

Finding the escape shaft – from resource curse to industrial growth

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1. Introduction

This paper considers the opportunities for innovation by firms and entrepreneurs in the SADC region. It recognizes that despite the commodities boom of the past decade, economic dependency remains the dominant condition of the fifteen-member Southern African Development Community¹ (SADC). Economic diversification through import-substituting industrialization (ISI), let alone export orientation, remains elusive, giving credence to an ongoing 'resource curse' (Ramdoo, 2012).

Economic dependency arising from a lack of control over the terms of trade separately exercised the minds of Singer and Prebisch leading to what became known as the Singer-Prebisch Theory that advocated ISI under state guidance to mitigate the disadvantages of structural dependency. This provided the early thinking of Dependency Theory whereby the 'metropolises' dominated the 'periphery.' Baran (1967) and Frank (1966) contributed to popularizing Dependency Theory going beyond mitigation in calling for the overthrow of the state. Rodney (1972) extended the analysis to Africa, emphasizing the 'underdevelopment' inherent in neo-colonialism, with Leys (1976) providing a critical analysis of class relations and the stranglehold of capital in Kenya. The idea of structural dependency and its constraints duly entered the rhetoric of African independence (Amin, 1977). Multi-layered dependency characterised the relationships among the new post-colonial states, within them, and with the former colonial powers.

Development Theory suggests that commodity producers will find themselves restricted in their quest for industrial diversification, let alone innovation. Indeed structural weakness appears in many aspects of such developing and emerging economies, including their nascent innovation systems that are variously described as 'immature' (Albuquerque, 2003) or disarticulated (Freeman and Soete, 2007).

For historic reasons South Africa is peripheral to the 'North' and the hegemon of the SADC. Nigeria and South Africa are the largest African economies, with South Africa the leader in science, technology and innovation (AU, 2014).

The working hypothesis of this paper is that the weight of dependency coupled with the entry of South African (and Chinese transnational corporations) (TNCs) crowds out the 'innovation space' so that domestic entrepreneurs in the less developed SADC economies will be unable to compete and gain market share. It is further anticipated that this dominance will be most evident in the sub-group that comprise the Southern African Customs Union (SACU).

PESTEL and SWOT analysis, combined with interviews, secondary data and three case studies serve to examine this hypothesis. Based on trade and STI data it might be expected that the internal markets of its neighbours would be totally dominated by

¹ Angola, **Botswana**, Democratic Republic Of Congo, **Lesotho**, Madagascar, Malawi, Mauritius, Mozambique, **Namibia**, Seychelles, **South Africa**, **Swaziland**, United Republic of Tanzania, Zambia and Zimbabwe. (**Boldface** denotes members of SACU)

large South African firms that have ramped up their international profiles since South Africa was readmitted into the community of nations following the political changes of 1994. Even so, against expectation, a number of large domestically owned firms have emerged in the SADC periphery. The objects of study are firms that operate in the context of the domestic innovation system (Lundvall, 1985). The precise composition of the innovation system is open to contention (Von Tuenzelman, 1995) as it is located within a larger national socio-political, financial and cultural system that is shaped by the world system especially interaction with key trading partners.

One recalls Friedrich List in 1843 describing tariff barriers that distorted free competition as ladders to raise productivity. Doctrine subsequently forbade the ladders – that were then ‘kicked away’ to restrict market access to newcomers. List’s ‘ladder’ provokes the idea of an ‘escape shaft’ as the mechanism for firms in resource-rich countries to break the path dependencies of their colonial bequest. The three case studies serve to illustrate how emergent entrepreneurs have found such escape shafts through seizing opportunities in the innovation space.

The literature provides little regarding the nature of these dependencies in SADC generally though the structural impediments embodied in the formation of the SACU have received more attention. These gaps will be addressed in the paper. The paper also revisits Schumpeter’s innovation typology, drawing attention to the overlooked importance of Type 1 entrepreneurs.

Following this Introduction, the second section applies Dependency Theory to South Africa and its external relationships. It is argued that South Africa navigates layers of dependency ranging from its historic metropole-periphery relationship with the North through to that inherent in SACU and now across SADC. The new set of relationships between South Africa, the wider SADC and the BRICS is considered.

This is followed by a PESTEL analysis of the SADC states supplemented with discussion of economic and STI indicators, including a SWOT analysis. These considerations provide background to the innovation space and the role that South Africa and the other BRICS play in crowding out emergent entrepreneurs. Case studies (two from Botswana; one Zambia) then serve to illustrate how Schumpeter Type 1 innovation is possible despite innovation space constraints.

How firms do this, and how policy enables or disables their attempts is essential knowledge for would-be entrepreneurs, the investment community, and governments. It is contended that the case studies speak to Schumpeter Type 1 entrepreneurship, thereby opening up a neglected area for research. A final section offers recommendations for research and policy.

