Fickle Formulas

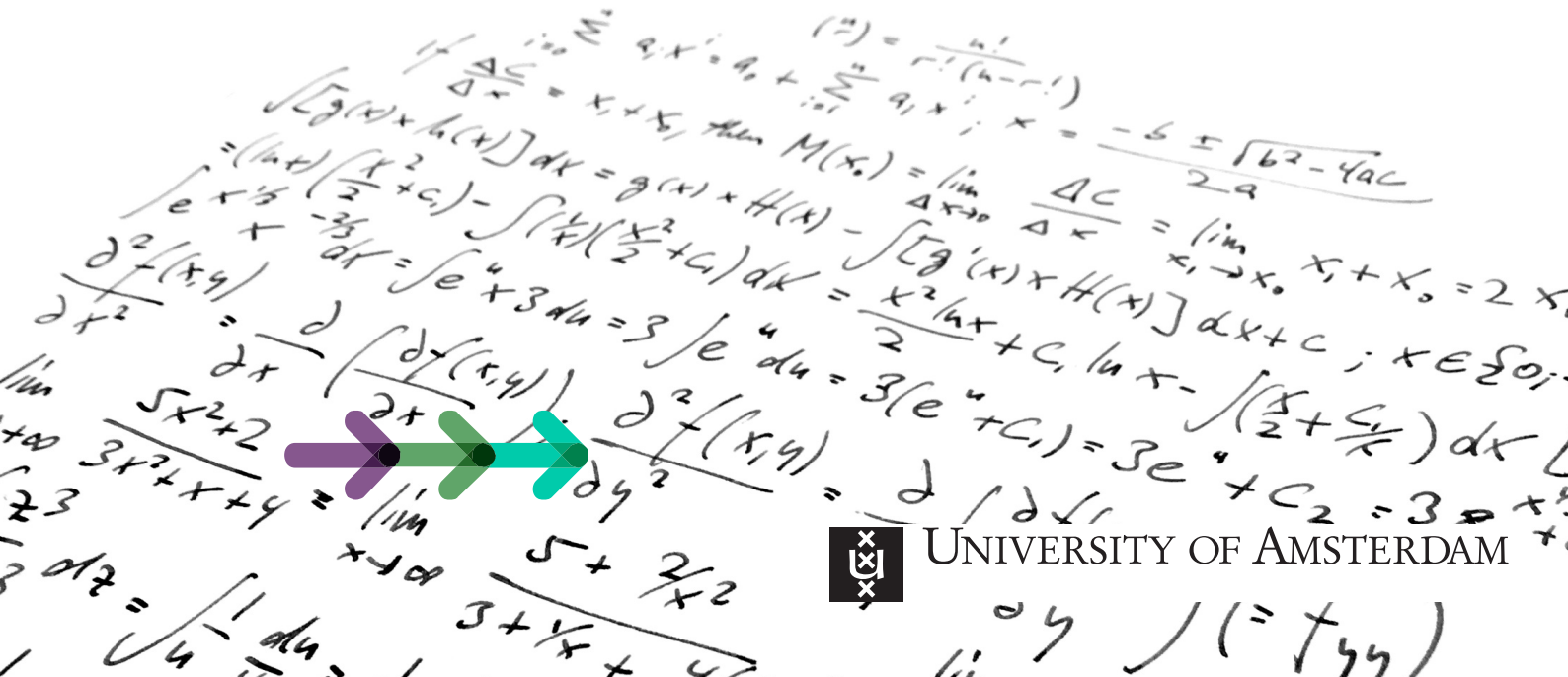
The Political Charge Behind Official Statistics in South Africa

Fickle Formulas Working Paper 03-2020.

Juliette Alenda

Radboud Universiteit

January 2020



University of Amsterdam

The Political Charge Behind Official Statistics in South Africa

Juliette Alenda

Radboud Universiteit

J.Alenda@fm.ru.nl

Last update: 07 January 2020

This is a preliminary draft. Please do not cite or distribute without permission of the authors.

ABSTRACT. Official statistics are central to policy-making and governance, necessary for comparison and evaluation, and shape perceptions of reality. However, the process of quantification remains poorly understood, especially in non-Western countries. The current study is set in South Africa, where the history of colonialism, the imperatives of development, and the racial divide continue to cast shadows on the statistical enterprise, between national and international statistical conventions and representations. Building on primary sources and interviews, we distinguish between three distinct periods in the history of official South African statistics. The specific factors that structure this story are the legacy of apartheid, the construction of the new democratic state, the influence of international standards, and the heated political struggles of a divided nation. Although the case of South Africa is in many ways unique, it contains insights into the evolution of official statistics more broadly.

Word count: 10,329

Introduction

Official statistics are central to policy-making and governance, necessary for comparison and evaluation, and shape perceptions of reality (Camargo, 2009; Hartwig, 2006). They are also sources of power. "Official statistics are simplifications that try to capture those parts of reality that interest the ruler (the main source of demand for official statistics) in order for them to understand, influence and alter that reality" (Krätke & Byiers, 2014, 14). Citizens also hold politicians to account using numbers such as the Gross Domestic Product (GDP) or the unemployment rate. The choice to measure an economic or social phenomenon in a certain way can include or exclude groups of citizens; the science of economic measurement is a deeply political enterprise.

Although criticism from both academia and civil society has mushroomed since the financial crisis, especially around GDP as a measure of national wealth (Fioramonti, 2013; Gadrey & Jany-Catrice, 2012; Porter, 1995), the process of quantification–the choices behind the use of specific statistical measures–remains poorly understood. But we have the foundations for a political-economic study of the construction and use of statistics (Desrosières, 1998; Mügge, 2016). Focusing mostly on western countries, scholars have focused on the interests of politicians seeking to embellish their achievements (Moon & Richardson, 1985), the influence of international organizations and standards (Clegg, 2010; Wallmana & Evinger, 2008), and the role of path dependency, linking specific statistical measures to policy commitments (Baxandall, 2004).

Besides, we know little about the political evolution of official statistics outside of the affluent west, although the rise of emerging economies makes this urgent. How official statistics have evolved outside of the "western bubble"? The current study is set in South Africa, where the history of colonialism, the imperatives of development, and the racial divide continue to cast shadows on the statistical enterprise (Acemoglu, Johnson, & Robinson, 2001; Maloney & Caicedo, 2012).

South Africa has experienced rapid transition since the end of apartheid. With the advent of democracy came the challenges posed by domestic social and racial tensions, an economy to restructure, and integration into the global economy (Carmody, 2002; Cling, 1999; Taylor, 2003). As the country transitioned from apartheid, we observe both the rapid evolution of official statistics alongside some important continuities. South Africa's current inequalities largely result from the legacy of apartheid (Kingdon & Knight, 2004), which we also expect

to be reflected in national statistical systems and how the economy and society are classified and measured.

So how and why are South African economy and society measured the way they are? We distinguish between three distinct periods in the history of official South African statistics. In the first period, during apartheid, economic statistics focused on the needs of whites, resulting in a kind of statistical apartheid; international standards were adopted to collect the data needed for international trade. In the second period, the statistical enterprise was tied to the needs of the democratic state; all existing and future statistics to represent the entire population were then in discussion, again in a context of openness to the international economy and organizations. In the third period, growing tensions within the African National Congress (ANC) government and the country's economic and social challenges prompt the now officially autonomous statistical organization, Statistics South Africa (Stats SA)[1] , to affirm its institutional role in a process of acquiring legitimacy and independence. The specific factors that structure this story are thus the legacy of apartheid, the construction of the new democratic state, the influence of international standards, and the heated political struggles of a divided nation.

