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Jamaica

*Revenue Administration Gap Analysis
Program—
The General Consumption Tax Gap*

April 2015

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JAMAICA

REVENUE ADMINISTRATION GAP ANALYSIS PROGRAM— THE GENERAL CONSUMPTION TAX GAP

April 2015

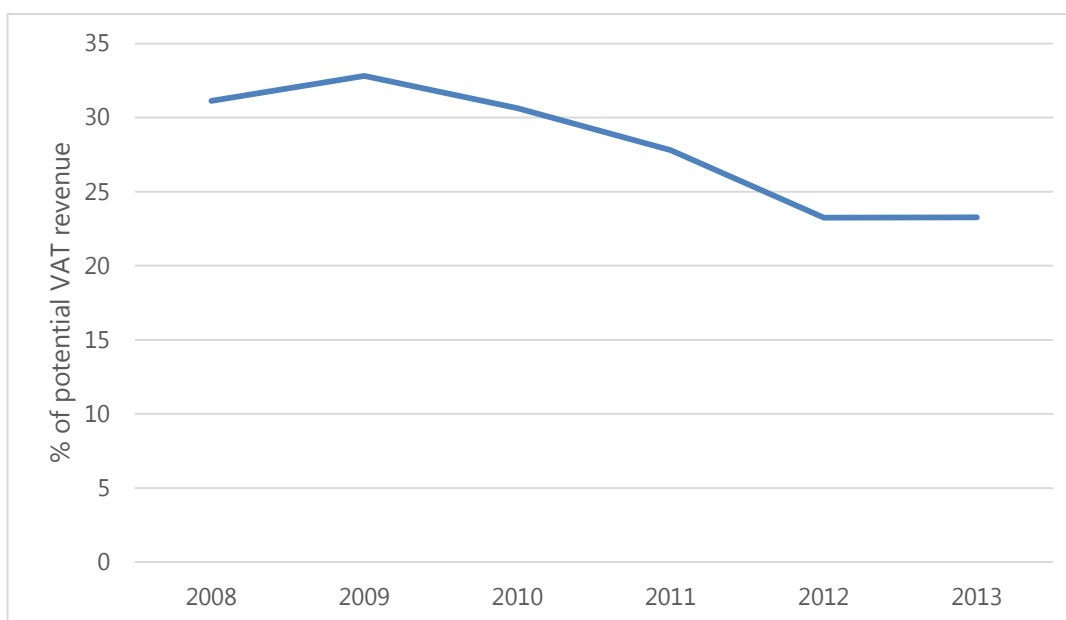
EXECUTIVE SUMMARY

This report presents the results of applying the General Consumption Tax (GCT) gap estimation methodology of the Revenue Administration Gap Analysis Program (RAGAP) to Jamaica for the period 2008–13. The methodology employs a top-down approach for estimating the potential GCT base, using statistical data on value-added generated in each sector. There are two main components to this methodology for estimating the GCT compliance gap: 1) estimate the potential net GCT collections for a given period, and 2) determine the accrued net GCT collections for that period. The difference between the two values is the compliance gap.