2. Literature review

Dependency Theory emerged in the immediate post war period, arguing that commodity producers are price takers who remain at the mercy of the metropolises. Key writers of the Latin American structuralist school were Prebisch (1950) and then Cardoso and Falleto (1979). Palma (1978) later argued that DT was most helpful when it focused on political economy, while Booth (1985) challenged its empirical base. More recently Amsden (2003) celebrated the East Asian tigers as examples of

growth despite their numerous disadvantages cited by DT proponents. DT is enjoying a renaissance through the notion of the 'developmental state' (UNECA, 2011). The commodities boom has seen the rise of resource nationalism (Kahn, 2011) with DT fuelling the rhetoric. This accords with the central planning that is found across the SADC region where many governments subscribe to five-year development plans, as for example in Zambia, Botswana and Tanzania where a dedicated ministry drives implementation.

In Southern Africa DT has not enjoyed favour with Marxist (Simons and Simons, 1968; Saul and Gelb, 1981) and neo-liberal approaches (Lipton, 1985) dominating. By contrast the South African National Development Plan (Presidency, 2011) is more of a vision statement than a plan, sketching a desired future out to 2030. The National Development Plan is an eclectic mix of Dependency Theory, and neo-classical economics resonating with the early Prebisch in calling for a 'capable state' that would act to address poverty, inequality and unemployment, thereby ensuring inclusion.

SADC countries gained statehood from the 1960s onward – half peacefully; the remainder through armed conflict and civil war over successive decades. These differing experiences express in a divergence of capability with most economies being raw material producers and labour exporters. Sanctions and economic blockages associated with the liberation struggles led to industrial deepening in South Africa, and the then Rhodesia (today's Zimbabwe). Industrialization stalled in Zambia, Malawi and Tanzania; war in Angola, Mozambique, and then Zaire constrained their diversification. The island states followed quite different paths.

For most of the 20th century South Africa functioned as a partially closed economy - open for commodity exports and importation of labour, with manufacturing and agriculture highly protected, with ISI subsidies. By the mid 1980s sanctions forced the economy toward autarky. At that juncture mining house Anglo American had controlling interests in 70% of the Johannesburg Stock Exchange, and had diversified into all industrial sectors.

Botswana, Namibia, Lesotho and Swaziland (BNLS) were extensions of the South African economy, part of the Rand Monetary Area, and recipients of customs revenues that comprised up to 60% of their revenues. The exception was Botswana where by 1982 diamond revenues exceeded those drawn from SACU. Island states aside, Botswana has the highest GDP/capita in SADC (World Bank, **). The catch in the SACU bargain is the infant industry clause that restricts ISI; a classic Faustian bargain – we give you customs revenues, but your industrialization is constrained. In fact a secret memorandum to the 1969 SACU Agreement specified that infant industry protection among the then BLS countries could only apply if a firm was able to supply 60% of the total SACU market and the agreement forbids infant industry protection if a firm is older than eight years.² In effect the SACU relationship locks

² <http://www.sacu.int/main.php?include=docs/legislation/1969-agreement/part3.html>

the small BNLS populations into a permanent dependence. While Edwards and Lawrence (2008), and Kirk and Stern (2005) see SACU influence on the BNLS economies as more or less neutral, Grynberg and Motswapong (2010; 2012) claim that the main beneficiary of SACU was, and continues to be South Africa. SACU is a case study of how a customs union fails if there is an overarching dominant player.

China has become the largest single source of FDI into Africa, having displaced South Africa. Up to 2014 high oil prices promoted exploration with great expectations for the oil and gas (O&G) in East Africa. China has invested heavily in Mozambique, Zambia and South Africa, Russia in Uganda,³ Brazil in Mozambique and Angola, and India in South Africa, Mozambique and Botswana. None of the above should mislead into thinking that Africa is a major recipient of FDI. It is not, but the FDI flows are very important in relation to recipient GDP and are capable of major distortions.

The bulk of FDI is into infrastructure and mining, so that technological spillovers into manufacturing are unlikely. At best Zambia's planners anticipate spillover 'effects' (Republic of Zambia, 2011: 23). FDI into South Africa is generally through acquisitions, with green field investment restricted to the automotive sector under original equipment manufacturer (OEM) restrictions, again with limited technological spillovers.

The South African mining sector is now globalized and while South Africa continues to draw in migrant labour from the region it is no longer the major source of FDI to SADC. Instead outward FDI flows from firms in manufacturing and services sectors as for example Sasol (fuels) and Tongaat-Hulett (sugar) in Mozambique, ABSA Bank across the region, and mobile company MTN in Zambia.

South Africa and Angola dominate the trade flows in and out of SADC (Sandrey, 2013), but in radically different ways. Angolan trade is mostly O&G. South Africa accounts for some 70% of intra-SADC imports spread across the industrial sectors.