We consider statistical measures of a given phenomenon as conventions that coordinate different representations of the world and which determine practices (Camargo, 2009; Desrosières, 2011). They arise not from objective reality but from a complex process of criticism and evolution involving actors with different interests and views of the world. Statistical conventions are plural; as economies and societies change, past conventions can become inappropriate and evolve. We use the framework of conventions to open the "black box" of official statistics in South Africa. The following sections outline our analytical framework and the implications of using international or domestic statistical conventions. We then detail how official statistics have evolved over the three historical periods outlined above. This article builds on 25 interviews conducted in South Africa in 2018 with present and past statisticians, labor and business representatives, researchers, politicians and consultants, as well as on primary documents detailing statistical debates and developments in the country. The interviews focused on both considerations of statistical method and the evolution of economic measurement.

As Krätke and Byiers argue, "a better understanding of the factors that drive and constrain the production and usage of official statistics at the national level–particularly the

[1] See the appendix for a chronology of the evolution of this national organization.

objectives of the state–is needed" (2014, 18). This single-country study thus focuses on the factors behind the evolution of official statistics in order to further our understanding of the politics of statistics outside of the affluent west.

The Political Economy of Quantification

Official statistics and national statistical systems are crucial for public administration and policy-making (Heine & Oltmanns, 2016; Taylor, 2016). According to the nine UN fundamental principles of official statistics, established by the Statistical Commission in 1994, "official statistics provide an indispensable element in the information system of a democratic society, serving the Government, the economy and the public with data about the economic, demographic, social and environmental situation" (Principle 1). "The use by statistical agencies in each country of international concepts, classifications and methods promotes the consistency and efficiency of statistical systems at all official levels" (Principle 9). Official statistics are central to governance (Camargo, 2009; Hartwig, 2006). They can serve to integrate societies and strengthen the social contract, but can also serve as instruments of exclusion.

Official statistics emerged in the late nineteenth century out of the need to gauge population welfare (Desrosières, 1998; Garraty, 1979). If statistics were previously mostly descriptive, they were at this time beginning to correspond with national policies, serving as both tools of governance and of evaluation. In this they were entwined with the construction of nation-states, of bureaucracies that sought to advance rational decision-making and the transition of countries to "modernity" (Camargo, 2009). The ability of statistics to facilitate international comparison was an early concern. Albert Thomas, the first director of the International Labor Office (ILO), declared in 1921 (271-272) that, "the reconstruction that has come with peace, the new situations which have arisen, the relations between the various peoples, have one and all increased the necessity for knowledge. Uniform methods of observation and procedure in investigations, standardized principles and practices in statistics, are more than ever indispensable."

Two points of view are in tension when interpreting measurement within official statistics. One sees measurement as an objective science; controversies thus revolve around the reliability of the measure itself, independent of the measuring process. The second questions the independent existence of the objects being measured and instead interrogates the process of quantification (Desrosières, 1998). The question of how official statistics are

constructed is not only of historical or theoretical concern. Following processes of social validation, economic indicators shape the choices of policy-makers and the perceptions of citizens and private actors.

> Numbers provide a unique means with which to simplify and communicate complex social phenomena. Through the process of quantification we are able to render the incommensurable commensurable, and allow the objective judgement of relative values to confidently be made. These positive aspects, however, often mask the deep divisions surrounding the production of numbers, and obscure the power relationships that are inevitably involved in the quantification of social life. (Clegg, 2010)

Data producers and users have interests that can conflict at the aggregate level (Heine & Oltmanns, 2016). Politicians may use statistics to embellish their achievements, and the opposition to criticize the government–both shaping the construction and use of definitions (Moon & Richardson, 1985). The process of complying with international standards, for example, may reflect the desire for greater efficiency by using existing standards; shielding statistical practices from domestic political interference; the need to report to international organizations; and the increased interest in internationally comparable data (Wallmana & Evinger, 2008). The choice for particular definitions may also rest on the path-dependency of indicators when they are attached to policy commitments or social struggles (Baxandall, 2004). Mügge (2016) shows how indicators can be studied as powerful, institutionalized ideas. Samuel (2013), one of the few authors studying statistics and the "bottom-up macroeconomy" in non-western countries, has focused on the obscure parts of the process of quantification at the heart of social, political, and institutional struggles. For example, in Burkina Faso, the scientific narrative is linked to the positive image of the country for international donors and its visible compliance to international standards.

In France, the economy of conventions has sought to study the process of quantification by bridging the sociology of quantification and the political economy of statistics (Desrosières, 2011)[2] , focusing on the relationship between science (statistical reasoning, description) and action (decision-making, political action). Conventions correspond to collective

[2] The economy of conventions appeared in France in the 1980s and first focused on categories and statistics. The research stream was launched by six authors, four of them from the INSEE (the official French statistical organization).

representations, shared references that solve problems of coordination in uncertain environments; they are possible solutions and can always be called into question as there is no single optimal convention (Diaz-Bone, 2016)[3]. More than strategic tools to coordinate individuals with different interests, conventions allow coordinating representations and individuals anchored in collectives (Biencourt, Chaserant, & Rebérioux, 2001). Conventions facilitate the study of the implicit choices made by actors who produce, interpret and reform statistics by revealing their methodologies, the tensions around measures and definitions, and the external relationships of statistics organizations (Camargo, 2009).

As conventions, statistical indicators–to the extent that actors accept and use them–help to construct a common language. Although they "were not designed for that purpose" (Vanoli, 2002), citizens, politicians, and the media consider the aggregates of national accounts, above all GDP, as measures of well-being. The utility of official statistics here stems from their reliability, not as faithful representations of reality but as conventions that can structure debate and action. This reliability of figures is both technical and social: they rely on–and affect–the social contract, requiring trust from the population. They can also be questioned and altered when they no longer correspond to changing interests and modes of evaluation (Eymard-Duvernay, 2001).

International and Domestic Conventions

We distinguish between two levels of statistical conventions–international and domestic–that represent different interests and views of the world. Different modes of evaluation lead to competition between different conventions that affect the development and use of national official statistics. The process of adopting international standards can be shaped by the demands of politics or objectivity, but also by outside demands. To explain South Africa's adoption of different international standards over time, I focus on domestic agency, international agency, political demands, and the local circumstances of apartheid and the beginning of multi-racial democracy.

[3] A convention may even be sub-optimal.

The Spread of International Conventions

The diffusion of international statistical standards gathered pace in the aftermath of World War II, both in the global north and south. As international organizations like the ILO and the United Nations promulgated standards such as the System of National Accounts (Ward, 2004), macroeconomic statistics became central to domestic policy-making and international comparison (Hartwig, 2006). This dynamic has only grown since the 1990s as development aid donors insist on quantified data and evidence-based policy (Krätke, Byiers, 2014). Today, "most national standards are consistent with international standards at least at the broadest levels" (Trewin, 2008, 22).

