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VIABILITY AND PROFITABILITY OF NORTHERN RHODESIA (ZAMBIA)'S COPPERBELT MINING COMPANIES DURING THE GREAT DEPRESSION, 1929–1939

ABSTRACT

The development of large-scale mining on the Northern Rhodesian / Zambian Copperbelt coincided with the global economic slump between 1929 and 1939. In this period, the Copperbelt mines were linked to the regional and global mining industry through foreign private capital, multinational corporate integration, labour strategies, trade networks, and market ties. Because the Northern Rhodesian mining sector depended on foreign capital and international markets, the rapid development of the Copperbelt mines would have been hampered by the global economic downturn. But as it turned out the Great Depression proved to be only a transitory setback for the Northern Rhodesian mines. Thus, this article examines factors that enhanced the financial performance of the Copperbelt mines vis-à-vis their established counterparts in the Belgian Congo and United States of America during the Great Depression. In contrast to studies emphasising the importance of labour strategies in influencing the productivity and profitability of the Copperbelt mines, the article examines the part played by a range of factors from quantity and quality of ores, through to interlocking corporate strategies and managerial innovations, to an economic boom in the copper business on the world market, which affected the overall viability of the Northern Rhodesian mining industry during the Great Depression.

Keywords: capital and labour, corporate strategy, Northern Rhodesian (Zambian) mining industry, Copperbelt mines, Great Depression, production costs, copper prices, viability and profitability.

1.1 INTRODUCTION

When the Litunga, King of the Lozi people of Barotseland, granted mineral rights to the British South Africa Company (BSAC), which eagerly sought to find a Second Rand, in 1890 the Copperbelt was:

a sparsely inhabited, narrow strip of country, about 80 miles long, in the north-central section of the country [Northern Rhodesia]. About 4 000 feet above sea level and approximately 13° south of the equator. The rocky, infertile soil discouraged productive farming. The infertility, however, was compensated for by the rich mineral deposits, particularly copper ore, which had been worked by the local Lamba people since the seventeenth century.¹



Figure 1: Map of Northern Rhodesia and Southern Africa showing the position of the Copperbelt mines before independence.

Source: JG Phillips, *Roan Antelope: Big Business in Central Africa, 1890-1953* (PhD, University of Cambridge, 2000), p. 33.

¹ JL Parpart, *Labour and Capital on the African Copperbelt* (Philadelphia: Temple University Press, 1983), p. 13.

The BSAC was quick to grant prospecting rights to any interested company soon after securing the mineral rights from the Litunga.² As a result, the Copperbelt mines were discovered by 1910, but mining operations remained speculative until after the First World War (1914–1918) because the surface ores were of poorer quality.³ However, on the other side of the Rhodesia / Zambia-Congo border, Katangese copper oxide deposits, located on the surface, were “not only easier to [extract]...but at the same time the values of ore [averaging 7–15 per cent copper] there were (and still are) much greater than anything found in Northern Rhodesia [Zambia]”.⁴ Therefore, the Union Minière du Haut Katanga (UMHK) began large-scale mining operations in 1911, barely five years after it was incorporated in Belgium, with Robert Williams as Managing Director. As a result, Kansanshi, Bwana Mkubwa, Roan and Nkana were largely ignored until the 1920s when the Bwana Mkubwa Company, Copper Ventures / Rhodesia Congo Border Company (CV / RCBC) and Anglo American Corporation (AAC) of South Africa undertook serious development and intensive drilling.⁵ The result was further discovery of high-grade copper sulphide ores, averaging 4–6 per cent, and running into millions of tons at Roan, Mufulira, Nchanga, and Nkana by

- 2 BWE Alford and CE Harvey, “Copperbelt Merger: The Formation of the Rhokana Corporation, 1930-1932”, *The Business Review* 54 (3), 1980, p. 331.
- 3 For a detailed understanding of the discovery of low-grade oxide ores at Kansanshi in 1899, at Bwana Mkubwa and Roan Antelope in 1902, and at Nkana in 1910, see, LH Gann, *A History of Northern Rhodesia: Early Days to 1953* (London: Chatto and Windus, 1964), p. 122; S Cunningham, *Nationalisation and the Zambian Copper Mining Industry* (PhD, University of Edinburgh, 1985), pp. 37–39; GW Silavwe, *Management of Human Resources in the Copper Mining Industry in Zambia* (Ndola: Mission Press, 1995), p. 20.
- 4 FL Coleman, *The Northern Rhodesia Copperbelt, 1899–1962: Technological Development up to the end of the Central African Federation* (Manchester: Manchester University Press, 1971), p. 14. See also, RL Sklar, *Corporate Power in an African State: The Political Impact of Multinational Mining Companies in Zambia* (Los Angeles: University of California Press, 1975), p. 10.
- 5 Coleman, *The Northern Rhodesia Copperbelt, 1899 – 1962*, p. 14; Sklar, *Corporate Power in an African State*, p. 10. For further details on the formation of the Bwana Mkubwa Company in 1920 by Edmund Davis; Copper Ventures (CV) in 1921, comprised of Bwana Mkubwa, Minerals Separation and Chester Beatty’s Selection Trust; the winding up of CV in 1923 and the formation of the Rhodesia Congo Border Concession / Company; formation of Nchanga Consolidated Copper Mines Limited in 1926; and, entry of Anglo American Corporation of South Africa into the Northern Rhodesian mining industry, see variously, T Gregory, *Ernest Oppenheimer and the Economic Development of Southern Africa* (London: Oxford University Press, 1961), pp. xvii, 22–29, 385–406; Alford and Harvey, “Copperbelt Merger”, pp. 332–333; AD Roberts, “Notes towards a Financial History of Copper Mining in Northern Rhodesia”, *Canadian Journal of African Studies* 16 (2), 1982, p. 348; Cunningham, *Nationalisation and the Zambian Copper Mining Industry*, p. 43.

1927.⁶ Compared to oxide ores, Sulphide ores were cheap to extract and treat, prompting the development of the Copperbelt mines.⁷

The discovery of rich copper sulphide deposits also led to closer association of the operations of the Bwana Mkubwa Company, CV / RCBC, and Nchanga Consolidated Copper Mines (NCCM) Limited.⁸ Consequently, development work began to accelerate at Roan, Mufulira, Nkana and Nchanga.⁹ These four Copperbelt mines attracted capital from South Africa, Britain and the United States of America (USA). A consortium of eight companies from Britain and South Africa funded the development of Nchanga mine, including the AAC, Johannesburg Consolidated Investment Corporation, BSAC, Minerals Separation and Rio Tinto.¹⁰ Chester Beatty's Selection Trust (ST) and the American Metal Company (AMC) purchased substantial shares in Roan and Mufulira, and formed the Rhodesian Selection Trust (RST) in May 1928. The AAC followed suit by floating Rhodesian Anglo American (RAA) in December of the same year.¹¹ RST controlled Roan Antelope and two-thirds of Mufulira. RAA was a holding company for AAC shares in the RCBC, Nchanga and Bwana Mkubwa, the majority shareholder in Nkana mine. Further integration occurred when the RCBC and Nchanga were amalgamated with Bwana Mkubwa and formed the Rhokana Corporation in 1931.¹² Besides finding additional capital for infrastructural development, stakeholders in all three companies anticipated that the Great Depression would last for several years and undermine the price of copper.¹³ They stressed, "the strong position that one large company, as compared with three companies, would have when it came to negotiating output restrictions with the other large copper producers".¹⁴ The establishment of the Rhokana Corporation "essentially achieved the corporate structure that remained until [1969 in the Northern Rhodesian / Zambian mining industry]".¹⁵

Alongside this corporate organisation, the Copperbelt mines, like their counterparts in Southern Africa, North and South America, introduced a

6 Anglo American Corporation (hereafter AAC), "Nkana-Kitwe: Twin Town of Copper", *Optima* 11 (2), 1961, p. 68.

7 AAC, "Nkana-Kitwe: Twin Town of Copper", p. 68.

8 AAC, "Company Histories No. 3: Rhokana Corporation", *Optima* 1 (3), 1951, p. 22.

9 R Brooks, "How the Northern Rhodesia Coppers were Found (III)", *Rhokana Review* 8 (4), 1959, p. 31.

10 Brooks, "How the Northern Rhodesia Coppers were Found (III)", p. 13.

11 Cunningham, *Nationalisation and the Zambian Copper Mining Industry*, p. 74.

12 Phillips, *Roan Antelope: Big Business in Central Africa, 1890-1953*, p. 148.

13 Alford and Harvey, "Copperbelt Merger", p. 343.

14 SJ Cunningham, *The Copper Industry in Zambia: Foreign Mining Companies in a Developing Country* (New York: Praeger Publishers, 1981), p. 77.