As GDP/capita has grown across SADC, and public servants have seen real increases in pay, the middle class has strengthened and acquired new buying power. A trickle down of wealth out of national treasuries into the hands of the employed has occurred, and this is driving consumption-led growth that is met by the entry of South African retail, wholesale and financial services firms. South African firms, confined to its domestic market in the apartheid years surged over the Limpopo River becoming TNCs that now earn half their revenue internationally. These firms have entered and captured new markets and demonstrate the necessary financial, logistical, marketing. OECD (2005) defines innovation as the introduction of a new or significantly improved product or process to a firm or market. If a company is able successfully to place new and additional products into a market it should create wealth (and employment) and is thereby innovating.

How then innovation policy? The innovation systems approach entered South African S&T policy discourse in the early 1990s and was given substance through its White

³ <http://www.iol.co.za/business/international/ugandan-refinery-russian-firm-wins-tender-1.1819348#.VSZUcxOUd5A>

Paper on Science and Technology - 'a national system of innovation can be thought of as a set of functioning institutions, organisations and policies which interact constructively in the pursuit of a common set of social and economic goals and objectives' (DACST, 1996: 20). Subsequently the National R&D Strategy (DST, 2002) and Ten Year Innovation Plan (DST, 2008) drifted toward more conventional science-led policy associated (Kahn, 2013). The new legitimacy of South Africa, and its leadership role in Africa saw the dissemination of these ideas into SADC and later to the African Union. Indeed the SADC Protocol on STI (SADC, 2008) adopted the self-same definition of an innovation system as that of South Africa. One might aver that Innovation policy became another South African export.

South Africa's series of innovation surveys (DST, 2005; 2008) reveal that close to 50% of firms claim to be innovating mostly through incremental or process changes. Radical innovation is very limited. How her TNCs translate domestic innovation into foreign sales and marketing is an issue for further research. The country remains dependent on foreign technology imports with the technology balance of payments (TBOP) showing the ratio between earnings and payments at a global low of 1:10 (OECD, 2013). Admittedly South Africa's tradable exports comprise items of low IP, while non-tradable services are not patentable. Accordingly, inward royalty flows are likely to be lower than outflows. Even if the underlying TBOP data is distorted by rent-seeking behaviours, the ratio is likely to remain an outlier⁴.

Chang (2007) has written extensively on the problems facing latecomer economies that wish to compete with established players according to the rulebook of the World Trade Organization (WTO). Chang observes that protectionism was the norm for all of today's industrialized nations; now that they are enjoying high standards of living they ensure that they maintain their competitive advantage by 'kicking away the ladder' so that new entrants face considerable barriers of entry. The above analysis suggests that FDI into mining and infrastructure has been the driver of economic growth that has promoted a consumption boom. South African firms have entered the market to supply the demand and dominate trade. It appears as if the ladder has been removed.

3. Methodology

The working hypothesis is that South African firms crowd out the innovation space. To examine this hypothesis use is made of the structured framework of a political, economic, social, technological, environment, and legal (PESTEL) analysis that examines the macro-environment or innovation space facing firms. The PESTEL analysis, supplemented with STI indicators is then used to undertake a strengths, weaknesses, opportunities and threats (SWOT) analysis. The analysis is supplemented with semi-structured interviews conducted with key stakeholders in to Zambia, Mozambique, Namibia and Botswana and South Africa. The firm case studies are based on secondary sources.

It might be argued that PESTEL analysis with its six separate categories is contradictory to the system of innovation approach, especially the politico-social-

⁴ Confidential author interview with South African law firm, 2011

economic. However it will be evident that the six categorizations overlap so that such objection may be somewhat pedantic.

Political

Would-be entrepreneurs require policy certainty, security for investment, and an expectation of returns. Various measures describing the business climate are generated through surveys of CEOs and country thought leaders. So Freedom House ranks Mauritius, Botswana, South Africa, Lesotho, and Namibia as ‘free,’ (the Economist intelligence Unit Democracy Index places these at ranks 18, 30, 31, 55 and 72 respectively) with the others ‘partly free’ or ‘not free.’ The World Economic Forum (WEF, 2014) ranks the SADC states (DRC excluded) as follows: Mauritius 39, South Africa 56, Botswana 74, and Namibia 88, ranging from Seychelles at 92 to Angola at 140, pointing to serious institutional and governance shortcomings. The World Bank Ease of Doing Business ranking tells a similar story: Mauritius 28 and South Africa at 43, after which the ranks plummet. This suggests an environment that may discourage risk taking.

Economic

SADC GDP stood at USD PPP 1 193 billion in 2013, and is strongly based on resource exploitation, with agriculture contributing some. GDP per capita varies from below PPP USD 1000 (DRC) to PPP USD 20000 (Seychelles), with an average of around PPP USD 2000/capita. SADC exhibits diverse levels of growth and development, including high growth economies - Angola, Botswana, Mozambique and Tanzania.