In the context of aid and conditionality, developing countries must collect specific statistics to meet the needs of supra-national organizations such as the IMF (Lehohla, 2008). As in many other fields of technocratic policy, de facto international standards have diffused through transnational expert networks. As the United Nations' Millennium Development Goals popularized the use of indicators to measure economic and social development (Williams & Smith 2000) and donors insisted on measurable results and "good governance", getting official statistics in order became a priority. But the failure of development aid in sub-Saharan Africa and the Asian crises of the 1990s focused criticism on the expert authority of international financial organizations and aid agencies (Best, 2014).

To regain their legitimacy, international organizations, after advocating for less state involvement, changed tack to emphasize good governance. The World Bank embraced the term in 1989 to tackle the "bad governance" deemed responsible for the failure of development policies. The good governance agenda–which encompasses the tenets of New Public Management–requires quantified data. International organizations develop "best practices" supported by "good institutions" (Baron, 2006). "Yet despite the long history of attention to standards development, and motivations for their continuing revision and use, there remains a substantial gap between standards adoption and standards implementation" (Wallmana & Evinger, 2008). Broadly speaking, international standards are not applied in a completely harmonized way as there remain differences in calculation, classification, elements to include or exclude, scope, etc. (Mügge, 2016).

We can first consider the problem of adapting international standards to specific contexts, with many African countries exemplifying the discrepancy between western-centered indicators and troubles encountered in the field. For example, the essentially Western concept of unemployment (Garraty, 1979) may be well suited to developing country labor

markets but may poorly fit African economies characterized by subsistence agriculture, large informal sectors, high labor market segmentation (sometimes along racial or ethnic lines) and situations in which the state does not control its entire territory. Moreover, the process of adopting international standards in domestic settings is far from neutral as conventions evolve, implying their domestic questioning over time.

The Importance of Domestic Roots

Following decolonization, Africa's newly independent democracies had to set up new institutions to serve their citizens. However, "the national statistical system in most African countries was trapped in [...] a vicious cycle of limited data use, underfunding and underperformance" (UNECA, 2016, 11). Through the 1980s and 1990s, statistics in many African countries "did not appear to be useful or contribute significantly in the arena of decision-making" (Lehohla, 2008, 8). This began to change in the mid-1990s with the Addis Ababa Plan of Statistical Development in Africa to achieve self-sufficiency in producing statistics. The pace of change in law, policy, technology, infrastructure and governance has since increased (UNECA, 2016), with forums, organizations and partnerships growing across the continent: the PARIS21 Consortium with the adoption of the UN Fundamental Principles for Official Statistics, the promotion of General Data Dissemination Standards, the Data Quality Assessment Framework, the International Comparison Programme for Africa, the Strategy for the Harmonization of Statistics in Africa, etc.

In South Africa, the post-apartheid era had implications not only for politics but for statistics. The new democratic state required statistics covering all of its citizens, not least to support its social programs. The focus on whites and economic statistics during apartheid left many blanks in the national statistical system. The challenge was to transform the uncoordinated, fragmented system of statistical production into an integrated one that included black Africans. This transformation was no neutral endeavor, as it entailed transforming the Central Statistical Service (CSS), the original national statistical organization, from an apartheid institution into an institution that served the democratic state. The first democratic census of 1996 gave the new government its first comprehensive overview of the entire population. This was followed in 1999 with the CSS becoming Stats SA and the creation of a national statistical system.

South Africa's current inequalities largely result from the legacy of apartheid and its racial categorizations and exclusions. For example, today's exceptionally high level of rural

unemployment is rooted in previous restrictions to mobility in the homelands (Kingdon & Knight, 2004). The legacy of apartheid is also reflected in the national system of statistics, especially how the economy and society are classified and measured.

Alongside the racial divide and the construction of the new democratic state, we can expect other path-dependent factors to inform the shaping of official statistics, including the country's history of political struggle, the role of unions and the business sector. Economic inequality, poverty, unemployment, and growth have remained existential challenges since the end of apartheid, with a 2017 report from Statistics South Africa showing that one in two South Africans is poor (Stats SA, 2017). While South African society remains one of the most unequal in the world (with a per capita expenditure Gini coefficient of 0.64 in 2015), the unemployment rate is also one of the highest, at 27.5 per cent under the strict definition and 39.6 per cent including discouraged work seekers (Stats SA, 2018).

The Congress of South African Trade Unions (COSATU) played a key role in the fight against apartheid, the accession of the ANC, and the construction of the new democracy (Webster, 2017)[4] . The labor movement in post-apartheid South Africa has often been more vocal than the opposition parties (Gordon, Roberts, & Struwig, 2013); the country is also known for the intensity of its strikes, especially since the events of Marikana (Visser, 2007). The protests principally concern higher wages but are also rooted in the social crisis of the new South Africa (Hepple, le Roux, & Sciarra, 2015). The country is also known for its business sector and its close but tense relations with government. Following apartheid, the pact between elites, the shift to the Growth, Employment and Redistribution program, and the re-opening of the economy led the government to preserve some pillars of the apartheid economy. Although the South African economy, both during and after apartheid, was dominated by a group of conglomerates (Carmody, 2002), the elite economic bargain has been fraying since the 1990s. Hirsch and Levy (2018) list the reasons for this: an agenda of economic reform influenced by established companies that want to expand overseas[5] , ongoing contestation over the distribution of rents between business and labor, and the program of black economic empowerment favoring political allies and engendering uncertainty. The relation between political elites, business, and unions is thus crucial; their competing ideologies lead to

[4] COSATU is the largest union in South Africa, representing more than two million members. In 2013, almost 70 per cent of public sector and 24 per cent of private sector employees were trade union members (the mining sector being the most unionized) (Bhorat, Naidoo, & Yu, 2014).
[5] The South African economy had been intensively boycotted since the 1980s, and was one of the factors that ended apartheid (Johnson, 2017). Re-opening to the international economy was thus a huge challenge at the time.

tensions over indicators such as unemployment, with unions fighting for more government intervention and the business sector, for less (Hirsh & Levy, 2018; Interviews with Alan Hirsch and Ravi Naidoo).

Statistical Apartheid (1948–1993)

The national statistical office of South Africa was established in 1914. The Representation of Natives Act laying the foundations of apartheid entered into force in 1936 and was followed by the creation of ethnic homelands (Bantustans) for black Africans ten years later. South Africa under apartheid consisted of Namibia, four independent countries, and six dependent homelands (some language groupings refused to accept "independence" and remained rural homelands within white South Africa). All sub-levels, with their own budgets, governments and administration, depended on the central government for fiscal transfers (van de Heever & Adams, 2015).

> When it came to power in 1948 the Nationalist government recognized the need to develop an affirmative dimension in white policy toward South Africa's black population [...] An investigative commission was appointed and assigned two tasks: first, to ascertain the state of economic and social conditions in the African areas; and, second, to suggest measures for their development [...] The Tomlinson Report attempted to build a bridge between the ideological rhetoric of apartheid and the need for positive action to deal with economic conditions in the reserves. (Butler, Rotberg, & Adams, 1977, 159-160)

The statistical enterprise was fragmented between institutions focusing on different racial groups inhabiting different geographic domains (Lehohla, 2002). The most important institution was the CSS, focused mainly on whites (less than 5 million people) and economic statistics. At the time, the CSS reported to the Department of Home Affairs. The Human Sciences Research Council (HSRC) was more focused on the black population, in the homelands and in South Africa, especially demographic statistics. The Development Bank of Southern Africa was dedicated to the financing of black economic development and worked in the homelands, while academics researched demography in the four independent Bantustans. The Bureau of Market Research, with its income and expenditure surveys, was also active in the homelands. Finally, homeland statistical offices had censuses as their principal mission.

