

THE MANUFACTURING ECONOMY OF ZIMBABWE

A stochastic approach to revival and sustainability planning

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Abstract

The manufacturing economy of Zimbabwe has been significantly affected by political, social and economic pressures. The absence of a comprehensive industrial policy has resulted in the manufacturing economy, as a subset of the economy of Zimbabwe, faltering and in the present day, struggling to achieve meaningful capacity utilisation and sustainable growth.

This paper presents proposals on how to address some of the critical factors that have contributed to the decline of manufacturing in Zimbabwe and set out metrics for the sustainable development of the country's manufacturing economy into the foreseeable future.

Glossary

BOP – Balance of Payments.

Capability rating – The ability of an industry to produce a range of products against set benchmark.

Capacity – The rate of output that can be achieved from a process.

Capacity utilisation – Weighted average utilisation of the factors of production of a facility or industry.

Competitiveness – the relative position in the marketplace.

CZI – Confederation of Zimbabwe Industries.

ESAP - Economic Structural Adjustment Program.

GDP – Gross Domestic Product.

Greenfield development – Innovative industrial development initiatives that are too high risk for private investment but with high potential for return on investment and long-term sustainability.

IDC – Industrial Development Corporation.

Import substitution – A deliberate industrial strategy that encourages the local production of products.

Manufacturing's value-add – The increase in value of a product that is achieved from raw materials passing through a manufacturing process.

PPP – Public Private Partnerships

Productivity – output per unit input.

STERP – Short Term Economic Revival Program.

Toll manufacturing – The local production of products intended for foreign markets on contract for foreign organisations.

UDI – Unilateral Declaration of Independence.

ZIDERA – Zimbabwe Democracy and Economic Resuscitation Act.

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1. CHAPTER 1: INTRODUCTION

1.1. Introduction

Beginning with an overview of the development of the manufacturing economy of Southern Rhodesia, this paper highlights how the business environment as relates to the macroeconomic fundamentals changed between the periods from 1938 to 2011, and based on the findings, proffers policy recommendations for the enhancement of the manufacturing economy of Zimbabwe.

1.2. Objectives

The objectives of this paper are to:

1. Identify the factors that affect Zimbabwe's manufacturing, show where they emanated from and propose mechanisms to address these.
2. Establish a framework to determine the viability of manufacturing in Zimbabwe and chart a way forward for the manufacturing economy based on the findings.

2. CHAPTER 2: BACKGROUND

2.1. Introduction

The manufacturing economy of Zimbabwe was in 1980 inherited from Rhodesia; which economy was designed to favour European settlement around the country and developments across Southern Africa, with the railway line from Cape Town to Harare being a key infrastructural development that influenced the distribution of industries and thus labour and settlements along the central, Highveld region of Zimbabwe.

Established to support developments in mining and agriculture, manufacturing developed in the early 1940s to become, at some point, a bigger contributor to the gross value of economic output than both agriculture and mining combined.

The post-World War Two years saw a rapid growth in Southern Rhodesia's manufacturing sector, which was supported by the development of transport infrastructure, housing and water supply. The post-World War Two era stimulated considerable development in technology with scientific innovation and engineering working to produce more efficient machines and ushering in an age that would domesticate engineering innovations.

Trade relations between Rhodesia and other countries grew; the growth of the productive sectors of the country created the demand for heavy equipment, which the country sourced internationally. In addition, the liberation war created the need for military equipment and spares and to this effect France and Russia were but a few of the countries that conducted business with Rhodesia.

Rhodesia relied on the import of petroleum; processed and semi processed, to support the transport sector, and the Feruka pipeline from the port of Beira in Mozambique essential infrastructure that enabled the flow of petroleum to Rhodesia.

From the late 1950s, a series of world political and economic systems, including embargoes and sanctions placed on Rhodesia, changed and significantly affected the manufacturing economy of Rhodesia. The imposition of economic sanctions on Rhodesia in 1965 inspired the need for economic independence and stimulated the implementation of industrial policies

that would ensure that the productive sectors of the economy produce sufficient products to meet local demand and sustain export commitments.

In the 1960s, following the growth of the productive sectors, tobacco grew to become the single largest source of foreign currency for Rhodesia (Tow, 1960). This would later become one of the weaknesses of the Rhodesian economy and efforts would soon shift towards diversification of the country's foreign currency earning avenues to fight sanctions.

The reliance on international markets for the supply of plant and equipment, and to a lesser extent, consumer goods, would be another of Rhodesia's undoings and would put pressure on the country's administration for the formulation of highly inward looking industrial policies that places high demands on manufacturing.

Several attempts, through policies such as ESAP, ZIMPREST, STERP and others, have, since 1980, been put into effect in attempts to develop Zimbabwe's economy. The lack of a viable long term industrial policy on the back of which these medium term policies would operate contributed immensely to these medium term policies having little success, particularly to the effect of normalising disparities in the economy that contributed to the faltering of the economy in the first place.

In the present day Zimbabwe is in a situation of economic insecurity; with manufacturing productive capacity utilisation hovering at about 43% (CZI, 2011), and the cost of production in manufacturing making locally produced products uncompetitive locally let alone internationally.

