



# SOUTH AFRICA

## TECHNICAL ASSISTANCE REPORT—REVENUE ADMINISTRATION GAP ANALYSIS PROGRAM—THE VALUE-ADDED TAX GAP

July 2015

This Technical Assistance Report on South Africa was prepared by a staff team of the Fiscal Affairs Department of the International Monetary Fund. It is based on the information available at the time it was completed on June 2015.

Copies of this report are available to the public from

International Monetary Fund • Publication Services  
PO Box 92780 • Washington, D.C. 20090  
Telephone: (202) 623-7430 • Fax: (202) 623-7201  
E-mail: [publications@imf.org](mailto:publications@imf.org) Web: <http://www.imf.org>  
Price: \$18.00 per printed copy

**International Monetary Fund**  
**Washington, D.C.**



# SOUTH AFRICA

## REVENUE ADMINISTRATION GAP ANALYSIS PROGRAM— THE VALUE-ADDED TAX GAP

June 2015

Mr. Ismail Momoniat, Deputy Director-General of Tax and Financial Sector, Department of National Treasury (NT), requested Fiscal Affairs Department (FAD), IMF, to provide a tax gap analysis for the Value Added Tax (VAT) in South Africa to the Davis Tax Committee. The mission thanks the South Africa Revenue Service (SARS), NT, and Statistics South Africa (Stats SA) for providing the necessary data for the calculation of potential and actual VAT revenues between 2007 and 2012.

The contents of this report constitute technical advice provided by the staff of the International Monetary Fund (IMF) to the authorities of South Africa, specifically the National Treasury (NT) and South Africa Revenue Services (SARS). This report (in whole or in part) or summaries thereof may be disclosed by the IMF to IMF Executive Directors and members of their staff, as well as to other agencies or instrumentalities of the IFP, and upon their request, to World Bank staff and other technical assistance providers and donors with legitimate interest, unless the IFP specifically objects to such disclosure (see Operational Guidelines for the Dissemination of Technical Assistance Information—

<http://www.imf.org/external/np/pp/eng/2013/061013.pdf> Disclosure of this report (in whole or in part) or summaries thereof to parties outside the IMF other than agencies or instrumentalities of the TA recipient, World Bank staff, other technical assistance providers and donors with legitimate interest shall require the explicit consent of the TA recipient and the IMF's Fiscal Affairs Department.

# CONTENTS

<b>ABBREVIATIONS AND ACRONYMS</b>	<b>4</b>
<b>EXECUTIVE SUMMARY</b>	<b>5</b>
<b>BACKGROUND</b>	<b>9</b>
A. Value-Added Tax Revenue Performance	9
B. C-Efficiency Ratio in South Africa	11
<b>ESTIMATION AND EVALUATION OF THE COMPLIANCE GAP</b>	<b>13</b>
A. VAT Compliance Gap in South Africa	13
B. The Assessment and Collection Gaps	15
C. Changes in Potential Revenues and Actual Collections	16
D. Actual Collections and Potential VAT by Sector	19
<b>ESTIMATION AND EVALUATION OF THE POLICY GAP</b>	<b>21</b>
A. Definitions and Methodologies	21
B. VAT Policy Gap in South Africa	22
C. Changes in C-Efficiency Ratios in South Africa after 2007	24
<b>COMPARISON OF RA-GAP RESULTS WITH ANALYSIS BY SARS</b>	<b>25</b>
<b>COMPLIANCE MANAGEMENT IN SOUTH AFRICA</b>	<b>29</b>
<b>BOX</b>	
1. The Effects of the Recent Revision of Gross Domestic Products in South Africa	14
<b>FIGURES</b>	
1. VAT Compliance Gap in South Africa, 2007–2012	5
2. Compliance Gap and Policy Gap	6
3. Changes in C-Efficiency Ratio in South Africa	7
4. VAT Compliance Gap by SARS and RA-GAP	8
5. VAT Revenues in Nominal Term, 2002–2013	10
6. VAT Revenues to GDP, 2002–2013	10
7. C-Efficiency Ratio in Sub-Saharan African Countries	12
8. C-Efficiency Ratio in South Africa, 2002–2013	12

9. VAT Compliance Gap in South Africa, 2007–2012 _____	14
10. Potential VAT and Actual Collection _____	15
11. Assessment Gap and Collection Gap _____	16
12. Declaration, Accrued Collection and Cash Collection of VAT Relative to GDP _____	17
13. Accrued Refund (Excess Credit) and Cash Refund _____	18
14. Net VAT Collections by Sectors _____	19
15. Sector Potential Revenues and Actual Collections in 2012 _____	20
16. Different Potential VAT Revenues _____	23
17. Policy Gap and Compliance Gap _____	23
18. Decomposition of Changes in C-Efficiency Ratios after 2007 _____	24
19. Compliance Gap by SARS and RA-GAP _____	25
20. Comparison of Gap, Accrual and Cash, by RA-GAP Estimates _____	26
21. Potential VAT Revenue by SARS and RA-GAP _____	28
22. Demand Components of Potential VAT Revenues, 2008 and 2012 _____	29
23. Micro-Businesses VAT _____	33

## **TABLES**

1. Revised GDP Numbers between 2006 and 2013 _____	14
2. Turnover of non-VAT Registered Businesses in South Africa 2001–2013 _____	33

## **APPENDICES**

I. The RA-GAP Model and Methodology _____	35
II. Application of RA-GAP Model to South Africa _____	44
III. Comparison of RA-GAP Results with Analysis by SARS _____	47

## **APPENDIX TABLE**

III-1. Audits Conducted by SARS _____	49
---------------------------------------	----

## **APPENDIX FIGURES**

III-1. New VAT Registrations in South Africa _____	47
III-2. Noncompliance in South Africa _____	48
III-3. Payment Compliance in South Africa _____	48
III-4. Credit Returns in South Africa _____	49

## Abbreviations and Acronyms

AFS	Annual Financial Survey
CF	Capital Formation
FADR1, FADR2	IMF Fiscal Affairs Department, Revenue Administration Divisions 1 and 2
FC	Final Consumption
GDP	Gross Domestic Product
IC	Intermediate Consumption
IES	Income and Expenditure Survey
NPISH	Non-profit Institutions Serving Households
NT	National Treasury of South Africa
RA-GAP	Revenue Administration Gap Analysis Program
SARS	South African Revenue Services
SNA	System of National Accounts
Stats SA	Statistics South Africa
SUT	Supply and Use Tables
TA	Technical assistance
VAT	Value-added tax

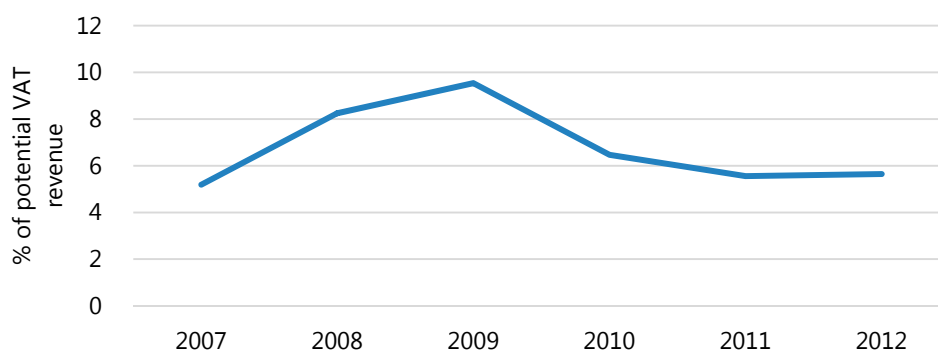
## EXECUTIVE SUMMARY

This report presents the results of applying the VAT gap estimation methodology of the Revenue Administration Gap Analysis Program (RA-GAP) to South Africa for the period 2007–12. The methodology employs a top-down approach for estimating the potential VAT base, using statistical data on value-added generated in each sector. There are two main components to this methodology for estimating the VAT compliance gap: 1) estimate the potential net VAT collections for a given period, and 2) determine the accrued net VAT collections for that period. The difference between the two values is the compliance gap.

### Main findings

The compliance gap is estimated to be between 5 percent and 10 percent of potential VAT revenues during the period 2007–12, and peaking in 2008 and 2009 (Figure 1). The estimated compliance gap for VAT in South Africa between 2007 and 2012 is hump-shaped; the compliance gap increased to 10 percent of potential revenue in 2009, when the global financial crisis severely hit the South African economy. The gap has since gradually decreased to the same level as 2007. The calculated gap numbers will be revised upward once the recent revisions of national accounts data in South Africa are incorporated, by 1–3 percent.<sup>1</sup> The estimated gap is low by international standards, below the typically observed levels in European and Latin American countries.

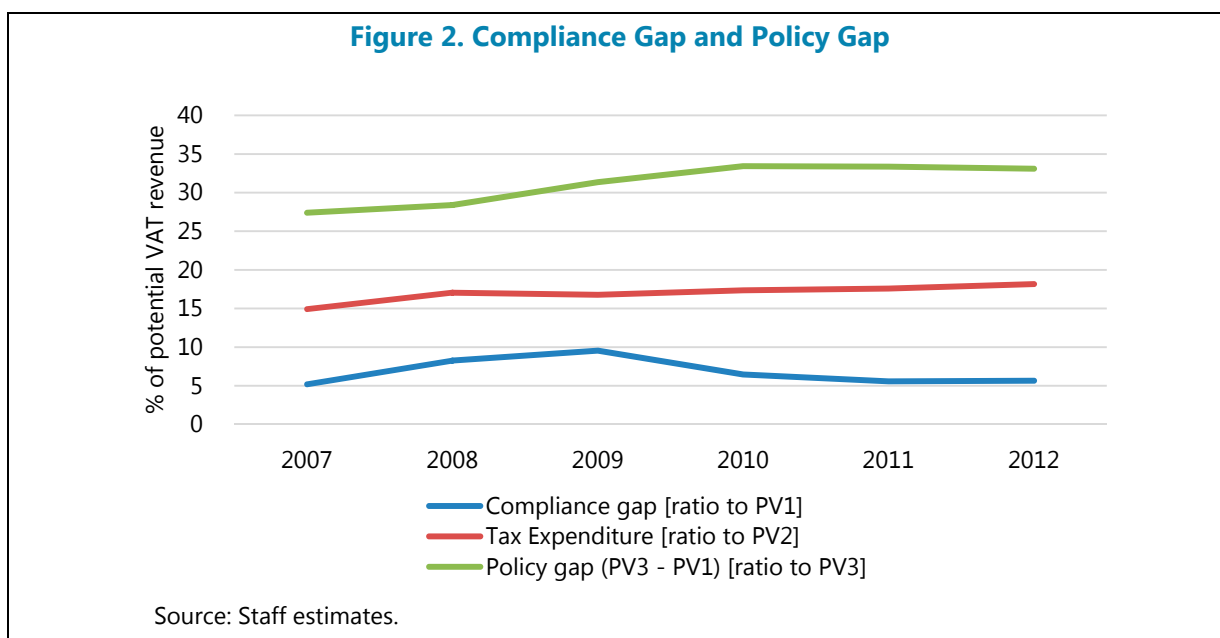
Figure 1. VAT Compliance Gap in South Africa, 2007–2012



Source: Staff estimates.

<sup>1</sup> Gross domestic product in South Africa has been revised upward by 3–5 percent between 2006 and 2013. While a part of the revision due to adoption of SNA 2008 (1.2 percent in 2010) will not affect the estimation of potential VAT revenues, the rest of the revision will increase the estimates for potential VAT revenues and gaps (see Box I).

**The level of the VAT policy gap in South Africa (Figure 2) is low by international standards, owing to its simple VAT policy structure.** The policy gap shows the efficiency of VAT policy structure by calculating the difference between theoretical revenue given a hypothetical policy framework and potential revenue given the current policy framework.<sup>2</sup> The policy gap is calculated to be between 27 percent and 33 percent of the theoretical potential VAT during the period of 2007 to 2012, while the average of European countries is 41 percent.<sup>3</sup> The VAT tax expenditure is calculated to be 15-18 percent of the potential VAT under normative policy. Although the level of policy gaps is higher than the level of compliance gaps, the room for additional revenue by changing VAT policy structure looks limited.



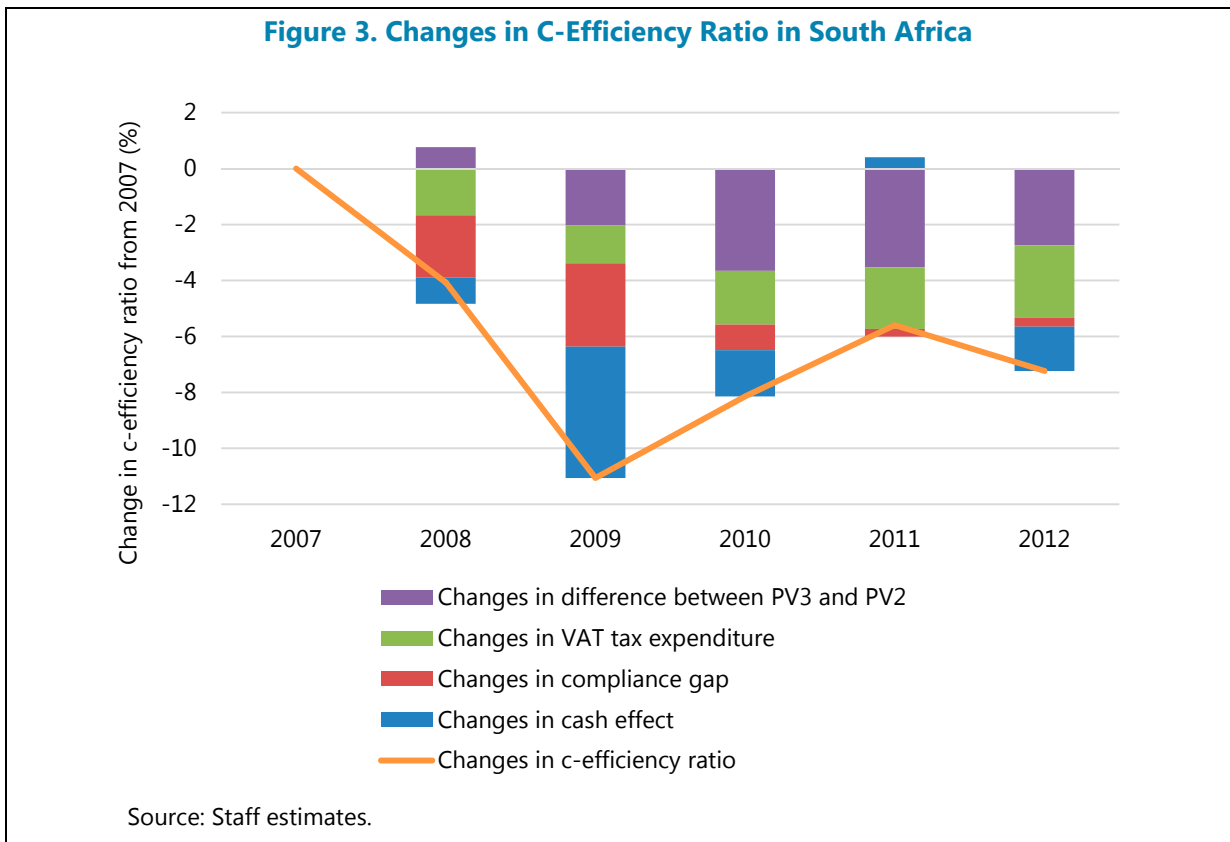
**The recent declining trend of VAT c-efficiency ratio after 2007 in South Africa can be explained by the increase of 'non-taxable' final consumption both by policy and by character among total final consumption (Figure 3).** Although the level of c-efficiency ratio is high among peer countries, the ratio has fluctuated with a downward trend after 2007. The overall reduction in levels compared to the period before 2007 is due to the effects of changes in non-taxable consumption and VAT tax expenditures (i.e., changes to the composition of GDP and final consumption). The economic downturn between 2008 and 2009 resulted in the

<sup>2</sup> In this paper, the policy gap is calculated as the difference between PV3 (derived from applying the standard rate to all final consumption) and PV1 (potential revenue under current legislation) relative to PV3, and tax expenditure is calculated as the difference between PV2 (potential revenue under a policy structure where only financial intermediation, residential rent and public administration services are exempted) and PV1 relative to PV2.