Although Coloured and Indian groups were included in some official statistics during apartheid, the black population–comprising more than 70% per cent of the population–was ignored. CSS products were mainly producer-driven; interactions with users were absent. "Any segment of the black population noted in official statistics were only measured and included for the purpose of control and (racial and geographic) segregation expressed in the Constitution" (Krätke & Byiers, 2014, 22). There was also an absence of comprehensive social indicators to assist policy-making (Møller, 1997). The apartheid state was focused on economic statistics[6] in line with the macroeconomic focus of their users in the white-controlled economy, government departments and academia (Belkindas & Ngwenya, 2016). "Anti-apartheid agencies within the country and abroad treated CSS outputs as propaganda, and largely ignored them" (Orkin, Lehohla, & Kahimnaara, 1999, 4).

For black Africans, the official statistics that most affected them was the census, with its methodology reflecting the tenets of apartheid. When conducting censuses,

> because of this fiction that the homelands were independent, they were used to overflying the areas, which of course caused massive resentment among black political leaders, because they said "you counted us like cattle on the ground". And thus it was hugely symbolically important. (Interview with Mark Orkin, former Statistician General in the 1990s, Johannesburg, 2018)

For whites, the most important official statistics were economic, mirroring the interests of the urban business class. These interests were also reflected in the composition and management of the national statistical office and the Statistics Council. The priority was fostering international trade, and the state reported its numbers from this perspective (Orkin, 2000). Economic statistics and the national accounts produced by the CSS were sophisticated and comprehensive, and followed international practice. The consumer price index (CPI) was already well developed. Alongside the Reserve Bank, half of the department of national accounts was dedicated to measuring GDP.

> Key market indicators like the CPI and producer price index (PPI) are gathered monthly, as well as many measures of production volumes and sales (such as wholesale, retail and motor trade or manufacturing), and

[6] Following the definitions of Stats SA and South Africa's national statistical system, economic statistics cover economic growth, inflation, and agricultural statistics, while social statistics cover unemployment, the census, living conditions, crime, education, etc.

> formal sector employment and wages [...] Drawing extensively upon this suite of collections is a thriving department of national accounts. One half of the department produces the GDP estimates every quarter (in collaboration with the Reserve Bank), as well as periodic input-output tables and social-accounting matrixes. The other half produces government accounts at national, regional and local level, and collaborates on state financial reporting and analysis with other major agencies such as the Department of Finance and the Reserve Bank. (Orkin, 2000, 11)

Apartheid thus led to a unique statistical set up. The CSS followed some international standards, but with strong biases. The coverage of the CPI, for instance, only consisted of the fourteen largest metropolitan areas, excluding half of the non-African population. The CSS did not ask local authorities for data on black Africans when gathering government accounts (Orkin, 2000). The central state lacked complete and consistent data on public expenditures, and was thus unable to budget properly, especially as military and security spending were deliberately disguised (MERG, 1993). The authoritarian regime did not allow contestation, and the racial divide and the white business sector played important roles in shaping official statistics.

The Transition to Democracy (1994–1999)

Re-opening to the International Economy

The young democracy had to rebuild its government over the whole territory. When South Africa instituted non-racial rule in 1994, it initially embraced unconventional forms of economic restructuring. Indeed, the new democracy with its low external debt enjoyed some freedom to pursue heterodox development strategies (Carmody, 2002). In 1994, the democratic movement in South Africa released its Reconstruction and Development Programme (RDP). Striking compromises between different actors and interests, it was the movement's main policy platform and focused on Keynesian redistribution (Adelzadeh, 1996). But the ANC government's strategy of "growth through redistribution" faded over time, becoming a two-pronged strategy with redistribution on one side and growth on the other (Hirsch, 2005). Two years later, the government shifted towards an orthodox economic

reform program, encouraged not only by the country's major conglomerates, but by the state itself. "Relations with the World Bank and the IMF would be conducted in such a way as to protect the integrity of domestic policy formulation and promote the interests of the South African population and the economy" (Hirsch, 2005, 53), in a way staving off the power of international finance. The strategy of trade liberalization was proactive in order to both attract FDI and to gain some autonomy in policy-making (Carmody, 2002; Hamilton & Viegi, 2014). "The world-wide movement to transform the way government goes about its business has greatly influenced the Government of South Africa" (Lehohla, 2002, 16).

The involvement of international consultants was particularly important at the time as statistics were deemed more credible when they adhered to international standards. International consultants also sought to transfer skills to Stats SA and to address the void of many official statistics inherited from apartheid (Stats SA, 2010). This demand came from the statistical office but also directly from the ministry: "Jay (Naidoo)[7] basically said to the Swedes and Australians, among your many offices of help, we want statistics" (Interview with Mark Orkin, Johannesburg, 2018). The Interim Statistics Council worked closely with Stats SA and with a Swedish adviser towards what would become the Statistical Act of 1999.

> The act [the new Statistical Act of 1999] was drafted in the 1990s, with a lot of foreign support. Statistics Sweden was very prominent in national accounts, as well as in normal corporate governance types of things, Statistics Australia was strong on economic statistics as well, but I am pretty convinced that one or two of the consultants coming from stats Sweden basically wrote the act. It was a big process of getting examples from others countries, and to see what works, what doesn't work, to have an act for ourselves (Interview with Joe de Beer, Deputy Director-General of Economic Statistics at Stats SA, Pretoria, 2018).

The institutional and legal framework arrived in 1999 in the form of the Statistical Act, outlining the duties and powers of the Minister of Finance, the Statistician General and the Statistics Council. CSS became Stats SA, the independent official statistics institution. The UN Statistical Office paid several visits to Stats SA in order to implement the 1993 System of National Accounts (SNA). Consultants from Sweden, Australia, Canada and Norway–whose visits were funded by aid programs that sought to improve the public sector and

[7] The minister responsible for the Reconstruction and Development Programme during Nelson Mandela's first cabinet, in charge of statistical development before Trevor Manuel.

infrastructure (Interview with Mark Orkin)–advised in matters ranging from organizational development, training, household surveys methodology, price-index methodology, national accounts, business registers and census planning (IMF, 2001). The involvement of Swedish consultants in the design of social statistics and Australian and Canadian consultants in economic statistics and matters of governance led to two important reports for Stats SA in the late 1990s and early 2000s.

> Because we were from other small offices in Pali's case, and my case an NGO, really ignorant of systemic requirements in the changing international context, modernizing the IMF requirements of national accounts, the new SNA. We were very largely ignorant of the international trends and how a local office should be structured. What must the priorities be? (Interview with Mark Orkin, Johannesburg, 2018)

All labor statistics were redesigned in accordance with ILO standards. With limited resources, the question to prioritize developmental and social statistics or market-driven economic statistics was central. For the statistical institution,

> the voice of the daily business press, local and international, is more immediate than that of the illiterate rural grandmother, when one for the umpteenth time ponders which of the hundred collections that inform the national accounts might be dispensable in favour of better attention to, say, subsistence agriculture. While there may be a clear and considered parliamentary mandate not to neglect the latter, the pressure from the former is unremitting (Orkin, 2000, 20).