15 K Ronnback and O Broberg, *Capital and Colonialism: The Return on British Investments in Africa, 1869-1969* (London: Palgrave Macmillan, 2019), p. 223.

dual (skilled and unskilled) labour structure designed to maximise profits.¹⁶ There was a need for both skilled and unskilled labour in mine production, mine development and construction in the Copperbelt mines. A large number of Africans without a formal education could only sell unskilled labour, while skilled employment was reserved for Europeans. By 1931, when all four copper producing mines on the Copperbelt began large-scale operations, they employed 2 221 Europeans and 13 948 Africans.¹⁷ The majority of European workers came from as near as Southern Rhodesia and South Africa and as far as Britain, America and Australia.¹⁸ The majority of African workers originated from within Northern Rhodesia, a substantial number from Nyasaland (Malawi), German East Africa (Tanganyika / Tanzania), Portuguese East Africa (Mozambique), Portuguese West Africa (Angola), and a few from Belgian Congo (Democratic Republic of Congo), Southern Rhodesia (Zimbabwe) and South Africa.¹⁹

The development of large-scale mining after 1931 precipitated rapid industrialisation, urbanisation and social transformation on the Northern Rhodesian / Zambian Copperbelt. As a result, the Copperbelt became one of the richest copper fields in the world and one of the most powerful agents of social change in Africa.²⁰ Whereas in the early 1900s, the sprawling Copperbelt areas supported just over 1 000 Africans in scattered villages, three decades later, in 1931, the Copperbelt was home to 13 948 Africans and 2 221 European miners.²¹ However, an economic boom in production on the Copperbelt coincided with the acceleration of the Great Depression,

16 For further details about the dual labour structure on the Copperbelt, other parts of Africa, and selected parts of the world, see, S Bellucci and A Eckert (eds.), *General Labour History of Africa: Workers, Employers and Governments, 20th and 21st Centuries* (Suffolk: James Currey, 2019); TM Klubock, *Contested Communities: Class, Gender, and Politics in Chile's El Teniente Copper Mine* (Durham: Duke University Press, 1998); Parpart, *Labour and Capital on the African Copperbelt*; GCZ Mhone, *The Political Economy of a Dual Labour Market in Africa, 1929–1969* (London and Toronto: Associated University Presses, 1982); United States (hereafter US) Department of Labour, *Monthly Labour Review*, 47 (1), 1938; US Department of the Interior, *Bureau of Mines: Copper Mining in North America*, Bulletin Number 405 (Washington: Government Printing Office, 1938), pp. 251–292.

17 CA Perrings, *Black Mineworkers in Central Africa: Industrial Strategies and the Evolution of an African Proletariat in the Copperbelt 1911–1941* (New York: Africana Publishing Company, 1979), p. 252.

18 AAC, “Nkana-Kitwe: Twin Town of Copper”, p. 68.

19 National Archives of Zambia (hereafter NAZ) KDD/KTW 2/1, Barovale District Notebook, Volume VII, Origins of Labour Employed on Northern Rhodesia during July 1938; NAZ/SEC 3/48 Volume II, Immigration Organisation: General Control of Immigration, 1935–1948.

20 A Paton, “African Advancement: A Problem of both the Copperbelt and Federation”, *Optima* 5 (4), 1955, p. 105.

21 AAC, “Nkana-Kitwe: Twin Town of Copper”, p. 68; Perrings, *Black Mineworkers in Central Africa*, p. 252.

which threatened the rapid development of the region's mines and the overall profitability of the Northern Rhodesian mining industry.

The Great Depression was a global phenomenon of economic downturn, which began in the USA and spread to Europe, Africa, Asia, Latin America, and Australasia. The October 1929 New York Stock Exchange crash was followed by a major slowdown in business activity coupled with bank failures.²² This led to a reduction in the amount of money available for domestic and foreign investments, causing unemployment to increase, as companies tried to cut back on their work force to reduce costs. Between 1929 and 1932, the USA's economy halved in size and shed 14 million jobs.²³ By comparison, Britain escaped relatively unscathed, with employment rising to 20 per cent and recovering from the effects of the Depression faster than the USA.²⁴ But even so, the economic meltdown in the metropole spread to the periphery through market ties, investment and trade. The immediate impact on the global copper industry was that prices halved between 1929 and 1931, as world consumption fell from 2 084 560 to 1 406 535 short tons.²⁵ Despite falling commodity prices, production and consumption, the Great Depression proved only a transitory phase for the Copperbelt mines.

Scholars have examined the factors that enhanced the Copperbelt mines' profitability during the economic slump, separately.²⁶ Several studies have focussed on labour when analysing the growth, expansion and profitability of the Copperbelt mines during the Great Depression. Merle Davis observed that, from their first boom in 1931, the Copperbelt mines were dependent on abundant and cheap supplies of unskilled African labour recruited from all over Southern Africa.²⁷ Like Davies, anthropologists affiliated to the Rhodes Livingstone Research Institute, which was established in 1937 in Northern Rhodesia, noted that, the impact of investment capital on the Copperbelt by the multinationals affected the social and economic aspects of

22 For a detailed understanding of the origin and impact of the Great Depression, see, S Kraner, *Causes of the Great Depression and the Great Financial Crisis* (PhD, Univerza Na Primorsken, 2010), pp. 9–10; M Santebe, *The Colonial Government and the Great Depression in Northern Rhodesia: Administrative and Legislative Changes 1929 – 1939* (MA, University of Zambia, 2015).

23 R Palmer and J Colton, *A History of the Modern World* (New York: Doubleday and Company, 1992), p. 806.

24 P Clarke, *Hope and Glory: Britain 1900–1990* (London: Penguin, 1997), pp. 152–158.

25 Phillips, Roan Antelope, p. 194.

26 See, for example, Perrings, *Black Mineworkers in Central Africa*; LJ Butler, *Copper Empire: Mining and the Colonial State in Northern Rhodesia, c. 1930–1964* (New York: Palgrave Macmillan, 2007); M Larmer, "Permanent Precarity: Capital and Labour in the Central African Copperbelt", *Labour History* 58 (2), 2017, pp. 170–184.

27 MJ Davis, *Modern Industry and the African: An Enquiry into the Effect of the Copper Mines of Central Africa upon Native Society and the Work of the Christian Missions* (London: MacMillan and Co., 1933).

African miners who were getting low wages at the expense of making huge profits for the mine owners.²⁸

Charles Perrings's works are seminal in using the theory of proletarianisation on the Copperbelt mines' development.²⁹ He argued that the emergence and subsequent history of African mine labour, protests, and organisation on the Copperbelt after 1935 resulted from the proletarianisation of Black labour, and itself one of the major factors underpinning the productivity and profitability of the Copperbelt mines during the Great Depression. The term proletarianisation originates from Karl Marx's theory of capitalism. Initially, it refers to the process of creating a class of workers (the proletariat) who sold their labour cheaply to factory and business owners (the bourgeoisie) or the owners of the means of production.³⁰ Using a Marxist perspective, Guy Mhone analysed the evolution of the dual (White and Black) labour structure in the Copperbelt mines between 1929 and 1969.³¹ He argued that the mining companies introduced proletarianisation and discrimination based on race and class in order to maximise profits. But as mentioned elsewhere above, this was not unique to the Copperbelt—majority of European mineworkers in the Belgian Congo, Southern Rhodesia and South Africa were employed in skilled jobs. On the same subject area, Elena Berger analysed the nexus of capital, labour and profitability of the Copperbelt mines during and after the Great Depression (1929–1974).³² She noted that

- 28 Rhodes Livingstone Institute (hereafter RLI) scholars included, G Wilson, *An Essay on the Economics of Detribalisation in Northern Rhodesia* (Livingstone: RLI, 1942); LA Saffrey, *A Report on some Aspects of African Living Conditions on the Copperbelt of Northern Rhodesia* (Lusaka: Mimeo, 1943); JC Mitchell, *The Kalela Dance: Aspects of Social Relations among Urban Africans in Northern Rhodesia* (Manchester: Manchester University Press, 1956); AL Epstein, *Politics in an Urban African Community* (Manchester: Manchester University Press, 1958); H Powdermaker, *Copper Town Changing Africa: The Human Situation on the Rhodesian Copperbelt* (New York: Harper and Row, 1962). For further details about the RLI, see, A Tembo, "The Rhodes-Livingstone Institute and Interdisciplinary Research in Northern Rhodesia (Zambia), 1937–1964", *Strategic Review of Southern Africa* 36 (1), 2014, pp. 90–99.
- 29 CA Perrings, "Consciousness, Conflict and Proletarianisation: An Assessment of the 1935 Mineworkers' Strike on the Northern Rhodesian Copperbelt", *Journal of Southern African Studies* 4 (1), 1977, pp. 31–51; Perrings, *Black Mineworkers in Central Africa*; CA Perrings, "A Moment in the Proletarianisation of the New Middle Class: Race, Value and the Division of Labour in the Copperbelt, 1946–1966", *Journal of Southern African Studies* 6 (2), 1980, pp. 183–213.
- 30 Today the term is used to describe the ever-growing size of the working class, which results from growth imperative of a capitalist economy. For further details, see, MP Kelly, "Proletarianisation, the Division of Labour and the Labour Process", *International Journal of Sociology and Social Policy* 8 (6), 1989, pp. 48–64.
- 31 Mhone, *The Political Economy of a Dual Labour Market in Africa*.
- 32 EL Berger, *Labour, Race and Colonial Rule: The Copperbelt from 1924 to Independence* (Oxford: Clarendon Press, 1974). Berger's study was a follow through to Robert Baldwin's work, which linked profitability of the Copperbelt mines during the economic slump to a

the advancement of Africans into semi-skilled and other comparable jobs, which had been done by some European workers, enhanced the profitability of the mines, since the wages of the former were by far lower than those of the latter. Berger suggested that the Copperbelt mines could have made further profits if they had advanced Africans into skilled jobs performed by most European workers.³³

George Chauncey and Jane Parpart employed a gendered approach when analysing the role played by women in the copper industry during the colonial era in Zambia.³⁴ Though not employed in the mines, they argued that African women were allowed to stay in the compounds to stabilise labour and relocate the social reproduction of labour to the Copperbelt. Stabilisation of labour improved the productivity of African workers, as they learned from their experience over the years. According to Klas Ronnback and Oskar Broberg, the compound system, which was imported from the gold mines in South Africa and adopted elsewhere in the Southern Africa region, was one of the most important strategies employed by the companies not only to create a controlled environment in the mine areas, but also to reduce desertions, recruitment / labour costs, and maintain profitability.³⁵ Recent studies by Larry Butler, Duncan Money and Miles Larmer have criticised the existing historical literature for concentrating on the stabilisation of labour excluding negotiations over wages, bonus allowances, and general conditions of service.³⁶ According to Butler and Larmer, the wages paid to African miners, which were low compared with those paid to their European colleagues, compensated for recurring costs for the industry, in the form of recruitment and transportation expenses and the provisioning of a wide range of basic services such as health, housing and food.

combination of foreign capital, labour efficiency and export technology. Baldwin contended that labour efficiency was more important in stimulating production and profitability in the mines than export technology. For further details, see, RE Baldwin, *Economic Development and Export Growth* (Berkeley and Los Angeles: University of California Press, 1966), pp. 74–104.

