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DOES ZAMBIA POSSESS COMPARATIVE ADVANTAGE AND COMPETIVENESS ONLY IN COPPER AND COBALT?*

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ABSTRACT

The author investigated if Zambia has comparative advantage in only copper and cobalt. The results were that Zambia has Revealed Comparative Advantage (RCA) ≥1 in 216 product codes which include other products other than copper and cobalt related. Although Zambia has many products in which it has comparative advantage or is competitive, the economy relies heavily on copper and cobalt export earnings. The author has recommended diversification through promotion of other products other than copper and cobalt. A new export strategy is required and necessary. This will prevent significant negative impact in future if there is a fall of prices on the international commodity market.

Key words: Comparative advantage; Competitiveness; Copper and cobalt; Zambia.

INTRODUCTION

Most of the developing countries rely on a particular product as their major source of export earnings. Usually such products are exported in primary form to the countries which add value. Such countries they normally find themselves affected by the movement of international commodity prices. Once there is a steady fall in the commodity prices such countries experience a fall in their earnings sometimes leading into a recession. This paper investigates whether Zambia has comparative advantage only in copper and cobalt.

BACKGROUND

Zambia is one of the major producers of copper and cobalt. Zambia ranks number seventh among world producers of copper. It is ranked the second nation in the production of cobalt (Government of Zambia, 2011; Mupimpila and Van der Grijp, 1997). Zambia began mining copper in the 1930s. The first mining of copper was done at Nkana in 1932. This was followed by mining at Mufulira in1933. At Nchanga, mining began in 1939 (Government of Zambia, 2011). In 1969-1976 production was at its highest and amounted to 700 000 tones on average per annum. For the past 60 years, Zambian economy has been driven by copper and cobalt. Copper deposits are estimate at 2 billion tones (Government of Zambia, 2011).

According to Mupimpila and Van der Grijp (1976) copper production is the major contributor to gross domestic product (GDP) in Zambia. It is also a major formal employer in

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Zambia and constitute a major source of government revenues. Copper exports account for 90% of the total earnings of Zambia from international trade while about 5% originates from lead, zinc and tobacco. Copper accounted for 75% of total exports in 2009 (World Trade Organization, 2009). Copper accounted for US$ 5.7 billion in 2010's total exports. Then it went up to US$8.4 billion in 2011. In 2012, copper exports were expected to hit US$10.2 billion being almost 46% increase (Bank of Zambia, 2011). The recent growth in copper production follows a decline in copper production follows a decline in copper production experienced since 1974 which continued in the 1980s. This mainly happened due to fall in world commodity prices of copper, supply bottlenecks, due to the little investment in the industry and over reliance by Zambia on copper (Mupimpila and Van der Grijp, 1997).

Developing nations such as Zambia have become major producers and stakeholders in the world copper market. A number of them, copper is their only significant commodity they export and earns them foreign currency. Zambia is one of the countries which virtually rely only on copper in the generation of foreign currency (Mupimpila and Van der Grijp, 1997).

Copper is mainly trade at London Metal Exchange (LME) while the second market for the product is the Commodity Exchange of New York (COMEX). Trading in copper is done into two forms namely spot and futures sales (Mupimpila and Van der Grijp, 1997). According to Moody (1992) spot sales refer to transactions made in cash and the commodity can be transferred immediately or in the immediate future. On one hand, future sales refer to an obligation to supply of the commodity in future months or years upon receipt of payment for the product now.

COMPARATIVE ADVANTAGE

The Ricardian theory is based on comparative advantage which arises from the differences in technology progress across nations. The Heckscher-Ohlin theory acknowledges that comparative advantage originates from costs differences which take place due to each nation's factor scarcity (Khatibi, 2008). The classical theory of comparative advantage alludes to that gains from exchange increases welfare and that free trade can lead to prosperous world economy. The Ricardian theory attributes comparative advantage comparative advantage arises from the differences in costs and technological progress. The Heckscher-Ohlin-Samuelson theory attributes comparative advantage to factor prices differentials. The Neo-Factor-Proportion theory focuses on efficiency of the factors. A country has a comparative advantage in producing a specific product if it is endowed with inputs employed to produce a specific product in that it will have used such inputs most intensively (Case and Fair, 2002). The technology gap and product cycle theory focuses on technological innovations as the determinant of comparative advantage (Bender & Li, 2002). Widgren (2005) notes that in Heckscher-Ohlin theorem, the determinant of comparative advantage arises from factor endowments in respective countries.