Concerted effort and high-level, informed planning is required to ensure the revival of manufacturing; which contributed greatly to Zimbabwe gaining repute as the breadbasket of Africa.

Zimbabwe's manufacturing sector, though largely technologically outdated, boasts of being well diversified, feeding into other sectors of the economy and contributing significantly to GDP. Manufacturing remains one of the most important of Zimbabwe's productive sectors and for that reason, significant effort should be placed on studying and developing empirical means for its revival.

2.2. Historic perspective

The occupation of the territory between the Limpopo River and the Zambezi River in the 1890s brought about by prospects of rich gold deposits, and the subsequent establishment of gold and coal mines around the country stimulated modern industry which progressed from mining and agriculture to manufacturing and later services.

When the British South Africa Company came to realise that the gold in the territory fell short of expectation and that a vast proportion of the gold could not economically be mined on a large scale, attention soon turned to other economic elements to recover the investments made into the territory, raising the price of land in the central parts of the country where the settler population was concentrated (Hurungo, 2010).

Nonetheless, mining took place and the labour that was required to undertake this led to a growth in demand for food, starting the European agricultural economy. With the increased demand for food, and increasing output in the mines, manufacturing became necessary to supply the implements to sustain both mining and agriculture.

From its inception, a major part of manufacturing's raw materials came from the mining and agricultural sectors, thus Rhodesia managed to develop a diversified, independent economy and could easily adapt to fluctuations on international supply markets. The country did however rely on foreign trading partners for processed and semi-crude petroleum and heavy equipment. In the mid-1960s however, Rhodesia still relied, though to a lesser extent, on the import of consumer goods, with 13% of local consumption being imported from South Africa (Tow, 1960).

As with other nations, Rhodesia experienced a significant boom following World War Two. This era is widely credited for its contributions to technological innovation particularly in engineering; where there was the development of efficient assembly lines for automobiles and other heavy equipment as well as efficient production lines for consumer goods.

While manufacturing was the fastest growing productive sector in the years that followed World War Two, the contribution of manufacturing's value-add to the overall economy stood at only 20% (Tow, 1960). Regardless, the manufacturing sector served to make the economy

less reliant on a limited number of products and make the economy less susceptible to changes in the operating environment.

From 1958 to 1980, several international and local forces would affect the economy of Rhodesia. In 1958, the world experienced a recession and this saw food prices increase internationally. Another such recession would be experienced in 1975 during which time Rhodesia had already sustained nine years of sanctions following the UDI in 1965. UDI came with several pressures including the expulsion of Rhodesia from the Sterling region and the UN imposition of sanctions among others. Prudent industrial policies would however ensure that the effect of these measures would only gradually affect the country, during which time countermeasures would be put in place to ensure sustainability.

The development of efficient transport and communication infrastructure, something that the country would come to boast of, supported the productive sectors of the country.

2.3. Growth and development of manufacturing

The manufacturing economy of Rhodesia was, at its prime, considerably diversified (Tow, 1960) and leveraged on the strength of its raw materials emanating to a large extent from the extractive and agricultural sectors. By the early 1940s, the manufacturing sector ranged from iron and steel production, to the production of basic consumer goods (Hurungo, 2010). The cost of production in manufacturing made it possible for locally made products to compete against imports, despite the fact that a significant proportion of local consumption was procured from other countries.

During the tenure of the Federation of Rhodesia and Nyasaland the Rhodesian economy experienced considerable growth, including during 1964 and 1965 following the dissolution of the Federation, when economic hardships were expected to befall the country. The establishment of the Federation created a common market in which much of the investment into manufacturing was located in Southern Rhodesia. At this time, the manufacturing economy served the markets of the three countries and contributed to the growth of manufacturing.

There was considerable growth in heavy industry in the 1950s, during which time the focus was in the areas of iron and steel and agricultural equipment. This was followed in later years by the growth of light manufacturing which served to ensure the availability of spares and components, particularly for transport, mining and agriculture.

Growth in energy supply, water and housing, encouraged the growth of manufacturing, particularly in the municipalities of Harare and Bulawayo, which were the main industrial centres at the time, contributing a combined 82.1% of total industrial output in 1956 and 1957 as shown in Table 1 below.

Table 1: Industrial output of Southern Rhodesia in 1956 - 1957

Municipality	Product Category	Gross Output/ £ '000	Cumulative Output/ £ '000	Gross Output as % of total output
Harare	Food manufacturing	9,693		
	beverages industries	1,494		
	tobacco industries	5,304		
	textiles, clothing, footwear and textile goods	1,754		
	manufactures of wood, except furniture	772		
	furniture and fittings	980		
	paper, paper products, printing, and publishing	2,973		
	chemicals and chemical products	4,278		
	non-metallic mineral products, cement product, and bricks	1,642		
	metal and metal products	2,434		
	manufacture and repair of transport equipment	3,797		
	other - including electrical machinery and vulcanizing	1,383		
	TOTAL	36,504	36,504	43.6
Bulawayo	Food manufacturing	10,933		
	beverages industries	1,110		
	textiles, clothing, footwear and textile goods	5,004		
	manufactures of wood, except furniture	1,441		
	furniture and fittings	922		
	paper, paper products, printing, and publishing	1,114		
	chemicals and chemical products	415		
	non-metallic mineral products, cement product, and bricks	2,566		
	metal and metal products	2,894		
	manufacture and repair of transport equipment	4,910		
	other - including electrical machinery and vulcanizing	924		
	TOTAL	32,233	68,737	38.5