33 Berger, *Labour, Race and Colonial Rule*, pp. 46–49, 117–130.

34 G Chauncey, "The Locus of Reproduction: Women's Labour in the Zambian Copperbelt, 1927–1953", *Journal of Southern African Studies* 7 (2), 1981, pp. 135–164; JL Parpart, "The Household and the Mine Shaft: Gender and Class Struggles on the Zambian Copperbelt, 1926–1964", *Journal of Southern African Studies* 13 (1), 1986, pp. 36–56.

35 C Van Onselen, *Chibaro: African mine labour in Southern Rhodesia, 1900–1933* (London: Pluto Press, 1976), pp. 128–157, 227–244; I Phimister, "The Reconstruction of the Southern Rhodesian Gold Mining Industry, 1903–1910", *The Economic History Review* 29 (3), 1976, p. 480; Ronnback and Broberg, *Capital and Colonialism*, p. 215.

36 Butler, *Copper Empire*, pp. 4–5; D Money, No matter how much or how little they have got, they cannot settle down: A social history of Europeans on the Zambian Copperbelt, 1926–1974 (PhD, University of Oxford, 2016), pp. 291–292; Larmer, "Permanent Precarity", pp. 170–184.

Beyond this literature, Lewis Gann, Hugu Macmillan, James Ferguson, Austen Bancroft, Francis Coleman and Theodore Gregory surveyed the profitability of the mining industry on the Copperbelt from various perspectives. Gann's study links the Copperbelt mines to the global mining industry and concluded that they emerged competitively during the Great Depression vis-à-vis their established counterparts in the USA and Latin America because of being low-cost producers.³⁷ On the same subject area, Ferguson saw the changes caused by the Great Depression as a temporary setback on the path of modernisation and economic growth.³⁸ Contrary to Ferguson's assertion, Macmillan argued that the Great Depression was a sign of much more structural fluctuations in copper prices, which affected mining companies' hiring and production strategies.³⁹ Bancroft and Coleman contributed to an understanding of the development of the Copperbelt mines by noting the importance of technological innovations.⁴⁰ Gregory's study emphasises the entrepreneurship skills of Ernest Oppenheimer, the founder and Chairman of AAC, and the business activities of the Corporation in the Southern Africa region.⁴¹ He further notes that AAC, through the shrewdness of Oppenheimer, became the biggest investor in the Northern Rhodesian mining sector, and the industry benefited from resources and services provided by associated companies of the Corporation in the region.⁴² Building on Bancroft, Ferguson, Macmillan, Coleman, and Gregory's analysis, this article partly examines

37 LH Gann, "The Northern Rhodesian Copper Industry and the World of Copper, 1923–1952", *The Rhodes-Livingstone Journal* 18, 1970, pp. 1–18. Another study linking the Copperbelt mines to the global mining sector is Thomas Navin's book, which examined the various techniques employed by the RST and AAC in capitalising their operations and placing their financing decisions within the international markets. For more information, see, TR Navin, *Copper Mining and Management* (Tucson: University of Arizona Press, 1978), pp. 132–138, 347–361.

38 J Ferguson, "Mobile Workers, Modernist Narratives: A Critique of the Historiography of Transition in the Zambian Copperbelt (Part One)", *Journal of Southern African Studies* 16 (3), 1990, pp. 385–412.

39 H Macmillan, "More Thoughts on the Historiography of Transition on the Zambian Copperbelt", *Journal of Southern African Studies* 22 (2), 1996, pp. 309–312.

40 Bancroft's study shows that scientific methods adopted during and after the second phase of mineral prospecting (from 1920 to 1928) in Northern Rhodesia accelerated the development of the Copperbelt mines. Coleman builds on Bancroft's analysis of technological developments including open stoping and caving methods of extracting ores, new concentrating techniques notably flotation, leaching and electrolysis, smelting machines such as reverberator furnaces and converters, which improved both labour productivity and copper output in the mines. For further details, see, AJ Bancroft, *Mining in Northern Rhodesia: A Chronicle of Mineral Exploration and Mining Development* (Bedford: The Sidney Press Limited, 1961), pp. 73–105; FL Coleman, *The Northern Rhodesia Copperbelt, 1899–1962: Technological Development up to the end of the Central African Federation* (Manchester: Manchester University Press, 1971), pp. 1–142.

41 Gregory, *Ernest Oppenheimer*.

42 Gregory, *Ernest Oppenheimer*, pp. 384–489.

technical and managerial aspects of production and the importance of horizontal and vertical corporate integration to the industry's development and overall profitability during the economic depression.⁴³

It can be seen that many studies have analysed the factors affecting the productivity and profitability of the Copperbelt mines during the economic depression in isolation. This makes it difficult for us to understand how various factors interconnected to affect the productivity and profitability of the mining industry in Northern Rhodesia during the dynamic decade, from 1929 to 1939. In this period, the majority of existing studies examined the impact of the dual (European and African) wage structure on labour costs, and the effect of proletarianisation, the productivity of Black workers and managerial tendencies on general production, without systematically relating interlocking corporate strategy, quality of ore mined, capital, operating costs, price of copper, and taxes to the industry's overall trajectory and viability. Additionally, the importance of the Great Depression for the future of the Copperbelt mines has never been studied comprehensively, until now. Thus, this article is the first to intertwine these factors in a single narrative in the Copperbelt mines' financial history during the Great Depression so that they "could usefully be seen in a perspective both wider and deeper than those so far adopted".⁴⁴

Profitability in the mining industry depends largely on the operating cost and the price level.⁴⁵ The Northern Rhodesian mines, like the mines of the Belgian Congo, USA, Canada and Chile, adopted corporate strategy, produced high quality ore, employed capital and streamlined operations in order to reduce costs during the Great Depression. Nevertheless, it is worth noting that individual mines' social, geological and technical conditions determined variations and changes in the cost of production.⁴⁶ By contrast, the price of the red metal was "susceptible to fluctuations in demand and supply".⁴⁷ For the Copperbelt mines, the economic downturn of the 1930s shows how the employment and shedding of "precarious" migrant and/or foreign labour coupled with low African wages, high-grade copper ores, a reduction in the cost of transport and coal, and an economic boom in the copper business on the world market compensated for volatility and risks.

43 Horizontal integration entails the acquisition of additional shares in other mines / properties to increase company assets. Vertical integration involves controlling the steps in the process of production (extraction, concentration, refining) and establishing trade links to attain a monopoly, efficiency and self-sufficiency in the industry. For more information, see, Phillips, Roan Antelope, pp. 29–30.

44 Roberts, "Notes towards a Financial History of Copper Mining in Northern Rhodesia", p. 347.

45 RL Sklar, *Corporate Power in an African State: The Political Impact of Multinational Mining Companies in Zambia* (Los Angeles: University of California Press, 1975), pp. 63–83.

46 Sklar, *Corporate Power in an African State*, p.73.

47 Sklar, *Corporate Power in an African State*, p. 73.

The article's narrative derives from primary sources drawn from the Zambia Consolidated Copper Mines Archive in Ndola and contemporary local and international magazines and newspapers. These magazines and newspapers carried important information on mining developments in the Southern Africa region during the 1930s. From these sources, I draw important information about capital, wages, and quality of ores, production, operating costs and price of copper, profits, taxes, and dividends in the period under consideration. I interpret this data in the broader context in order to make sense of many factors affecting production on the Northern Rhodesian Copperbelt during the Great Depression.

The article begins by analysing the importance of the interlocking corporate organisation of AAC and the BSAC and cooperation between the Copperbelt companies and other firms in the Southern Africa region that were essential to the industry's profitability. It proceeds by discussing the impact of the quality of copper ores on production and costs in the Copperbelt mines. The effect of rationalisation of labour and capital on operating costs in the mines is analysed. The paper also looks at the rationalisation of production among producers in line with demand on the world market, and the impact on the copper price. It further examines the effect of rising industrial and military activities in Europe on the demand, the supply, and the price of the red metal. It traces the impact of these factors on the cost of sales for the Copperbelt mines in comparison with the price of copper on the international market. The article concludes by examining overall production and profitability of the Northern Rhodesian mining sector between 1929 and 1939. In this manner, the article demonstrates that the Great Depression, in economic terms, was not a setback at all.