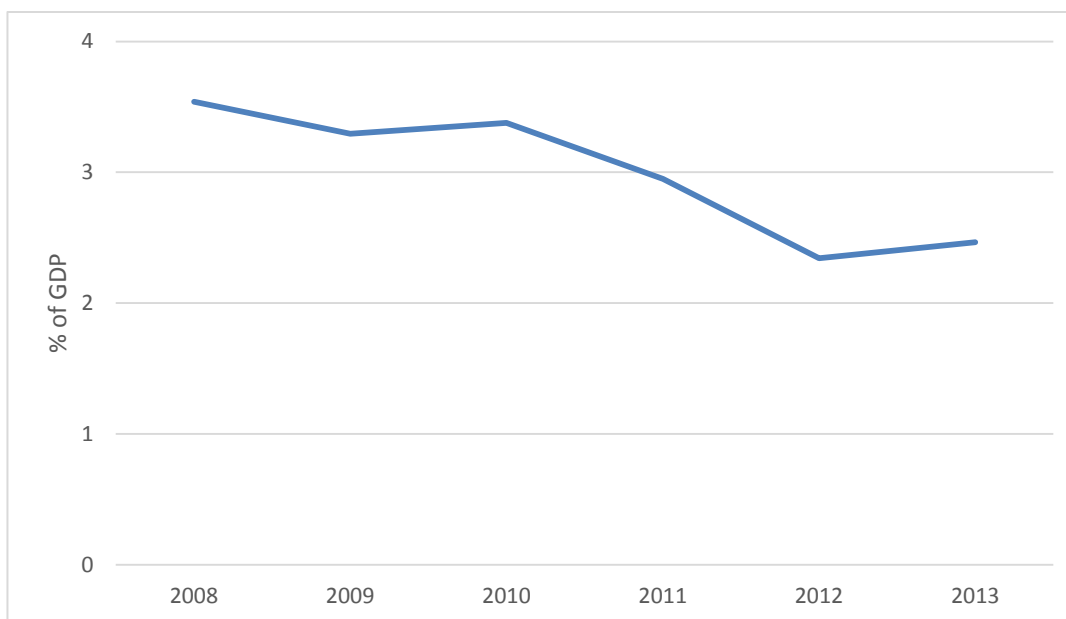
Main findings

The compliance gap is estimated to be between 23 percent and 33 percent of potential GCT revenues during the period 2008–13, and peaking in 2009 (Figure 1). The estimated gap is higher than the typically observed levels in European countries and near to the levels in Latin American countries.¹ The estimated compliance gap increased to 33 percent of potential revenue in 2009, when the global financial crisis severely hit the Jamaican economy. The gap has since gradually decreased to 23 percent of potential GCT revenues. The size of compliance gap relative to GDP was between 2.3 percent and 3.5 percent of GDP (Figure 2).

¹ The compliance gap numbers for VAT on average in 27 European countries were estimated to be between 15 and 19 percent in the period from 2009 to 2012 in CASE (2014), '2012 Update Report to the Study to quantify and analyse the VAT Gap in the EU-27 Member States', TAXUD/2013/DE/321. For Latin American countries, the average of compliance gap in 13 countries is 27.3 percent between 2006 and 2010 in CIAT (2012) 'Estimating Tax Noncompliance in Latin America: 2000-2010', Tax Studies and Research Directorate Working Paper No3-2012.

Figure 1. GCT Compliance Gap, Ratio to Potential Revenue, 2008–13

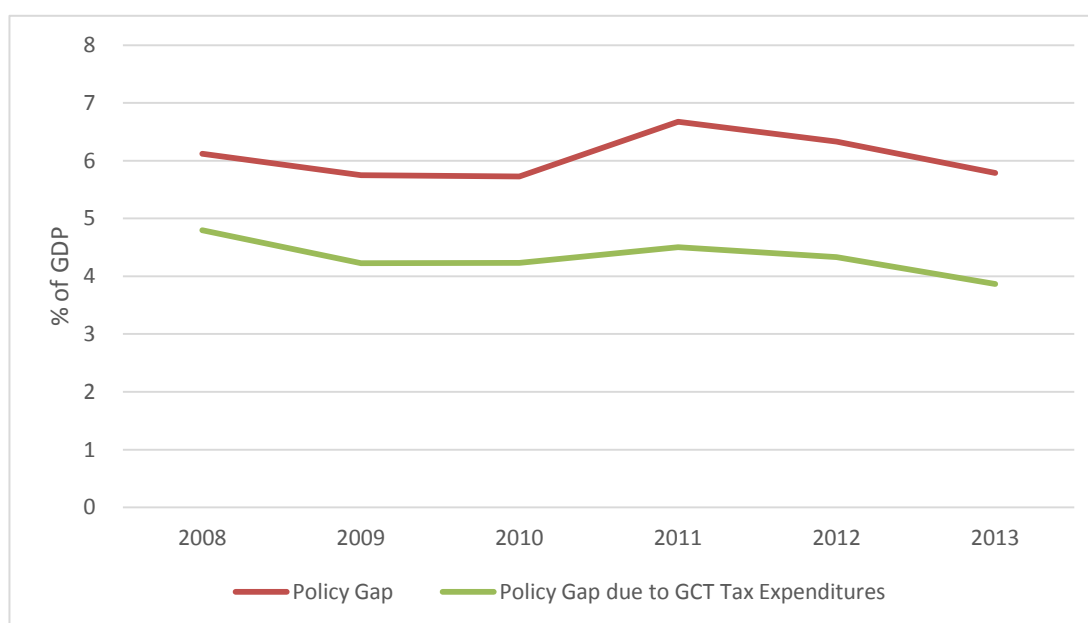
Source: Staff calculations.