Municipality	Product Category	Gross Output/ £ '000	Cumulative Output/ £ '000	Gross as % of total output
Mutare	Food manufacturing	894		
	metal products	170		
	Repair of transport equipment	250		
	other - including beverages, tobacco, footwear, clothing, wood, printing, vulcanizing, bricks, chemicals, iron and steel	2,002		
	TOTAL	3,316	72,053	4.0
Gweru	Food manufacturing	923		
	metal and metal products	223		
	Repair of transport equipment	212		
	other - including beverages, tobacco, footwear, clothing, wood, printing, vulcanizing, bricks, chemicals, iron and steel	2,834		
	TOTAL	4,192	76,245	5.0
Kadoma	Textiles and clothing	2,295		
	Repair of transport equipment	75		
	other - including food, beverages, tobacco, printing, and metal products	147		
	TOTAL	2,517	78,762	3.0
Chegutu	Milling, tobacco, textiles, metal products, motor vehicle repairs	1,143	79,905	1.4
Kwekwe	metal and metal products, milling, bakeries, tobacco, clothing, furniture, printing, vulcanizing, and motor repairs	3,082	82,987	3.7
Masvingo	food, clothing, bricks, metal products, motor vehicle repairs	258	83,245	0.3
Norton	tobacco, paper, manufacturing and repair of transport equipment	533	83,778	0.6

Source: Tow, 1960

By the late 1950s, manufacturing's output far outweighed the combined output of mining and agriculture, with manufacturing's Gross Value Output in 1957 of £105.1M being far in excess of the £67.6M output from mining and European agriculture. The Gross Value of Output of manufacturing first exceeded the output of mining and European agriculture in 1943 and manufacturing has consistently contributed to the economy since.

The regional distribution, product diversity and contribution to GDP of manufacturing all pointed to the fact that manufacturing had by the late 1950s attained a high level of maturity. The continued contribution of the extractive and agricultural sectors on the supply side would set up manufacturing to continue its growth and dominate as the biggest contributor to Rhodesia's GDP.

During the years of UDI, Rhodesia experienced average growth in GDP of 5.42%, which, though much less than the average growth experienced a decade before UDI, indicated that the success of the industrial policies implemented to counter sanctions. To a great extent, the ability of the economy to grow despite the imposition of international sanctions were the trade relations between Rhodesia and countries such as South Africa with which trade grew as opposed to declining as a result of the UN sanctions.

The South African government worked closely with Rhodesia to evade the sanctions and ensure that Rhodesian products would find their way to international markets, albeit under the guise of being South African. This propped the Rhodesia manufacturing economy which at the time resorted to measures such as import substitution and foreign currency rationing as means of ensuring that sufficient foreign currency was held by the country. These policies strengthened Rhodesia's manufacturing economy and made it more resistant to foreign influence, with many new industries being created to produce a wide range of products, and the government leading innovation by sponsoring Greenfield research and development through the Industrial Development Corporation.

Industry diversified and the range of products emanating from Rhodesia's manufacturing grew to include a wider variety of heavy equipment, spares and components and consumer goods.

2.4. Challenges affecting manufacturing

The UDI and the sanctions associated with it, coupled with the war of liberation that brought about the birth of Zimbabwe in 1980, brought a slowdown in the growth of manufacturing and other productive sectors. This period marked the beginning of the steady decline of Zimbabwe's manufacturing economy.

The problems would persist far into the 21st century with the political and economic landscape of the country changing dramatically. The years that followed independence were the most challenging for Zimbabwe on the economic front. Compounded by the devastation to infrastructure caused by the liberation struggle, and the political risk that ensued from the attainment of independence, the economy, which was largely controlled by the minority as

well as multinational corporations, came to a gradual slowdown. The risk associated with the change in political regime made doing business in Zimbabwe much less favourable than it had been even during UDI. This lethargy continued well into the later years of independence and became the norm of business in Zimbabwe.

In 1990, ten years after independence, the situation was exacerbated by the uncertainty resulting from the implementation of land reform which was established by the signing of the constitution of Zimbabwe at Lancaster House. By this time, the economy had gone off track; running outside of the context of a comprehensive industrial policy.

ESAP which was adopted to revive the economy did not meet its objectives. Instead, ESAP resulted in the growth of the labour movement as well as disparities in remuneration. The disparities have persisted since. Efforts made to eliminate the disparities in wages ushered in a new dynamic to the challenges faced by the manufacturing economy; labour pressure. The labour movement gained impetus and its political influence grew in the late 1990s. The cost of production rose in manufacturing as remuneration was misaligned to production.

The economic policies implemented after independence strayed far from conventional economics and proffered only short-term solutions to the challenges which riddled the economy. Price controls have persisted even till the present day as a great evil to the economy, affecting cost recovery in manufacturing and agriculture mainly.