2.1. INTERLOCKING CORPORATE STRATEGY AND COOPERATION

Despite the negative economic climate, the Great Depression actually saw the competitiveness of the Copperbelt mines enhanced vis-à-vis that of its more established counterparts in the Belgian Congo, the USA, and Canada. Several factors enhanced the competitiveness of the Northern Rhodesian copper industry. One of the initial measures taken by the Copperbelt mines to maintain profitability was to reduce transport and production costs by negotiating with key Southern Rhodesian companies, Rhodesia Railways and Wankie Colliery, for cheaper railway rates and coal supplies.⁴⁸ The three producing mining companies, Nkana, Roan Antelope and Mufulira, entered

48 *The Times*, 9 July 1931.

into a 13-year contract with Rhodesia Railways to send all of their exports and imports along the Rhodesian system at reduced rates from October 1931.⁴⁹ Similarly, the mining companies secured a 13-year contract with the Wankie Colliery Company to run from 1931 to 1944 to supply all their coal requirements at a reduced price. On the Rhodesia Railways, export rates for copper fell from £5.10 to £4 a ton; for coal from 22s to 20s a ton; and on general goods, plant and machinery, from £9 to £8 a ton.⁵⁰

But the Rhodesia Railways would not have reduced their rates without being cushioned by Wankie. As such, Wankie offered the Railways coal at a special rate of 7.6s per ton for 10 years.⁵¹ For the Northern Rhodesian mines, the price of coal per ton was reduced from 10.6s to 8s.⁵² This agreement would have been difficult to negotiate without the concerted efforts of Sir Edmund Davis and Sir Ernest Oppenheimer, who were “powerful figure[s] in the interlocking world of [the] Central African Mining Company boards and directorships”.⁵³ They sat on the BSAC Board of Directors, which owned 86.56 per cent shares in the Rhodesia Railways and a substantial interest stake in Wankie Colliery.⁵⁴ Davis was also chair for the Wankie Colliery Company until he died in 1939. Following this agreement, the Colliery’s supply to the Copperbelt mines increased from 423 392 tons in 1934 to nearly 1 million tons in 1937.⁵⁵

2.2. EFFECT OF HIGH-GRADE COPPER ORES ON PRODUCTION AND COSTS

The presence of high-grade copper ores also enhanced the profitability of the Copperbelt mines during the Great Depression compared to their counterparts in the USA with low-grade ores. For instance, in 1931, the Copperbelt and Katanga mines contained huge ore reserves averaging 4 per cent and 8 per cent copper, respectively, while those owned by the USA contained an average of 1.6 per cent copper.⁵⁶ By comparison, the quality of ore reserves in Canadian mines averaging 2.9 per cent copper was 1.1 per cent lower than the copper reserves on the Copperbelt.⁵⁷ Similarly, in 1931, copper ores on

49 *The Times*, 9 July 1931.

50 *The Times*, 9 July 1931.

51 I Phimister, *Wangi Kolia: Coal, Capital and Labour in Colonial Zimbabwe* (Harare: Baobab Books, 1994), p. 93.

52 Phimister, *Wangi Kolia*, p. 93.

53 Phimister, *Wangi Kolia*, p. 4.

54 ZCCM 19.2.2B, British South Africa Company, *Reports and Accounts*, 1929–1939.

55 Phimister, *Wangi Kolia*, p. 84.

56 *The Times*, 9 July 1931.

57 US Department of the Interior, *Bureau of Mines*, p. 9.

the Copperbelt totalled 540 780 000 tons in reserves; ore reserves in the USA were 26 263 000 tons, and total copper reserves in Canada at 11 355 000 tons were almost 48 times smaller than the quantity of copper sulphide ores in the former.⁵⁸ Given the high quantity and quality of copper ores in the Katanga and the Copperbelt mines, the two regions produced at a cost below the selling price on the market. The USA and Canadian mines with low quantity and quality of copper ore remained high-cost producers.

As stated elsewhere above, sulphide ores, compared to oxide ores, were cheap to treat because they could be fed directly into the furnace without passing through the flotation process.⁵⁹ Additionally, the quantity and quality of the copper ore was largely responsible for the overall improvement in both labour productivity and metal output (see Tables I and III).

2.3. EFFECT OF RATIONALISATION OF LABOUR AND CAPITAL ON COSTS

Another factor behind the enhanced profitability of Nkana, Roan Antelope, Mufulira and the UMHK during the Great Depression was that, compared to the copper mines of North and South America, they were more labour-intensive than capital-intensive. For example, capital invested in mine development, plant, equipment and day-to-day operations in the copper mines of the USA totalled £131 589 119 in 1929.⁶⁰ That year, capital expended on major projects and operations totalled £98 557 213, £15 566 298 and £8 106 238 in the copper industries of Chile, Canada and Katanga, respectively.⁶¹ By comparison, working capital and expenditure on mine development and metallurgical facilities when all the Copperbelt mines began large-scale

58 ZCCM 3.8.2F, Rhokana Corporation (hereafter RC) Limited, *Directors' Report and Statement of Accounts for the year ended 30th June 1931* (London: RC Head Office, 1931), p. 6; ZCCM 12.6.1E, Rhodesian Selection Trust (hereafter RST) Limited, *Report of the Directors with Balance Sheet at 30th June 1931* (RST Head Office: London, 1931); Phillips, Roan Antelope, p. 367.

59 AAC, "Nkana-Kitwe: Twin Town of Copper", p. 68.

60 US Department of the Interior, *Bureau of Mines*, p. 288. In the Bureau of Mines Bulletin, the amounts of capital investments in the mines of the USA, Canada, Chile and Katanga are indicated in United States dollars. They have been converted into British pounds for easy comparison with the figures of their counterparts in Northern Rhodesia at the exchange rate of £1 = 490 US cents = US\$4.90. For further details about these exchange rates, see, New World Economics, "Foreign Exchange Rates: Just Looking at the Data", <https://newworldeconomics.com/foreign-exchange-rates-1913-1941-just-looking-at-the-data/>, accessed 7 May 2021.

61 New World Economics, "Foreign Exchange Rates: Just Looking at the Data".

operations in 1931 amounted to £8 439 495.⁶² In terms of labour force, employment at 14 major producing mines in the USA averaged 22 176 per year from 1930 to 1935.⁶³ In this period, the number of workers employed in the three producing mines on the Copperbelt averaged 12 360 per year, and 9 483 in the three operating mines of its neighbour, Katanga.⁶⁴

The disparities in the labour force and capital expenditure in the copper industry in Africa and North America were mainly due to differences in ore deposits and mining methods utilised. The low-grade porphyry copper deposits of North America occurred in huge mineralised rock formations, which were easily worked using large-scale mechanisation. Additionally, in the 1930s majority of North American companies, 49 out of 71 – to be specific, utilised open stoping, square-set, and shrinkage mining methods, which were extremely expensive compared to block and sublevel caving methods utilised elsewhere in the industry.⁶⁵ More skilled labour was required to operate machines in these underground mines. Thus, North American copper mines utilised more skilled labour than unskilled labour.⁶⁶ Skilled labour was more expensive than unskilled labour, making labour costs in the mines of USA and Canada more expensive compared to anywhere else in the industry, despite their mines being low labour intensive.⁶⁷ The ore bodies of the Katanga and Copperbelt mines were predominantly flat stopes, which were more accessible and required greater use of unskilled labour (hoist men), semi-skilled labour (hoist drivers and blasting license holders), and less advanced machinery.⁶⁸

In the late 1920s, when the Copperbelt mines were developing, they devoured capital, but between 1931 and 1934, production techniques and labour policies were re-calibrated to underpin the mines' profitability. For example, capital expenditure on major projects at Nkana increased from

62 ZCCM 3.8.2F, RC Limited, *Directors' Report and Statement of Accounts for the year ended 30th June 1931*, p. 11; ZCCM 12.6.1E, RST Limited, *Report of the Directors with Balance Sheet at 30th June 1931*, p. 9; Phillips, Roan Antelope, p. 220.

63 US Department of the Interior, *Bureau of Mines*, p. 255.

64 ZCCM 3.8.2B, RC Limited: Unpublished Annual Reports, June 1931–June 1935; ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts, 1931–1935*; 12.6.1E, RST Limited, *Reports of the Directors with Balance Sheets, 1931–1935*; Perrings, *Black Mineworkers in Central Africa*, Appendices i and ii, pp. 101, 252–253. By calculation, it can be seen that each of the 14 operating mines in the USA utilised an average of 1 584 workers per year between 1930 and 1935. By comparison, the labour force in each of the three mines on the Copperbelt and their counterparts in the Katanga averaged 4 120 and 3 160 per year, respectively.

65 US Department of the Interior, *Bureau of Mines*, p. 255.

66 US Department of Labour, *Monthly Labour Review*, p. 866.

67 US Department of Labour, *Monthly Labour Review*, p. 866.

68 Parpart, *Labour and Capital on the African Copperbelt*, p. 30.

£14 113 in 1932 to a peak of £693 693 in 1935.⁶⁹ The increase in capital expenditure was due to development activities at Nkana, such as construction of the concentrator, smelter and refinery.⁷⁰ Between 1932 and 1938, the labour force at Nkana grew from 5 393 to 7 678.⁷¹ According to John Phillips, capital expenditure at Roan reduced from a peak of £1 708 518 in 1931 to £27 210 in 1937 because the firm was more labour-intensive than capital-intensive.⁷² In this period, the work force at Roan and Mufulira increased substantially from 9 660 to 11 150.⁷³ In addition to Phillips' argument, this study supports Gregory's argument that Roan was able to save excess capital more than Nkana because the former did not invest more in infrastructure on the mine and in residential areas.⁷⁴ As explained in the preceding paragraph, the capital invested by Nkana would still not be more than the amount expended by its counterparts in America.