> I said if the new South Africa is going to compete for investment from global sources and banks and fellow investment partner countries, we need to meet the STDS. (Interview with Mark Orkin, Johannesburg, 2018)

One of the consequences was changing the needs-oriented annual household survey into a market-oriented labor force survey. Orkin realized that if there were benefits to be gained from complying with the IMF's Special Data Dissemination Standard and the United Nations' SNA, there were also costs. Several statistics were thus redesigned, including those for public sector debt in 2000. The National Treasury decided to follow the IMF's recommendation to disclose national government debt not only in gross but in net terms in the annual review (van den Heever, Adams, 2015). "I mean we were the only developing

agency in the world, to be able to comply with the SNA that fast, thanks to the Swedes" (Interview with Mark Orkin, Johannesburg, 2018).

Between Old and New Conventions

From 1994, the need to design, implement, monitor and evaluate the Reconstruction and Development Programme led to statistical reforms in the country (Kiregyera, 2015).

> The first challenge for the South African government official was the identification of these "scientifically" valid measures and the development of some socio-political and business consensus of their utility as acceptable measures of phenomena in question. (Lehohla 2002, 18)

Following the 1994 elections, the CSS was no longer part of the Department of Home Affairs and became a national department in its own right. In the years immediately before and after 1994, the CSS had to straddle the old and new models (Orkin et al., 1999).

With the reunification of South Africa, the independent states and homelands were reincorporated in what used to be white South Africa. With the new organization of governmental departments and provincial governments, and the emergence of new users of statistics including trade unions, lobbies and non-governmental organizations, a new hierarchy of users appeared for the CSS, urgently demanding up-to-date statistics with new definitions and criteria of relevance. Tensions ensued between these new users and the CSS, still in its old form and the main producer of official statistics (Orkim et al., 1999). The CSS' reputation as an institution of the apartheid era also undermined its legitimacy in the eyes of the new government. In early 1995, the minister responsible for the Reconstruction and Development Programme, Jay Naidoo, commissioned the Australian Bureau of Statistics and the United Nations Population Fund to report on preparations for the 1996 census; the findings were negative for the CSS. The transition inside the statistical system began in 1995, with change at the head of the CSS and the nomination in 1996 of an Interim Statistics Council.

> Integrating a big organization has many things not just from a content perspective; you have cultural issues, so that was a huge thing. The department was also scaled up a bit in 1994. Even if we were independent, we were still owned by the Department of Home Affairs. Even if we were

> politically independent, we were still inside the structure of a bigger organization (Interview with Joe de Beer, Pretoria, 2018).

With all the pressure from different directions, "the data generated were criticized by everyone whose goals they did not serve. Users who were not privy to statistical information during apartheid were very critical of any information they perceived to threaten democracy (for example, high unemployment)" (Belkindas & Ngwenya, 2016, 94). International standards were contested. For example, broad and strict definitions co-existed for unemployment (the latter being the ILO standard), fueling intense political debate in the late 1990s:

> It was very contentious because the union was keen to say that unemployment was a much bigger problem. And that therefore the government should be proactive in the economy. Whereas business, at that time, was happy to say we don't need much intervention [...] The fight was really to make the government more interventionist, because we had a very conservative economic team then in government. (Interview with Ravi Naidoo, director of the National Labour and Economic Development Institute in the 1990s and member of the Statistical Council in the early 2000s, Johannesburg, 2018)

Within this openness to international standards, old structures and means of measurement continued, and not only in the organization of the CSS/Stats SA. For example, the measurement of GDP was inherited from the statistical system before the democratic transition, and endorsed by the implementation of the 1993 SNA. The arrangement was that Stats SA was responsible for the production measure (the official estimate of GDP) while the expenditure measure was the responsibility of the South African Reserve Bank (SARB), leading to at times different measures. Although only Stats SA was mandated to publish official statistics, the SARB, given its history and reputation, was "broadly seen by local and international users as having official status" (Stats SA, 2008, 3).

> I think the economists in the private sector quite liked that approach [...] because of these highly qualified economists at the reserve bank, there was a high level of trust in what they were doing, so no one was really unhappy with this dual approach. (Interview with Peter Perkins, Economist at the Office of the Deputy Director-General of Stats SA, Pretoria, 2018)

We again observe continuities from the previous period. Although with new objectives and in a new democratic context, unemployment statistics were still classified according to racial population groups: Black/African, Coloured, Indian/Asian, and White–a classification that remains in other statistics such as poverty indicators. Although the Population Registration Act was repealed in 1991, the post-apartheid government accepted the racial divide as a social reality and marker of historical disadvantage (it also informed policies of black economic empowerment) (Maré, 2014). The racial divide also informed the choice between a broad or narrow definition (the chosen official statistic) of unemployment as the narrow definition excluded particularly black women in rural areas (Barker, 1999; CSS, 1996), giving the difference between definitions a racial charge. According to Kingdon and Knight (2004b), but also Posel, Casale, and Vermaak (2014) and others, the prominence of rural unemployment in South Africa is due to the legacy of apartheid and its policies of restricting mobility. The homelands were rural areas with poor land and few opportunities for employment. Unemployed persons in the homelands often waited for formal sector employment–a phenomenon that characterizes the South African labor market to this day.

In this period, we observe transformation as well as resistance. Agreements about statistical organization and measurement from the apartheid era crumbled, creating the need for new indicators to represent new realities. With the new South Africa's openness to the international economy, the urgent need for statistics at the outset of multiracial democracy, the need for credibility, and the lack of skills largely inherited from the methodologies of apartheid, the environment was favorable for the voluntary application of international standards and the turn to consultants. This was the time of the emancipation of statistics, with the need of relevant indicators for the Reconstruction and Development Programme and ensuing economic development programs. Decisions about statistics (including the new focus on social statistics) and institutional structure were thus linked as competing interests sought to measure South Africa's economy and society.

The Independence Period (1999–today)

The Maturation Process of Independence

With Stats SA becoming its own department, its first director, the Statistician General, was appointed in the person of Pali Lehohla, also the first black director of the statistical

institution. This period was one of Stats SA's maturation as an independent institution, building on the Statistical Act of 1999.

> The good thing is they give us enough space, good space. They don't tell us at all what to do; they have to accept what we say. It is a story from a long time ago; when the minister [Manual] said, don't give me what I want to hear but what I need, what I need to understand, because what I cannot measure, I cannot manage it. Nobody asks for figures before. They get to know them at the same time as everybody, in the media. (Interview with Peter Buwembo, Executive Manager of the Labor Statistics Department at Stats SA, Pretoria, 2018)

The independence of Stats SA can be gleaned from the trust of the users of its statistics, especially business users, and the role of its statistics in negotiations between political and other actors.

> We use all of their [Stats SA's] data. At the moment, we are not using any of our own data. There is such a trust deficit between us and the government at the moment that we virtually decided to use only official data, so we would use the reserve bank data, we would use the department of mines and natural resources data and we would use Stats SA data. And, so, whatever we talk about, the debate about where do you get the data from is no debate, it is about your interpretation of the data, which helps a lot. (Interview with Henk Langenhoven, chief economist at the Minerals Council, formerly Chamber of Mines, Johannesburg, 2018).