By contrast South Africa appears caught in a middle-income trap of its own making, with its polity unable to achieve sufficient consensus among state, labour and capital to create new firms and jobs at home (Hausmann, 2014). Instead its firms have expanded into SADC and across Africa with shopping malls based on South African designs hosting its major brands found in most large cities.

What then is known regarding entrepreneurs in SADC? A useful source is the Global Entrepreneurship Monitor (GEM, 2012) that covers 67 countries including Angola, Botswana, Malawi, Namibia, South Africa and Zambia. GEM polls in the order of 2000 working age adults in each country. To measure Total Early-stage Entrepreneurship (TEA) (Table 1).

Table 1. SADC Global Entrepreneurship Monitor rates

Country	Nascent Entrepreneurship rate	New business rate	TEA	Discontinued business rate	Necessity driven (% of TEA)	Improvement driven (% of TEA)
Angola	15%	19%	32%	26%	24%	38%
Botswana	17%	12%	28%	16%	33%	48%
Malawi	18%	20%	36%	29%	42%	43%
Namibia	11%	7%	18%	12%	37%	37%
South Africa	4%	3%	7%	5%	32%	40%
Zambia	27%	15%	41%	20%	32%	46%

Source : GEM (2012)

TEA tends to be higher where GDP/capita is low and economies are factor-driven, so Zambia for example yields a high TEA of 41%. However the TEA for South Africa goes counter to this trend and is very low at 7%. In South Africa, unemployment is officially around 25%, but may be as high as 35% if one departs from the ILO definition of the workforce to comprise those actively seeking work. This, together with the system of social grants, and historic exclusion of the majority from business opportunities, may go some way to explaining South Africa's very low TEA.

Social

Mauritius excepted two significant obstacles are the low status of health and education. HIV/AIDS, tuberculosis and malaria (especially in the tropical regions) are causes of morbidity and mortality, and life expectancy has fallen. Only Botswana and South Africa have large-scale programmes to treat these diseases.

Primary education net enrolment ratios are generally above 86%, though no data are available for Madagascar, Seychelles, Tanzania and the DRC (Global Education Digest, 2012). Net enrolment ratios for secondary education are much lower ranging from Angola at 12% to Botswana with 61%. Up-to-date figures are unavailable for seven states, including South Africa, Namibia, Zambia and Zimbabwe. In the more advanced countries primary school participation is high, yet there is a steep fall-off in the senior secondary phase. And the quality of school education is generally poor. All countries have at least one main university, but quality and postgraduate higher education is concentrated in South Africa that provides subsidized places to 42 000 SADC students in fulfilment of the SADC Protocol on Education and Training. Deficiencies in health and primary education reveal in the WEF 'basic requirements' scores with eleven SADC states below rank 89. Unemployment, poverty and inequality are severe, with Namibia and South Africa displaying extreme Gini coefficients.

Technology

SADC has two unifying technological infrastructures, the Southern African Power Pool (SAPP) and the Cape Gauge rail network. Coal deposits are plentiful and there are hydropower sources in Mozambique, Zimbabwe/Zambia and Lesotho, with the Congo River assessed as having 40GW of potential. In response to the commodities boom, and to enhance intra-SADC trade, transport corridors are being developed to allow cross-regional movement of goods and people. Air transport is expensive, with most flights routed through Johannesburg, South Africa.

Mobile telephony is well developed with median penetration rate of 63% (ITU, 2013) ranging from 30% for DRC, Madagascar and Malawi, to 120% for South Africa and 150% in Botswana and Seychelles. On the other hand Internet subscription rates are much lower, with a median value of 13%, ranging from DRC (1,7%) to Mauritius and South Africa (41%).

WEF (2014) assesses Lesotho, Madagascar, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe as factor driven; Angola and Botswana in transition from factor to efficiency driven; South Africa, Swaziland, Namibia and Mauritius efficiency driven; Seychelles is in transition from efficiency to innovation driven. This categorization suggests that technological innovation only feature more strongly in the latter five economies.

Most SADC states host institutions expected of a system of innovation – a STI policy locus in government, public research organizations (PROs) especially in health and agriculture, a public university, academies of science, and science funding agencies. Bodies for standard setting, testing and monitoring are in place with the SADC Quality assurance Accreditation and Metrology (SQAM) body ensuring comparability. Intellectual property rights (IPR) and plant breeders rights (PBR) registrars and registries are found in all states, but their capability varies considerably, suggesting that they enjoy lower status than the standards authorities.

As to innovation and R&D itself the main source of information is *African Innovation Outlook 2014* (AU, 2014). The push to establish the required survey capability has come from the African Science, Technology and Innovation Indicators (ASTII) initiative involving all bar Seychelles, Swaziland and Madagascar. Even so Innovation Surveys are only available for Lesotho, South Africa, Tanzania and Zambia, reflecting the difficulties in measuring STI activities in the business sector. For R&D, information is tabled for the public sectors of Angola, Malawi, Mozambique, Tanzania and Zimbabwe. South Africa provides data for both public and private R&D. The little information that is to hand points to a dearth of wholly new innovation activity and low levels of R&D. Other information on the outputs of research and innovation is shown as Table 2.