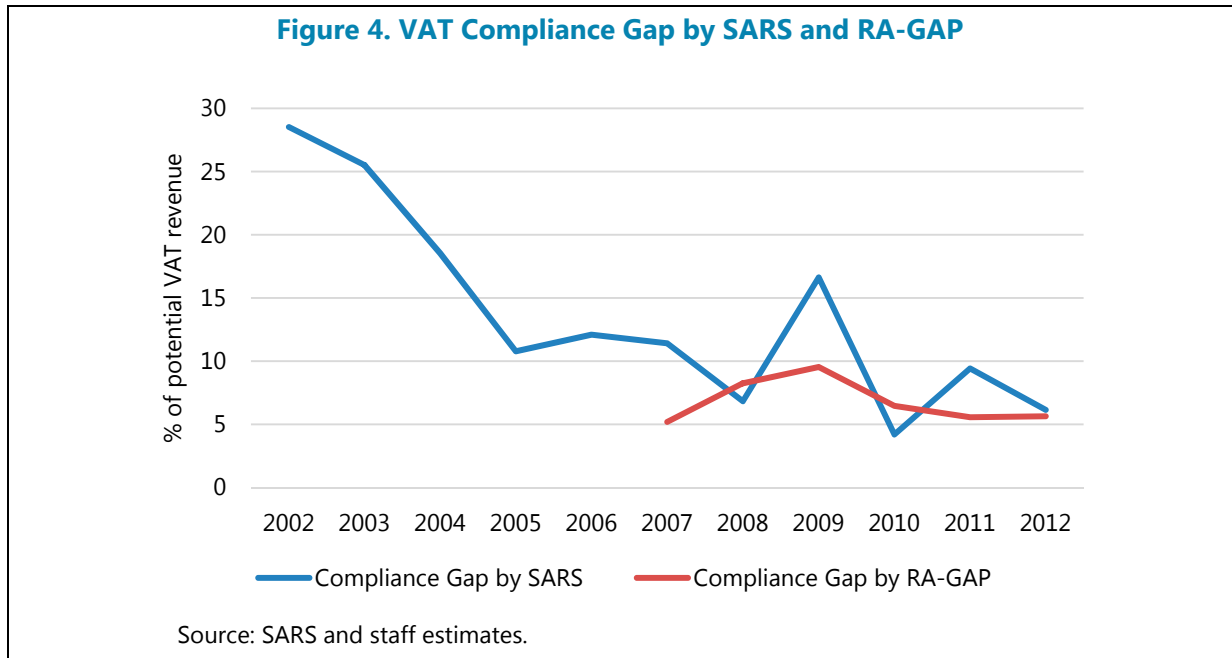
<sup>3</sup> CASE, "2012 Update Report to the Study to quantify and analyse the VAT Gap in the EU-27 Member States TAXUD/2013/DE/321 FWC No. TAXUD/2010/CC/104", European Commission, TAXUD, 2014, CPB Netherlands Bureau for Economic Policy Analysis, The Hague.

increase of the compliance gap, but it subsequently decreased. Cash collection numbers have been more volatile than accrued collections, and exacerbated the movement of c-efficiency ratio.

**The level of calculated gaps are generally consistent with internal estimates by SARS using demand approach between 2007 and 2012 (Figure 4).** Because the estimates by SARS use net cash collection data in the calculation, their gap numbers are more volatile, especially in 2009 and 2011, while the gap numbers from the RA-GAP approach are based on accrued collections and remain relatively stable. Although the original estimates by SARS need some adjustments to maintain consistency in the assumptions used, the combined estimates by SARS and RA-GAP show a declining trend of compliance gaps in the years after 2002.







### **Observations and possible follow-up action**

- SARS should continue to monitor the VAT compliance gap as a means of evaluating its performance, and to inform strategic decisions about tax.
- SARS should take the opportunity of revised supply-use tables due to be released in February 2015 to update its estimate of the VAT gap, and its sectoral composition.
- SARS could consider broadening its tax gap analysis to include other major taxes.
- SARS should further integrate its revenue and national compliance analyses, to support systemic compliance risk management. There is more scope for more detailed analysis of revenues from individual industry sectors and taxpayer segments to support strategic risk analysis.

## BACKGROUND

**1. The IMF RA-GAP program provides a comprehensive quantitative analysis of the gap between potential revenues and actual collection, known as the compliance gap<sup>4</sup>.** The program is conducted by the Revenue Administration Divisions of the Fiscal Affairs Department (FADR1 and FADR2). The RA-GAP model uses a value-added approach that allows for a breakdown of the VAT compliance gap by sector of economic activity, thereby helping revenue administrations monitor and identify what is contributing to this gap.

**2. This report presents an estimate of the level and recent trends of the VAT gap in South Africa, and analyzes recent VAT revenues in terms of the VAT gap.** The revenue performance of VAT in South Africa is analyzed in terms of both the compliance gap and the policy gap. The RA-GAP approach is used to estimate these gaps. National accounts data was used to model the VAT tax base, and current South African VAT law is used to estimate potential VAT revenues. This potential VAT is compared with VAT receipts, accrued to the timing of underlying economic activities; with the difference being assumed to represent losses through non-compliance, i.e. the compliance gap. The difference between potential VAT revenue under current policy and theoretical VAT revenue calculated from final consumption and standard rate is defined the policy gap.

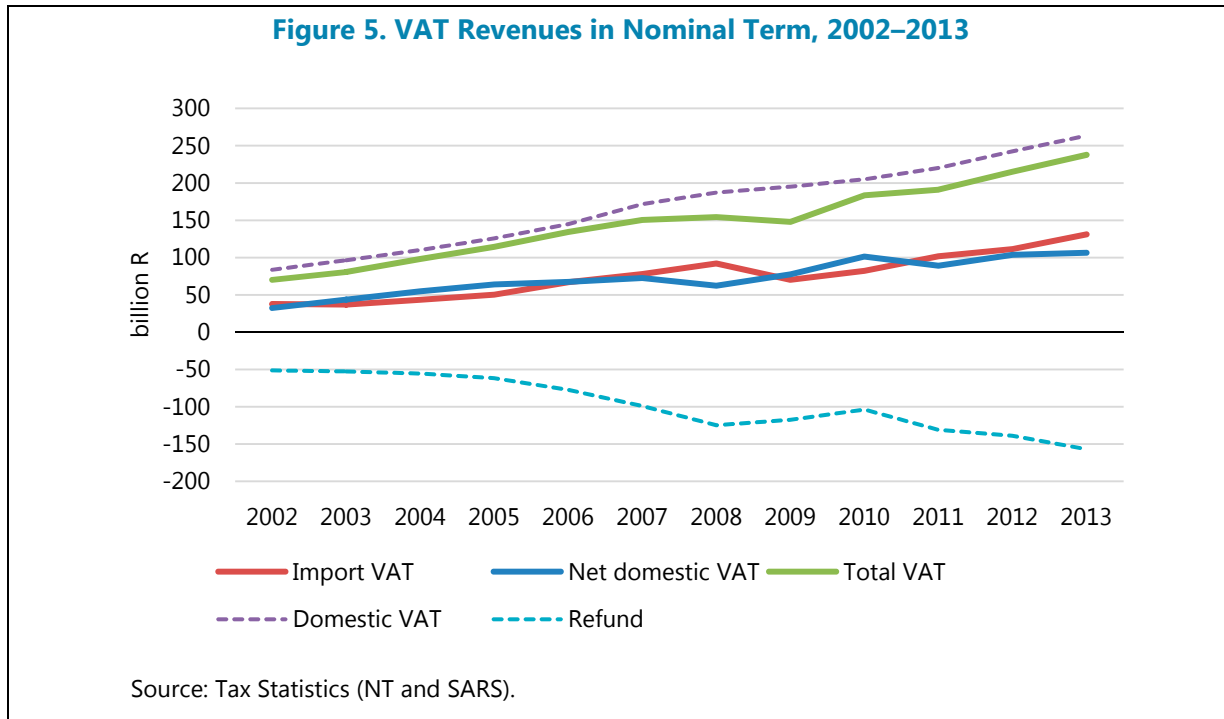
### A. Value-Added Tax Revenue Performance

**3. In South Africa, VAT revenues have increased in nominal terms from 70 billion R to 238 billion R between FY2002 and FY2013, largely owing to economic growth and inflation (Figure 5).<sup>5</sup>** Total VAT revenues are the sum of net domestic VAT which shows the difference between gross payments and refunds (net domestic cash collections) and import VAT collected by Customs during each year. Because of the high magnitude of imports relative to household final consumption in South Africa (50 percent on average between 2002 and 2013), import VAT collections are of a similar level to net domestic VAT.<sup>6</sup> There were some fluctuations between 2008 and 2011 in total VAT revenues; in 2008 and 2011, domestic VAT collections fell, recovering in the subsequent years, and import VAT significantly declined between 2009 and 2010.

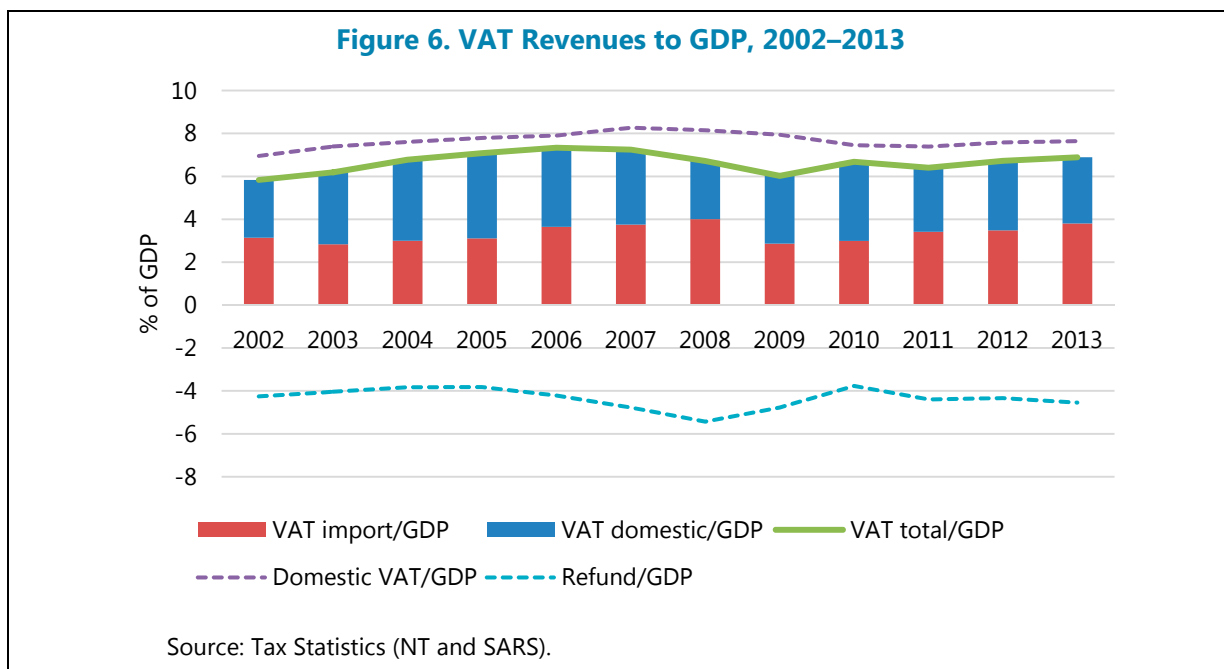
<sup>4</sup> In this report, potential VAT revenues refer to a possible or hypothetical tax collection with full compliance under current standard VAT rate; it does not show whether the current standard rate is higher or lower than other countries.

<sup>5</sup> In this section, the revenue data are taken from Tax Statistics published by National Treasury and the South African Revenue Service. In these time series, yearly data are based on the South African fiscal year (April 1<sup>st</sup> to March 31<sup>st</sup>).

<sup>6</sup> Note that this can overstate the importance of import VAT in total net VAT revenue, as any input tax credits offered against the VAT paid on imports is being offset against domestic net collections.



**4. The VAT revenues as a percent of GDP increased from 2002, peaking at 7.3 percent in 2006 (Figure 6).** In 2009, the ratio fell to the level of 6.0 percent of GDP, coming back to 6.9 percent in 2013. During this decade, there were not any significant changes in VAT policy in either rates (14 percent standard rate) or exemption. Therefore, the fluctuation of VAT revenues relative to GDP is likely to be mainly attributable to some combination of changes in the tax base (changes in shares of taxable economic activities) and changes in taxpayers’ compliance.



## B. C-Efficiency Ratio in South Africa

**5. The c-efficiency is a general measure widely used to compare the overall performance of VAT system.** The c-efficiency ratio is an indicator that can be simply calculated from VAT revenues, the VAT standard rate and GDP final consumption aggregates to indicate the overall efficiency of VAT revenue collections. It presents the ratio of actual VAT collections to the amount that would be collected under a perfectly enforced tax levied at the standard rate on overall final consumption.<sup>7</sup> C-efficiency ratio is a rough estimator for the overall tax gap for a VAT, and roughly equates to the product of the compliance gap and the policy gap,<sup>8</sup> as such it is a good measure to compare and contrast against more detailed estimates of the VAT gap as performed as part of this mission.

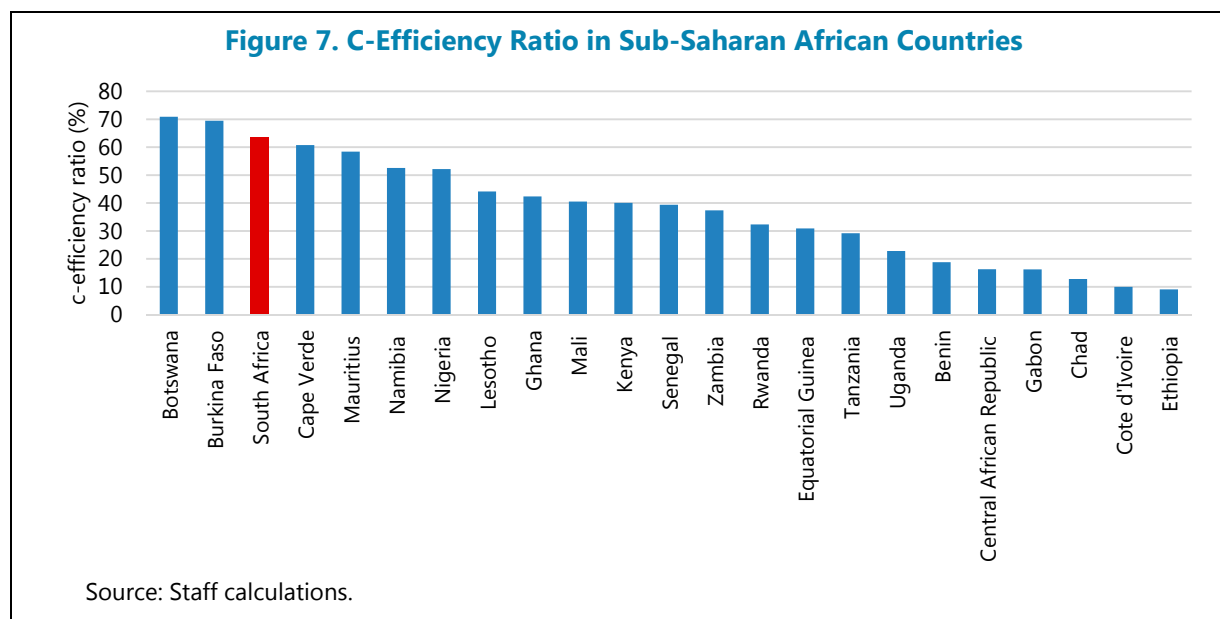
**6. The average of c-efficiency ratios in South Africa between 2007 and 2013 is 63.6 percent, which is relatively high.** This result is among the highest in Sub-Saharan African countries over the same period (Figure 7).<sup>9</sup> The high c-efficiency ratio is partly a result of South Africa's limited number of exempted and zero-rated goods and services.<sup>10</sup> It also suggests that the revenue administration in South Africa is relatively effective compared to its peer countries, and that the room for additional revenues mobilization by improvement of tax compliance and expanding tax base of VAT could be limited compared with other countries in the region.

<sup>7</sup> In the calculation of the c-efficiency ratio, final consumption includes household final consumption, government final consumption and NPISH (non-profit institutes serving households) final consumption, following Keen (2013).

<sup>8</sup> More precisely, c-efficiency ratio can be expressed as is the product of (1 – compliance gap) and (1 – policy gap).

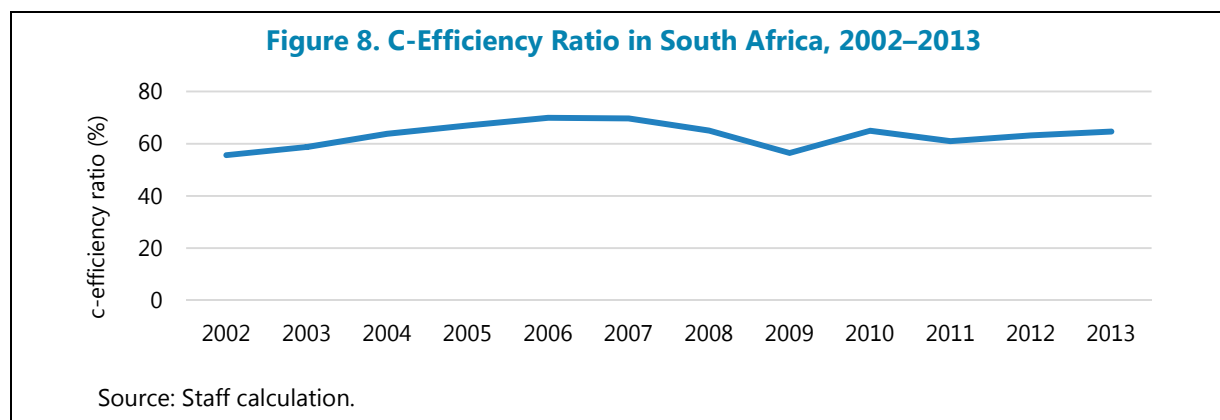
<sup>9</sup> The c-efficiency ratios in Sub-Saharan countries in Figure 7 show the average between 2007 and 2013, except for Ghana (2007-11), Ethiopia (2007-11), Cape Verde (2007-12), Zambia (2007-12), Uganda (2007-12), Cote d'Ivoire (2007-12), Rwanda (2008-13), and Central African Republic (2008-13).

<sup>10</sup> Education, passenger transport (road or rail), financial services (except fees) and rent for residential accommodation are major items exempted from VAT. Goods used for farming activities (6 Items), some foodstuffs (19 Items), fuels (on which fuel levy is imposed) and kerosene, and local government services are zero-rated.



**7. Although the level of the c-efficiency ratio is generally high, the ratio has fluctuated, especially after 2007 (Figure 8), due to a combination of compliance and economic changes.**

The calculated ratio shows similar changes to the VAT revenue ratio to GDP because yearly changes in overall final consumption are almost the same as the changes in GDP.<sup>11</sup> The yearly changes in c-efficiency ratio can be decomposed into several factors: changes in the compliance gap, changes in the policy gap (i.e. tax expenditures), changes in the share of non-taxable consumption, and timing effects of cash payments and refunds. Section IIIC below will discuss in more detail the main factors contributing to change in the c-efficiency figures. In summary, the fall in 2009 can be largely attributed to an increase in the compliance gap and the impact of timings in VAT refunds, while the overall reduction in levels in later years compared to the period before 2007 is due to the effects of changes in non-taxable consumption and tax expenditures (i.e., changes to the composition of GDP and final consumption).