THE PRINCIPLE OF COMPETITIVE ADVANTAGE

According to the President's Commission on Industrial Competiveness (1985) defines competiveness as the degree the nation is bale to produce products and service under fair and free atmosphere in line with the global market standards while at the same time the country improves the Wealth of its citizens. Ezeala-Harrison (1999) on one hand defines competiveness as the capability of the country's firms to produce then promote them. The goods meet higher international standards but other countries buy them at cheaper prices. According to Porter (1990) and Porter (2009) competiveness arises due to the country's human resources, physical capital as well as natural endowment. It is further determined by demand conditions, by performance of the firms as well as strategies which they adopt. Competitive advantage is synonymous with absolute advantage. They impact on distribution

of resources, trade pattern and volume of trade. On the other hand, comparative advantage represents direction of trade (Neary, 2002). The concept of competiveness does not refer or suggest a cut throat competition among countries. The theory only makes a suggestion that each country trading with another will reap benefits arising from international trade. The countries involved are therefore not in a cut throat competition where one wins and the other loses. However here the gains are shared and promote specialization among countries in that at the end each country produces products it is competent to produce (Brumbaugh, 2006).

METHODOLOGY

The methodology used in this paper is Balassa (1965) Revealed Comparative Advantage (RCA).

$$RCA = (X_{i,j} / X_{w,j}) / (X_{i,tot} / X_{w,tot})$$

With:

$X_{i,j}$ denoting country *i*'s exports of product *j*;

$X_{i,tot}$ denoting country *i*'s total exports;

$X_{w,j}$ denoting the world's (all countries) export of product *j*; and

$X_{w,tot}$ denoting total exports in the world.

An RCA ≥ 1 demonstrates that a country has revealed comparative advantage in the production of that product. An RCA < 1 demonstrates a country has no revealed comparative advantage in the production of the product.

The authors have used export data obtained from International Trade Centre's Trademap to compute RCA for Zambia's products it exports. Export data for Zambia for 2008, 2009 and 2010 was used. Further export data for world exports for the same period was used. Then an average RCA for 2008, 2009 and 2010 was computed for each product code.

RESULTS AND DISCUSSION

The results show that Zambia has comparative advantage in the production of 216 product lines. These products had an RCA ≥ 1. This demonstrates that Zambia is specialized in the production of these products.

TABLE 1

Zambia Comparative Advantage in the Production of 216 Product Lines

Rank	Product code	Product description	2008 RCA	2009 RCA	2010 RCA	Average RCA
1	930610	Cartridges or rivet etc tools, humane killers	5.94	8570.55	28.03	2868.20
2	740919	Plate, sheet, strip, refined copper, flat, t>0.15mm	1628.34	1437.66	914.71	1326.90
3	810590	Cobalt, articles thereof	848.02	439.86	568.85	618.90
4	262030	Ash or residues containing mainly copper	269.55	534.19	428.47	410.70
5	740319	Refined copper products unwrought	15.30	447.50	413.55	292.10
6	260500	Cobalt ores and concentrates	59.71	378.10	199.48	212.40
7	252230	Hydraulic lime	205.91	174.78	191.48	190.70
8	270500	Coal gas, water gas (not gaseous hydrocarbon	516.24	0.91	0.47	172.50
9	710310	Precious, semi-precious stones unworked, partly worked	217.55	137.06	105.56	153.40
10	740311	Copper cathodes and sections of cathodes unwrought	132.13	121.47	119.62	124.40
11	740329	Copper alloys, unwrought (other	8.86	36.73	228.77	91.50