Table 2: Research and innovation output indicators

	Scopus Publ'ns	Patents granted abroad	TM awards Res	TM awards Non-res	TM Abroad	GCI Innov	GCI Tech Readiness	University students in SA/ total abroad. ²
Angola	63	-	-	-	100	2.12	2.34	1135/7052
Botswana	290	1	103	1112	40	2.97	3.58	<i>4849/8562</i>
DRC	57	2	-	-	188	-	-	<i>1815/5426</i>
Lesotho	38	-	-	675	2	2.87	2.37	<i>4004/4206</i>
Madagascar	246	-	725	1215	7	3.09	2.63	-
Mauritius	184	72	747	1050	1893	3.22	3.97	1108/7631
Malawi	407	-	-	-	4	2.80	2.41	<i>854/2053</i>
Mozambique	191	-		1153	2	2.76	2.71	<i>823/2715</i>
Namibia	160	2	-	918	28	3.10	3.43	<i>7264/7832</i>
Seychelles	37	37	106		928	3.25	3.73	48/398
Tanzania	902	6	-	-		3.03	2.51	651/5610
South Africa ¹	13627	965	14923	12302	6953	3.64	3.86	-
Swaziland	75	788		740	48	2.86	2.66	<i>3453/3870</i>
Zambia	315	1	-	944	1	3.42	2.99	<i>1529/4951</i>
Zimbabwe	373	1	-	-	18	2.63	2.95	<i>14359/19658</i>

Sources: Scilmag; WIPO year 2013; WEF year 2014; Global Education Digest 2012.

Notes: 1. Countries for whom South Africa is the prime destination for study are shown *italic*.

2. South Africa is the only state for which WIPO provides Plant Variety registrations: 255 in 2014.

This information calls for some general observations. Firstly South African dominance, with its outputs exceeding the combined totals of the other states. Secondly that the data set is incomplete, especially for trademarks and their resident/non-resident status, and this despite long efforts to strengthen IP registries across SADC. When disaggregated data was requested from IP registrars the

common response was 'go and ask in Pretoria, since that is where the IP lawyers are.' The IP layers in Pretoria were less than helpful when approached with this request. Thirdly the Global Competitiveness Index shows much smaller divergence than the other measures.

South Africa is the frontrunner with respect to Patent Cooperation Treaty awards, with Mauritius and Seychelles in second and third ranks. Both of these may reflect these island states' roles as financial service hubs – certainly the case for Seychelles whose tiny population cannot be generating domestic IP on this scale, namely 370 awards per million population. The patent data for Swaziland are unusual since Swaziland has a small innovation system and limited manufacturing industry, neither of which will generate significant domestic patents. It is more likely that the country is simply a domicile for the registration of patents. Mechanisms are needed to dig deeper into the WIPO data before concluding that respective innovation systems are innovating in the conventional 'new product' sense.

Patenting is of much lower intensity than trademark registration. The lack of disaggregation of trademarks as resident or non-resident is unfortunate. One might speculate that South Africa is responsible for the bulk of non-resident trademark registrations across SADC since this is its major market. The registration of foreign trademarks by South African firms have leapt from less than 10 in 1994 to the 6953 in force today. One may note that South African trademarks registered 'abroad' total 6953, whereas the SADC non-resident total stands in the order of 7500. The inference that the bulk of these registrations are to South African entities is reasonable. South African goods proliferate across SADC, and the associated IP is part of a 'crowding out' of the innovation space in retail and wholesale.

Next is scientific outputs, with peer reviewed journal publications used as the conventional proxy measure. The poorer countries that face HIV and malaria pandemics host clinical trials so that much scientific activity is foreign-led health science. This generates publications in the international literature but carries the risk that scientists of the North are research hunters using the scientists of the South as data gatherers. Yet another dependency relationship?

The last column provides data on SADC student enrolments in South Africa, showing a total of nearly 42000 in 2012, comprising two thirds of foreign enrolment. For nine of the fourteen 'exporting' countries South Africa is the destination of choice. Angola opts for Portugal, Madagascar for France, Mauritius for France, and remote Seychelles and Tanzania for the UK.

Environment

Mozambique, Angola, Zambia, Tanzania, Zimbabwe and Mozambique have considerable agricultural potential. The SADC coastline is roughly 6000 km, with abundant marine resources under severe threat through overfishing by foreign countries. Trans-border pollution is dealt with under the 2008 Lusaka Agreement, while the Regional Strategic Action Plan for Integrated Water Resources Management and Development deals with shared catchment areas and river basins.