In the mid 1990s, the affirmative action movement became a political force to reckon with, increasing risk to ownership of manufacturing concerns owned by minorities. Land reform later that same decade destabilised agriculture and the supply side for manufacturing which depended a lot on the produce from farms for leather, food processing and beverages.

Economic measures were imposed on Zimbabwe by the United States of America by way of ZIDERA, and a number of European countries in the form of travel bans. While the measures were intended to affect specified individuals, the economic cost to the country has been considerable. This was as a result of the economic measures targeting the leaders of strategic institutions such as the National Railways of Zimbabwe and Air Zimbabwe for instance, which relied heavily on supplies from Europe and the United States. Such supplies could no longer be procured in these countries and territories following the imposition of the economic measures. In addition, the individuals targeted by the economic measures are business people

of note, whose aggregate contribution to the economy of the country is significant. With the restrictions placed on them, their businesses were affected and inadvertently the overall economy of Zimbabwe.

The suspension of Zimbabwe from the IMF as a result of its failure to service loans extended to the country worsened the economic situation, and with reduced credit, the development of the productive sectors of the country became even more elusive. The supply of foreign currency reduced and this would affect the supply side for all productive sectors, sending the economy into a downward spiral that would see the productive economy of Zimbabwe hit rock bottom in 2008 where manufacturing capacity utilisation would dip below 30%.

To a certain extent, the political and social challenges Zimbabwe encountered emanated from the productive sectors of the economy; inability to meet demand, wages and ineffective industrial planning.

The economy rebounded with the adoption of a multicurrency monetary regime which would inspire the restocking of shops with consumer goods and enable the productive sectors to resume production without the risk of losing their investments as the case was when stringent price controls were imposed in 2008.

Two years after the introduction of the multicurrency system, capacity utilisation in manufacturing has experienced slow but determined increase. The absence of a robust industrial policy has however limited the growth of industry and not adequately addressed the supply of raw materials and the misalignment of labour cost and production.

3. CHAPTER 3: METRICS IN ZIMBABWE'S MANUFACTURING ECONOMY

Rhodesia managed to survive the onslaught of UN imposed sanctions following the UDI in 1965. The implementation of well calculated measures that considered the capability of the productive sectors of the economy, as well as the demand that existed were instrumental in ensuring positive growth of the economy even with punitive measures in place.

The ability to forecast demand, monitor and evaluate the performance of various sectors of the economy made the implementation of industrial policies such as import substitution successful.

While the publication of data relating to industrial performance during UDI was restricted, the performance of the economy indicated the application of a comprehensive industrial policy based on a full understanding of the supply and demand variables in the economy.

Given the existence of infrastructure that accommodates a well diversified manufacturing economy, coupled with the knowledge and experience of a highly educated workforce, Zimbabwe is well positioned to achieve industrial prowess and once again take its position as one of the biggest economies in Africa.

Never in the history of Zimbabwe has its people been under attack on so many fronts as it is today. This is a sign that the country has gone too far and too fast in the wrong direction, culminating in the need for societal and economic reforms that will once again bring about the semblance of a modern society.

While government is charged with setting course for the running of the economy and setting an enabling environment for business operation, the business community is responsible to the greater part for guiding the process and providing the decision tools for their representation at government to set out well informed policies.

The starting point is a clear understanding of the current state of manufacturing. The manufacturing economy of Zimbabwe, despite its underdeveloped state, boasts of plant and equipment and support infrastructure that enables it to produce a wide variety of products , as well as to be decentralised with centres such as Harare, Bulawayo, Gweru, Kadoma and Mutare having large manufacturing facilities producing specialised products. This is but a mere fragment of the knowledge necessary to build a viable industrial policy which would

enable sustainable growth of manufacturing to the extent that the economy would be able to withstand another decade of recession. The first step therefore is to embark on a census to effectively measure the factors of production and put these into the perspective of the long-term objective of the overall economy.

Manufacturing relies on the extractive and agricultural sectors for its raw materials, and in the undesired case, imports. This means that any efforts to determine growth or decline of the manufacturing economy should take cognizant of the capabilities of these supply markets and be based on reliable forecasts of their medium to long-term performance. Such a census would in essence be an ongoing process that would provide up-to-date information on supply and demand within the economy thus advising policies on a moving basis.

The present state of Zimbabwe's manufacturing economy, and as a policy due-diligence measure, requires this intensity of continuous research, monitoring and evaluation to maintain a healthy insight into the performance of the manufacturing economy. In addition, the influence of government and political pressures needs to be reduced to create an environment with a close semblance of a free market economy.

3.1. Contemporary approach

Present industrial measurement includes the measurement of capacity utilisation in large manufacturing concerns. The CZI has made concerted effort to measure capacity utilisation in manufacturing. This has widely been used as the main mechanism for measuring growth or decline in manufacturing, and to a lesser extent the economy as a whole.

The capacity of the production system defines the firm's competitive boundaries. Specifically, it sets the firm's response rate to the market, its cost structure, its work-force composition, its level of technology, its management and staff-support requirements, and its general inventory strategy. If capacity is inadequate, a company may lose customers through slow service or by allowing competitors to enter the market. If capacity is excessive, a company may have to reduce its prices to stimulate demand, underutilize its workforce, carry excess inventory, or seek additional, less profitable products to stay in business (N Aquilano, 1991).