When the Great Depression struck, the closure of the majority of the mines led to a drastic reduction in the labour force of all the mining groups. The UMHK scaled down its Black labour from 11 621 in 1931 to 5 065 by the end of 1932, and its White labour from 1 388 to 664.⁷⁵ RST and RAA followed suit, with their total African labour force falling from 13 948 in 1931 to 5 831 in 1932, while White labour dropped from 2 221 to 959.⁷⁶ The reduction in labour enabled the mines to save funds for other developmental projects. For example, between 1932 and 1934, Roan Antelope managed to save £1 151 962.⁷⁷ As the mines began production after 1933, there was a demand for African labour due to greatly increased production and construction activities.⁷⁸

On the UMHK mines, the number of African employees increased tremendously from 10 564 in 1935 to 15 727 by 1939, while European workers increased steadily from 596 to 870 between these years.⁷⁹ Labour strength on Rhokana / RAA-owned mines was 6 583 Africans against 844 Europeans in 1935; both categories of workers increased to about 9 371 compared to

69 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts, 1932–1939; The Times*, 31 October 1935; *Daily Telegraph and Morning Post*, 28 October 1937; *Financial Times*, 16 November 1939.

70 ZCCM 3.8.2B, RC Limited: Unpublished Annual Reports, June 1931–June 1935.

71 ZCCM 3.8.2F, RC Limited: *Annual Reports and Accounts, 1931–1938*.

72 Phillips, Roan Antelope, pp. 217, 220–221.

73 Phillips, Roan Antelope, p. 217.

74 Gregory, *Ernest Oppenheimer*, pp. 473–475.

75 Perrings, *Black Mineworkers in Central Africa*, p. 252.

76 Perrings, *Black Mineworkers in Central Africa*, p. 252.

77 Phillips, Roan Antelope, Table 14, p. 220.

78 ZCCM 3.8.2F, RC Limited, *Director's Report and Statement of Accounts for the Year ended 30 June 1934* (London: Rhokana Corporation Head Office, 1934), p. 19.

79 Perrings, *Black Mineworkers in Central Africa*, p. 252.

1 231 in 1939, respectively (see Table I).⁸⁰ Similarly, the African labour force on RST mines rose from 7 156 to 12 808, while the number of European workers increased from 946 to 1 422 over the same period.⁸¹ By comparison, the UMHK relied more on African workers compared to its Copperbelt counterparts. The reason being that the UMHK, unlike the Copperbelt mines, employed more semi-skilled African workers from Nyasaland, who had gained experience working in the mines of South Africa and Southern Rhodesia.⁸² However, the Copperbelt mines, especially Nkana, relied more on White and Coloured semi-skilled labour from South Africa.⁸³ Coloured labour at Nkana was placed in jobs where it was not economical to employ Europeans, yet such jobs were beyond those occupied by Africans.⁸⁴ It was economical to employ experienced Nyasas and semi-skilled Coloureds from South Africa because they were cheaper than their European counterparts. Skilled or semi-skilled labour enabled the mines to increase production more rapidly and efficiently especially when the copper market improved.

In 1937, the annual turnover rate of African labour was 41.9 per cent at Roan; 73.1 per cent at Mufulira; and 70.2 per cent at Nkana; coupled with a service record of between one and four years, especially among married men.⁸⁵ The low turnover rate for Roan compared to Nkana and Mufulira was due to the stabilisation of labour, practised by the former since it was incorporated in 1928. Perrings observes a similar increase in the stabilisation of African labour on the UMHK with long service records. For example, in 1932, there was less than 1 per cent of voluntary workers under three years' service, but by 1934 the figure was more than 50 per cent, and in 1935, more than 70 per cent, the majority of them were married.⁸⁶

Throughout the 1930s, however, Nkana relied more on migrant labour than stabilised labour because the former was cheaper than the latter. This can be seen from the high percentage of single men compared to married ones at Nkana. Between 1932 and 1939, married men averaged 33.6 per cent and the remainder for single men.⁸⁷ In this same period, married workers at Roan averaged 53.3 per cent.⁸⁸ By contrast, Roan relied more on stabilised

80 Perrings, *Black Mineworkers in Central Africa*, p. 252.

81 Perrings, *Black Mineworkers in Central Africa*, p. 252.

82 Perrings, *Black Mineworkers in Central Africa*, p. 109.

83 ZCCM 3.8.2B, RC Limited, Unpublished Annual Report Covering the Period from 1 July 1932 to 30 June 1933, p. 14.

84 ZCCM 3.8.2B, RC Limited, Unpublished Annual Report Covering the Period from 1 July 1932 to 30 June 1933, p. 14.

85 Mhone, *The Political Economy of a Dual Labour Market in Africa*, pp. 104–105.

86 Perrings, *Black Mineworkers in Central Africa*, p. 104.

87 J Ferguson, *Expectations of Modernity: Myths and Meanings of Urban Life on the Zambian Copperbelt* (Berkeley: University of California Press, 1999), p. 59.

88 Ferguson, *Expectations of Modernity*, p. 59.

labour than Nkana. As mentioned earlier, majority of the mining companies relied more on migrant African labourers recruited from the rural areas in the region, who performed unskilled tasks and “cajoled into selling their labo[u]r power by expropriation of land [and] imposition of taxation” and “became attracted to wage employment as a way of making up or supplementing their means of subsistence, [farming]”.⁸⁹ Migrant labourers worked for a period of six to twelve months and returned to the villages. Labour stabilisation was meant to settle parts of:

[T]he African mining workforce with their families on the properties of the mining companies ... [so] as to diminish the dependence on (foreign) migrant labour, lower the costs of recruitment and create an environment for long-term investments in workers' health, skills and offspring.⁹⁰

By comparison, migrant African workers were still cheaper because their wages, working conditions, and living standards were lower than those of stabilised labourers on the mines. Nonetheless, stabilisation enhanced the productivity of Africans as they gained from experience and became more efficient. Thus, as these workers became familiar with their work, fewer workers were required to produce the same amount of copper ore. Table I compares Black and White labour co-efficients on metal output by mining group between 1931 and 1939. It also compares average African wages in shillings per shift for all workers in semi-skilled, surface and underground employment on the Copperbelt.

Table I: Black / White Labour Coefficients on Metal Output, and Average African Wages in Shillings per Worker per Shift by Mining Group, 1931–1939.

Year	Rhodesian Selection Trust (RST) Group					Rhodesian Anglo American (RAA) Group				
	Number of Workers		African Wages	Labour Productivity		Number of Workers		African Wages	Labour Productivity	
	Black	White	Shillings	Black	White	Black	White	Shillings	Black	White
1931	8 414	1 246	0.87s	-	-	5 534	975	0.93s	-	-
1932	2 459	399	0.92s	112	19	3 372	560	0.98s	198	35
1933	3 414	500	0.99s	98	13	4 045	570	0.85s	76	12

89 M Burawoy, “The Functions and Reproduction of Migrant Labour: Comparative Material from Southern Africa and the United States”, *American Journal of Sociology* 81 (5), 1976, p. 1054.

90 D Juif and E Frankema, “From Coercion to Compensation: Institutional responses to Labour Scarcity in the Central African Copperbelt”, *Journal of Institutional Economics* 14 (2), 2018, p. 329.

Year	Rhodesian Selection Trust (RST) Group					Rhodesian Anglo American (RAA) Group				
	Number of Workers		African Wages	Labour Productivity		Number of Workers		African Wages	Labour Productivity	
	Black	White	Shillings	Black	White	Black	White	Shillings	Black	White
1934	5 906	851	0.84s	131	15	7 064	960	0.84s	128	17
1935	7 156	946	0.90s	102	14	6 583	844	0.90s	99	14
1936	7 195	841	0.96s	155	16	5 287	748	0.96s	95	14
1937	10 116	1 034	0.95s	138	11	8 036	902	0.98s	84	12
1938	12 716	1 430	0.96s	100	11	8 589	1 086	1.00s	88	14
1939	12 808	1 422	0.99s	104	11	9 371	1 231	1.04s	105	15

Source: Compiled from ZCCM 3.7.2B, attachment to letter from Secretary–Northern Rhodesia Chamber of Mines, Kitwe, to General Managers–Mufulira, Nchanga, Rhokana, Roan Antelope and Chibuluma, 21 May 1953; ZCCM 3.8.2F, Rhokana Corporation (RC) Limited, *Annual Reports and Accounts*, 1931–1939; ZCCM 11.8.3C, Labour Relations on the Copperbelt, 1930–1982, p. 2; Gregory, *Ernest Oppenheimer*, p. 419; Perrings, *Black Mineworkers in Central Africa*, Appendices i and ii, pp. 252–253.

Note: The coefficients are based on crude labour totals (productive and non-productive labour taken together) per 1 000 tons of copper produced.

In 1932, it took 198 Africans and 35 Europeans to produce 1 000 tons of copper at Nkana; by 1938, the mine only required 88 Africans and 14 Whites to produce the same quantity (see Table I). At Roan, about 112 Africans and 19 Europeans produced 1 000 tons of copper in 1932, but in 1938, the number of employees involved was 100 blacks and 11 whites. In addition to experience and efficiency, the quantity and quality of ore discussed above partly determined the productivity of African workers.