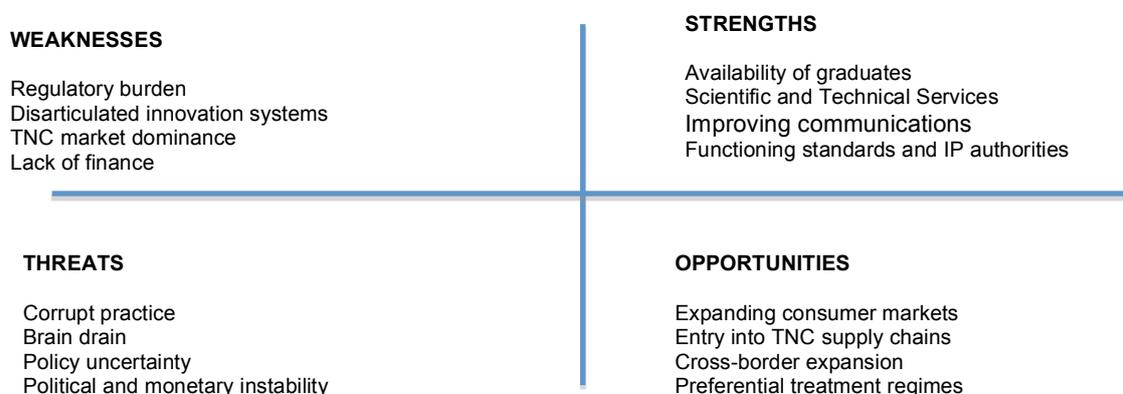
Legal

Legal systems vary considerably - vestiges of central planning in Mozambique and Angola; Belgian law in DRC, and British in the remaining domains. Land tenure is complicated by the ongoing role of traditional systems alongside Western legal systems. According to the WEF GCI South Africa scores high for its legal systems but low for regulatory burden; Zimbabwe and Angola are among the worst overall performers. A number of protocols provide the framework for a free trade area with a single currency, though a wide range of product and commodity exclusions remain in force (Sandrey, 2013).

It is now necessary to explain what is meant by the 'innovation space.' The starting point for this is the innovation systems approach (Lundvall, 1985; Freeman 1988) that draws on Evolutionary Economics (Nelson and Winter, 1985) with roots going back to the works of Schumpeter and List. The innovation system approach recognizes the importance of actors, both market and non-market facing, that engage in innovation activities both internally and with one another domestically, and internationally. The term 'innovation ecosystem' is often used interchangeably with that of innovation system proper (see e.g. NSF, 2010). The innovation system approach has found expression in the main innovation policy statements and measurement technologies of the OECD, World Bank, and the African Union.

In this paper 'Innovation space' refers to the immediate operating environment within which an entrepreneur or would-be innovator finds herself. The space includes latent opportunities, the specific regulatory conditions enabling or disabling action, availability of finance and financial incentives, access to business and technical skills including quality control, and problem solving, a ready market, availability of physical inputs and utilities, legal rights, insurability, tariff protection, political support and manual labour. Failure in any one of these domains may see failure of the entire project. R&D is not singled out as a *sine qua non* since it matters more for high-tech start-ups whereas gaining access to an existing market requires somewhat different skills. The SWOT analysis (Diagram 1) serves to synthesize the 'typical' innovation space in which SADC firms operate.

Diagram 1. SWOT Analysis of Innovation Space



In essence the would-be domestic entrepreneur receives little by way of novel research from the innovation system proper. What that system will provide is a stock

of graduates especially in the social sciences, and a cadre able to staff quality control and testing sections in their firms. In addition the system provides the necessary regulatory and safety standards for the conduct of business. On the downside the entrepreneur must contend with incumbent firms with associated barriers to entry. In the case of manufacturing the firm in SACU also faces the barriers against infant industry protection. On the plus side the domestic entrepreneur is likely to receive more favoured status for soft financing.

4. Finding the escape shaft

Botswana and Zambia present examples of entrepreneurship in two radically different (and landlocked) environments. Botswana has a small population, is a member of SACU and its currency is largely pegged to the South African Rand. Zambia on the other hand has a larger population, and is a member of both SADC and the Common market of East and Southern Africa. It is well positioned to export to no fewer than eight SADC countries.

At independence Botswana was wholly dependent on SACU receipts. With the discovery of the Jwaneng deposit, the Botswana government renegotiated its equity share in holding company Debswana to 51%, and most recently pressured De Beers to move its London diamond sales to Gaborone to create a local cutting and polishing industry. Prudent technocratic management generated a boom economy with a well-developed school system and primary health care network enabling the country to move from low to upper middle income in two generations.

Massive dominance of foreign capital in mining and services might imply that local interests would be entirely crowded out. Careful management of the resource purse allowed for wealth to accrue to both state and foreign capital. The services sector has presented a space into which Botswana entrepreneurs can grow, as in the supply of red meat, poultry, vegetables, and of security, IT and transport services to South African TNCs. This penetration of well-established technologies has been facilitated by means of a suite of financial incentives including loans at well below market rates with collateral provided by the new business itself. The technical skills needed for such large-scale, intensive animal production (now including pork) is available locally. Entrepreneurs have identified market opportunities and have captured these. In other words new firms based on tried and tested technologies have come into being through financial incentives.