While capacity utilisation is good in that it indicates the general performance of manufacturing companies, its viability as a strategic decision tool in the current operating environment is considerably low.

Without a comparison of how the Zimbabwean manufacturing economy operates against trading partners, the development of strategies to revive and sustain manufacturing will remain fruitless. To this effect, the measurement of capacity utilisation does not serve the requirements for the development of viable manufacturing strategies.

3.2. Systems perspective

The measurement of the output metrics of manufacturing does not serve to give a good indication of the effect of production factors on manufacturing.

With a plethora of factors affecting manufacturing, a more factor specific approach should be applied to matriculate production in both input and production. By benchmarking against the country's most significant trading partners, measuring the competitiveness of manufacturing and the supply chains that feed into manufacturing will enable more specific analysis of the factors affecting manufacturing.

The competitiveness of the manufacturing economy, benchmarked against those of trading partners should serve as the baseline metric. This and the measurement of supply-side risk give adequate information for the development of long-term strategies for the sustainability of the manufacturing economy. A significant proportion of the products available in Zimbabwe consist of imports. To reduce the proportion of imports on Zimbabwean shelves, manufacturing of competitive products by Zimbabwean companies should be promoted and this can only be achieved by comparison.

3.2.1. Competitiveness

The ability of the manufacturing economy to produce competitively against trading partners is the fundamental metric which should serve to advise the development of strategies to revive and sustain local manufacturing.

Competitiveness as a metric takes into consideration the cost in financial terms and time resources that are required to produce a product. When compared, the cost and time it takes to produce one product in one economy and a similar product in another economy, strategic decisions relating to technology and other production factors can then be made.

3.2.1.1. Cost

The majority of the factors of production contribute to the cost of production. The cost of production can therefore be ascribed to various factors of production, from which decisions relating to the manipulation of production factors can be made to ensure the industry is well geared to compete against trade partners.

3.2.1.2. Time

Technology and human capability are the two main factors that affect the time that it takes to produce a product. By comparing the time it takes in the local manufacturing economy and other manufacturing economies, decisions can be made on the development of human capital as well as investment into manufacturing technology. To a lesser extent, the quality of raw materials will affect the time taken to produce comparable products, and the quality of raw materials is a factor which relates directly to the supply chain, which is the greatest source of operational risk once a production cycle commences.

3.2.2. Supply management

Manufacturing, by virtue of requiring physical raw materials, relies on efficient supply chains to be competitive. The supply chains and sources of supply of a number of manufacturing concerns have negatively affected and in some cases, causing the seizure of operations. The automotive industry for instance, because it relies heavy on imports, has over the years shrunk to unsustainable levels. While the capability of Zimbabwe's manufacturing sector to produce the components for this industry is to be determined, this case serves to highlight the vulnerability of manufacturing owing to supply-side risks.

A census of the manufacturing economy should assess the sources of raw materials for manufacturing including the options of source markets. An ideal scenario would see a number of source options for each product emanating from the manufacturing economy, with local substitutes being available for internationally sourced raw materials and sub-assemblies in key product categories.

3.2.3. Capacity utilisation

Having determined the competitiveness of the manufacturing economy and the supply-side factors that affect manufacturing, the design capacity of the economy can be ascertained. This is essentially the volume that can be produced by the economy in different product categories. From this metric, the expected volume of imports can be determined and gradually reduced with the increase in design capacity.

The design capacity represents the output that the economy can optimally to produce at any given time, and this does not necessarily correspond to the capacity that is actually utilised. Various constrains will affect capacity utilisation, and from the metrics relating to cost and time, optimum capacity utilisation can be determined.

Note should be taken of the fact that capacity utilisation is economic in a given range, outside of which, the cost of production increases and reduces the ability of manufacturing to compete against other economies.

The measurement of actual capacity utilisation should therefore be accompanied by the measurement of the range in which capacity utilisation is economic.

3.3. Viability of the manufacturing economy

The systems approach for monitoring and evaluation of manufacturing applied in the present context of Zimbabwe's manufacturing will highlight the fundamental areas of the manufacturing system and supply chains that affect the viability of the manufacturing economy.

Ideally, the exercise of measuring metrics in manufacturing should take a holistic approach, interrogating the appropriateness of production technologies in use, and the supply chains that feed manufacturing.

3.3.1. Demand assessment

To begin with, an understanding of immediate and future demand for manufactured products in local and export markets is essential to serve as the objective of manufacturing's efforts.

Given the increase in world food prices and the increased influence of various political factors internationally, the need for local demand to be met locally cannot be avoided.

An in-depth analysis of the ranges and volumes of products required to meet both local domestic and industrial demand will give an indication as to the level to which the manufacturing economy needs to develop.

3.3.2. Technical capability survey

The collation of data relating to manufacturing is required at the start of the process of establishing an industrial policy and this should be the immediate concern of government and industry alike.