Table I indicates that African wages began to increase on the Copperbelt mines after 1935. Three factors were responsible for this state of affairs. Firstly, as the Great Depression eased and the mines stepped up production, expanding construction work on the Copperbelt mines caused African wages to rise. For the RST group, the re-opening of the Mufulira mine raised African wages from an average of 0.87s per shift in 1931 to 0.99s in 1933, partly to attract more labour. For the RAA group, the construction of the Rhokana Refinery raised African wages from an average of 0.84s per shift in 1933 to 0.90s in 1935. It should be added that the international demand for copper, following re-armament in Europe, also increased wages and bonus allowances as the mines stepped up production and increased working hours over the normal duration of eight hours per day.⁹¹ The second factor

91 Perrings, *Black Mineworkers in Central Africa*, pp. 121–129.

behind the increase in African wages on the Copperbelt mines was the strike in 1935 by African workers against low wages and falling living standards. The government sparked the strike when it increased the poll tax in urban areas by 50 per cent but reduced it by 25 per cent in rural areas, provoking workers at Roan, Nkana and Mufulira to take strike action.⁹² “The realisation that mobilisation and resistance had been organised in compounds and settlements” led the mining companies and the government to “reintroduce pass-laws along with other measures to restrict and reverse labour stabilisation” in the aftermath of the 1935 strike.⁹³ Thirdly, the re-opening of Nchanga mine after 1937 also increased wages at Nkana. Despite Nkana’s reliance on migrant labour, which was cheaper than stabilised labour, the mine still paid more for African labour than Roan and Mufulira because of three reasons noted above. Increased wages for African mineworkers added to unit labour costs but was offset through reduced turnover or desertions and increased efficiency.

European workers were expensive at this time because they had the skills not yet acquired by African labourers. According to Butler and supported in this study, despite the high wages paid to attract skilled White workers, the Copperbelt mines were low-cost producers largely because of low African wages.⁹⁴ The difference in wages between European and African workmen per shift in the Copperbelt mines, in general, was in the ratio of about 25:1, and the average monthly salary of a White miner was £40, and that of an African was 22.6s, plus rations and housing in each case.⁹⁵ The disparity in European and African monthly wages was greater than elsewhere in the Southern African mining industry. This disparity in European and African labour earnings was not born out by comparable disparities in the cost of living on the Copperbelt. When the Copperbelt mines were opened in the late 1920s, housing and health conditions were terrible, general amenities were lacking, and the living cost was high.⁹⁶ Therefore, an unusually generous scale of pay was necessary to attract skilled labour from Europe, the USA, South Africa, and Southern Rhodesia.

92 I Henderson, *Labour and Politics in Northern Rhodesia, 1900-1953: A Study in the Limits of Colonial Power* (PhD, University of Edinburgh, 1972), pp. 135–138; Perrings, “Consciousness, Conflict and Proletarianisation”, pp. 45–47; Butler, *Copper Empire*, pp. 51–53; Phillips, *Roan Antelope*, pp. 231, 233.

93 HP Nino, “Labour Migration”. In: S Bellucci and A Eckert (eds.), *General Labour History of Africa: Workers, Employers and Governments, 20th and 21st Centuries* (Suffolk: James Currey, 2019), p. 280.

94 Butler, *Copper Empire*, p. 22.

95 ZCCM 3.8.1A, Trade Union Relations - Nkana Division: Native Strike, March 1940–June 1941.

96 ZCCM 3.8.1A, Trade Union Relations - Nkana Division: Native Strike, March 1940–June 1941.

Overall, labour on the Copperbelt was still cheaper than in North America and Europe. For example, basic wages for skilled and unskilled labour at three USA mines (Butte, Arizona and Michigan) averaged £1.03 per shift and a maximum of £31 per month.⁹⁷ On the Copperbelt monthly wages for both unskilled and skilled labour averaged £20.⁹⁸ As indicated in the paragraph above, skilled (White) miners were expensive than unskilled (African) workers on the Copperbelt. But the cheapness of unskilled labour compensated for the high cost of skilled labour. Due to cheap African labour, the Copperbelt mines constructed a copper refinery at Nkana instead of in Britain.⁹⁹ Butler supports this proposition, observing that it cost £415 000 to construct the Rhokana Copper Refinery, £291 800 less than it would have cost to build it in Britain, “the difference largely being due to the relative cheapness of African labour”.¹⁰⁰ The construction of the Refinery enabled the Copperbelt mines to reduce processing costs as they minimised exporting blister copper to the USA for refining.¹⁰¹ Indeed, the cheapness of African labour in the Northern Rhodesian mining industry kept total labour costs low, despite the high cost of European labour. However, after 1935 African wages also increased substantially relative to operating costs (see Tables I and II). Despite an enormous increase in African wages after 1935, the average cost of producing a long ton of copper in the Copperbelt mines was generally maintained primarily due to inexpensive transport, mining and processing fees.

2.4. RATIONALISATION OF PRODUCTION IN LINE WITH DEMAND

While the factors discussed above had a significant impact on the total cost of production, the price level determined the overall profitability of mining. Rationalisation of production among producers in Africa, North America, and Latin America, in line with the demand on the international market, was one of the initial measures devised to stabilise the copper price. Six leading USA copper companies devised two key measures, which were

97 US Department of the Interior, *Bureau of Mines*, p. 253; US Department of Labour, *Monthly Labour Review*, p. 866. Wages in these reports are indicated in United States dollars. They have been converted to British pounds at an average annual rate of £1 = US 435 cents = US4.35, between 1930 and 1935. For further information about these exchange rates, see, *New World Economics*.

98 ZCCM 3.8.1A, Trade Union Relations - Nkana Division: Native Strike, March 1940–June 1941.

99 Butler, *Copper Empire*, p. 22.

100 Butler, *Copper Empire*, p. 22.

101 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1934–1935.

implemented around the world.¹⁰² The first method was to focus on selective mining production. This involved concentrating on high-grade ore mines and closing lower-grade ones. This policy was followed in Northern Rhodesia, the Belgian Congo, Chile and Canada. Other companies followed suit. The RAA group closed its mining operations at Bwana Mkubwa and Kansanshi, and halted operations at Nchanga until 1938, leaving only Nkana in operation. Mine development was halted at Nchanga because the entire underground workings were flooded in 1931 and remained underwater until 1937.¹⁰³ Similarly, the RST group operated the Roan Antelope mine but reduced production at Mufulira until 1933. On the other side of the border, UMHK closed two high-cost producing mines, Luishia and Lukuni, and operated three low-cost producing mines, Kambove, Shangulowe and Shituru.¹⁰⁴ As a result, the Copperbelt companies lowered production costs (see Table II) by operating low-cost mines.

The second method was an attempt to control the export market by stabilising prices through a cartel called Copper Exporters Inc., comprised of the major producers, including the Copperbelt mines. Inside the United States, Copper Exporters sought protection against foreign competition by demanding that Washington impose a tariff of 4 cents per pound on imported copper; externally, the cartel sought to support prices by restricting production to 25 per cent of capacity.¹⁰⁵ On the Northern Rhodesian Copperbelt, Rhokana / Nkana scaled down production to 31 000 long tons per year, while Roan Antelope and Mufulira each reduced annual production to 29 000 long tons.¹⁰⁶ In Katanga, the UMHK's production fell to 8 929 long tons per month.¹⁰⁷ For the Copperbelt mines, this meant that it kept their copper out of the United States market and directed exports toward Europe where there were fewer restrictions.¹⁰⁸ Meanwhile, the enforcement of this restriction coupled with the tariff on imported copper caused the collapse of Copper Exporters Inc. because non-USA producers who felt disadvantaged pulled out of the cartel.

102 The companies were the American Smelting and Refining Company (ASARCO), Kennecott, Phelps Dodge, Anaconda, Newmont, and American Metal Company (AMC), the majority shareholder in Rhodesian Selection Trust (RST) Limited. For details, see, Navin, *Copper Mining and Management*, pp. 128–132.

103 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1931–1939.

104 Perrings, *Black Mineworkers in Central Africa*, p. 101.

105 Navin, *Copper Mining and Management*, p. 133.

106 Phillips, Roan Antelope, p. 200; Perrings, *Black Mineworkers in Central Africa*, p. 101.

107 Perrings, *Black Mineworkers in Central Africa*, p. 101.

108 As discussed in the preceding section, Europe was experiencing a resurgence in industrial developments, booming automotive and electrical industries and rearmament, which increased the demand for copper.

In March 1935, there was further effort at bringing production in line with international demand.¹⁰⁹ The chief executive of Chile's Anaconda mine invited the world's leading producers of copper to a meeting in New York to secure an agreement to cut back output. However, the meeting produced scant results. It saw Chile, Katanga, and Northern Rhodesia agree only to a meagre reduction of 10 per cent; Canada did not even attend, and the two Northern Rhodesian groups refused to stop the development of new mines.¹¹⁰ The Copperbelt producers felt that they were entitled to a reasonable proportion of the world's markets in view of the magnitude of their investments.¹¹¹ However, when a second cartel, the Production Control Committee, was formed to control the production of copper from sources and its sale in markets outside the USA, the Northern Rhodesian mines joined it. They kept their production within limits agreed on for the rest of the 1930s. For example, between 1 May 1935 and 1 November 1936, the basic production quota was placed at 77 per cent, and in line with this restriction, Nkana maintained production at an average of 4 416 long tons of copper per month.¹¹² From 1 December 1937 to 4 October 1939, when world copper production was fixed at 100 per cent, Nkana scaled its production to an average of 6 247 long tons per month.¹¹³ These restrictions partially helped to reduce production and supply, thereby easing world stocks, and consequently contributed to an increase in the price of copper especially after 1935 (see Table II).