A wide range of financial institutions are at play in Botswana: these include large funders such as the Botswana Development Corporation, intermediate agencies such as NORSAD and smaller players such as the Citizen Entrepreneurship Development Agency, and the Local Enterprise Authority. Funding to expand innovation activities is therefore not the issue: the issue is the generation of innovation itself and the linkages among those engaged in innovation activities. The latter are weak, and skills are below the critical mass that will be needed; the implication is that Botswana may also be constrained in breaking out of an emerging middle-income trap. Interviewees were unanimous in regarding South Africa in a positive, rather than negative light.

The first case study, the poultry industry, is a classic example of successful ISI. The industry has enabled self-sufficiency in poultry products, a total shift from its prior dependence on imports. Two major companies supply the local market both directly and as suppliers to South African TNC retail and leisure groups, and the mass of poultry consumed exceeds that of beef. The poultry value chain includes day old chicks, local feedstock producers and suppliers, private abattoirs, quality control and veterinary services. This industry developed over a four-decade period, enjoying soft loans from government, infant industry protective tariffs, and import restrictions. Local entrepreneurs have seized the market away from their foreign competitors. The sole exception to the general failure of ISI for the SACU member states is the case of the Botswana poultry industry (Grynberg and Motswapong (2011)).

Both entrepreneurs are new to the poultry industry, but not to trading. Their initial investments in new business were funded off own cash, with expansion coming from market and non-market sources. This capture of market space is a Schumpeter Type 1 innovation, enabled by political connections and the availability of finance. The two firms have had to learn how to provide feedstock and processed poultry that meets the quality standards of well-established TNCs with global reputations. In so doing they have introduced new products into their own firm offerings and as such are innovating, albeit at a basic level.

The second case is food retailer 'Choppies' that is a mere thirty years old, having commenced with a family-owned convenience store in 1986. By 1993 it had grown to three, after which it multiplied across the country, expanding into South Africa in 2008. Today Choppies is a publicly owned company, listed on the Botswana bourse, with 70 stores in its home market and 25 in South Africa. It holds 32% of the Botswana fast moving consumer goods (FMCG) sector against strong competition for South Africa's retail giants. As the 2013 Annual Report avers, Choppies Group 'created a paradigm shift in the Botswana retail market, by taking stores to population centres, and maintaining shop hours convenient to the consumer' (Choppies, 2013: 2). Total employment was 7200 in 2013, making the company the largest employer outside the public sector.

Choppies is an integrated retail group with its own maintenance subsidiary, four state distribution centres and its own fleet of 400 trucks. The Group enjoys indirect political support with former President Mogae as Chairman of the Board.

The colonial border between South Africa and Botswana split the indigenous Sotho-Tswana peoples of the area into two 'nations.' The Choppies footprint straddles this ethnic terrain serving the northern half of South Africa. Choppies, using its long experience in Botswana has developed a business model that 'understands' the preferences of the customers in under serviced areas. The company is forward looking, making use of ERP systems and establishing the Choppies Retail Academy that offered training courses to 1100 employees in 2013. Choppies studied the market, saw the gap, and captured that space. The company interaction with the conventional innovation system is minimal, quality controls aside. Choppies sells a range of lower priced items produced by third parties under its own name and has engaged in marketing innovation. For this she requires social science and humanities graduates for professional roles, and organises training for other levels in house. In

May 2015 Choppies listed on the Johannesburg Securities Exchange as a prelude to expanding further across SADC.

This brings one to the third case. At independence the Zambian economy was wholly dependent on exports of copper with all manufactured goods imported. With the deepening of regional conflict Zambia found itself virtually isolated. These pressures, a slump in copper prices and with poor domestic political choices combined to produce economic collapse. One gain from that period was investment into mining and technical skills.

In the early 1990s liberalization of the economy launched recovery that is now running strongly, with new infrastructure, and prospects for the diversification of mining and industry. In the early 2000s Zambia broke out from LDC status and with a GDP per capita of PPP USD 1500 is now moving toward becoming a middle-income economy. Even so the process of moving from a centrist to a free market economy is incomplete, and the cost of doing business remains high. One finds the strong presence of South African services in retail, wholesale, banking, insurance, leisure, technical services and logistics.

The Zambia innovation system includes many institutions dating from the socialist period but here is little obvious R&D in the industrial sector. In theory mechanisms are in place to support SME development, but lack of finance, patronage networks, perceived corruption, problems of land tenure and poor appreciation of innovation potential are limiting factors. The innovation space is largely crowded out by foreign capital.