<sup>11</sup> The ratio of final consumption to GDP has been stable between 80 percent and 83 percent between 2002 and 2013 in South Africa.

## ESTIMATION AND EVALUATION OF THE COMPLIANCE GAP

**8. Estimating the VAT compliance gap.** The VAT compliance gap for a particular year is the difference between revenues actually collected and the potential revenues that could have been collected given the policy framework that was in place during that year. The RA-GAP approach was used to estimate the compliance gap for the years 2007 to 2012 in this report. The potential VAT revenues were estimated using detailed national accounts data provided by Stats SA. For VAT actual collections, tax returns and payment data between 2007 and 2012 provided by SARS was used to calculate collections on an accruals basis as at August 2014.<sup>12,13</sup>

### A. VAT Compliance Gap in South Africa

**9. The compliance gap grew significantly in South Africa from 2007 to 2009, but has since reverted to the same level as 2006 (Figure 9).** The estimated compliance gap for VAT in South Africa between 2007 and 2012 is hump-shaped. The compliance gap increased to 10 percent of potential revenue in 2009, when the global financial crisis severely hit the South African economy. The gap has since gradually decreased to 6 percent of potential revenue, which is around the same level as 2007.

**10. The observed increase in the compliance gap explains much of the observed decline in VAT collections as a percent of GDP.** The sharp increase in the compliance gap between 2008 and 2009 corresponds to the steeper decline of actual collections as a percent of GDP compared with the potential revenues (Figure 10). After 2010, the actual revenue relative to GDP has stayed sluggish while potential VAT decreased, which results in a decrease of the compliance gap.

<sup>12</sup> The general method of calculation for accrual tax collection is described in Appendix I, section C, and the specific method and data used for measuring VAT collections in South Africa is explained in Appendix II, section C.

<sup>13</sup> In measuring actual collections, adjustments were required to add back diesel refund claims (See Appendix II).

### Box 1. The Effects of the Recent Revision of Gross Domestic Products in South Africa

On November 27<sup>th</sup> 2014, the Stats SA released the revised numbers for GDP in South Africa. The major changes for yearly nominal GDP come from implementation of the 2008 SNA, and the inclusion of new sources of information including results of intermittent industry large sample surveys, the 2010/11 Income and Expenditure Survey and the 2011 Population Census, and more detailed producer and consumer prices. The level of nominal GDP has been revised by between 2.8 percent and 5.0 percent for the period 2006 to 2013.

**Table 1. Revised GDP Numbers between 2006 and 2013**

	2006	2007	2008	2009	2010	2011	2012	2013
Previous GDP (billion R)	1,767	2,016	2,256	2,408	2,674	2,933	3,139	3,385
Revised GDP (billion R)	1,839	2,110	2,369	2,508	2,748	3,025	3,263	3,534
Difference (%)	4.1%	4.7%	5.0%	4.2%	2.8%	3.1%	4.0%	4.4%

Source: STATS SA (2014) Statistical release P0441.

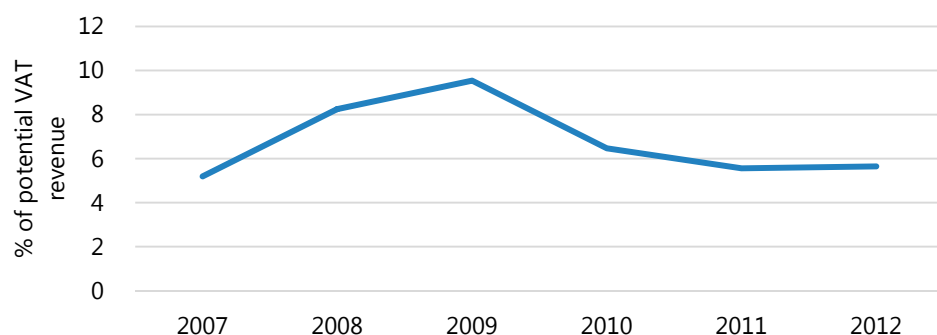
#### The changes due to the implementation of the 2008 SNA will not affect the estimate of potential VAT revenues.

This is because the increases in nominal GDP numbers come from capitalization of research and development and expenditure on weapons system, different treatment of employment stock options, and adoption of a refined method for calculating FSIM (financial services indirectly measured). These changes will not change the magnitude of the tax base of VAT in the past because these changes are the changes in the definition of value added produced in the year, while the size of the tax base remains the same as before. These changes account for about 1.2 percent of previous GDP numbers.

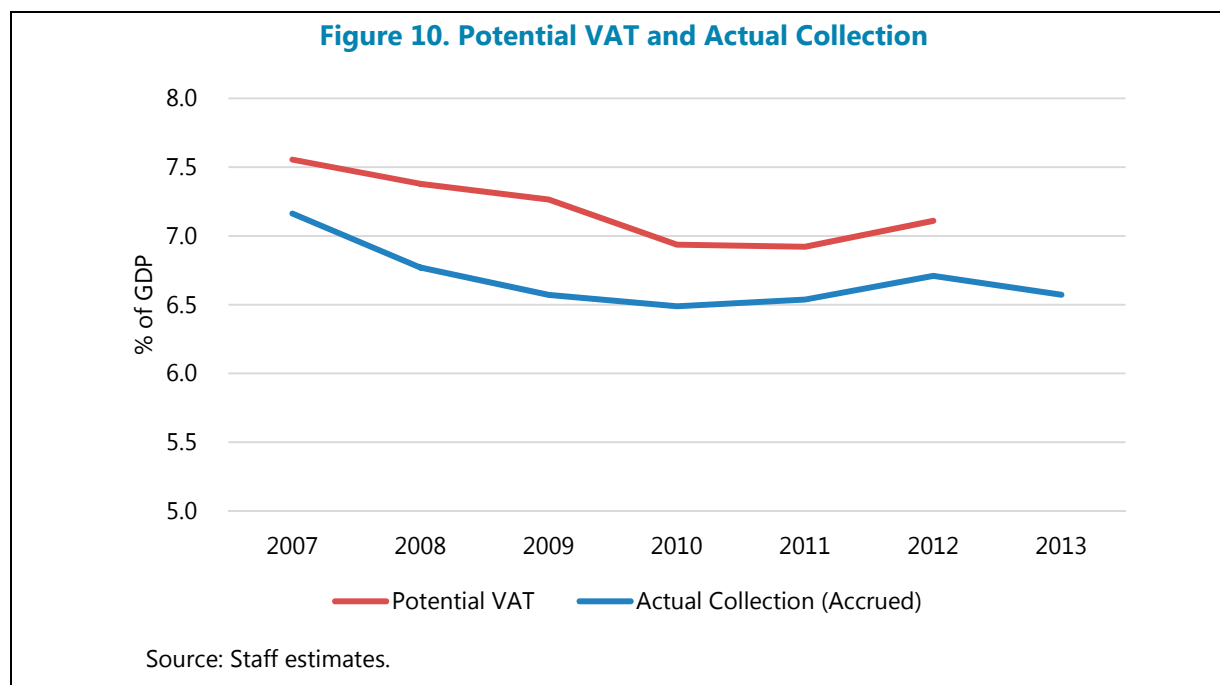
#### The revised GDP numbers due to newly available data will result in the upward shift of potential VAT revenues calculated from revised supply and use tables during the period.

These changes relate to the revision of the nominal size of economic activities, and size of the potential tax base of VAT. The revised supply and use tables, including new 2013 tables, will be available in February 2015, and potential VAT revenues from these tables will be higher than the numbers in this report by 2-4 percent, which will result in the estimated compliance gap numbers being higher by 1-3 percent, although neither the trend nor the general level of the gaps will significantly change.

**Figure 9. VAT Compliance Gap in South Africa, 2007–2012**



Source: Staff estimates.

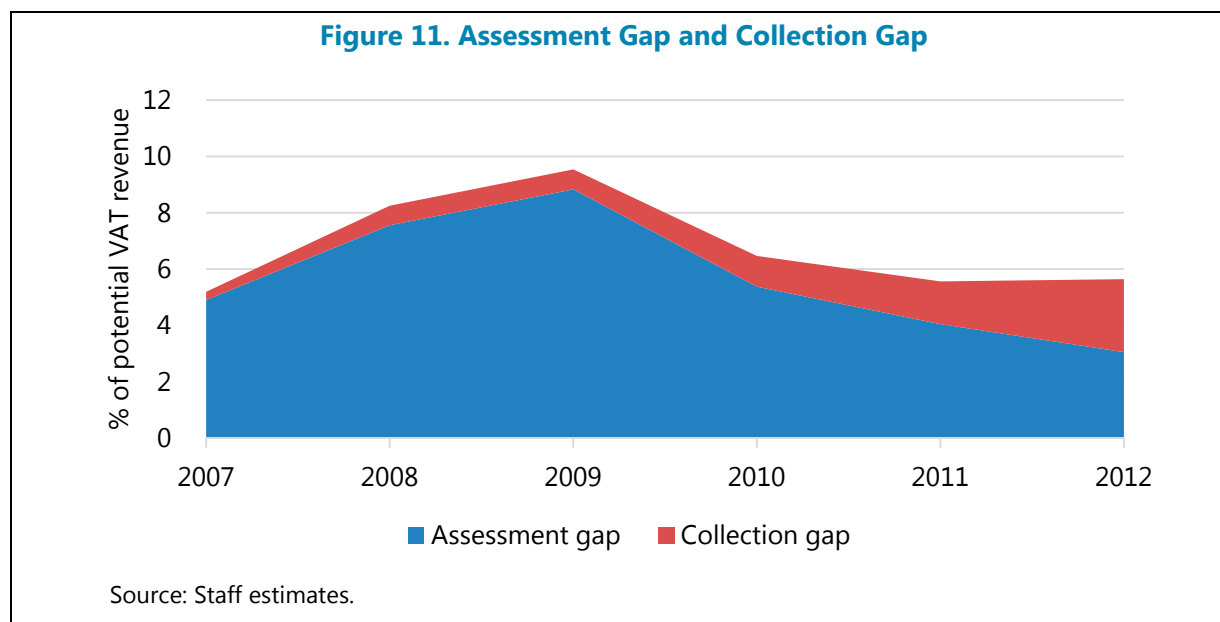


## B. The Assessment and Collection Gaps

**11. The compliance gap can be decomposed into two portions, an assessment gap and a collection gap.** The collections gap is the difference between actual VAT collections and the total amount of VAT declared or assessed as due from taxpayers, while the assessment gap is the difference between the amount of VAT declared or assessed and potential VAT. These two gaps correspond to the identified portion of the compliance gap (the collections gap) and the unidentified portion (the assessment gap).

**12. Over the period from 2007 to 2012, the collection gap gradually grew, while the assessment gap first increased sharply and then fell back to less than its former level (Figure 11).** The increase of the collections gap means that the differences between declared and assessed VAT and collected VAT have become wider year by year. It would naturally reflect a first-in-first-out procedure for late payments that prioritizes older tax liabilities, but there is a risk of increasing future uncollectible tax liabilities to the extent that it reflects a growing stock of outstanding taxpayers' arrears.





## C. Changes in Potential Revenues and Actual Collections

### *Changes in potential VAT revenues*

**13. Potential VAT revenues in South Africa have been declining since 2008 compared with GDP.** Potential VAT revenues as a percent of GDP, calculated from national accounts data, has been declining since at least 2008 (Figure 10). Because there have been no significant policy changes in VAT legislation over this period, this decline is attributable to changes in the tax base.

**14. The decline in potential VAT relative to GDP is attributable to increased non-taxable GDP components, including services provided by government and consumption of petroleum products.** The major cost of government services is compensation for government employees, which is out of scope of VAT. So the increase in government services as a share of GDP will have decreased the share of GDP liable for VAT and this was the main contributor to the recent declining trend in potential VAT revenues relative to GDP. The share of government final consumption, which represents the cost of services provided by the government, grew from 18.8 percent of GDP in 2007 to 22.2 percent of GDP in 2013, which reduced the relative size of household final consumption and gross capital formation in overall economic activities. Also, the increased share of petroleum products, which are zero-rated for VAT,<sup>14</sup> in household consumption contributed to the decline of potential VAT revenues.

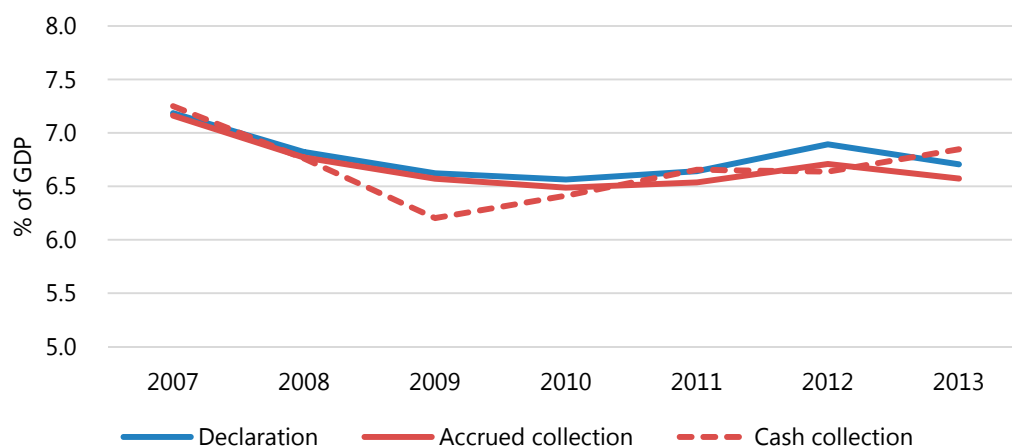
<sup>14</sup> In South Africa, there is a separate, specific levy on petroleum products, so the increased loss of VAT will not represent a net loss to government, at least to the extent that it is compensated by an increase in receipts from the levy.

**15. The decline in imports in 2009 and 2010 temporarily reduced potential VAT revenues relative to GDP.** In 2009 and 2010, due to the effects of global financial crisis, falling imports resulted in the additional decline of the potential VAT revenues to some extent. However, on average throughout the whole period, the changes in imports have matched changes in (zero-rated) exports, and so the effects on overall potential VAT revenues have been cancelled out. It means that the reduction of import VAT occurred with the reduction of claim for input VAT credit and VAT refund on average.

### *Changes in actual VAT collections*

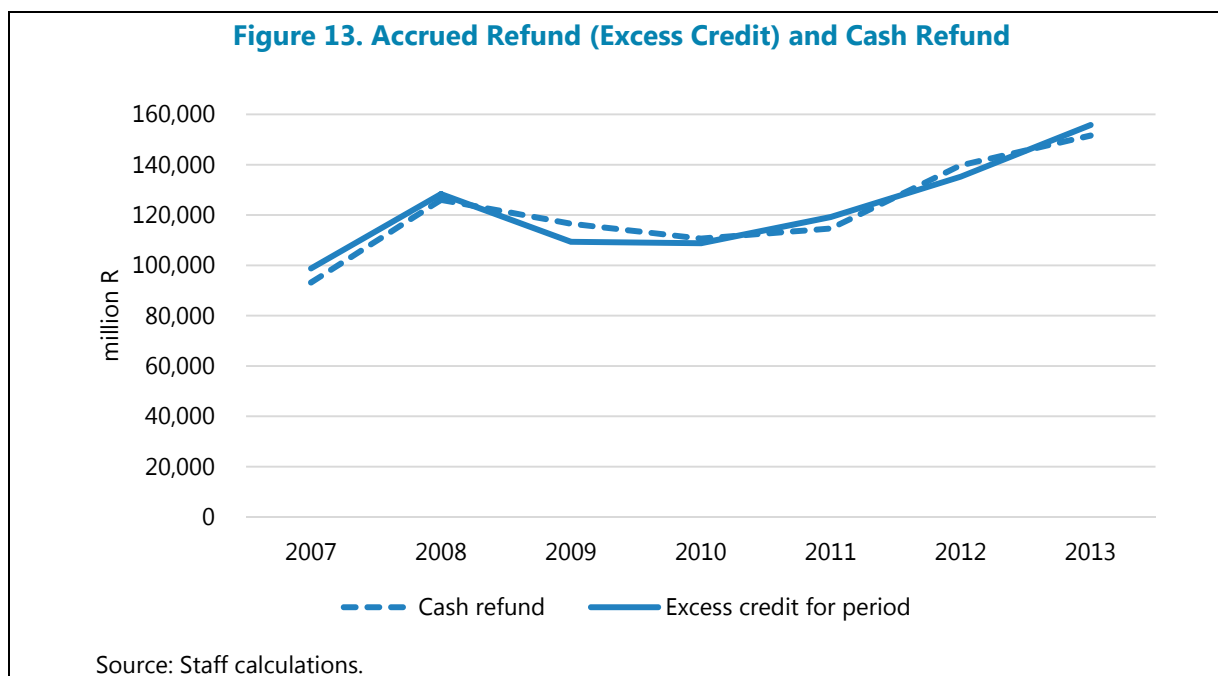
**16. Accrued VAT collections show a much smoother trend than net cash collections in South Africa in the period between 2007 and 2012, especially in 2009 (Figure 12).<sup>15</sup>** The main reason for the different fluctuation comes from the timing of payments and refunds. For example, some part of actual cash refund transactions during 2009 reflected the declared excess credit for tax periods in 2008, and claims for refund in 2008 were much higher than the declared excess credit for tax periods in 2009 because economic activities (import and capital formation) were higher in 2008 than 2009 (Figure 13). When the economy recovered, the adverse effect occurred in 2011 and 2013. That is, refunds in those years for previous periods were lower than refunds for those periods in later years.