Figure 2. GCT Compliance Gap, Ratio to GDP, 2008–13

Source: Staff calculations.

The GCT policy gap and the part of the gap explained by the policy gap due to GCT tax expenditures is higher than the GCT compliance gap in Jamaica (Figure 3), owing to exemptions and reduced rates.² 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. The policy gap is calculated to be between 5 percent and 6 percent of GDP, and the policy gap due to GCT tax expenditures is calculated to be between 4 percent and 5 percent of GDP. Although the policy gap due to GCT tax expenditures is gradually decreasing due to efforts of widening tax base, its level is still higher than GCT compliance gaps. However, current GCT tax expenditures are mainly associated with hard-to-tax sectors, and substantial revenues from these sectors could not be expected without having more efficient revenue administration.

Figure 3. GCT Policy Gap, Ratio to GDP, 2008–13



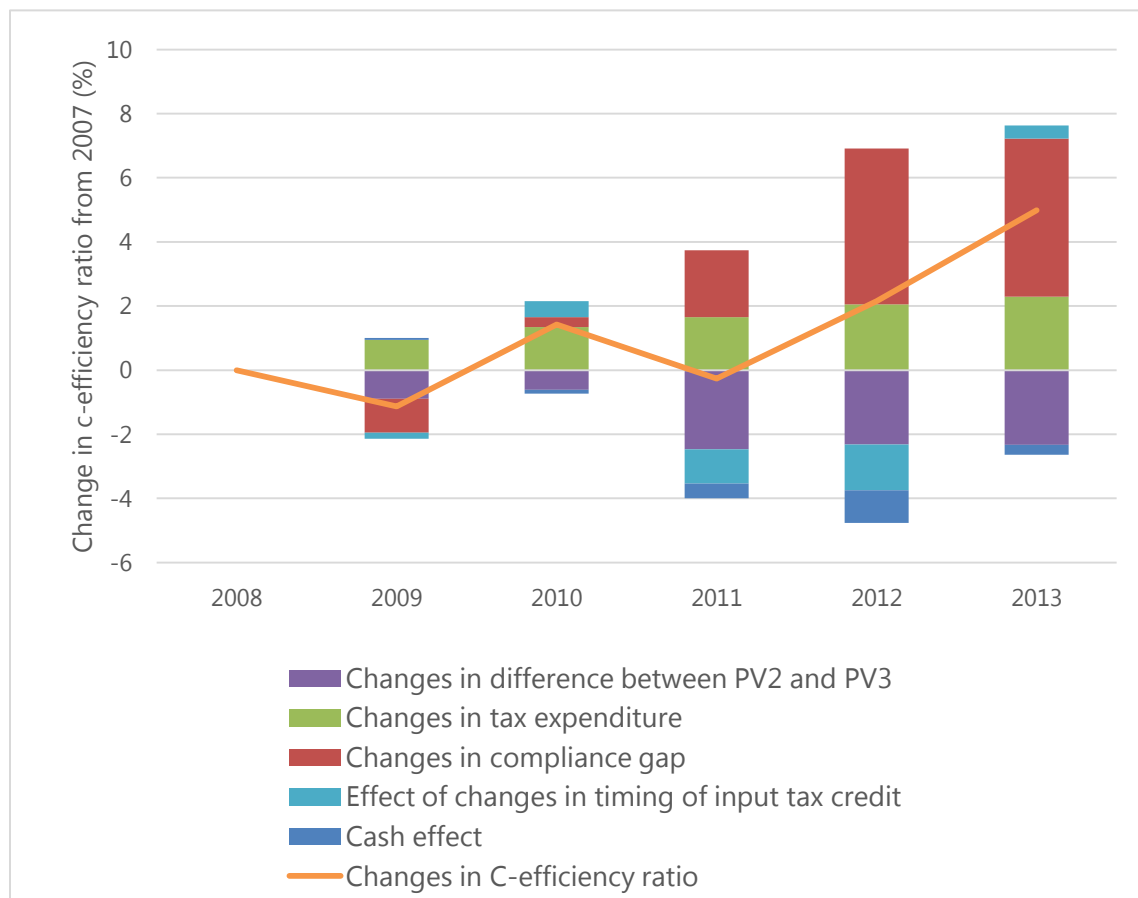
Source: Staff calculations.