In 2002, the Finance Standing Committee inquired about coordination between Stats SA and the government's departments. Pali Lehohla answered by emphasizing the neutrality of statistics–stemming from the use of international standards–and promoted classifications and standards as a way to ensure that conflict between Stats SA and the departments would be resolved in a neutral manner. "Stats SA has a statutory mandate and is kept in line by the well informed media, academia and international standards and definitions" (Finance Standing Committee, 2002). But this independence still had its limits.

> One of my programs does a large survey of economic sectors every two or three years. Two years ago, we decided we had to understand better the forestry sector. It is a small sector, mostly government owned entities, with a couple of private forestry companies. So we go to the minister of

> agriculture, forestry and fishing. We asked them, look, we are going to do this survey, they are not very keen, we wanted to help with the questionnaire, they delay... So ok fine we will do the forestry questionnaire ourselves [...] we started and the respondent said "but why doesn't the government coordinate and just send own questionnaire?" We said "what do you mean?" It transpired that the department appointed a contractor to do a private survey on forestry. (Interview with Joe de Beer, February 2018)

The departure of Pali Lehohla in 2017 occurred during a difficult period for Stats SA, with budget cuts and critical staff shortages. "There's a maturing process on accountability and statistics is coming of age and in that way it cannot play the same role it played like when it reported to Home Affairs" (Speckman, quoting Lehohla, 2017). A new Statistical Act is now in the works, which will especially address this question of coordination.

The objectification of statistics accompanied Stats SA becoming an independent institution. Howard Gabriels, chair of the Statistics Council, emphasized the "separation ... between providing information and formulating policy. Stats SA's job was to provide the right information and it was not its job to make policy, as this involved making value judgements" (Finance Standing Committee, 2009). Nevertheless, Pali Lehohla during his 17 years as Statistician General discussed policies in newspapers columns and at conferences.

> If you are participating in a dialogue with users, and users are pressuring you for an interpretation of the data, it can be difficult to keep it simple. If you feel as an agency that there is some kind of role in the policy space, then it can be quite complicated because the numbers that you produce will be affected by things like monetary policy, interest rate or physical policy, but managing those physical policies are the responsibility of the reserve bank and the national treasury [...] It was also his [Pali Lehohla's] responsibility in terms of the Statistics Act to promote the good use of statistics. So if the Statistician General sees or hears stats being misinterpreted or used incorrectly, he has an obligation to speak up and correct that. (Interview with Peter Perkins, January 2018)

We thus witness concurrent processes of depoliticizing statistics, of striving for objectivity, and of mobilizing statistics for political purposes. Stats SA at this time was seeking to become an autonomous force producing statistics on the African continent. Since the early

2000s, it had stood out as one of the leaders of the development of statistics–and thus the diffusion of international standards–in Africa, first within relations with the Southern African Development Community and the African Union. "South Africa's credibility in the international statistical arena was confirmed by Stats SA winning the right to host the conference of the International Statistical Institute in 2009" (Stats SA, 2003, 24).

In Search of Users' Trust

Bolstering credibility and trust from users was not always a smooth process. In 2003, Stats SA made a mistake when calculating the CPI. André Roux and John Stopford, from Investec, identified the flaw in the rental component of the CPI, which had not been updated properly for 15 months. The investment bank released the information in the media (it was indeed mainly covered in the financial and business press), pushing Stats SA to review the index.

> We have a quite demanding users' community in SA and the press can be quite aggressive. The press can be very harsh. Which is a good thing. They watch us closely. If there is some change in the methodology that introduces a possible bias, they can be quite critical of the change we have made. (Interview with Peter Perkins, Pretoria, 2018)

The subject was sensitive, especially in light of monetary policy. The mistake in the CPI also threatened the results of the 2001 census. It was not only a period of crises of credibility for the CPI, but also for Stats SA as a whole.

> The Statistics Council rallied in an objective way on the matter and the Minister of Finance, to whom Stats SA reports, provided necessary perspective on this issue. Members of Parliament called for the Statistician-General to be fired. Cartoonists had a field day satirising the agency and its senior staff. (Lehohla, 2005, 64)

To regain the general public's trust, Stats SA asked for an international review of the CPI and explained the mistake and the correction in the media. There were no comments from the state authority, except a self-initiated call from the Governor of the SARB to a Johannesburg radio station to defend Stats SA. But behind the scenes, Stats SA also made its political point. Supported by several officials, informal discussions and exchanges took place until the Cabinet itself supported Stats SA's position (Kelly, 2010).

The new CPI was introduced in 2009. The Classification of Individual Consumption by Purpose (the internationally preferred classification) replaced the International Trade Classification, resulting in food having lesser weight. The adoption of Owners Equivalent Rent also brought the methodology closer to international standards as prescribed by the ILO.

The search for normalization also occurred for others statistics such as for unemployment. The autonomy and legitimacy of Stats SA hinged on relations with the government, which at this time was struggling to address unemployment and continued widespread poverty in the country[8] . In 2004, the government drafted its plan to halve absolute poverty and unemployment by 2014.

> In a way there was a real trade-off. Because of the high level of poverty and the high level of unemployment, there was a significant shift of resources into looking at poverty and labor indicators. (Interview with Alan Hirsch, Professor of Development Policy and Practice, who worked at the Presidency between 2002 and 2012, Cape Town, 2018)

By 2005, the broad unemployment rate had reached roughly 40 percent, attracting attention from the Finance Minister (Trevor Manuel) and the President (Thabo Mbeki) to use and publish this broad measure (Mbeki, 2004; PCAS, 2003; IOL, 2005). To regain credibility, the World Bank was asked to review the country's statistical approach (interview with Peter Buwembo, Pretoria, January 2018) and to furnish recommendations. In its 2003 Annual Report, Stats SA, in response to concerns expressed by the Statistics Council about the quality of its economic statistics, again pointed to the role of consultants from Australia and Canada in enhancing statistical quality and credibility (Stats SA, 2003).

The division between the two GDPs became a political matter (minutes of the Finance Standing Committees), with the Finance Minister himself stating that "an anomaly exists" and "must be resolved" (Finance Standing Committee, 2002). In 2012, Stats SA embarked on the project to reunite the two approaches to GDP. Although a response to political pressure, it was also supported by people inside institutions and by international organizations.

> We had a team of consultants from Canada, Australia, and one or two other countries, helping us with mainly at first the CPI, but then in other

[8] Even with the autonomy of Stats SA, institutions and the Statistician General must report to the Minister of Finance.

> areas. Over time, there were discussions with these consultants about how the national accounts get done in SA. One thing leads to another, and eventually, it became this project, that Stats SA would take over the expenditure side and do it all here. And really follow what has been done in the rest of the world. (Interview with Peter Perkins, January 2018)

> So when I was at Stats SA, I proposed a big project, to bring expenditure under one roof. And that was a difficult project because at the end of the day the central bank, for good or bad reasons, had much more credibility in the eyes of the public than Stats SA, and that was very hard to convince the public. (Interview with Rashad Cassim, former Director General for economic statistics at Stats SA, Head of the Economic Research and Statistics Department at the Reserve Bank since 2011, Pretoria, 2018)

In this period, we observe new trends towards normalization and the application of international standards as well as Stats SA's search for credibility as an independent institution. The depoliticizing technocratic impulse in the search for objective and neutral statistics grows more important as Stats SA seeks a more powerful political role. In this period, South Africa's autonomy, growing tensions within the ANC government, and the country's economic and social difficulties lead Stats SA to affirm its role as an independent South African–and African–institution.