**Figure 12. Declaration, Accrued Collection and Cash Collection of VAT Relative to GDP**



Source: Staff calculations.

<sup>15</sup> For import VAT, total monthly cash collection aggregated by SARS were used as actual VAT collections.

**Figure 13. Accrued Refund (Excess Credit) and Cash Refund**

**17. Sector VAT collection data (including both net domestic and import VAT) shows revenues are highly concentrated in a couple of key sectors.** In particular '8. Financial intermediation, insurance, real-estate and business services' sector and '6. Wholesale and retail trade, catering and accommodation' sector are the main contributors of VAT collections in South Africa (Figure 14).<sup>16</sup> The large contribution of these sectors coincides with their large share of economic activities in the whole economy of South Africa (19.4 percent for sector 8 and 13.7 percent for sector 6 in 2013). The third largest contributor is '3. Manufacturing' sector, whose share in the whole economy is 13.0 percent. While the '2. Mining and quarrying' sector accounts for 7.7 percent of the whole economy, the sector records negative VAT due to a large volume of zero-rated exports.

<sup>16</sup> The sector allocation of actual VAT collections is based on the classification of individual VAT vendors provided by STATS SA to keep consistency with national accounts data. For the vendors without having classification by STAT SA, sector classification provided by SARS was applied alternatively. The values of collections are accrued to tax periods. For these reasons, the sector collection values in this report are different from sector collection values presented in the 'Tax Statistics 2014' published by NT and SARS.

**Figure 14. Net VAT Collections by Sectors**

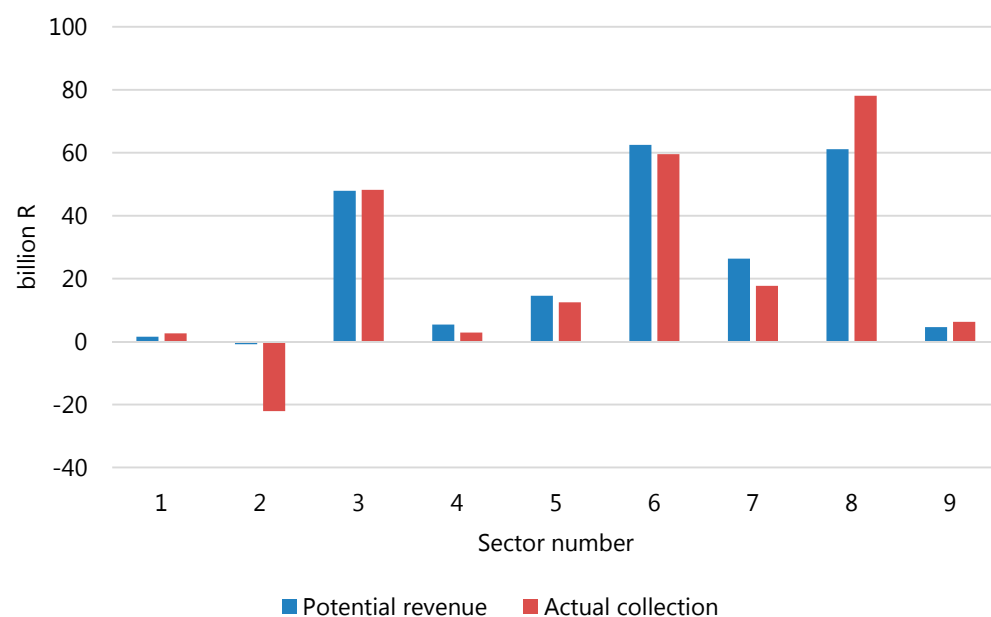
- 9. Community and social services
- 8. Financial intermediation, insurance, real estate and business services
- 7. Transport, storage and communications
- 6. Wholesale and retail trade, catering and accommodations
- 5. Construction
- 4. Electricity, gas and water
- 3. Manufacturing
- 2. Mining and quarrying
- 1. Agriculture, forestry and fishery

Source: Staff calculations.

## D. Actual Collections and Potential VAT by Sector

**18. The overall potential VAT revenues can be decomposed into sectors using currently available data and information (Figure 15), but it is difficult to directly compare them with sector collections to infer sector compliance gaps through time by several reasons.** The difficulty comes from: [1] different classification systems between national accounts data (supply and use tables) and tax collection, [2] limited availability of detailed sector export, import and capital formation data, and [3] limited availability of sector import VAT collections data.<sup>17</sup>

<sup>17</sup> Sector import VAT collections data are calculated by reallocating individual VAT declarations at Customs according to VAT reference numbers and Stats SA classification. However, individual VAT declarations associated with VAT reference numbers are only available after 2011.

**Figure 15. Sector Potential Revenues and Actual Collections in 2012**

1. Agriculture, forestry and fishery
2. Mining and quarrying
3. Manufacturing
4. Electricity, gas and water
5. Construction

6. Wholesale and retail trade, catering and accommodations
7. Transport, storage and communications
8. Financial intermediation, insurance, real estate and business services
9. Community and social services

Source: Staff estimates.

**19. The sector classification of economic activities in supply and use tables is not fully comparable with sector classification of tax collections recorded by SARS.** In this report, actual collections were reallocated by Stats SA classifications as much as possible by using a corresponding table for each VAT vendors, but it could not be fully completed. Sector economic activities on supply and use tables are recorded according to an activity-based classification system (Stats SA classification: classifying economic activities by branches), and actual collections are classified by only the main activity of individual VAT vendors (SARS classification). For large VAT vendors with many branches, only SARS classification is applicable.

**20. The different classification system for VAT vendor's economic activities itself creates difference between sector VAT collections from those estimated as potential sector revenues.**

In this case it is particularly notable in the financial intermediation, insurance, real estate and other businesses (sector 8). There are several large VAT vendors classified into sector 8 according to the SARS classification that likely have operations that should be classified in multiple other sectors. This means that actual collections in that sector likely include VAT revenues from other operations than sector 8 economic activities (productions) recorded in supply and use tables. If this is so, it would result in smaller actual collections compared with potential revenues in other sectors.

**21. Limited availability of reliable and consistent data about sector exports and imports may result in difficulties in firmly estimating sector potential VAT that are comparable with sector collection data.** This may be the cause in some of the discrepancies when comparing sector potential VAT and actual collections, particularly in the mining sector (sector 2). Sector import and export data can be constructed from individual import and export declarations recorded at Customs by classifying them according to VAT reference numbers. But, export data associated with VAT reference numbers are available only after 2012, and some declarations for export at Customs do not have VAT declaration numbers and so could not be classified into sectors. Combined with the problem caused by the different classification system, in some sectors, the values of allocated export goods are substantially smaller than declared zero-rated goods and services, particularly in sector (mining and quarrying).<sup>18,19</sup> This problem led to larger potential VAT results in these sectors compared with actual collections.

**22. To specify sector compliance gap numbers appropriately for more detailed analysis, it is necessary to have a common sector classification and consistent sector decompositions of export and import.** Although the estimates for overall potential revenues and compliance gap number will not be affected by detailed sector information, estimates for sector potential revenues and gaps heavily rely on data about sector information with a common classification system. Currently, detailed sector information is not sufficiently available, and the differences between these numbers would not usefully suggest the compliance situation in each sector. However, it would be worth finding out the reasons for current discrepancies between potential and actual numbers in each sector, for example by investigating the differences in export declaration at Customs and declarations for zero-rating goods and services.<sup>20</sup>

## ESTIMATION AND EVALUATION OF THE POLICY GAP

### A. Definitions and Methodologies

**23. The VAT policy gap and tax expenditure are calculated as the difference between theoretical revenue given a hypothetical policy framework and potential revenue given the current policy framework (Potential VAT under current policy: PV1), to show the efficiency of VAT policy.** In calculating the policy gap and tax expenditure, it is not assumed that taxpayers' behavior would be different under the normative policy framework, so the policy gap should not be

<sup>18</sup> It is also difficult to accurately specify the aggregate value of declared export in the VAT returns for each sector, because the separate declaration for zero-rated export (Field 2A) was newly introduced in 2010, and some zero-rated exports appear to be declared in the field for zero-rated goods and services excluding export (Field 2).

<sup>19</sup> There is another method to allocate export into sectors according to sector share of production inferred from supply tables, but the result of allocated export into sector 2 is similar to the one based on 2012 Customs data through the whole period of the analysis.

<sup>20</sup> It could be that there are holding companies (designated as being in the sector 8) performing purchases on account of sector 2 (mining sector) which would increase the actual VAT attributed to the former and decrease it for the latter.

interpreted as an indicator showing the size of expected additional revenues following transition to the normative framework, but an indicator of the efficiency of VAT policy.

**24. The difference between theoretical revenue calculated from final consumption and standard rate (PV3) and potential VAT under current policy is called a policy gap.** We refer to this as being only “theoretical” potential VAT because a policy framework in which all final consumption is taxed at a standard rate would likely be difficult to implement.<sup>21</sup> This is, nonetheless, an important measure, as the gap value arrived at with this measure is comparable to the value arrived at using the c-efficiency ratio.<sup>22</sup>

**25. The difference between theoretical revenue under a specific normative VAT structure with a single standard rate and a necessary minimum of exemptions and reliefs (Potential VAT under normative policy: PV2) and Potential VAT under current policy is called VAT tax expenditure.** Under this hypothetical policy framework, it is assumed that VAT at the standard rate is applied to all supplies except for financial services, residential housing rent, and public administration services, which are all assumed to be exempt, and exports, which are assumed to be zero-rated.<sup>23</sup> This means that the calculated VAT tax expenditure will mainly capture the effects of policies for the other exempted goods and services and zero-rating of foodstuffs, agricultural related goods, fuels and local government activities.

## B. VAT Policy Gap in South Africa

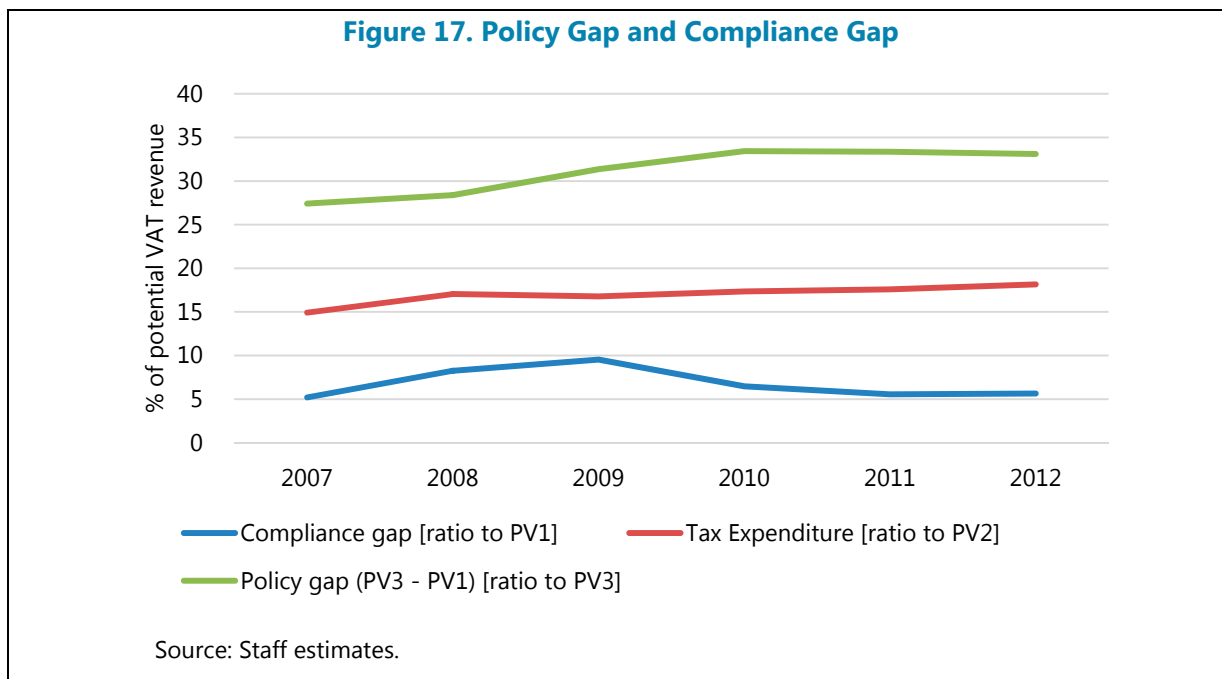
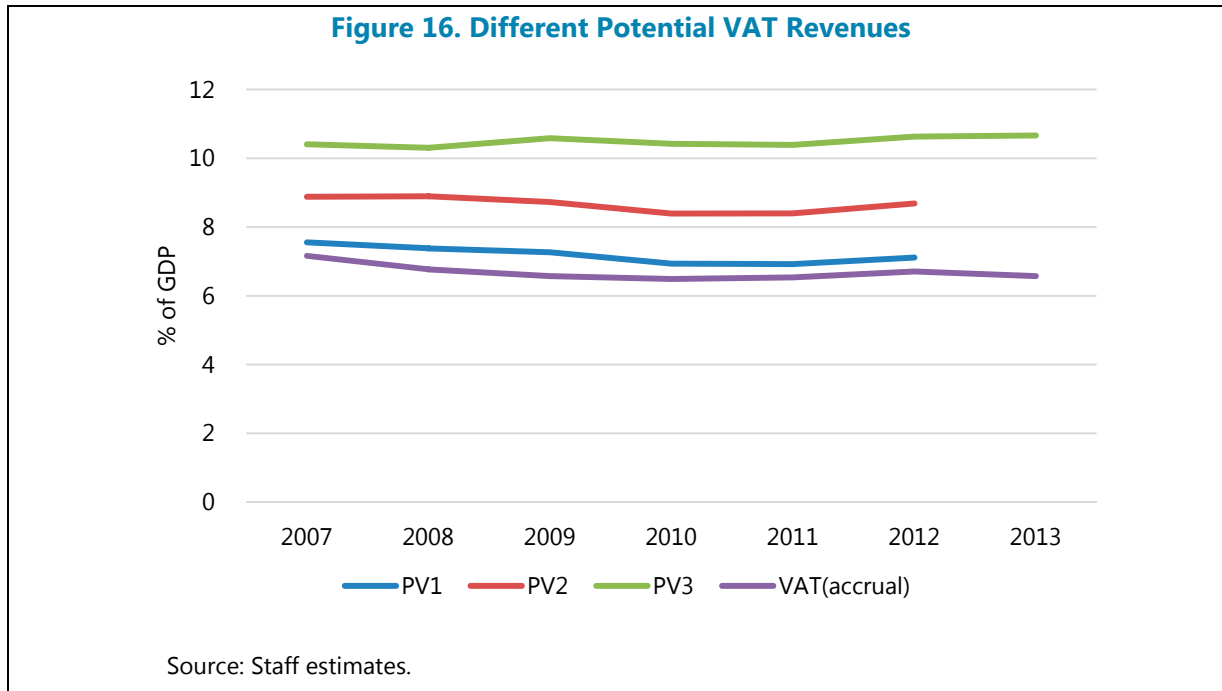
**26. The level of the VAT policy gap in South Africa is quite low by international standards.** The policy gap in South Africa is equivalent to 2.7-3.5 percent of GDP, and 25-32 percent of theoretical potential VAT (Figure 16 and 17), compared with average 41 percent in European countries, owing to its simple VAT policy structure. The VAT tax expenditure has been 1.1-1.5 percent of GDP.

**27. The policy gap and VAT tax expenditure in South Africa have been increasing over the period 2007-2012 (Figure 17).** Because there have not been any significant changes in VAT policy, the increase of the policy gap is attributable to increases in economic activities that are not taxable as a matter of (policy) choice. The main contributors to growth in the policy gap are the increasing share of zero-rated local government activities leading to rising input tax credit, and the increasing share of final consumption taken by petroleum products due to price increases and inelastic demand.

<sup>21</sup> The concept of final consumption in national accounts includes consumption on which is difficult to levy VAT (such as financial intermediation), and imputed transactions (such as government final consumption and imputed rents).

<sup>22</sup> C-efficiency ratio is calculated by dividing actual VAT collections by this theoretical potential revenues.

<sup>23</sup> The argument for these exclusions to standard-rating is largely pragmatic. For example, it is very difficult to levy VAT on financial services in practice, while just about every administration in the world zero-rates exports.