2.5. IMPACT OF RISING INDUSTRIAL AND MILITARY ACTIVITIES ON THE PRICE LEVEL IN EUROPE

As mentioned in the preceding section, concerted efforts by the major producers to align production with demand paid off as prices began to improve. As a result, between 1934 and 1937, a better copper market and the price were helped by reducing copper stocks in the USA of 200 000 short tons and 77 000 short tons in Europe.¹¹⁴ This improving economic situation was also boosted by Germany and Britain's booming automotive and electrical

109 ZCCM 3.8.2F, RC Limited, *Director's Report and Statement of Accounts for the Year ended 30 June 1935* (London: Rhokana Corporation Head Office, 1935), p. 7.

110 Navin, *Copper Mining and Management*, p. 134.

111 ZCCM 3.8.2F, RC Limited, *Director's Report and Statement of Accounts*, 30 June 1935, pp. 7–8; *The Times*, 11 December 1934; *The Times*, 31 October 1935.

112 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts, 1935–1937*.

113 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts, 1938–1939*.

114 *Financial Times*, 17 July 1934; *The Times*, 23 November 1937.

industries and re-armament.¹¹⁵ There was a high demand of minerals, especially copper.

Copper is a basic raw material of the electrical, building, motorcar, shipbuilding and general engineering industries.¹¹⁶ The red metal is needed in great quantity during re-armament and in wartime for cartridge cases and shell bands and fuses, and wanted extensively for electrical cables and wires utilised in batteries for armoured vehicles, submarines, and aircrafts.¹¹⁷ Germany alone purchased about 22 000 short tons of copper per month and became the second largest buyer of Katangese and Northern Rhodesian copper. Between 1937 and 1939, Britain purchased about half of Northern Rhodesia's copper output, with Germany buying one-third.¹¹⁸ Consequently, the average monthly copper consumption in Europe increased from 85 600 short tons in 1936 to 111 600 short tons in 1937, pushing the price of the red metal up to a record figure of £60.08 per ton.¹¹⁹

2.6. LOW COST OF PRODUCTION IN COMPARISON WITH THE PRICE OF COPPER

Among many other factors, which influenced operating costs in the USA (North America), the most important were the mining method utilised, ore grade, scale of operations, natural underground conditions, labour expenses, climate, topography, government regulations, and prices of supplies and power.¹²⁰ The most influential factors were mining, and labour costs and these "accounted for over half the cost per ton of mining copper ore [which averaged £40 in the early and mid-1930s]".¹²¹ By comparison, operating costs on the Copperbelt were influenced mainly by the quality of copper ore, labour costs, transport expenses, and the price of supplies/coal. By expense class, mining and labour costs averaged £11.67, processing or treatment expenses amounted to £6.72, transport charges totalled £5.06, and other expenses accounted for £5.08 of the total annual average cost of £28.53 per ton of

115 For further details about re-armament in Europe, see, PMH Bell, *The Origin of the Second World War* (London: Longman Group Limited, 1986), pp. 1–4; M Harrison, "Resource Mobilization for World War II: the USA, UK, USSR, and Germany, 1938-1945", *Economic History Review* 41 (2), 1988, p. 2.

116 AG Charles, "Prospects for Base Metal Prices and Production", *Optima* 1 (2), 1951, p. 2.

117 Charles, "Prospects for Base Metal Prices and Production", p. 2.

118 Butler, *Copper Empire*, p. 21.

119 *The Times*, 23 November 1937.

120 US Department of the Interior, *Bureau of Mines*, p. 251.

121 US Department of Labour, *Monthly Labor Review*, p. 866; ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts, 1931–1935*.

saleable copper produced at Mufulira mine between 1934 and 1939.¹²² Mining and labour costs on the Copperbelt accounted for 41 per cent of the total cost of producing a ton of copper. Mining and labour costs were cheaper on the Copperbelt than in the USA. It can be seen that the Copperbelt mines were in control of four crucial components of production costs; rich ore reserves, mill-feed quality, mine operations' labour productivity, and transport networks. These four elements comprised approximately 82.2 per cent of the total cost of sales per long ton of copper from 1934 to 1939.¹²³

True, cheaper railway rates and coal supplies, access to good quality ores, and low labour costs reduced mining and operating costs in the Copperbelt mines. At the same time, rising demand from European electrical and automotive industries coupled with re-armament by Britain and Germany moved the world out of recession. It revamped the Copperbelt mines, whose copper production doubled from 1932 to 1934 and trebled between 1935 and 1939.¹²⁴ The result of all these factors taken together, was that, the cost of production remained very low compared to copper's selling price, making copper mining on the Copperbelt increasingly profitable after 1932 (see Table II).

Table II: Prices on the London Metal Exchange and Operating Costs for the Copperbelt mines, 1931–1939.

Year	Average Price per Long Ton	Average Cost per Long Ton Delivered to Buyers	
	London Metal Exchange	RST (Roan / Mufulira)	RAA (Rhokana / Nkana)
		Average Cost per Long Ton	Average Cost per Long Ton
1931	£42.66	£42.63	-
1932	£36.39	£31.50	£31.47
1933	£36.71	£26.60	£21.58
1934	£33.78	£34.30	£23.47
1935	£35.70	£25.15	£22.20
1936	£42.88	£25.10	£23.86
1937	£60.08	£26.35	£22.59

122 ZCCM 12.6.1E, RST Limited, *Annual Reports and Accounts*, 1934–1939.

123 ZCCM 12.6.1E, RST Limited, *Annual Reports and Accounts*, 1934–1939.

124 Perrings, *Black Mineworkers in Central Africa*, p. 245; Gregory, *Ernest Oppenheimer*, pp. 420, 422, 440; Phillips, *Roan Antelope*, pp. 198, 216; Butler, *Copper Empire*, pp. 22–23.

Year	Average Price per Long Ton	Average Cost per Long Ton Delivered to Buyers	
	London Metal Exchange	RST (Roan / Mufulira)	RAA (Rhokana / Nkana)
		Average Cost per Long Ton	Average Cost per Long Ton
1938	£45.84	£25.55	£23.06
1939	£49.84	£23.75	£23.67

Source: Compiled from ZCCM 12.6.1E, Rhodesian Selection Trust (RST) Limited, *Annual Reports and Accounts*, 1931–1939; ZCCM 12.6.1E, RST Limited, *Annual Report and Accounts, 1948* (London: RST Head Office, 1948), p. 17; ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1931–1939; Gregory, *Earnest Oppenheimer*, p. 419; Phillips, *Roan Antelope*, pp. 222, 366.

Between 1932 and 1934, when the Depression was at its most severe, the average cost of producing a long ton of copper at Nkana was approximately £26, and £31 for the RST group, when the metal was selling at an average price of £36 on the London Metal Exchange (LME). By comparison, the USA-owned mines were incapable of producing a long ton of copper for less than £40 because of their high operating costs.¹²⁵ The majority of American mines could only produce at a profit after 1935 when the price per long ton of copper increased.¹²⁶ Following expansion and improved efficiency of the Copperbelt mines, driven by quality ores, mechanisation and better labour productivity, as well as low cost of transport, consumables and coal, production costs fell. Northern Rhodesian copper was produced and landed in Europe for an average £25 per long ton for the RST group and £23 for RAA / Rhokana, at a time when the metal was selling for an average price of £47 between 1935 and 1939 (see Table II).

2.7. OVERALL PRODUCTION AND PROFITABILITY

The benefits accruing from the low cost of producing copper on the Copperbelt can be seen from Table III, indicating gross production for UMHK, RST and RAA between 1932 and 1939.

125 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1931–1935.

126 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1931–1935.

Table III: Gross Copper Production for Union Miniere and the Copperbelt mines, 1932–1939 (in Long Tons)

Years	World	UMHK		RST (Roan / Mufulira)		RAA (Nchanga / Nkana)	
	Total Output	Total Output	Per cent of World	Total Output	Per cent of World	Total Output	Per cent of World
1932-1934	3 021 483	227 118	7.5	124 631	4.1	130 708	4.3
1935-1939	9 327 230	591 038	6.3	508 762	5.5	377 864	4.1
Grand Output Per cent	12 348 713	818 156	(6.6)	633 393	(5.1)	508 572	(4.1)

Source: Compiled from ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1932–1939; ZCCM 12.6.1E, RST Limited, *Annual Reports and Accounts*, 1932–1939; Perrings, *Black Mineworkers in Central Africa*, p. 245; Gregory, *Ernest Oppenheimer*, pp. 420, 422, 440; Phillips, *Roan Antelope*, pp. 198, 216.

Note: UMHK and World production figures have been converted from metric tons to long tons. Similarly, RST and RAA production have been converted from short tons to long tons. 1 Short Ton = 2 000 pounds, 1 Long ton = 2 240 pounds, and 1 Metric Ton = 2 204.6 pounds. For details on these measurements, see, H Munene, *A History of Rhokana / Rokana Corporation and its Nkana Mine Division, 1928–1991* (PhD, University of the Free State, 2018), p. xv.

Between 1932 and 1939, total copper output in Northern Rhodesia was about 1 141 965 long tons or 9.2 per cent of world production, while the UMHK's total production was 818 156 long tons or 6.6 per cent of the world output (see Table III). The Northern Rhodesian Copperbelt mines produced and contributed more towards world production than the UMHK in this period. According to Butler, Northern Rhodesia ranked fourth in terms of world copper production during the Great Depression.¹²⁷ Despite its low-grade ores, the USA was still the largest producer in the world because porphyry copper deposits tend to have large mineral resources.¹²⁸ The RAA / Rhokana-owned mines produced more copper than the RST-operated mines between 1932 and 1934 with 130 708 long tons, compared to 124 631 long tons. Between 1935 and 1939, the latter, with a total output of 508 762 long tons, outstripped the dominance of the former, whose total production was 377 864 long tons.