Conducted privately and supported by state and industry associations representing the interest groups, a survey of the technical capability of the manufacturing economy should lead the process of industrial policy making. Taking lead from the CZI's annual manufacturing survey, this census should include a larger number of manufacturing organisations which are geographically more dispersed and cover a wider range of products. This will be achieved through voluntary participation, and in key sectors, through statutory requirement.

Among other variables that will be measured, the national manufacturing technical capability census will assess human capacity, energy supply, plant and equipment and production technology.

3.3.2.1. Human capacity

A comprehensive skills audit that aims at determining the availability of technical and managerial skills that are currently available in manufacturing will serve to inform decisions on the development of human capital.

While there is still a wealth of human capital with the technical skills required in manufacturing, despite skills migration, some human capital has been lost by the manufacturing sector to other sectors of the economy as a result of conditions of service in manufacturing, which the survey would be able to ascertain and proffer solutions for.

3.3.2.2. Plant and equipment

Many of the manufacturing concerns in Zimbabwe operate equipment that was commissioned during the early days of manufacturing in Rhodesia and before independence. Much of the equipment, while still operational, is no longer able to produce competitively.

Through the census, the age and capacity of the machinery in operation will be ascertained and strategies on the disposal, replacement and upgrading of the plant and equipment will be developed.

3.3.2.3. Energy supply

Having ascertained the energy demand and uptime of manufacturing facilities and their supporting infrastructure, the energy requirements of the manufacturing sector can accurately be determined to ensure the consistent generation and procurement of sufficient energy to meet the demand.

Through this survey all technical information pertaining to local industrial capability will be enumerated and made available for current policy support and future policy formulation. Once collected, this information can be easily updated and resources can also be directed on the basis of known capability and not unverifiable claims and assumptions.

4. CHAPTER 4: INDUSTRIAL AND SUPPORT POLICIES

Having set out the current status of the manufacturing economy through the census of production technology, skills and other factors of production, as well as setting up reliable monitoring and evaluation mechanisms, the next step, is to set out a long-term plan for the development of the manufacturing economy, focussing initially on the building of production and support infrastructure.

4.1. Industrial development

A national industrial policy should be premised on a few fundamental principles that, regardless of the changes in fiscal policy should subsist.

The security of the Zimbabwean economy hinges on the ability to consistently meet local demand and adapt in line with changes in the world economy. The following are recommendations that should form the underlying principles of Zimbabwe's industrial policy. These recommendations are followed by policy recommendations to support these principles in the medium to long-term.

1. Non-inflationary measures

A national industrial policy should be such that it does not promote inflation. To this effect, industrial policy should ensure the adherence to prudent economic principles which include the alignment of cost to production. As such, labour should be related directly to production, wherein no component of production labour is factored into the cost of production as fixed cost, as may be the case at present due to low capacity utilisation.

The implication of such measures in the short-term includes the increase in unemployment. This will have the effect of reducing disposable income and further reduce inflation. The application of such measures should be stepped to ensure minimal social impact.

2. Support extractive and agricultural sectors

Industrial policy should support the extractive and agricultural sectors through the promotion of local sourcing. The sourcing of raw materials locally, particularly from the primary sectors of the economy should however not be promoted against cost advantage of sourcing internationally. In the case where subsidies can be applied over a short period to make local sourcing viable, these should be applied but only on the basis that these sectors can produce a return to pay back the subsidies in the medium to long-term.

The support of extraction and agriculture should be reciprocated by promoting value addition. Adding value by processing produce to partially-processed or finished goods increases the contribution of manufacturing to GDP and promotes Greenfield development.

3. Reduce risk

A fair part of the risk in manufacturing emanates from supply of raw materials as well as production technology. Efforts should be made to minimise the risks associated with supply chains, as well as the risks associated with the production technology used in manufacturing.

The financing of manufacturing poses another major risk, and to this effect, the consistency of supply of foreign currency should be ensured by any industrial policies. Rationing of foreign currency is one policy which could be helpful in the short to medium term.

The element of risk emanating from the limited scope of manufacturing output in respect of product ranges poses a risk to the development of manufacturing and general economic development. Industrial policy should have a great focus on the diversification of product ranges, now more than ever in the areas of communication technology and consumer electronics.

4.1.1. Import substitution and value addition

The first of the strategies that should form the basis of Zimbabwe's industrial policy is that of import substitution supported by value addition.

Import substitution and value addition are two strategies that have been applied in the history of Rhodesia and Zimbabwe to cushion against the impact of supply constraints. More recently, in 2006, the Government of Zimbabwe embarked on a program to promote import substitution and value addition but lacked the depth and scope due to funding constraints to achieve the industrial development necessary to bolster the manufacturing sector.

When implemented by the Rhodesian government during UDI, the import substitution and value addition program focussed on the development of product ranges that would support the productive sectors of the economy as well as meet the demand for consumer goods.

4.1.1.1. Import substitution

Import substitution focuses on the production of products to serve current needs which are being met by imported products. The substitution of imports is necessary to reduce the reliance of the local economy on trading partners. This mechanism in addition promotes the continued development of local industries, which are encouraged by global changes in technology and the need to remain competitive to continuously improve.

Import substitution in the present context of Zimbabwe will result in an increase in capacity utilisation and eventually reduce unemployment when the need to increase capacity arises. While the long-term result will be an increase in disposable incomes resulting from increased employment, the measure will result in a reduction in imported inflation and reduce the cost of goods thus minimising the effect of the inflationary tendency of increased employment.