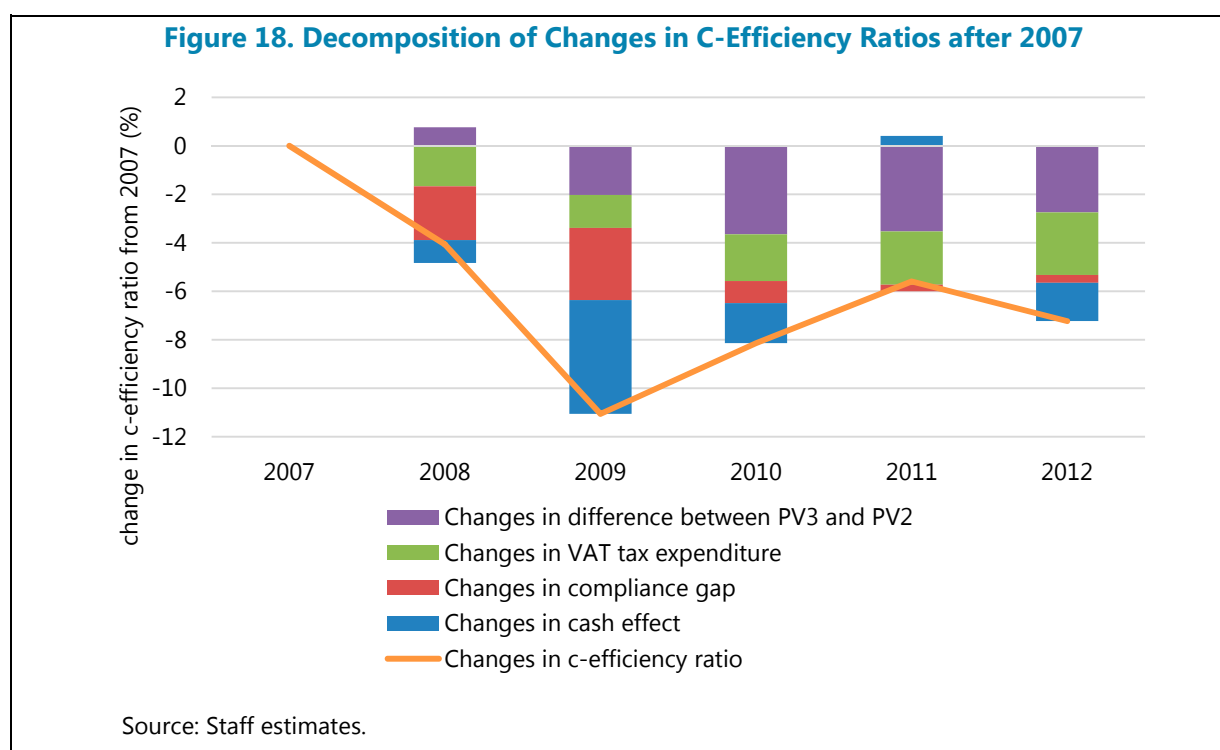
**28. Though the level of VAT tax expenditure is not high, it is still higher than the compliance gap.** This means that potential scope for additional revenue mobilization by restricting exemptions and zero-rates in the current VAT legislation (i.e. reducing the policy gap) is greater than by increasing the effectiveness of revenue administration (i.e. reducing the compliance gap). In principle, and all else equal, simplifying the VAT by removing exemptions could also improve compliance. However, it should be noted that the policy gap is quite low by international standards, so the actual scope for base erosion may be more limited.



### C. Changes in C-Efficiency Ratios in South Africa after 2007

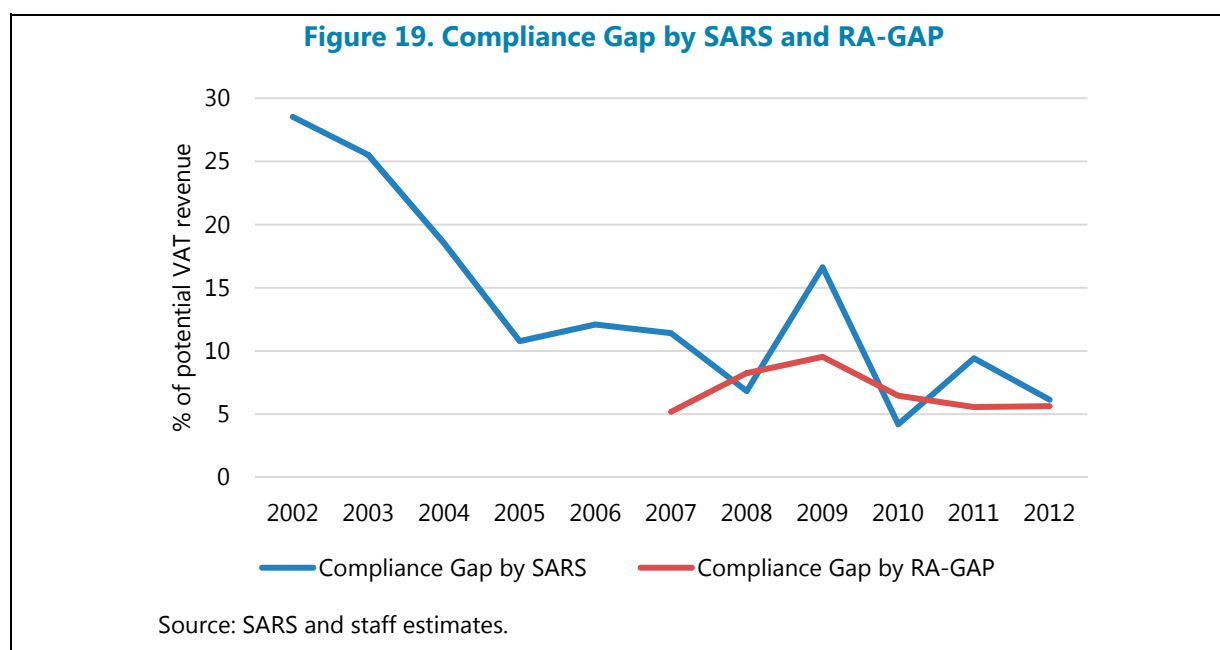
**29. Annual changes to calculated c-efficiencies were decomposed using the estimated compliance and policy gaps.** By using the results of the analysis of policy gap and VAT tax expenditure, the yearly fluctuations of c-efficiency ratios after 2007 can be numerically decomposed into four components: changes in the compliance gap, changes in VAT tax expenditure, changes in the share of non-taxable consumption (the difference between the theoretical potential VAT and the potential VAT under normative policy), and the timing effects of variations in the delays in making payments and refunds (Figure 18) (because c-efficiency is calculated by using cash receipts).

**30. A decomposition of c-efficiency changes suggests that the recent decline of both c-efficiency and VAT receipts as a percent of GDP has been caused by increases in economic activities that are either outside the VAT tax base or relieved of VAT by policy.** The sharp decline of c-efficiency ratios from 2007 to 2009 can be explained by the increasing compliance gap, with some amplification from the effects of increasing delays in payments and decreasing delays in refunds. Subsequently c-efficiency increased as the compliance and cash effects abated, even though the effects of the VAT tax expenditure and other base effects (difference between the theoretical potential VAT and the potential VAT under normative policy) continued to widen. As above, because changes to the changes to the level of GDP over this period were associated with similar changes to taxable final consumption, the same explanation can be applied to observed changes in VAT receipts as a percent of GDP.



## COMPARISON OF RA-GAP RESULTS WITH ANALYSIS BY SARS

**31. A method to estimate tax gaps for VAT has been studied and explored internally in SARS.** Potential VAT revenues ('VAT liability' in the analysis) were calculated for the period between 2002 and 2012 by using statistical data, including use tables from national accounts, and the ratio of difference between actual tax revenues recorded in Tax Statistics (net cash collection) and potential VAT revenues were defined as the VAT gap.<sup>24</sup> The calculated gap fell significantly from nearly 30 percent in 2002 to 10 percent in 2005, and then fluctuated in the range between 5 percent and 17 percent of potential VAT revenues (Figure 19).<sup>25</sup>



**32. There are two major differences in the methodology used by SARS from the RA-GAP approach.** These are:

[1] Actual collections are based on net cash collection data (by fiscal year),<sup>26</sup> whereas RA-GAP accrues individual payments and refunds to the period for which they are made; and

<sup>24</sup> 'Estimating the VAT gap, 2002-2012', January 30, 2014, internal SARS document

<sup>25</sup> The scale of the observed fall indicates a notable improvement in the compliance environment in South Africa's VAT. Neither the SARS VAT gap methodology nor RA-GAP's approach measure the relative impact of individual forms of non-compliance, so they cannot be used to diagnose the reasons for the decrease in the gap. However, SARS has undergone an extensive reform program over the last 15 years or so, which is discussed further in Section IV below.

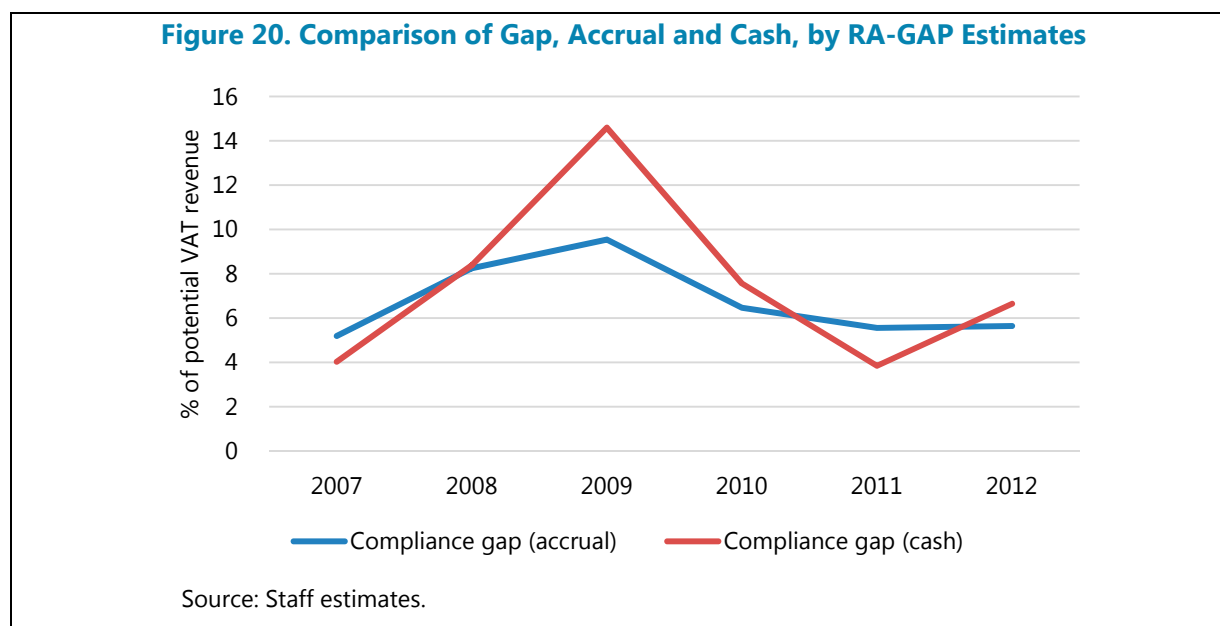
<sup>26</sup> Net cash collection data are based on fiscal year, while potential revenues are calculated for calendar year.

[2] Potential VAT revenues are calculated from demand side statistics only (mainly relying on final consumption data), whereas RA-GAP uses supply and use tables.

**33. SARS uses net cash collection data as actual VAT collections, which results in large fluctuation of calculated gap numbers.** RA-GAP's preferred approach to calculating VAT revenues is to allocate payments and refunds to the period for which they were made. Such an approach is required as a means of presenting the underlying trends in taxpayers' compliance more clearly. The approach provides a closer, more consistent link between receipts (and hence the estimated gap) and the underlying economic activities that generated them, and removes the short-term timing effects of payments and refunds.

**34. The comparison of gaps based on the RA-GAP potential VAT revenues also shows that calculated gap numbers become volatile when net cash collections data are used, especially in 2009 and 2011 (Figure 20).** This means that using the gap results derived from using net cash collection data makes it more difficult to understand the underlying trend in taxpayers' compliance, and can amplify or offset changes in the underlying compliance position.

**35. The potential VAT was estimated by SARS as the sum of three demand components, VAT liabilities from final demand, intermediate consumption and capital formation.** The final demand part consisted of taxable final consumption by households, intermediate consumption by government and informal sectors, and these numbers were calculated by using national accounts use tables. The relative weights of taxable and non-taxable (exempted or zero-rated) consumption for individual commodities were calculated from the information in the Income and Expenditure Survey (IES) in 2005/06 and 2010/11. Potential VAT revenues from intermediate consumption by the private sector (except for informal activities) and capital formation were calculated from data collected in the Annual Financial Survey (AFS).



**36. The method of estimating potential VAT used by SARS follows a generally consistent demand approach, although it needs some modifications for: [1] data treatments of final demand, [2] overestimation of final demand component, and [3] underestimation of capital formation component.** The correction of data treatment will reduce the estimated potential VAT before 2007, and modifications for final demand component and capital formation component will contribute to measuring yearly changes in potential VAT more appropriately.

**37. Treatment of final consumption by non-residents should be modified.** In the calculation for tax base by SARS, consumption by non-residents is not consistent through time. It is subtracted from domestic final consumption after 2008, and added to domestic final consumption before 2007. In general, however, final consumption by non-residents, which is originally included in domestic final consumption data, should be neither subtracted nor added in the calculation of potential VAT revenues.<sup>27</sup> Correction for this treatment will eliminate a step change in the calculated potential VAT over the period of 2007–2008.

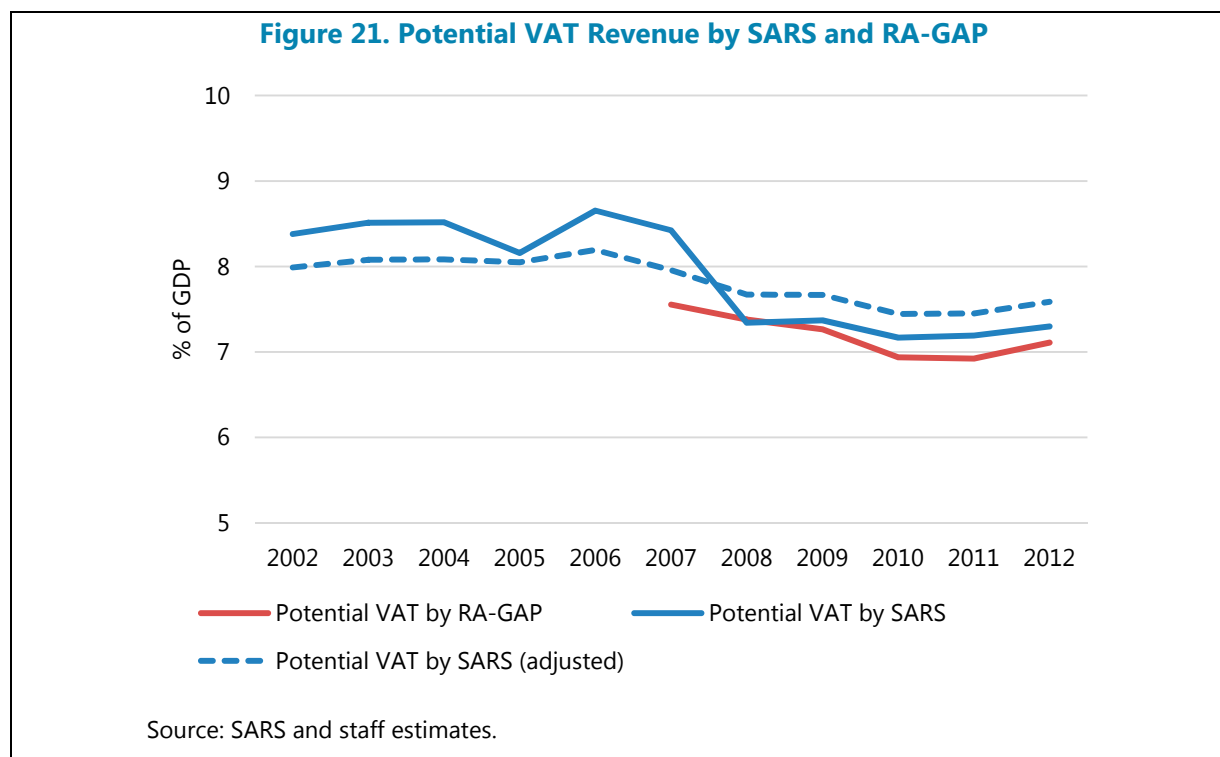
**38. Exemption ratios of consumption for financial services need to be reconsidered.** Up to 2007, it is assumed that 53 percent of household final consumption for financial services (CPC711) is taxable, while the assumption after 2008 was that there should be no taxable household final consumption of financial services. Although the effect of these different assumptions is not significant for the calculated result of potential VAT revenues, it does not look convincing to adopt qualitatively different assumptions through time.<sup>28</sup>

**39. The modifications for these data treatments result in more stable movement of potential VAT estimates by demand approach.** The estimated potential VAT revenues calculated by SARS stayed around 8.5 percent of GDP between 2002 and 2007, and then changed to around 7.2 percent of GDP after 2008. After the modifications for non-residents and financial services, the potential VAT revenues become more stable (dotted line in Figure 21).

---

<sup>27</sup> Some part of final consumption by non-residents is refundable for VAT. Because there is no reliable data about the share of refundable consumption by non-resident, the estimation in the model does not reflect the refund for non-residents.