Rank	Product code	Product description	2008 RCA	2009 RCA	2010 RCA	Average RCA
		than master alloys)				
12	280200	Sulphur, sublimed or precipated, colloid/sulphur	8.78	173.50	91.25	91.20
13	240110	Tobacco unmanufactured not steemed or stripped	82.60	68.05	70.14	73.60
14	280700	Sulphuric acid, oleum	38.82	91.64	65.70	65.40
15	110320	Pellets of cereals	119.67	45.37	26.61	63.90
16	950300	Electric train, train sets, etc.	5.50	158.71	17.62	60.60
17	140420	Cotton linters	98.70	58.00	15.40	57.40
18	071090	Frozen vegetables mixtures uncooked, boiled or steamed	94.50	47.05	25.84	55.80
19	230610	Cotton seed oil-cake and other solid residue	37.53	50.11	70.15	52.60
20	020850	Meat & edible offal of reptiles, includes snakes, turtle	0.00	106.70	34.43	47.00
21	230210	Maize bran sharps, other residues	49.84	36.36	50.96	45.77
22	120720	Cotton seeds	15.50	50.80	41.93	36.10
23	260300	Copper ores and concentrates	62.27	26.38	10.95	33.20
24	282200	Cobalt oxides and hydroxides	0.00	12.70	77.74	30.10
25	261690	Precious metal ores and concentrates except silver	37.84	31.78	18.03	29.20
26	740312	Wire bars, copper, unwrought	0.00	81.25	0.00	27.10
27	110220	Maize (corn) flour	60.15	10.90	8.83	26.60
28	100510	Maize (corn) seeds	22.77	30.11	25.75	26.20
29	740811	Wire of refined copper >6mm wide	24.81	29.02	19.97	24.50
30	270820	Pitch coke	28.80	29.91	14.19	24.30
31	040229	Milk and cream powder sweetened<1.5% fat	0.33	69.42	0.27	23.30
32	170111	Raw sugar, beet	22.38	26.62	20.58	23.20
33	252210	Quicklime	21.04	25.75	20.92	22.60
34	410390	Raw hide/skins except bovine/equine/sheep/goat	27.47	33.92	6.05	22.50
35	722880	Hollow drill bars and rods of alloy/non-alloy steel	18.29	37.28	10.83	22.10
36	401193	New pneumatic tyres, of rubber (of rubber those with herring-bone	31.68	14.12	18.68	21.50
37	410320	Reptile skins, raw	28.33	17.02	18.62	21.30
38	721011	Flat rolled iron or non-alloy steel, coated with tin >600mm	59.17	0.08	0.00	19.70
39	261790	Ores and concentrates	0.52	3.43	54.22	19.40
40	280440	Oxygen	8.33	22.15	24.19	18.20
41	360300	Safety or denoting fuse, detonators, griters	22.36	19.73	12.10	18.10
42	860120	Rail locomotives powered by electric accumulators	53.81	0.00	0.00	17.90
43	260400	Nickel ores and concentrates	0.01	19.43	34.36	17.90
44	410691	Tanned/crush hides & skins without wool/hair on	3.54	15.03	29.75	16.10
45	110100	Wheat or meslin flour	14.77	14.93	16.34	15.30
46	411390	Leather further prepared after tanning/crusting	0.01	42.65	0.85	14.50

Rank	Product code	Product description	2008 RCA	2009 RCA	2010 RCA	Average RCA
47	252329	Portland cement, other than white cement	10.58	13.02	18.00	13.90
48	210230	Baking powders prepared	10.98	16.22	10.64	12.60
49	740500	Master alloys of copper	0.00	9.98	26.87	12.30
50	470610	Cotton linters pulp	1.54	2.38	32.84	12.30

Source: Computed using data from Trademap (2013).

In Table 1, above cartridge for rivet had the highest RCA index of 2868.2 followed by plate, sheet and strip including refined copper with an RCA index of 1326.9. The third place is occupied by cobalt with an RCA of 618.9. The list has also several copper related products. Generally the products in which Zambia has comparative advantage among the top 50 products are primary products in mining and agricultural products. Copper products among top ranked products in terms of their index, signifying that the Zambia is highly specialized in these products. Cobalt products also are amongst the top product with the highest RCA. It also demonstrates that Zambia is highly specialized in the production of these products as evident by very high index. Apart from copper and cobalt products, there are about 36 non-copper and non-cobalt products which have the highest among the top 50 products. That means 14 products among the top 50 products are copper and cobalt related. Of the 36 non-copper and non-cobalt, about 13 product codes are agricultural related.

CONCLUSIONS AND RECOMMENDATIONS

The major conclusion arising from the findings of this paper is that Zambia has comparative advantage and demonstrates competitiveness in other products also other than copper and cobalt. The 216 product lines in which Zambia has comparative advantage include: copper, cobalt, agricultural products such as tobacco, cotton, maize etc, some manufacturing products and other minerals other than copper and cobalt. Although there are other products in which Zambia has comparative advantage in, there is evidence of heavy reliance on copper and cobalt products. This is not good for the Zambian economy. Although Zambia currently enjoys high prices of copper and cobalt, there is no guarantee that the commodity prices will remain favorable forever for Zambia. It is therefore recommended that Zambia should diversify by promoting other products other than copper and cobalt. A new export strategy is required and is necessary. This will help to avoid future recessions arising from future fall of copper and cobalt prices at the London Metal Exchange (LME) and at Commodity Exchange (COMEX) in New York.

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