Concluding Remarks

As economies and societies change over time, previous conventions become inappropriate, methodological and theoretical developments take place, and users have new needs for statistics. Apartheid (up to 1993) was reflected in the statistical system and national conventions. The adoption of international standards was linked to the need to collect standardized data for international trade. The applied international standards were biased and focused on specific indicators, such as GDP and inflation, as the focus was on international trade and the interest of white businesses. National statistical conventions were dominant during this period, integrating some international standards but not others. National conventions were furthermore linked to the apartheid regime; contestation was absent in the authoritarian system.

During the transition to multi-racial democracy (1994–1999), there was a clear connection between the evolution of official statistics and the construction of the democratic state. The political struggles of the time illustrate the broader debate over social and economic models, especially the extent of intervention and redistribution desired in the new democracy. But some domestic conventions lived on, leading to clashes between old and new conventions. With the demise of apartheid, all national conventions were in flux to answer the needs of the new democracy to represent the whole population, again in a context of openness to the international economy and organizations. All statistics in this period were challenged, leading to the involvement of international consultants to support the emancipation of the statistical institution and to meet the government's urgent need for statistics.

In the last period (since 1999), growing tensions within the ANC government and the country's economic and social difficulties lead Stats SA to focus on bolstering its institutional role. Old agreements between the political elite and the unions on one hand, and the business sector on the other, continue to erode. During this process of acquiring legitimacy, credibility and institutional independence, the adoption of international standards is for Stats SA a way to escape domestic tensions and to showcase its seriousness. Earlier political pressures placed on Stats SA now pushed it to become an autonomous statistical organization capable of announcing bad social and economic news.

Although the case of South Africa is in many ways unique, it contains insights into the evolution of official statistics more broadly. For policy-makers, academics conducting research, and in political and civil contestation, official statistics and international standards appear as objective measures beyond question. If knowledge of the complexity of reality is at the root of macroeconomic objects, it disappears in the simple and unified figures for growth and inflation. But in reality, statistical conventions result from complex coordination processes, contribute to shape social representations through classification, and have social consequences. For some African countries, complying with international standards helped them economically, even impacting on flows of aid.

The centrality of statistics in governance should lead their users to reflect on their origins and on what they actually mean; we need to open the "black box" of statistics to understand the actual context of internationally harmonized indicators. As we continue to depart from a realistic epistemology, sovereign power, through these standards, is increasingly shared (Samuel & Hibou, 2011). But standardization is not only due to outside forces imposing themselves on passive actors; the result of practice, it must be understood as an interactive process, as we have done here for South Africa.

References

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. American Economic Review, 91(5), 1369–1401.

Adelzadeh, A. (1996). From the RDP to GEAR: The Gradual Embracing of Neo-Liberalism in Economic Policy. Transformation, 31, 66-95.

Baron, C. (2006). La construction d'alternatives en économie du développement : entre discours et pratiques [The construction of alternatives in development economics: between discourse and practices]. In E. Berr & J. M. Harribey J. M. (Dirs.), Le développement en question(s) (pp. 111-139). Bordeaux: Presses Universitaires de Bordeaux.

Baxandall, P. (2004). Constructing Unemployment: The Politics of Joblessness in East and West. Hoboken, NJ: John Wiley & Sons.

Belkindas, M., & Ngwenya, P. (2016). Creating an Inclusive and Credible Statistical System. In A. Alam, R. Mokate & K. Plangemann (Eds.), Making It Happen: Selected Case Studies of Institutional Reforms in South Africa (pp. 91-102). Washington DC: Worlds Bank Group.

Best, J. (2014). Governing Failure, Provisional Expertise and the Transformation of Global Development Finance. Cambridge, UK: Cambridge University Press.

Biencourt, O., Chaserant, C., & Reberioux A. (2001). L'Économie des conventions : l'affirmation d'un programme de recherche [The economy of conventions: the affirmation of a research programme]. In P. Batifoulier (Dir.), Théorie des conventions (pp. 193-218). Paris: Economica.

Bohart H., Naidoo K., & Yu D. (2014). Trade unions in an emerging economy, The Case of South Africa (Working Paper No. 2). Cape Town: DPRU.

Butler, J., Rotberg, R., & Adams J. (1977). The Black Homelands of South Africa: The Political and Economic Development of Bophuthtswana and Kwa-Zulu. Berkeley: University of California Press.

Camargo, A. (2009). Sociology of statistics: possibilities of a new field of investigation. História, Ciências, Saúde-Manguinhos, 16(4). Retrieved from

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-

59702009000400004&lng=pt&tlng=pt

Carmody, P. (2002). Between Globalisation and (Post) Apartheid: The Political Economy of Restructuring in South Africa. Journal of Southern African Studies, 28, 255-275.

Clegg, L. (2010). Our Dream is a World Full of Poverty Indicators: The US, the World Bank, and the Power of Numbers. New Political Economy, 15(4), 473-492.

Cling, J.-P. (1999). La politique économique sud-africaine face à la mondialisation [The South African economic policy facing globalization]. Politique africaine, 1(73), 146-158.

Desrosières, A. (1998). The Politics of Large Numbers, A history of Statistical Reasoning. Cambridge, MA: Harvard University Press.

Desrosières, A. (2011). Les origines statisticiennes de l'économie des conventions : réflexivité et expertise [The statistical origins of the economy of conventions: reflexivity and expertise]. OEconomia, 1-2, 299-319.

Desrosières, A. (2011). Words and numbers. For a sociology of the statistical argument. In A. R. Saetnan, H. M. Lomell & S. Hammer (Eds.), The mutual construction of statistics and society (pp. 41-63). London: Routledge.

Diaz-Bone, R. (2016). Convention Theory, classification and quantification. Historical Social Research, 41(2), 48-71.

Eymard-Duvernay, F. (2001). L'économie des conventions a-t-elle une théorie politique ? [Has the economy of conventions a political theory?]. In P. Batifoulier (Dir.), Théorie des conventions (279-297). Paris: Economica, Paris.

Finance Standing Committee (2002). Statistics South Africa Budget & Programmes: briefing (Minutes). Retrieved from https://pmg.org.za/committee-meeting/1412/

Finance Standing Committee (2009). Statistics South Africa: Strategic Plan 2009/10: briefing (Minutes). Retrieved from https://pmg.org.za/committee-meeting/10475/

Fioramonti, L. (2013). Gross Domestic Problem: The Politics Behind The World's Most Powerful Number. London: Zed Books.

Gadrey J., & Jany-Catrice F. (2012). Les nouveaux indicateurs de richesse [The new indicators of wealth]. Paris: La Découverte.

Garraty, J.A. (1979). Unemployment in History. Toronto: Fitzhenry and Whiteside Limited.

Gordon, S., Roberts, B., & Struwig, J. (2013, March). The state of the union? Attitudes to South African trade unions. Public trust in select South African institutions. Retrieved from: http://www.hsrc.ac.za/en/review/hsrc-review-march-2013/the-state-of-the-union

Hamilton, L., & Viegi, L. (2014). Public Debt and State Credibility in Post-Apartheid South Africa. Cambridge, UK: Cambridge University Press.