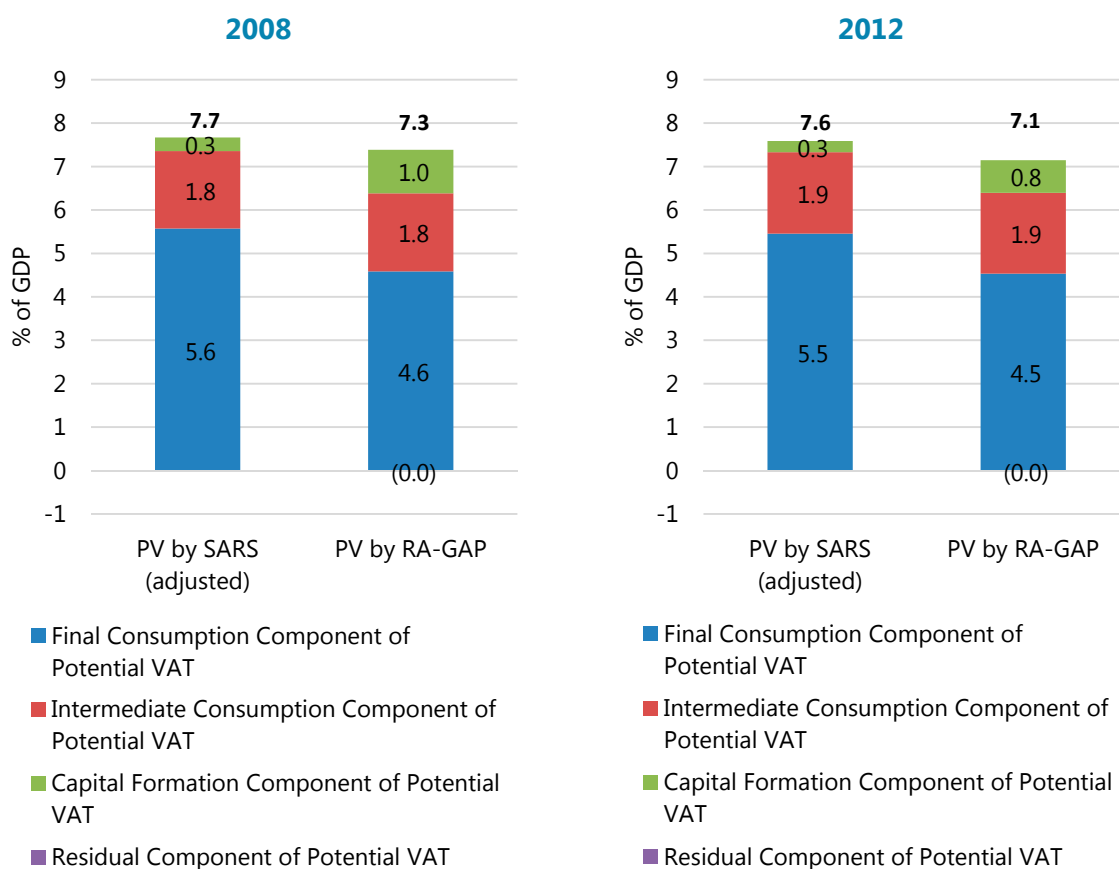
<sup>28</sup> In general, it is reasonable to adopt different ratios of exempted and zero-rated shares of consumption to reflect the changes in consumption patterns through time. SARS applies the detailed consumption data on IES2005/06 to the ratios up to 2007, and the data on IES2010/11 to the ratios after 2008. The RA-GAP calculation also uses the same assumption as the SARS calculation after 2008.



**40. In addition to the data treatments, potential VAT is overestimated by SARS, because VAT liabilities in the informal sector are double counted.** The overestimation of potential revenue comes from the treatment of production by informal sectors (defined as those businesses trading below the VAT registration threshold). While taxpayers in informal sectors are defined to be non-registrants and their intermediate consumption is included in the tax base for VAT, the sales of informal sectors are not excluded from taxable FC. This means that FC purchased by final consumers from non-registrants is treated as taxable, and intermediate consumption by informal sectors is double counted in the calculation of potential revenues.

**41. The coverage of capital formation in the SARS model does not include all relevant capital formation, leading to an underestimation of potential VAT for this component.** The SARS model only includes capital formation in residential dwellings in the VAT tax base. However, all capital formation by entities producing exempted products, including capital formation by government and the financial sector should be in the VAT base. As well, the restriction of input tax credits for purchases of passenger motor vehicles should be included in the tax base in capital formation given that the amount of capital formation for passenger motor vehicles appears to be significant.

**42. Because the overestimation of the final consumption component is greater than the underestimation of the capital formation component, the SARS result is estimated slightly higher than the RA-GAP's result, after the modification of data treatment (Figure 22).** This issue affects not only the difference in overall levels, but also biases in yearly changes. For example, RA-GAP results suggests a decreasing trend of potential VAT revenues since 2008 owing to the

**Figure 22. Demand Components of Potential VAT Revenues, 2008 and 2012**

decline of revenue from capital formation, but the SARS results do not capture the trend, because potential revenues from capital formation are underestimated (Figure 19). It is therefore recommended that SARS makes appropriate corrections for the two identified issues in post-2008 estimates.

## COMPLIANCE MANAGEMENT IN SOUTH AFRICA

**43. The estimated level of the VAT compliance gap is low by international standards, and SARS own estimate indicates a strong, sustained improvement in VAT compliance over the period 2002-2007.** The average VAT compliance gap in EU member states in 2012 is estimated to be 16 percent of potential revenues,<sup>29</sup> and the average VAT gap for Latin American countries is

<sup>29</sup> CASE (Center for Social and Economic Research), "2012 Update Report to the Study to quantify and analyse the VAT Gap in the EU-27 Member States", 2014, European Commission, TAXUD/2013/DE/321, FWC No. TAXUD/2010/CC/104

estimated to be 27 percent for the period 2006–2010.<sup>30</sup> Both the RA-GAP and SARS estimates of the compliance gap indicate low levels of noncompliance, and SARS estimated that the gap decreased from around 30 percent in 2002 to less than 10 percent in 2007. Because both the RA-GAP and SARS estimates are ‘top-down’, they do not measure the impact of individual types of noncompliance and so do not offer a diagnosis of the reasons for the low observed gap.

**44. SARS have undertaken a series of structural reforms and far reaching changes to their compliance management since 1998, covering all of the major taxes in South Africa.** The overall aim of these reforms was to increase the professionalism of SARS, with a customer-centric strategy, transformed tax compliance and greater efficiency. Though not formalized as such by SARS, there were three broad phases to this change process:

- From 1998 to 2002, SARS undertook a series of structural reforms. Previously tax administration in South Africa had been split between two separate organizations for Customs and domestic tax collection with separate units for various aspects of tax administration, e.g. collections and audit. Regional units also had a high degree of autonomy, each with their own support teams. The reforms led to a single revenue authority, led by a strong headquarters, with centralized process functions and standardized service offerings. SARS also gained more autonomy as an independent agency, with the authority to implement its own HR policies, e.g. recruitment, and staff pay and conditions.
- From 2001 to 2006, SARS implemented a rolling program of campaigns and initiatives designed to improve compliance risk management. These included the Woodmead compliance campaign; the Siyakha 1 and 2 infrastructure projects, which consolidated compliance functions into single units; the hiring of tax compliance experts from the private sector; and other administrative and process improvements. As well, there was an increased focus on the largest taxpayers, for example a project to increase the effective tax rates of banks, which culminated in the creation of the Large Business Centre (LBC) in 2005 to handle the largest taxpayers, mining companies and some other sensitive or complex entities.
- Since 2006, SARS has been modernizing and automating their administrative processes so as to achieve efficiency savings and reduce taxpayers’ compliance costs. A national compliance analysis was introduced in FY 2008/09 that provides a monitoring framework for key performance indicators (see Appendix III). National risk profiles have been implemented that are

---

<sup>30</sup> Trigueros, Miguel Pecho, Longinotti, Fernando Pelaez and Vecorena, Jorge Sánchez, “*Estimating Tax Noncompliance in Latin America: 2000-2010*”, 2012, Centro Interamericano de Administraciones Tributarias (CIAT), Tax Studies and research Directorate Working Paper No. 3- 2012

used for all taxpayers, except those controlled by the LBC. For LBC taxpayers, further analysis is added including intelligence updates and automated checks of standard accounting ratios.

At the same time as these administrative reforms there were a number of policy measures to reduce taxpayers' compliance burdens. As part of this process, the registration threshold for VAT was increased from R300,000 pa to R1 million pa.

**45. The impacts of these change programs appear to be reflected in SARS' estimates of the compliance gap.** Although SARS did not conduct a formal evaluation of the overall impact of changes prior to 2006, the observed level and trend of the VAT gap appear to show their effects. The structural reforms prior to 2002 created what is described as a period of administrative disturbance by SARS officials, and the VAT gap was relatively high, at 25-30 percent. When SARS implemented a program of strong compliance initiatives over the period 2002-2006, the VAT gap decreased steadily to under 10 percent. (NB: though not tested in this mission, SARS described the improvement in CIT revenue performance over the same period as being even greater than VAT.) This period also coincided with a period of strong economic growth in South Africa, and it is possible that this will have contributed to reductions in noncompliance (for example, if larger, more compliant businesses took a greater share of economic activity, or stronger revenues decreased firms' motivation for noncompliance). Subsequently, although the compliance gap increased in 2008 and 2009 (probably as a result of the financial crisis) it returned to under 10 percent and has been broadly level over the entire period 2007 to 2012. SARS evaluation of individual projects and campaigns since 2002 is consistent with the observed VAT gap trends, for example observing improved service times, automated risk processes leading to better audit results, and greater data efficiency reducing the time spent by auditors on routine checking.

**46. SARS are now using the national compliance model to monitor current compliance trends.** The program of automation and modernization of processes included implementing the national compliance analysis indicators, referred to within SARS as, 'the pillars of compliance'. The key performance indicators being monitored are registration, filing compliance, payment compliance and credit returns, and declaration compliance including audit results, together with net tax receipts. Overall, the results of these indicators are consistent with a level tax gap since 2011 and increasing efficiency within SARS.

**47. While VAT filing compliance is relatively low, payment compliance is much higher.** Over the period 2008/09 – 2013/14, non-filing by active taxpayers has increased by 13.3 percent, with the overall filing rate (on time and late) falling from 79.1 percent to 65.8 percent. SARS believes that this may be at least partly due to increasing numbers of taxpayers recorded as active that are actually inactive. Over the same period, payment compliance has risen from 81.1 percent to 85.1 percent. (NB: there are no penalties for late filing of VAT returns, but there are penalties for late or non-payment.) Analysis of individual taxpayer segments shows a positive correlation between turnover and these compliance indicators.



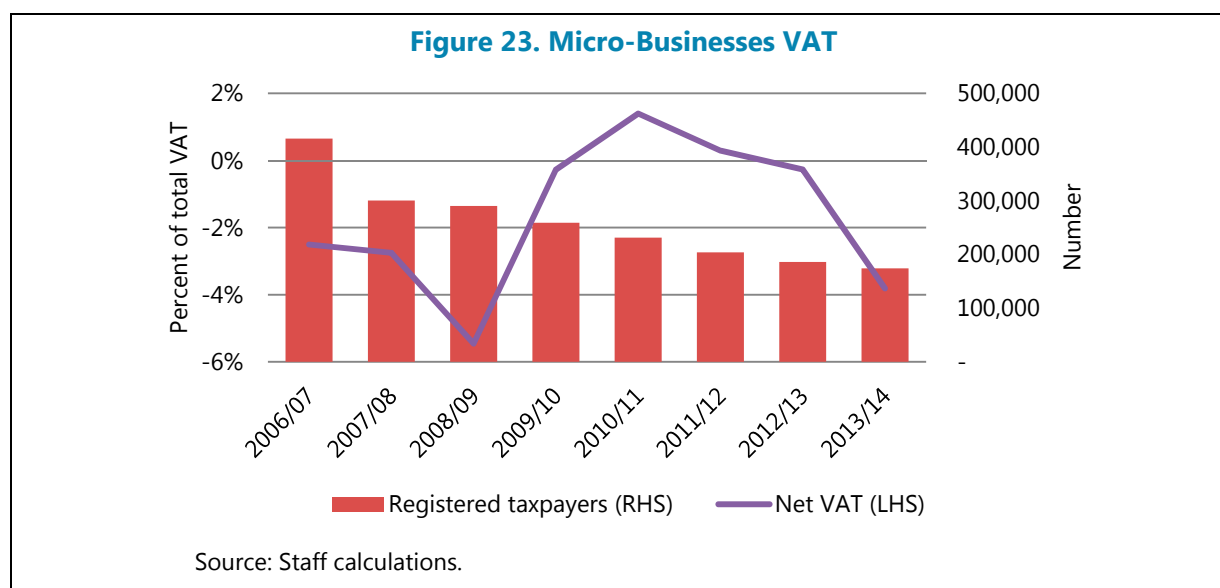
**48. Overall, the percentage of VAT returns showing net credits has fallen slightly, but the average amount claimed has increased.** From 2008/09 to 2013/14, the proportion of credit returns fell from 21 percent to 18.4 percent of all VAT returns, but the average value of excess credits rose from R182,735 to R317,869, and total value of credit returns rose accordingly, reaching R157 million in FY 2013/14. The increase in the overall excess credits is due to increasing import in South Africa.

**49. Audit coverage by SARS has decreased from 2011/12 to 2013/14, but the additional yield has risen.** The number of audits conducted by SARS (excluding verification checks) has fallen from 7,612 in FY 2011/12 to 3,565 in FY 2013/14. However, the percentage of audits finding inaccurate declarations has risen from 51.7 percent to 62 percent. The average yield per audit has also risen very strongly, and overall yield from audits has risen from R4.5 billion to R6.1 billion. Whilst it is possible that the increase in 2013/14 may be due at least partly to higher levels of noncompliance—there is no estimate yet of the VAT gap for that year—these results do otherwise indicate better targeting of audit resources and more effective auditing.

**50. The increase in the VAT registration threshold in 2007 decreased the number of registered micro business and net VAT repayments (Figure 23).** In FY 2007/08, the registration threshold for VAT was increased from R300,000 pa to R1 million pa and a sustained campaign to de-register micro businesses trading below the threshold was implemented (though such traders retained the right to be registered on a voluntary basis). This noticeably reduced the number of registered micro businesses. Prior to the rise in the threshold, businesses with annual turnovers of less than R1 million had been receiving overall net VAT repayments worth around 2-3 percent of total VAT receipts. Following the increase in the threshold, the net repayment to such businesses initially rose to around 5 percent of total VAT receipts in FY 2008/09 as businesses liable for net VAT payments deregistered. However, the net repayments to micro businesses fell to negligible levels in subsequent years. This will have reduced the observed VAT gap by around 2-3 percent. NB: SARS have noted an increase in refunds paid to micro businesses in FY 2013/14, to about 5 percent of total VAT receipts. In order to manage the potential compliance risk indicated by this rise – the potential of increased contrived or fictitious registrations intend to claim fraudulent VAT refunds, SARS have implemented tighter controls on VAT registrations, including the scrapping of a planned introduction of online registrations.

**51. The number of non-VAT registered businesses has decreased overall since 2001 (Table 2).** Stats SA conducts regular surveys of employers and the self-employed at four year intervals.<sup>31</sup> This survey records the number of businesses trading below the VAT registration threshold, and their demographics. The most recent survey shows an overall decline in the number of individuals running such businesses from 2.3 million to 1.1 million in 2009, despite the increase in the VAT registration threshold. The number increased in 2013, to 1.5 million, perhaps due to the financial

<sup>31</sup>“Survey of Employers and the Self-employed 2013”, Statistics South Africa, 2014. There is a view that the 2001 result cannot be compared with other years because of a different sampling method, and the downward trend of non-VAT registrants could be exaggerated.



**Table 2. Turnover of non-VAT Registered Businesses in South Africa 2001–2013**

(Percent)	2001	2005	2009	2013
R0 - R100	10.8	11.4	8.8	8.2
R101 - R350	29.5	21.4	14.5	11.0
R351 - R750	21.4	23.3	18.7	13.8
R751 - R1 500	15.3	17.0	19.9	19.3
R1 501 - R3 000	8.5	12.2	15.8	18.5
R3 001 - R6 000	6.0	7.0	10.8	14.6
R6 001 plus	3.7	7.4	11.5	14.6
Unspecified	4.9	0.3	0.0	0.0
<b>Number of businesses (thousands)</b>	<b>2,258</b>	<b>1,668</b>	<b>1,144</b>	<b>1,517</b>

Source: Stats SA.

crisis. Over the period 2001–2013, the average size of non-registered businesses has increased, but the great majority (85 percent in 2013) reported annualized turnovers less than R72 thousand, well below the registration threshold of R1 million.

### Recommendations

**52. SARS should continue to estimate the VAT compliance gap in South Africa, and further integrate their revenue analysis and compliance analysis.** Both the revenue analysis and national compliance analysis currently being conducted by SARS represent good practice, and SARS should review and update their compliance gap estimates as updated data becomes available. There is scope for more systemic integration of these analyses, using the compliance analysis to inform the revenue analysis, and the revenue analysis—particularly, a regularly updated compliance gap

analysis—to set the strategic context for the national compliance analysis. As well, SARS could monitor detailed time series of sectoral and other demographic aggregate returns and payments data to identify, changing trends, step changes and spikes that might indicate new or emerging compliance risks. Such monitoring should bring together both revenue and compliance analysts and operational experts. In addition to supporting better compliance risk management, this process should also aid better fiscal analysis. SARS could also consider extending this approach to revenue and compliance analysis to other taxes.

## Appendix I. The RA-GAP Model and Methodology

### A. Introduction

RA-GAP aims at estimating potential tax revenues from macroeconomic data, and finding out the magnitude of gap by comparing it to appropriately evaluated actual tax revenues. In order to analyze the gap, the best way is to break down both revenue data into economic sectors and trace the trend of gap through time. This enables us to capture the reasons for fluctuations in the overall gap indicator, whether due to changes in potential revenue or to compliance issues in specific sectors.

The difference between the potential revenue under the current tax rules with full compliance and the actual revenue is called a compliance gap. RA-GAP will treat this gap as a representative indicator, and analyze its level and changes. Other indicators based on hypothetical tax legislation and the analyses of effects due to changes in tax policies ('policy gap' in RA-GAP) will be provided as supplementary components to help to explain the level and changes of potential revenues and gaps.

The general approach of the RA-GAP methodology is to estimate the size of the compliance gap on a *top-down* basis. That is, it sets out to estimate the total size of compliance losses by comparing actual VAT collections to potential VAT collections estimated from economic statistics covering the whole of the VAT tax base. The critical advantages of this approach are that (a) it should cover all compliance losses, whether or not they have been separately identified; and (b) the results can be compared to the costs of tax expenditures and reliefs as barriers to revenue mobilization. The alternative, *bottom-up*, approach of estimating losses of each behavioral component of the compliance gap individually may also be used to help identify drivers of the total gap.