The major reason for the decrease in production for RAA was adherence to world copper production restrictions. Gregory notes that these restrictions affected Nkana and Nchanga more than Roan and Mufulira because of

127 Butler, *Copper Empire*, pp. 22–23.

128 US Department of the Interior, *Bureau of Mines*, pp. 2, 37–49.

different opinions among the affiliated offices of AAC in Northern Rhodesia, South Africa, Britain and the USA.¹²⁹ With the latter at the centre stage of global production strategies, its decisions determined market prices.¹³⁰ In a letter dated 5 August 1938, Leslie Pollack, RAA / Rhokana's Managing Director in Johannesburg, lamented to SS Taylor, RAA's Managing Director in London, about the loss of RAA / Rhokana's bargaining power compared to RST between 1935 and 1939.¹³¹ Pollak regretted advice from their American counterparts that had led to major reductions in production at Nkana and neglect of the Nchanga mine, while RST had minimally reduced output in line with international regulations. The management structure of AAC-controlled companies embraced a top-down approach in decision-making compared to RST whose bottom-up approach "gave mine staff wide latitude in the carrying out of policy".¹³² "[RAA / Rhokana] lost its preferential position and the Roan was put on equality. Mufulira was recognised as a second producer, while Nchanga was treated as a joke".¹³³

Nevertheless, the cheapness of producing copper in Africa can be seen from Table IV indicating huge net profits realised by the UMHK and the Copperbelt mines especially after 1935. From 1935 to 1939, the UMHK's net profits totalled £9 270 676 while the Copperbelt mining companies realised after-tax profits totalling £14 536 309. The total gross profit of the Copperbelt mines was about £25 million.¹³⁴ But their gross profit was less than a third of the total value invested in the mines.

Table IV: Net Profits of UMHK (Katanga), RSTt, and RAA / Rhokana, 1932–1939 (in Pounds).

Year	Katanga Mines	RST Mines		RAA Mines
	UMHK (£)	Roan Antelope (£)	Mufulira (£)	Rhokana / Nkana (£)
1932	-	156 740	-	156 987
1933	-	317 455	-	40 862
1934	-	387 940	-	389 044
1935	734 960	330 220	-	634 732

129 Gregory, *Ernest Oppenheimer*, p. 442.

130 Gregory, *Ernest Oppenheimer*, p. 442.

131 Gregory, *Ernest Oppenheimer*, p. 442.

132 Phillips, *Roan Antelope*, p. 152.

133 Gregory, *Ernest Oppenheimer*, p. 442.

134 Roberts, "Notes towards a Financial History of Copper Mining in Northern Rhodesia", p. 353; Butler, *Copper Empire*, pp. 23, 34.

Year	Katanga Mines	RST Mines		RAA Mines
	UMHK (£)	Roan Antelope (£)	Mufulira (£)	Rhokana / Nkana (£)
1936	1 224 361	514 487	142 89	737 912
1937	2 796 423	1 790 308	649 998	1 790 413
1938	1 446 104	1 575 068	968 179	1 761 031
1939	3 068 828	1 372 204	1 041 431	1 228 137

Source: Compiled from Perrings, *Black Mineworkers in Central Africa*, Appendix ii, p. 244; ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1932–1939.

Beyond net profits, Rhokana, Roan and Mufulira paid their first after-tax dividends in 1935.¹³⁵ It is worth noting that between 1931 and 1934, the Copperbelt mines failed to declare dividends because they were under-capitalised in relation to the rapid expansion and magnitude of their undertakings in the region, which compelled them to use all their profits as working capital.¹³⁶ Between 1935 and 1939, the Copperbelt mines' total dividends amounted to £7 million.¹³⁷ Rhokana paid the highest after-tax dividends averaging 41 per cent per annum amounting to a total of £5 184 250 during this period.¹³⁸ Despite cutting back on production in line with international regulations, Rhokana was able to distribute huge profits to its shareholders more than any other company in the Northern Rhodesian copper industry because the Corporation received extra income from its investments in other mines and properties on the Copperbelt. For example, the Corporation's investment income from Mufulira mine and other properties on the Copperbelt amounted to £506 639 between 1937 and 1939.¹³⁹

The prosperity of the Copperbelt mines can also be seen from their tax contributions. For example, in 1934, the mining companies paid an income tax of £43 000.¹⁴⁰ Between 1935 and 1937, taxes generated by mining contributed 45 per cent of total government revenue.¹⁴¹ The mining companies

135 Roberts, "Notes towards a Financial History of Copper Mining in Northern Rhodesia", p. 353; Butler, *Copper Empire*, pp. 23, 34.

136 ZCCM 12.6.1E, RST Limited, *Annual Reports and Accounts*, 1931–1939; ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1931–1939.

137 Roberts, "Notes towards a Financial History of Copper Mining in Northern Rhodesia", p. 353; Butler, *Copper Empire*, pp. 23, 34.

138 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1935–1939.

139 ZCCM 3.8.2F, RC Limited, *Annual Reports and Accounts*, 1937–1939.

140 ZCCM 3.8.2F, RC Limited: *Directors' Report and Statement of Accounts for the Year ended 30 June 1934* (London: Rhokana Head Offices, 1934), p. 12; Butler, *Copper Empire*, pp. 29–30.

141 Butler, *Copper Empire*, pp. 29–30.

also paid over £300 000 to the BSAC in royalties. From the remaining profits of about £4 million, the British and Northern Rhodesian governments received each £500 000 and taxed the BSAC's royalty receipts each getting £40 000.¹⁴² However, in terms of retained earnings, although 25 per cent of the companies' profits was taxed, only half went to the Northern Rhodesian Government. Even so, the low royalty tax rates levied by the BSA Company on the companies compared to the relatively high income tax paid in Britain, where their headquarters were domiciled, and Northern Rhodesia their host-nation cushioned the effects of double taxation on the mines. The BSAC's revenue in the form of royalty was on the following sliding scale per long ton of standard or blister copper, "2 per cent when the price was less than £55; 2.25 per cent on £55 or more, but less than £60; 2.5 per cent on £60 or more, but less than £80".¹⁴³

3.1 CONCLUSION

By examining economics of production on the Copperbelt, this article has sought to advance as detailed as possible an understanding of the major factors, which impacted on the corporate profitability of the Northern Rhodesian mining industry during the Great Depression. The article has built on Bancroft, Coleman, Gregory, Ferguson, Macmillan and Phillips' pioneering studies of the importance of managerial and technological innovations, as well as horizontal and vertical multinational integration of the copper industry in Northern Rhodesia and its cooperation with key stakeholders in the regional and global mining sector, to the Copperbelt mines' development and overall profitability between 1929 and 1939.

In addition to studies by Perrings, Mhone, Berger, Parpart, Butler, Larmer, Ronnback and Broberg, emphasising the impact of labour on mining fortunes, this paper has argued that cheaper railway rates and coal supplies, and access to quality ores significantly reduced operating costs in the Copperbelt mines during the economic depression. For all these reasons, the Copperbelt mines were low-cost producers compared to their counterparts in the Belgian Congo, USA, and Canada. At the same time, rationalisation of production in line with demand on the world market, coupled with a boom in the automotive industry and re-armament in Europe significantly improved the price of the red metal, especially after 1935 (see Table II). Consequently, the Copperbelt mines emerged during the Great Depression as strong and profitable competitors in world copper production.

142 Roberts, "Notes towards a Financial History of Copper Mining in Northern Rhodesia", p. 352; Butler, *Copper Empire*, p. 32.

143 *The Times*, 31 May 1932.

In the region, the economic importance of Northern Rhodesia became second to that of South Africa, outstripping Southern Rhodesia.¹⁴⁴ Similarly, the Copperbelt mines established copper mining as the dominant sector of the Northern Rhodesian economy, far surpassing the importance of peasant and settler agriculture. Additionally, copper production added an element of diversification of the Northern Rhodesian economy, now embracing mining, cattle rearing, growing of maize, cotton and rubber plantations.¹⁴⁵

It can be seen that the period between 1929 and 1939 was such an important decade for the Copperbelt mines' future. As demonstrated in this article, the Great Depression was not a setback at all for the Northern Rhodesian mines. In fact, the economic crisis generated by the Great Depression enhanced the development of the Copperbelt mines in several ways. Firstly, the Copperbelt mines were able to attract foreign capital from South Africa, Britain and the USA because of being low-cost producers. Foreign capital was necessary for infrastructural and mine developments in this region. Secondly, the low-cost of production enabled continued economic and productive growth on the Copperbelt despite the worldwide depression. Thirdly, volatility in the price of copper on the international market encouraged cooperation between the Copperbelt mining companies and other major producers in the world in devising and implementing measures, which helped to avoid wider price fluctuations. Fourth, and most importantly, the Great Depression caused the Copperbelt mining companies to improve their corporate and growth strategies, managerial tendencies and industrial relations, which proved vital in the near future. As the clouds of the Second World War (1939–1945) became darker, the Copperbelt's strategic importance for Britain was to become obvious.

144 As discussed elsewhere in this paper, the Copperbelt mines became the main market for coal produced by Wankie Colliery and were the biggest customers of Rhodesia Railways. For more information, see, Berger, *Labour, Race and Colonial Rule*, p. 9; Phimister, *Wangi Kolia*, p. 84.

145 Butler, *Copper Empire*, pp. 22–23.