When applied in various parts of the world, the principle reason for the failure of import substitution was that, as practices, it created an environment that discouraged learning (Brunton, 1998) Import substitution should therefore be applied in tandem with other policies that promote technology and skills development in the local economy.

The following is a summary of other benefits that will result from the implementation of import substitution.

1. Employment creation

Zimbabwe boasts of a highly educated population but due to the prevailing economic challenges, large numbers of highly skilled individuals are currently unemployed, with a greater number being underemployed, meaning that the country is losing potential revenue from their inactivity.

Through import substitution activities, employment is created in various sectors of the economy, from the supply side through processing to the consumer end. The greatest number of the jobs created will be in the manufacturing sector where a combination of skilled and unskilled jobs being created.

With wages aligned to production output, the inflationary effect of increased employment will be countered by the reduction in cost of finished goods, which will result in realistic product pricing.

2. Reduced BOP

By reducing imports through local production of goods that are currently sourced internationally, the deficit in trade will be reduced. Given that many local industries are operating far below capacity, and the capacity of the country to export significant volumes is low, the country already faces the challenge of generating sufficient foreign currency for its day- to – day requirements.

Import substitution, particularly in the areas of consumer goods, industrial components and spares would significantly reduce the country's reliance on international sourcing.

The efficient management of the import substitution program may in the long-term result in the country producing an excess of high quality goods that can compete with

the products that are currently being imported. At this point, the country will be able to generate extra foreign currency through the export of locally produced goods.

3. Increased availability of products

Increased production of consumer and industrial products by local manufacturers will ensure the supply of products to meet local demand. The increase in industrial capacity utilisation will increase the proportion of local products on the market.

4. Hedging

For over a decade the country has been subject to economic and political measures from Europe and the United States of America. The results of these sanctions have been far-reaching in both areas of import and export.

The country has sought other markets for the supply of machinery, spares and other essential equipment. Sectors that have been affected significantly include transport and defence, which rely on supply of equipment from international sources, notably the United States of America, France and Russia.

Since the inception of the import substitution program in 2006, manufacturing concerns have shown the potential that of import substitution as a mainstream industrial development strategy.

The abundant natural resources which Zimbabwe boasts of put Zimbabwe in a good position to develop industry through import substitution and reduce the risk of constricted supply from trading partners.

4.1.1.2. Value addition

Value addition involves the processing of raw materials and subassemblies to increase their economic value. The rationale behind increasing the economic value of materials and products is to increase the contribution of value to the economy.

In the present case of Zimbabwe, high volumes of raw and partially processed products from mining and agriculture are exported thus resulting in lower than possible contribution to GDP. Value addition should focus more on products for export, resulting in direct foreign currency earnings.

Among some of the benefits of value addition is:

1. Greater contribution to GDP

Value addition greatly increases the market value of the sold product, resulting in each unit of product having greater contribution to GDP than a comparable semi-finished product or the raw materials consumed in producing the product.

Through value addition processes, more human capital is engaged in developing the final product and it is likely in the case of manufactured products that more material is added to produce the final product. These activities directly increase disposable income in the economy as well as result in greater earnings.

2. Promotion of infrastructure development

As the focus towards value addition increases, industry at large will undertake to develop its facilities to cater for new product lines and improved manufacturing processes. Through the application of highly accurate stochastic information, making such decision will become much simpler and less risky. In line with such development, both local and central government will be positioned to contribute towards infrastructure development particularly in the area of transport, wherein road and rail networks will undergo upgrading to cater for increased capacity demand.

4.1.1.3. Export promotion

The determining statistics for the success of the import substitution and value addition program is the increase in exports.

The successful implementation of the import substitution and value addition policy will inevitably result in Zimbabwe's manufacturing based exports increasing at a greater rate than the reduction in exports of mining and agriculture based products which are mostly unprocessed or semi-processed. The trend will begin with the exploration of new markets in the developing world and expand to markets in the developed world. Given this scenario, the manufacturing economy will achieve great success from the sale of low cost products it manages to produce.

While it is good for the country to promote local production for local consumption, it is only through exports that local industry can influence monetary policy and provide a solid basis for the reintroduction of a Zimbabwean currency, hence the need to fully exploit the export capacity of the country.

4.1.2. Greenfield development

Greenfield development plays a critical role in the development of the manufacturing economy. The development and production of new product ranges, which will result in the diversification of the manufacturing sector, will contribute towards Zimbabwe becoming more influential in international trade and becoming less dependent for its local consumption on traditional trading partners.

Greenfield development in Zimbabwe is stimulated by the wealth of natural resources that the country possesses and has only partially exploited. These resources which include gold, platinum, silver, and chrome are highly sought out for the development of innovative products. Greenfield development will bring about an increase in local demand for products from the extractive and agricultural sectors. This will support the rational of preferential sale

of minerals, agricultural and horticultural products to local consumers that produce for international markets.

The management of Greenfields should ensure the investment of capital into ventures that have a considerable lifespan and result in the production of sustainable, cost effective products.