#### ***Estimating potential value-added tax revenue***

Potential tax revenue can be generally calculated as the sum of the product of potential tax bases and corresponding statutory tax rates. For VAT, there are several approaches to estimate the tax bases from macroeconomic statistics, e.g. from simply taking final consumption or by capturing the ends of VAT chains by looking at demand data.

In the RA-GAP, the aim is to deal with each sector's value added, i.e., output minus input, as VAT tax bases. Tracking value added by each sector along the line of production chains is exactly how VAT due is actually determined. In addition, in real VAT systems there are a large number of different treatments for commodities and sectors, such as exemption and the application of different tax rates. This approach enables us to directly reflect such systems in the estimation of overall potential tax revenues. It also carries an advantage that sectoral potential revenues can be easily estimated and matched to actual sectoral tax collections in the analysis, which enables the identification of causes of the level and changes to the overall gap.

It may be possible to adopt other approaches, such as using detailed household surveys and demand data, depending on the nature and quality of available data in a specific country. The worth

of any method depends on the quality of data, and alternative approach might produce more reliable estimate if the used data are more reliable than the value added approach.

It should be noted that any approaches using macroeconomic statistics have error margins—due to simplifications in modeling and difficulty in measuring the full impact of the shadow economy. In addition, this kind of top-down approach in estimating potential revenues carries an inherent risk of overestimating potential VAT within the extant tax law because of tax avoidance activities and other questions of legal interpretation. Those may be technically complying with tax rules, but the reduction of revenue cannot easily be captured in the estimation. Without a specific adjustment, it would therefore be included in the compliance gap number, even though it requires a policy response or litigation, not administrative measures.

### ***Determining the corresponding actual value-added tax revenue***

The next step is to measure the amount of actual VAT collections. Tax is obviously collected in cash and all tax authorities record yearly cash collections, netting out payments and refunds during the period. However, in the analysis of RA-GAP, it is important to compare the potential tax revenue with the amount actually collected out from that potential in order to trace correctly the relative changes in compliance. Since cash collection in a specific period does not necessarily correspond to the tax due that accrued in the same period, it is necessary to allocate the cash collection data to the periods in which tax due actually accrued.

In general, yearly cash collection is the most eye-catching data, not least because total receipt of cash payments is one of the most reliable data. The RA-GAP approach will use cash collection data, but it will link collected tax revenue and underlying economic activities. This can be achieved through fully utilizing the vast volume of individual tax return and payment records available to tax authorities. This procedure helps us to capture the real trend of the compliance gap without the effects of concurrent lags in payments and refunds. Where appropriate, the RA-GAP estimates will be reconciled to cash-based estimates so as to allow tax administrations to better understand this linkage.

The tax collection data will be sorted out into sectors in the economy, and compared to the potential revenues for each sector. Using sectoral or institutional collections data will help us to understand trends, by considering specific features. A comparison of potential VAT receipts against actual collections for each individual sector also allows us to identify those sectors with larger compliance gaps, and thus some insight as to the nature and placement of non-compliance in the country.

It would be also useful to take into account assessment data showing amounts assessed but not yet collected at specific points. Such data will also help analyzing the causes of changes in compliance level, and may give useful information of a need for streamlining systems such as investigation, assessment and enforcement.

### Relative size of 'compliance gap' to 'policy gap'

RA-GAP will treat a compliance gap as a representative indicator, and analyze its level and changes. As a further analysis, the magnitude of the compliance gap can be compared with the impact of policy measures, by using the indicators based on hypothetical tax legislation and the analyses of effects due to changes in tax policies. RA-GAP will provide this indicator as a 'policy gap' (Figure 18). This analysis can provide policy makers and administrators with a perspective on necessary actions for revenue mobilization.

## B. Measuring Potential Revenues for a Value-Added Tax

The RA-GAP employs a model designed to estimate the taxable value-added across all sectors of the economy. The approach is similar in structure to the method individual taxpayers use to determine their individual liabilities. The tax liability for an individual taxpayer is determined by the amount they pay customs on their imports, plus the VAT they must charge on their output sold domestically (exports being zero-rated), less the VAT they paid on their inputs. The value-added model works with statistical data available through national accounts supply-use tables, or input-output tables, to estimate the potential amount of tax on imports by a sector, plus the tax applicable to the output of a sector, less the amount of input tax credit due the sector.<sup>32</sup>

### The potential revenues model

The value-added based potential revenues model is:

$$PV^s = \sum_c (M_c^s \times \tau_c) \times r^s + \left[ \sum_c (Y_c^s - X_c^s) \times \tau_c \right] \times r^s - \left[ \sum_c (N_c^s + I_c^s) \times \tau_c \right] \times r^s \times (1 - e^s) \times \eta_c^s$$

Where,

$PV^s$  = the potential net VAT for a sector,

$M_c^s$  = imports by sector s of commodity c,

<sup>32</sup> An alternate model structure for estimating the potential revenues for a VAT is to use statistical data on final consumption to determine the VAT paid by the end consumer, and then add an estimate of the amount of final VAT borne by exempt businesses using statistics on intermediate demand. In theory both methods should yield similar results, as they are both theoretically identical definitions of the potential tax base. This equivalence is similar to the basic National Accounts identity:

$$C [+G] = Y - I - X + M [-G]$$

The consumption based approach to estimating the base would be represented by the left-hand side of the equation, with the value-added based approach represented on the right hand-side. "G" is appearing as potentially being on either side of the equation, as its location, for a VAT gap model, would depend on the precise treatment of government - whether they have to pay tax on their purchases, and so more closely relate to final consumption, or whether they are not subject to the VAT and so are excluded from the potential VAT base.

$Y_c^s$  = output by sector  $s$  of commodity  $c$ ,

$X_c^s$  = exports by sector  $s$  of commodity  $c$ ,

$N_c^s$  = intermediate demand (consumption) by sector  $s$  of commodity  $c$ ,

$I_c^s$  = investment by sector  $s$  of commodity  $c$ ,

$\tau_c$  = the VAT rate that applies to commodity  $c$  (zero if zero-rated or exempt),

$\eta_c^s$  = the proportion of input tax credits for commodity  $c$  by sector  $s$  allowed to be claimed,

$r^s$  = the proportion of output for a sector produced by registered businesses, and

$e^s$  = the proportion of output for a sector which is exempt output.

Values for each of these variables are determined as follows:

**Y, X, M, N, and I:** Data for these variables is obtained from their respective components in statistical supply-use (or input-output) tables. The data for the external trades, X and M, require some adjustment before being input into the model; this adjustment is described below.

**$\tau_c$ :** This is the first of the two “policy variables” in the model. The values for  $\tau_c$  are obtained from the tax rate structure for each commodity, except for trade services. The explanation and method for the trade services are described below. For the calculation of hypothetical revenues under reference tax structure, the standard rate is assigned to the full vector  $\tau_c$ , apart from those supplies typically exempted internationally (margin-based financial services, life insurance, and residential rents).

**$\eta_c^s$ :** This is the second policy variable in the model. The values in estimating current potential revenues are determined by any specific statutory limitations on input tax credits, such as a general disallowance of input tax credits for restaurant meals; such a disallowance would be indicated by a value of 0 for the commodity of restaurant meals across all sectors; the default value is 1. All values in  $\eta_c^s$  are set to 1 for the calculation of revenues under reference tax structure.

**$r^s$ :** Estimates for the values for  $r^s$  are determined in conjunction with the authorities, possibly making use of business licensing data, or Customs transactions data.<sup>33</sup>

<sup>33</sup> There is an assumption here that the same value of  $r^s$  applies across Y, X, I, and N. It can be shown that this assumption is only of consequence if there are any significant difference between the level of  $r^s$  for Y and X. As the level of  $r^s$  is generally fairly close to one, the results are not that sensitive to this assumption. As such, while it might

(continued)

$e^s$ : The proportion of output for a sector which is taxable is a function of  $\tau_c$ . The values for  $e^s$  are determined by comparing the value of exempt output in a sector to the total output of the sector. That is  $e^s = \sum_c (Y_c^s \times \tau'_c) / \sum_c (Y_c^s)$ , where  $\tau'_c$  is a vector which distinguishes whether commodity  $c$  is exempt ( $\tau'_c = 1$ ) or taxable ( $\tau'_c = 0$ ).<sup>34</sup>

### **Adjustments for variables X and M**

Adjustments to the raw statistical data for exports and imports as supplied by the supply-use tables (or input-output table) are necessary. Specifically the values for exports needs to be adjusted to remove the value of domestic consumption by non-nationals, and the value of consumption abroad by nationals which is included in the values for imports needs to be removed.<sup>35</sup>

### **Determining the weighted average statutory rate for the output of the trade sector**

To determine the value for  $\tau_c$  applicable to the retail and wholesale trade services, a weighted average statutory rate is determined based on the trade margins by commodity type. This rate is determined as follows:

$$\tau_T = \sum_{c'} (\tau_{c'} \times K_{c'}) / \sum_{c'} (K_{c'}) ,$$

where,

- $\tau_T$  = the weighted average statutory rate for the trade services commodities,
- $\tau_{c'}$  = the statutory rate for commodity  $c'$ , where  $c'$  includes all commodities but the trade services commodities, and
- $K_{c'}$  = is the trade margins associated with commodity  $c'$ .

### **Accommodating complexities in the policy structure**

While the two policy variables  $\tau_c$  and  $\eta_c^s$  can be used to model most policy structures, there are some structures which they are able to accommodate. There are too not uncommon circumstances in

---

be more technically correct to come up with separate values for Y and X, this would likely greatly increase the time and effort required to construct the model with no discernible difference in the final results.

<sup>34</sup> This assumes that the proportion of inputs to output used in producing the taxable supplies and non-taxable supplies is identical. While this is most likely not the case for any individual taxpayer, many jurisdictions use just such an apportionment rule to determine the allowable amount of input tax credits for businesses making split supplies (taxable and exempt supplies). In such case this model treatment would exactly coincide with the statutory requirement. In jurisdictions where taxpayers are allowed to apportion their supplies based on actual use,  $e^s$  could be determined by tax return data on the proportion of input tax being creditable to those sectors with exempt output – presuming the required information is being captured on the return.

<sup>35</sup> In a best case scenario the supply and use tables will specifically include the data used for these out these special categories of imports and exports (domestic consumption by non-nationals, and consumption abroad by nationals) making it simple to adjust the tables to the definitions for VAT purposes. In cases where this specific data is not available, an approximation can be made by removing values for the import or export of services which are typically consumed at the place of supply – such as hotel and restaurant supplies, and local transportation supplies.



particular which either requires adjustments to the inputs into the model, or adjustments to the structure of the model:

- a) a tax structure that has provisions which relate to a sector as a whole, as opposed to a particular type of supply or commodity; for example an exemption which applies to the financial sector instead of particular financial services, and
- b) a tax structure that has special provisions for particular types of transactions; for example the zero-rating of certain otherwise taxable business-to-business transactions.

### **Sector specific tax rates**

Sector specific tax rates can be accommodated by using a sector by commodity matrix of tax rates,  $\tau_c^s$ , instead of the simple vector in commodity space,  $\tau_c$ , for the treatment of the tax to be applied to output, and in the computation of input tax credits. The simple  $\tau_c$  vector of rates would still apply against imports.

The calculation of  $e^s$  also needs to be adjusted in such cases. Instead of using  $\sum_c (Y_c^s \times \tau'_c)$ , to determine  $e^s$ , as specified in the equation above, the calculation would include the term  $\sum_c (Y_c^s \times \tau_c^{s'})$ , where  $\tau_c^{s'}$  is a matrix of specific vector of ones and zeros, with one indicates an exempt commodity  $c$  for sector  $s$  – so  $\tau_c^{s'}$  would have a vector of zeros for any exempt sectors.

### **Transaction specific treatments**

Dealing with transaction specific treatments, where a different rate schedule might apply to a supply depending on the nature of either the supplier or recipient generally requires additional data on the value of these supplies. These specific treatments cannot, in fact be accommodated in the model and must be dealt with on the data side. There are two classes of these types of transactions, taxpayer-to-taxpayer transactions, and taxpayer-to-final consumer transactions. These two classes of transactions require separate treatments.

- 1) Taxpayer-to-taxpayer transactions

There are two potential solutions to deal with this circumstance: split the commodity into two component commodities based on their tax treatment, or to ignore such transactions. To split a commodity requires adding a new commodity to the supply use tables and to the policy variables. Adjustments to both the output and input variables would be needed. This treatment requires data on the value of these transactions.

It is also possible to simply ignore these transactions. These transactions have no net impact on the overall gap estimate; they only impact the value of the gap at the sectoral level. The gap for one sector in the transaction will include some of the gap which should be allocated to the other sector.

- 2) Taxpayer-to-final consumer transactions

Again special tax treatments under this category require treatment on the data side. In this case the final estimate of the potential VAT from the retail sector would need to be reduced by external estimates of the cost of the tax expenditure.

### C. Measuring Actual Collections

The RA-GAP measures actual tax collections from the same economic activities upon which potential revenues are estimated. It requires reallocation of cash collection data into the periods in which tax due actually accrued.<sup>36</sup> These reallocated data are called 'accrued collections', formulated as follows:

$$AV^s = C^s + P^s - R^s (+ OP^s)$$

Where,

$AV^s$  = accrued VAT collections for the period,

$C^s$  = collections at customs in the period,

$P^s$  = payments received for the period,

$R^s$  = excess credit accrued for the period, and

$OP^s$  = payments offset by excess credit (excess credit carried forward to offset tax due, or excess credit accrued for the period used to offset tax owing for the past periods).

Values for each of these variables are determined as follows:

**$C^s$ :** Collections at customs in the period, by sector, are obtained from the customs declaration database. Declaration data necessary to determine these amounts includes: the value of VAT payments on imports, the date of entry for the declaration the payment is associated with, and the sector of activity for the taxpayer making the declaration.

**$P^s$ :** Payments received for a period is obtained from the payments transaction database. The data needed from the payment transactions database would include: the value of VAT payments made (exclusive of interest or penalties), the date of payment, the tax period for which the payment is for, and the sector of the taxpayer who made the payment.

**$R^s$ :** To determine the amount of excess credit in a tax period, data from the tax returns database is required.<sup>37</sup> The data to be extracted would include: the value of excess credit, the

<sup>36</sup> While in the long run cash collections and accrual cash collections should balance out, there can be wide variations between the two for a given period, as cash collections will include arrears collections from other periods and the stock of arrears changes.

<sup>37</sup> While the transactions database may include data on actual refunds paid, data on the value of excess credits accrued in a period will be needed in order to properly measure the accrued collections. If the excess credit is used to offset other tax obligations, it should be recognized as a reduction in net VAT collections.

tax period the excess credit return was submitted for, the date of filing for the return, and the sector of activity of the taxpayer who filed the return.<sup>38</sup>

**OP<sup>s</sup>:** This variable only applies in jurisdictions where taxpayers are required, or allowed, to carry excess credit generated in one period forward for use against any obligations in the next period, in place of a refund request, or to offset past tax liabilities by excess credit. These data would again need to be obtained from the tax return database, in addition to the related tax period, and the sector of the taxpayer.<sup>39</sup>

There are a few additional nuances to the tax return and payments data necessary to consider when completing gap estimates, which are discussed below.

## D. Measuring and Reporting the Compliance Gap

The compliance gap, as stated above, is measured by the current potential collections, as determined in step 1, minus the actual collections, as determined in step 2. As the value for accrued collections will change over time, the value for the gap will change over time. There are two general measures that RA-GAP uses in order to provide standardized static measures of the compliance gap which can be used comparatively over time, and across jurisdictions:

- 1) the compliance gap at the time of filing
- 2) the compliance gap at the time of Estimation

The methods for measuring these two indicators, specifically the data considerations, are provided below. In addition there are some other measures which could be conducted dependent on data availability.

### *The compliance gap at the time of filing*

The compliance gap at the time of filing is measured at the original filing/payment deadline. In measuring the accrued collections, data for  $P^s$ ,  $R^s$ , and  $OP^s$  are filtered to only select payments and returns received before their appropriate deadlines. The tax return data selected for  $R^s$  and  $OP^s$  is

---

<sup>38</sup> In order to properly measure excess credit for a given period, it may be necessary to compute it from some of the fundamental line items on the return, rather than using the reported value for net tax owing. The proper computation of net tax for the period should be: output tax on supplies made in the period, plus any self-assessed VAT on imports, minus VAT paid on inputs used in making taxable supplies. If this value does need to be recomputed, it will need to be computed on a taxpayer by taxpayer basis.

<sup>39</sup> The amount of excess credit used to offset tax owing is generally not recorded explicitly on either the return or in the return database. The method for determining this value is: if the net tax owing (as determined above) is greater than zero, and the excess credit carried forward is greater than zero then the amount of excess credit used as a tax payment is either the net tax owing, if the excess credit carried forward is greater than the net tax owing, or the excess credit carried forward, if the net tax owing is greater than the excess credit carried forward.

the data as originally submitted by the taxpayer.<sup>40</sup> This measure for the gap will not change over time, and provides a basis for comparison as to how the gap evolves over time as the administration collects on arrears and yields additional assessments.

### **The compliance gap at the time of estimation**

The compliance gap at the time of estimation is measured using the latest available data for returns filed, assessment values, and collection and refund payment values. Ideally this measurement would occur annually using the annual anniversary of the last filing/payment deadline for a tax year. Data for the variable  $P^s$  is filtered to select payments made by that date. The tax returns data for variables  $R^s$  and  $OP^s$  is the current assessed values for the data as of that date.<sup>41</sup> This value will change from year to year, but the value as measured at a particular point in time will remain static. Comparing changes to this measure of the compliance gap over time can provide insight into the collection performance of the administration.