An exception is Tradekings, a diversified industrial group (www.tradekings.co.zm) that started out in 1992 as a family soap maker, before diversifying into confectionaries and cleaning products. Detergents, breakfast cereal and soya-based food lines followed and Tradekings now producing rebar for the construction industry at Kafue on the Copperbelt using scrap steel. Tradekings competes head on with the likes of Unilever in Zambia. Tradekings has 'learnt by doing, using and interacting' and has introduced a stream of new products into its market offerings.

The company is now a major market player and exports to Botswana, Malawi, Zimbabwe, Congo, and South Africa. It has established a confectionary plant in South Africa and a USD 50 million detergent plant in Zimbabwe that will to diversify to making other products such as biscuits, cereals and other detergents.

Tradekings employs 4000 staff in Zambia and claims to be one of the largest FMCG producers in the region, with a readiness to innovate: "We are not a typically formal organisation. If we find that one product is not shining as much as it should, we will respond very quickly and, as a team we respond quickly to circumstances. We are a work in progress and can certainly do better, but we are willing to learn and are doing so all the time." Tradekings is a 'mom and pop' store that grew into a transnational corporation in a mere twenty years.

5. Discussion and concluding remarks

Despite the crowding out of the innovation space at the hands of South Africa, and its ally China, domestic players have emerged in all SADC countries. These domestic players include joint ventures between state and private capital, mobile operators, beneficiaries of corrupt practice, and individual entrepreneurs. Constraints on space have limited the discussion to three case studies: the Botswana poultry industry, a retail chain, and a diversified industrial group.

The development economist Ha-Joon Chang (2007) has written extensively on the problems facing latecomer economies that wish to compete with established players according to the rulebook of the World Trade Organization (WTO). Chang observes that protectionism was the norm for all of today's industrialized nations; now that they are enjoying high standards of living they ensure that they maintain their competitive advantage by 'kicking away the ladder' so that new entrants face considerable barriers of entry. In the case of SACU South Africa maintains its dominance through the 60% market rule – this is a very long ladder for the small SACU states to climb. Recall too the evidence of the trademark registrations that points to South African dominance across SADC.

Much of innovation policy is confined to further the first two of Schumpeter's original fivefold typology of innovation (OECD, 2005: 29). What is of interest in this paper are the latter three that are concerned with issues of the value chain, new markets, new sources of supply, or the creation of new market structures in an industry. An entrepreneur who wishes to compete with existing players may consider these three barriers to entry. Their specific form at a given time and place is part of the 'innovation space.'

These Schumpeterian Type 1 entrepreneurial innovators have emerged in spite of innovation policy, not because of it. They have benefitted from exploitation of local financial incentives and closeness to the ruling party. They are thereby reducing dependence on South Africa. It is literally the position in the market or value chain that is up for competition, by means fair or foul. These are the challenges that Schumpeter Type 1 entrepreneurs face. They seek a unique escape shaft to drill through the barriers to entry.

The feature common to these cases is that established trading families have used their business acumen and savings to expand and then diversify. For this to happen they have had to enjoy some degree of political protection, and this too is a common thread.

Given that the firms are all competing in mature industries they have but limited need for high-end R&D. In any case the innovation systems in which they operate tend not to have a strong connection with industry, agriculture excepted. What the innovation systems do provide is a stock of graduates, with postgraduate skills available at low cost and of high quality through study in neighbouring South Africa. It is notable that Tradekings has moved into the steel industry in Kafue, where it doubtlessly draws on the engineering skill pool that has developed there over the last decades.

For the Botswana poultry industry infant industry protection has not been enough – quality and reliability of supply are non-negotiable to satisfy TNC buyer requirements. The industry is pulled up to the TNC standard. The same applies to the two FMCG cases – local detergents must perform to market expectation; own brands must meet consumer tastes. The market pulls the entrepreneur to innovate for quality.

These three studies serve to call for further inquiry to build a portfolio of case studies. So Botswana for example hosts new ventures in horticulture and pork production, the latter using Danish high technology; in Zambia there is the case of Zambia, a major meat processing, distribution and retail group. Lesotho hosts the Matekane Group that diversified from brickmaking to road transport, and then into aviation, diamond mining in Lesotho and coal mining in Mozambique. As to Mozambique, the origin and growth of Retail Master Group and the Delta Corporation call study.

South Africa itself hosts a plethora of highly innovative services and consumer goods companies with global footprints. They too innovate in spite of policies that push science rather than market needs. Indeed what applies in South Africa could be replicating over its borders. South Africa, peripheral to the developed metropolises is also fighting back.

This suggests that the necessary range of support structures and services are in place to enable entrepreneurs successfully to enter supply chains, add value, innovate, and thrive. Dependency Theory thereby does not speak to a permanent disadvantage, and the working hypothesis is negated. The necessary conditions for market capture to happen are a mix of visionary leadership, business skills, availability of finance, market opportunity, and political support. This short paper has shown how and in what ways South Africa is the dominant economic player in SADC, but that it has been possible for local entrepreneurs to emerge as able competitors. Forget the ladder. The trick is to find the appropriate escape shaft.

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