4.1.3. Capitalisation

The financing of manufacturing is essential for the sustainability of the economy. The ability to create capital makes manufacturing an important sector of the economy. The historic record of manufacturing's higher net contribution to GDP than mining and agriculture positions manufacturing as the best sector to stimulate economic growth, making it essential to secure lines of credit for capital investment and order finance for manufacturing.

With the complement of commercial institutions in Zimbabwe on the rise, the idea of a bank to finance and support the manufacturing sector is not unrealistic. To encourage this, incentives may be given to financiers on capital invested into manufacturing to increase current productivity levels and ensure steady production in the long-term.

Foreign investment into manufacturing through PPPs, toll manufacturing and other arrangements will ensure that the local economy achieves economic capacity utilisation levels and continues to grow and improve production technology to remain competitive.

4.1.4. Protectionism

The enforcement of measures in the short term that cushion local manufacturing concerns from competition for the purpose of enabling the resuscitation of capacity should be encouraged in the country's industrial policy. While this will affect existing trade relations, particularly with low-cost producers such as China, the effect will in the long-term enable manufacturing to produce a wider range of products to meet local demand. The application of protectionism should however be strictly controlled and applied in consultation with industry

as opposed to being implemented as a blanket policy encompassing the entire manufacturing economy. Close cooperation between government and industry is required to determine which industries should benefit from various forms of protection.

With a clear picture of the production and supply economics of manufacturing derived from an industry census and the metrics derives from the same, the effect of protective measures can accurately be determined and monitored, with forecasts of the impact of policies being used as the basis for decision making relating to the extent of protection that should be given in each scenario.

Protectionism will apply more to consumer goods than capital goods. The premise of this is that the cost of production of consumer goods in developing countries, such as Zimbabwe is, would be relatively less than those of capital goods because production of the latter goods is assumed to be more capital intensive and tends to employ more complex technology (Brunton, 1998).

4.1.4.1. Sourcing policy

Industrial policies should serve to promote all productive sectors of the economy. The promotion of local sourcing only on the basis of cost advantage will ensure that the extractive and agricultural sectors continue to grow and support manufacturing. In the case where the sourcing of raw materials in the local market is not viable in the short-term, subsidies may be applied on the premise that subsidies will be paid back in the same manner as if they were long term loans extended to the industry by the fiscus so as to ensure the sustainability of supply in the long-term.

Efforts should be made to reduce imports through import substitution thus reducing the deficit in BOP and promoting local industry. This may be effected in the medium term through systematic rationing of foreign currency which will in the long run reduce the demand for foreign currency and create a situation where foreign currency demand and creation is highest in the productive sectors of the economy.

4.1.4.2. Tax incentives

Manufacturing and other productive sectors of the economy have been negatively affected by the impact of continued economic recession. Billions of dollars of investment are required for the recapitalisation of industry and the sourcing of markets which will sustain the productive sectors. The investment periods involved for meaningful returns to be achieved on productive sector investments are long and to encourage the much needed investment into these sectors of the economy, particularly manufacturing, tax incentives on capital investment may be introduced. Tax incentives should be reviewed on a going basis with the decision to maintain these incentives being based on the development needs of the productive economy. Incentives for Greenfield development and investment into capital equipment should however be a permanent feature of any industrial policy. Application of incentives should however be adopted on a fixed basis for capital investments that result in the diversification of local manufacturing into foreign currency earning areas as well as Greenfields.

5. CONCLUSION

The manufacturing economy of Zimbabwe has taken great strides since 2009 to be self rejuvenating, maximising on its ability to source raw materials on local and international markets following the introduction of a multicurrency monetary regime. This has eased the pressures on Zimbabwe's economy, resulting in stocks of consumer goods on the shelves of shops increasing to pre-2003 levels, when major shortages of consumer goods became a regular occurrence around Zimbabwe.

The absence of an industrial policy that facilitates the operation of the productive sectors of the economy however impinges on the development of viable information that summarises the performance of all the productive sectors of the economy.

The journey for Zimbabwe has not been smooth since February 2009 and the introduction of the multicurrency monetary regime, with social, economic and political pressure all taking its toll on the nation.

While various novel and traditional orthodox policies have been proffered to make Zimbabwe's economy self sustaining, the absence of a viable information generation mechanism for planning, monitoring and evaluation has hindered and will continue to hinder Zimbabwe's economic advancement.

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THE MANUFACTURING ECONOMY OF ZIMBABWE

A stochastic approach to revival and sustainability planning

This project has been motivated by the need for real economic development in Zimbabwe and the realisation that the contribution of manufacturing to the economy is the single greatest influence, of all sectors of the economy, which can bring about sustainable growth and development.

This paper is presented for the purpose of stimulating interest in the promotion of manufacturing as the most important productive sector of Zimbabwe's economy and garnering the support of industry and policy makers alike for the development of sustainable industrial policies which are crafted on the back of well collated, accurate and precise metrics.

The revival of Zimbabwe's manufacturing economy will prepare Zimbabwe for the reintroduction of a local currency, and will improve the livelihoods of Zimbabweans across all sectors of the economy through the provision of goods and services (in non-productive sectors), as well as the creation of jobs.

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