### **Reporting the compliance gap**

While the measure for the compliance gap above was expressed as simply being the difference between the potential revenues and actual collections, RA-GAP more commonly expresses the compliance gap as:

$$\frac{CPV - AV}{CPV}$$

or the compliance gap as a percentage of current potential revenues. This provides a more useful measure for comparing changes in the value over time, and across jurisdictions.<sup>42</sup> The values of the compliance gaps are also expressed as percentages of GDP, to provide a common basis for comparison with economic activities and the magnitude of policy gaps.

---

<sup>40</sup> Most tax administration information systems keep track of the original values on a tax return, plus all subsequent changes. As the notion with this compliance gap measure is to attempt to measure only voluntary compliance, then it is important that the return values used not reflect any subsequent assessment actions by the authorities.

<sup>41</sup> Some compromise might be needed in regards to the assessed values, as not all administration information systems record the date for all changes to a return. As such, the compliance gap calculation might have to specify that it is based on the assessed data as of the date of extraction. Managing a consistent timeframe between each annual measurement would then involve maintaining a fairly consistent data extraction anniversary date.

<sup>42</sup> While an argument could be made that a value for the compliance gap measured purely as  $CPV - AV$  is of more relevance, as it provides the authorities and policy makers a value for the potential yield to be gained in particular period from increased compliance efforts, this can be misleading – the value does not on its own give an indication of how much of that yield might be *reasonably* gained.

## Appendix II. Application of RA-GAP Model to South Africa

### A. Introduction

Potential VAT revenues (PV1 and PV2) are calculated for each year between 2007 and 2012 by using supply and use tables (62 sectors and 104 commodities) of each year with the policy parameters specified in B. Actual VAT collections for each year is calculated by the sum of [1] payments reallocated to the tax period starting each calendar year, [2] excess credit declared in the tax period starting each calendar year, and [3] payment at Customs during each calendar year.

### B. RA-GAP model for potential VAT revenues

For the calculation of PV1 (potential VAT revenues under current policy structure), the following ratios are used to specify the amount of exempted products and zero-rated products. These ratios are based on consumption share in the IES2010/11.

#### Exemptions

CPC_239	Food n.e.c.	0.0637
CPC_64	Passenger transport services	0.9097*
CPC_711	Financial services	1
CPC_72	Real estate services	0.9818
CPC_92	Education services	0.9690

(\*) For CPC\_64, the production by I42 (Land transport, transport via pipe lines) and I61 (Other activities) is treated as exempted.

#### Zero-rating

CPC_01	Products of agriculture, horticulture and market gardening	0.8799
CPC_02	Live animals and animal products (excluding meat)	0.5048
CPC_212	Prepared and preserved fish	0.4730
CPC_213	Prepared and preserved vegetables	0.2090
CPC_215	Animal and vegetables oils and fats	0.2924
CPC_22	Dairy products and egg products	0.3796
CPC_231	Grain mill products	0.7427
CPC_233	Preparations used in animal feeding	1*
CPC_234	Bakery products	0.4924
CPC_33	Coke oven products, refined petroleum products	0.9792
CPC_346	Fertilizers and pesticides	1*

(\*) For CPC\_233 and CPC\_346, only transactions for intermediate consumption are treated as zero-rated.

### ***Treatment of government***

Public administration services produced by the government are used in three categories: government final consumption, final consumption by households, and intermediate consumption. Because government final consumption is the notional value of services provided to general public without actual transactions, it is regarded as non-taxable. The other transactions are regarded as taxable transactions.

Since public administration services produced by LG are zero-rated, they can claim input tax credit for their purchase. On the other hand, services produced by CSG are treated as exempted, and they cannot claim input tax credit. Production of public administration services by the government sector (I55) is divided into production by central and state governments (CSG) and production by local governments (LG) according to the ratio of intermediate consumption for each year.

### ***Treatment of informal sector***

In supply and use table, Sector I62 (non-observed, informal, non-profit, households) represents the economic activities by small entities estimated from the data of business entities under the threshold of VAT. Therefore, the production of I62 is regarded as exempted in the model.

The production by I62 can be used in three categories: final consumption of households, intermediate consumption, and capital formation. It is assumed that trade services are directly used by final consumers, and other goods and services are used primarily as intermediate consumption and capital formation.

### ***Treatment of restriction on input tax credits***

In the calculation model, it is assumed that input tax credit for accommodation, catering services and purchase of motor vehicle (except for I42 (land transportation services) and I51 (renting of machinery and equipment)) are not allowed.

### ***Sector allocation of capital formation, import and export***

Capital formation is allocated to sectors by using National Bank's data for sector capital formation. Import and export are allocated to sectors by using Customs data in 2012.

## **C. Measurement of actual collections for VAT**

### ***Aggregate cash collection***

Cash collection data are based on monthly collection data provided by SARS. The data consist of gross cash collection for domestic VAT, refund, and cash collection for import VAT.

**Accrued collection**

Accrued collection is calculated as the sum of [1] payments reallocated to the tax period starting each calendar year, [2] excess credit declared in the tax period starting each calendar year, and [3] payment at Customs during each calendar year. Reallocation of payments to tax period is based on individual payment data from 2007 to 2012, and reallocation of excess credit is based on individual VAT declaration data for the period.

**Treatment of diesel refund**

The diesel refund system in South Africa allowed some specific sectors to claim refunds of fuel levy and Road Accident Fund levy as credits against their VAT liability. Such refunds had been recorded as reductions of VAT net payments before FY2013, even though they do not form part of the original VAT liability for taxpayers. The amounts that had been subtracted from reported net VAT collections were therefore added back to actual collections to show the underlying trend of VAT revenues. After FY2013, these claims have been included as a separate item in tax collections, so it is not necessary to adjust the reported figures.

**D. Data used in the RA-GAP model**

[For estimating Potential VAT revenues]

Supply and use tables, 2007 - 2012 (Stats SA; provided in August 2014)

Quarterly Bulletin, June 2014 (South African Reserve Bank; downloaded in August 2014)

Income and Expenditure Surveys (IES) 2010/11

Customs declaration for Trade Statistics 2010 – 2013 (SARS; provided in August 2014)

[Tax collections data] (Aggregate)

Tax Statistics 2008 – 2014 (published by NT and SARS)

Monthly cash collection of VAT 2005/06 – 2013/14 (SARS; provided in August 2014)

Diesel refund data 2008 – 2013 (SARS; provided in September 2014)

[For calculating Accrued VAT collections] (Anonymized)

VAT Payments and Refunds from January 2007 to July 2014 (SARS; provided in August 2014)

VAT Returns from January 2006 to July 2014 (SARS; provided in August 2014)

VAT Audit from 2007 to 2013 (SARS; provided in August 2014)

Customs Import VAT declaration from 2010 to 2013 (SARS; provided in August 2014)

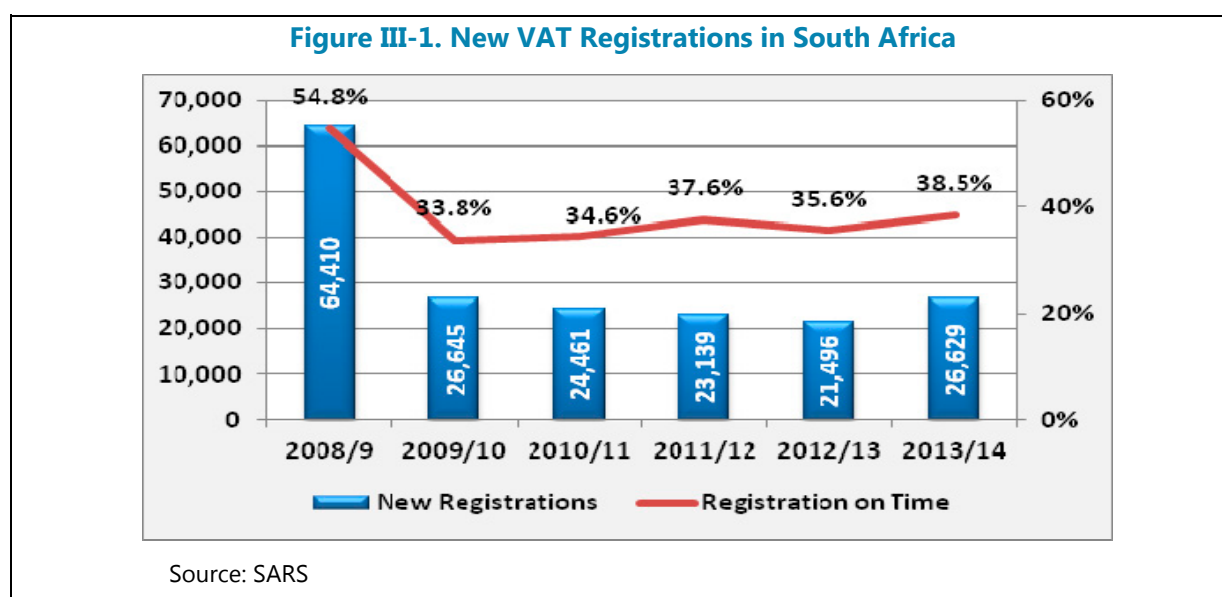
### Appendix III. Comparison of RA-GAP Results with Analysis by SARS

SARS's national compliance analysis is a performance management framework that monitors key performance indicators of compliance, introduced in FY 2008/09. Collectively known as, 'the pillars of compliance', for VAT, these indicators cover:

- Registrations
- Filing compliance
- Payment compliance and excess credit returns
- Declaration compliance

In addition to these metrics, the national compliance analysis assesses compliance risk by industrial sector. VAT receipts are monitored by SARS' revenue analysis team.

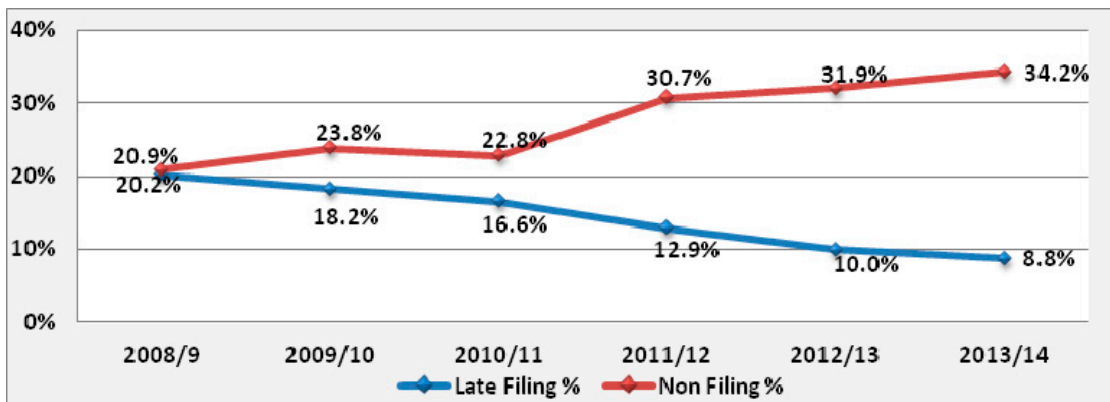
New registrations declined very sharply in FY 2009/10, and are still at a low level relative to the taxpayer register, despite a small rise in 2013/14 (Figure III-1). New registrations in South Africa fell from 64.4 thousand in 2008/09 to 26.6 thousand in 2009/10. Registrations continued to decline, albeit much more gradually, rising slightly in 2013/14. They now stand at 26.6 thousand, out of a total VAT register of 662 thousand vendors, about 4 percent. This represents a relatively low level of churn in the register, which SARS attributes to tightened controls on new registrations (to prevent fraudulent excess credit returns), and a high registration threshold of R1 million (which is similar to the thresholds in many advanced economies with much higher median incomes).



Filing compliance is relatively low in South Africa, and has declined by 13.3 percent since FY 2008/09 (Figure III-2). Filing on time rates have remained at 55-60 percent of active VAT taxpayers since FY 2008/09, but overall filing compliance has declined from 79.1 percent to 65.8 percent. Taxpayers with higher turnovers are more compliant than those with lower turnovers, and filing compliance for LBC vendors is 87.9 percent. The industrial sector with the lowest filing compliance is construction, at 45.2 percent.



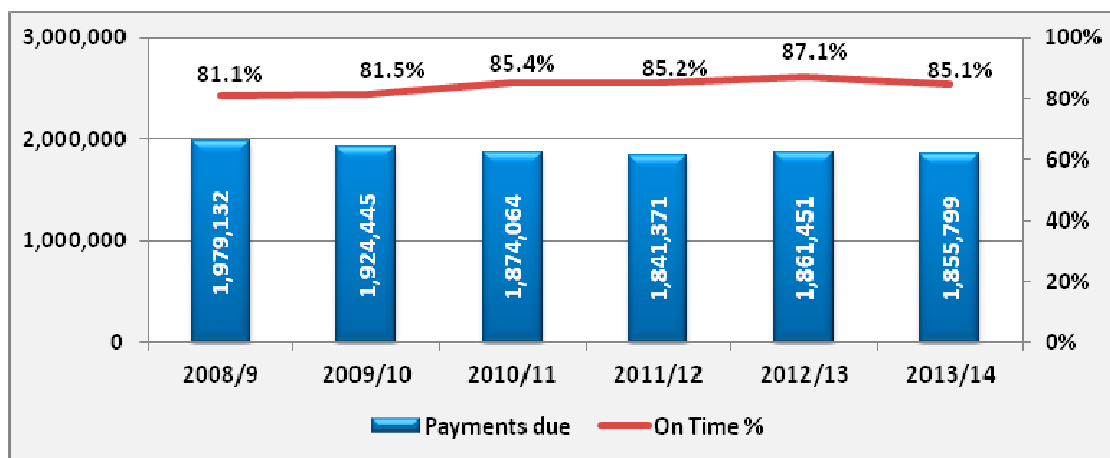
Figure III-2. Noncompliance in South Africa



Source: SARS.

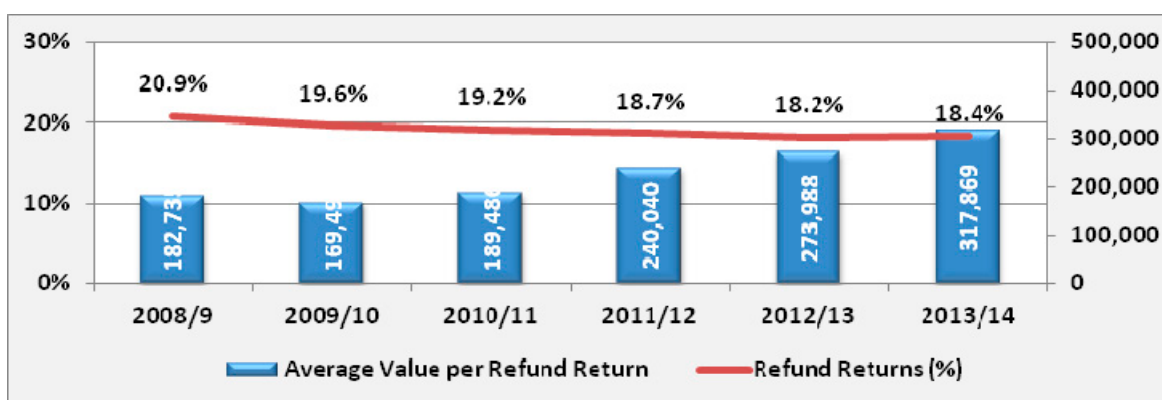
Payment compliance is higher than filing compliance, at 85 percent (Figure III-3). Payment compliance has remained fairly steady in South Africa over recent years at around 80-85 percent. Vendors with higher turnovers are more compliant than smaller vendors, with payment compliance of 95.7 percent in LBC vendors. Highest noncompliance was found in the public administration (10.3 percent) and construction (7.2 percent) sectors.

Figure III-3. Payment Compliance in South Africa



Source: SARS.

Credit returns as a proportion of VAT returns have decreased slightly since FY 2008/09, but the value of such returns has increased (Figure III-4). The decline in the number of credit returns may be caused by the registration threshold increase, as micro businesses trading below the threshold had previously declared a net VAT repayment. The increase in the overall value of refunds claimed is attributable to increases in refunds to public administration, reflecting increased government investment in recent years.

**Figure III-4. Credit Returns in South Africa**

Source: SARS.

The number of audits carried out by SARS has decreased since FY 2011/12, but the overall yield from audits has increased (Table III-1). Targeted audits found inaccuracies in 62 percent of cases with an average yield of R1.7 million per audit. The number of audits has decreased from 7,612 in FY 2011/12 to 3,565 in FY 2013/14, but the average yield per audit increased sufficiently that the total yield from audits increased from R4.5 million to R6.1 million over the same period. On this face of it, this is an indicator of better targeted and more effective audits, but there is the possibility that the increases simply reflect greater levels of noncompliance—the VAT gap for 2013/14 has not been estimated.

**Table III-1. Audits Conducted by SARS**

Financial Year:	2011/12	2012/13	2013/14	All Years
Audits completed	7 612	5 008	3 565	16 185
Inaccurate Declarations %	51.69%	50.26%	61.99%	53.52%
Monetary Yield	4 494 539 280	4 205 411 971	6 140 220 856	14 840 172 108
Average monetary yield per case audited	590 454	839 739	1 722 362	916 909

Source: SARS.

The national compliance analysis assesses declaration compliance risks by industrial sector and compliance behavior. The highest levels of declaration inaccuracy are found in the public administration and construction sectors, at 71.1 percent and 64.8 percent respectively. The highest yielding noncompliance behaviors are under-declaration of standard rated outputs, over-declared zero rated outputs (exports) and undisclosed income on secondary bank accounts. Overall, the highest risk sectors are construction, personal and household services, and agencies and other services. These are unchanged from FY 2012/13. Of these three, the construction and agencies and other services sectors are in the high volume, high revenue category of industries in South Africa.