companies in the 2020 Budget, released on 27 September 2019. The Finance Minister, Bwalya Ng'andu, said the government had decided to drop its plans to replace VAT with a sales tax, as announced in the 2019 Budget, following consultations with stakeholders (GRZ - National Budget, 2020).

The litany of changes outlined in this paper show that Zambia lacks national consensus and strategy on how to extract benefits from mining. Changes to the mining tax regime are expected each time there is a change in government. This makes the tax policy environment unstable and unattractive to would be investors.

7.0 Conclusion

This paper discussed Zambia's practice of resource nationalism focusing on the country's changing mining taxation regimes. The paper illustrated how mineral governance has changed in periods prior to the 1990s and after, following the country's transition from one party to a multi-party state. Prior to the 1990s, state owned mines falling under ZCCM proved to be loss making even though they delivered social and economic benefits to communities on the Copperbelt and Zambia in general. As loss makers, they became the crown jewels of privatisation. Zambia's copper mines were privatised through the Mining and Minerals Act of 1995 which embraced development agreements that offered concessionary terms to investors in form of low taxation rates, tax exemptions and deductions. The development agreements, which were kept confidential, favoured the mines for almost 20 years. Political pressure from the opposition parties and civil society led President Levy Mwanawasa to revoke the development agreements by enacting the Mines and Minerals Development Act in 2008. The new Act presented more meaningful tax adjustments to enable the country benefit from mineral resource exploitation. The introduction of the Mines and Minerals Development Act No. 7 of 2008 introduced some changes to the mining tax regime in subsequent years. The changes were characterised by the introduction, retraction and amendments to trending taxes in the years that followed under the Sata and Lungu government administrations. To this day, taxation remains highly contested as a main tool for controlling mining resources.

There are many causes of natural resource nationalism in Zambia. Among them are firstly, external market forces for Zambia's copper which have seen long-term declining trends in commodity prices relative to the prices of manufactured goods. With a weak manufacturing and industrial base Zambia often suffered greatly from international commodity price shocks. This brings about dissatisfaction among Zambians as it results in loss of benefits from the mining sector. Secondly, over the years, short-term volatility of copper prices have not helped Zambia's development model which is based on revenues from mining. This is because volatility of copper prices and associated revenues contribute to uncertainty for mining investors leading to lower investment levels than would ordinarily be the case if international prices were more stable. Thirdly, the political economy of natural resources and need for political hegemony may explain the different contestations around resource nationalism in Zambia. Poor economic performance has often been attributed to low revenue generation from mining, and also to how ruling governments have managed windfall revenues from mineral production.

Zambia's mining taxation regime, intended as a tool for retaining benefits within the country from mining, has been plagued by indecisive policies arising from factors related to mineral dependence. Dependence on the copper sector is linked to international trade and this directly affects the performance of the national economy. Since independence, copper exports have dominated Zambian exports to the global markets. Copper prices are however prone to fluctuations which negatively affect the country's foreign exchange receipts during global recessions. In order to sustain the export of copper and ensure high retained benefits, successive governments have attempted to alter the mineral taxation policies in response to changing prices of copper on the global markets. There are other issues related to this. For instance, mining towns have historically been known to provide employment, amenities and even business to their inhabitants. Mining has directly benefited local people as a source of income through direct employment by the mines or employment through a service chain linked to the mines. During recessions copper mining companies shut down full scale operations, which leads to cuts in the labour force and the services required at mining sites, thus impoverishing individuals and households. Such developments negatively affect the economic, social and political stability of the country. In Zambia, with elections being regularly held every five years, governments often attempt to retain their popularity in mining towns by introducing tax regimes that favour retention of benefits such as employment, education and infrastructure development. This contributes to the regular changes in mining taxation in Zambia.

Finally, Zambia's mineral dependence and oscillating mining taxation policies may be attributed to how the government collects and uses mineral revenues. The government would ideally use mineral revenues to finance infrastructure development especially roads, hospitals, and schools. However, with the copper mines in private ownership, the mineral proceeds that government receives are considered inadequate. The mineral revenue sharing mechanism is not straight forward. The structural power of mining capital has, through the development agreements dictated terms that favour mining investors. Thus, governments have on occasion attempted to retain the ownership of the mines through nationalisation and thus to extract more financial gains from mineral production. Mineral policy changes are not only intended to spread national gains from mining, but also to offer hopes of continued political popularity and dominance for the ruling party.

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