Hartwig, J. (2006). On spurious differences in growth performance and on the misuse of National Accounts data for governance purposes. Review of International Political Economy, 13(4), 535-558.

Heine, K., & Oltmanns, E. (2016). Towards a political economy of statistics. Statistical Journal of the IAOS, 32(2), 201-209.

Hepple, B., le Roux R., Sciarra S. (Eds.) (2015) Laws Against Strikes: The South African Experience in an International and Comparative Perspective, Milano: FrancoAngeli.

Hirsh, A. (2005). Season of Hope; Economic Reform under Mandela and Mbeki. Scottsville: University of KwazuluNatal Press and IDRC.

Hirsh, A., & Levy, B. (2018). Elaborate scaffolding, weak foundations: Business-government relations and economic reform in democratic South Africa (Working Paper No. 105). Manchester: ESID.

IMF (2001). South Africa: Report on Observance of Standards and Codes-Data Module; Response by the Authorities; and Detailed Assessment Using the Data Quality Assessment Framework. Washington DC: IMF Country Report.

IOL (2005, February 28). Manuel is too glib about unemployment. Retrieved from https://www.iol.co.za/business-report/opinion/manuel-is-too-glib-about-unemployment-749442

Johnson, R. W. (2017). How Long will South Africa Survive? Johannesburg: Jonathan Ball.

Kelly, P. (2010, May). Consumers, users, partners...and other interested parties. Paper presented at the ILO/UNECE meeting on Price Statistics, Geneva.

Kingdon, G., & Knight, J. (2004). Race and the Incidence of Unemployment in South Africa. Review of Development Economics, 8(2), 198-222.

Kiregyera, B. (2015). The Emerging Data Revolution in Africa: Strengthening the Statistics, Policy and Decision-making Chain. Stellenbosch: SUN MeDIA.

Krätke, F., & Byiers B. (2014). The Political Economy of Official Statistics, Implications for the Data Revolution in Sub-Saharan Africa (Discussion Paper No. 170). Maastricht: ECDPM.

Lehohla, P. (2002, April). The National Statistics System: Our Challenge. Paper presented at the Paris21 conference, Cape Town.

Lehohla, P. (2005). Statistics South Africa in Transition: Reflections on a decade of Statistical Practice (1994-2004). African Statistical Journal, 1, 48-69.

Lehohla, P. (2008, February). Statistical Development in Africa in the context of the Global Statistical System. Paper presented at the Statistical Commission, on the Regional statistical development in Africa, New York.

Maloney, W. F., & Caicedo, F. V. (2012). The persistence of (subnational) fortune: geography, agglomeration, and institutions in the new world. Washington DC: The World Bank Policy Research Working Paper Series.

Mbeki, T. (2004). Letter from the President. ANC Today 5(20), 20-26 May.

MERG (1993). Making Democracy Work, A framework for Macroeconomic Policy in South Africa. Pretoria: Centre for Development Studies South Africa.

Møller, V. (1997). South Africa's emergent 'social indicators movement'. Social Indicators Research, 41, 1-14.

Moon, J., & Richardson, J. (1985). Unemployment in the UK: Politics and Policies. London: Gower.

Mügge, D. (2016). Studying macroeconomic indicators as powerful ideas. Journal of European Public Policy, 23(3), 410-427.

Orkin, M. (2000, September). From Apartheid to Democracy: Global Lessons from a National Experience. Paper presented at the IAOS conference, Statistics Development and Human Rights, Montreux.

Orkin, M., Lehohla, P., & Kahimbaara, J.A. (1998). Social transformation and the relationship between users and producers of official statistics: the case of the 1996 population census in South Africa. Statistic Journal of the United Nations Economic Commission, 15(34), 265-279.

PCAS (2003). Towards a ten year review, synthesis report on implementation of government programmes. Pretoria: Office of the Presidency.

Porter, T. (1995). Trust in numbers. The Pursuit of Objectivity in Science and Public Life. Princeton: Princeton University Press.

Posel, D., Casale, D., & Vermaak, C. (2013). Job Search and the Measurement of Unemployment in South Africa. South African Journal of Economics, 82, 66-80.

Samuel, B. (2013). La production macroéconomique du réel : formalités et pouvoir au Burkina Faso, en Mauritanie et en Guadeloupe [The macroeconomic production of the real: formalities and power in Burkina Faso, Mauritania and Guadeloupe] (Doctoral dissertation). Retrieved from https://www.theses.fr/2013IEPP0057

Samuel, B., & Hibou B. (2011). Macroéconomie et politique en Afrique [Macroeconomics and politics in Africa]. Politique Africaine, 124, 5-28.

Speckman, A. (2017, August 20). My time's up, says Lehohla. Statistician-general moves on after 17 chequered years as SA's numbers man. Retrieved from https://www.businesslive.co.za/bt/business-and-economy/2017-08-19-my-times-up-says-lehohla/

Stats SA (2018). Quarterly Labour Force Survey (3rd Quarter). Pretoria.

Stats SA (2003). Annual Report. Pretoria.

Stats SA (2008, May). Economic statistics in South Africa. Paper Presented at the International conference on International Outreach and Coordination in National Accounts for Sustainable Growth and Development, Luxembourg.

Stats SA (2017). Poverty Trends in South Africa, An examination of absolute poverty between 2006 and 2015. Pretoria.

Taylor, I. (2003). Globalization and regionalization in Africa: reactions to attempts at neo-liberal regionalism? Review of International Political Economy, 10(2), 310-330.

Taylor, M., (2016). The Political Economy of Statistical Capacity: A Theoretical Approach (Discussion Paper IDB-DP-471). Washington, DC: Inter-American Development Bank.

Thomas, A. (1921). The International Labour Organisation. Its origins, development and future. International Labour Review, 1, 261-278.

Trewin D. (2008). An effective global statistical system – A prerequisite for consistency in global measurements. Statistical Journal of the IAOS, 25(1,2), 19-25.

UNECA (2016). The Africa Data Revolution Report. Addis Ababa: ECA/UNDP/OpenData/World Wide Web Foundation.

Van de Heever, J., & Adams, M. (2015). Improving public sector debt statistics in South Africa. In Bank for International Settlements (Ed.), Indicators to support monetary and financial stability analysis: data sources and statistical methodologies (pp. 617-630). Basel: BIS.

Vanoli, A. (2002). Une histoire de la comptabilité nationale [A history of national accounting]. Paris: La Découverte.

Visser W. (2007). A racially divided class, Strikes in South Africa, 1973-2004. In S. van der Velden S., D. Lyddon D. & K. Vandaele (Eds.), Strikes around the world, 1968-2005 (pp. 40-60). Amsterdam: aksant.

Wallmana K., & Evinger S. (2008). The gap between standards adoption and standards implementation. Statistical Journal of the IAOS, 25(1,2), 3-10.

Ward, M. (2004). Quantifying the World: UN Ideas and Statistics. New York: Indiana University Press.

Williams, T., & Smith, K. B. (2000, May). Statistics to shape the 21st Century: the role of indicators. Paper presented at the Conference of Commonwealth Statisticians, Gaborone..