² The effects on tax burdens due to discretionary policy choices are generally referred to as 'tax expenditures'. The policy choices related to GCT include differentiated rates and exemptions. In Jamaica, the amount of effect by each individual policy choice is estimated using tax returns and published by MoFP in 'Tax Expenditure Estimates'. In this report, the word of 'GCT tax expenditures' is used to express the same concept, but the effects of policy choices are estimated in a different way focusing on overall impact of a set of policy choices based on specific assumptions and the RA-GAP model. Therefore, the estimated amount of the whole effects, represented as a 'policy gap due to tax expenditures' in this report, are not related to the results of regular GCT Expenditures report by MoFP.

The GCT c-efficiency ratio in Jamaica has been in an increasing trend after 2008 due to the decrease of both compliance gap and policy gap due to tax expenditures (Figure 4).

Although there have been some cancelling effects of increasing non-taxable consumption and cash payments, the changes in compliance gaps and policy gaps due to policy choices have contributed to the increasing trend of C-efficiency ratio.

Figure 4. Changes in C-efficiency Ratio, 2008–13



Source: Staff calculations.

Mr. Devon Rowe, Financial Secretary of Ministry of Finance and Planning (MoFP), requested Fiscal Affairs Department (FAD), IMF, to provide a tax gap analysis for the General Consumption Tax (GCT) in Jamaica. The mission thanks the Tax Administration Jamaica (TAJ), MoFP, the Statistical Institute of Jamaica (STATIN), and the Jamaica Customs Agency (JCA) for providing the necessary data for the calculation of potential and actual GCT revenues between 2007 and 2013.

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ABBREVIATIONS AND ACRONYMS

FADR1, FADR2	IMF Fiscal Affairs Department, Revenue Administration Divisions 1 and 2
GCT	General Consumption Tax
GDP	Gross Domestic Product
JCA	The Jamaica Customs Agency
KPI	Key Performance Indicator
MoFP	The Ministry of Finance and Public Services
NPISH	Non-profit Institutions Serving Households
PV1	Potential GCT revenue under current policy
PV2	Potential GCT revenue under a normative GCT structure with only a necessary minimum of exemptions and reliefs
PV3	Potential GCT revenue calculated by applying the standard rate to all final consumption
RA-GAP	Revenue Administration Gap Analysis Program
SCT	Special Consumption Tax
STATIN	The Statistical Institute of Jamaica
SUT	Supply and use tables
TA	Technical assistance
TAJ	The Tax Administration Jamaica

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1. BACKGROUND

1. **The IMF RA-GAP program provides a comprehensive quantitative analysis of the gap between potential revenues and actual collections, known as the compliance gap.**³ The program is conducted by the Revenue Administration Divisions of the Fiscal Affairs Department (FADR1 and FADR2), initially focusing on gap analysis of value-added taxes, such as the General Consumption Tax (GCT) in Jamaica. The RA-GAP model uses a value-added approach that allows for a breakdown of the 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 tax gap for GCT in Jamaica using the RA-GAP approach.** For that purpose, available national account data was used to quantify the potential revenues under the current Jamaican GCT legislation. These potential GCT revenues were compared with the GCT receipts accrued to the timing of underlying economic activities by using individual taxpayers' declarations and transactions. The difference between potential revenues and actual collections represents compliance gaps showing the degree of non-compliance of taxpayers.

A. Overall Revenue Performance of GCT in Jamaica

3. **In Jamaica, the GCT revenues as a percent of GDP have fluctuated between 6.4 percent and 7.5 percent (Figure 5), showing an increasing trend after 2009 (Figure 4).**⁴ Because there have been consecutive changes in GCT legislation in Jamaica, it is necessary to consider the details of policy changes and their impacts to analyze the performance of GCT revenues, as well as movements of the tax base. In 2005, the standard rate of GCT was increased from 15 percent to 16.5 percent, and further raised to 17.5 percent in 2010. The rate was reduced back to 16.5 percent in June 2012. Measures were also introduced to broaden the GCT tax base by reducing exemptions.

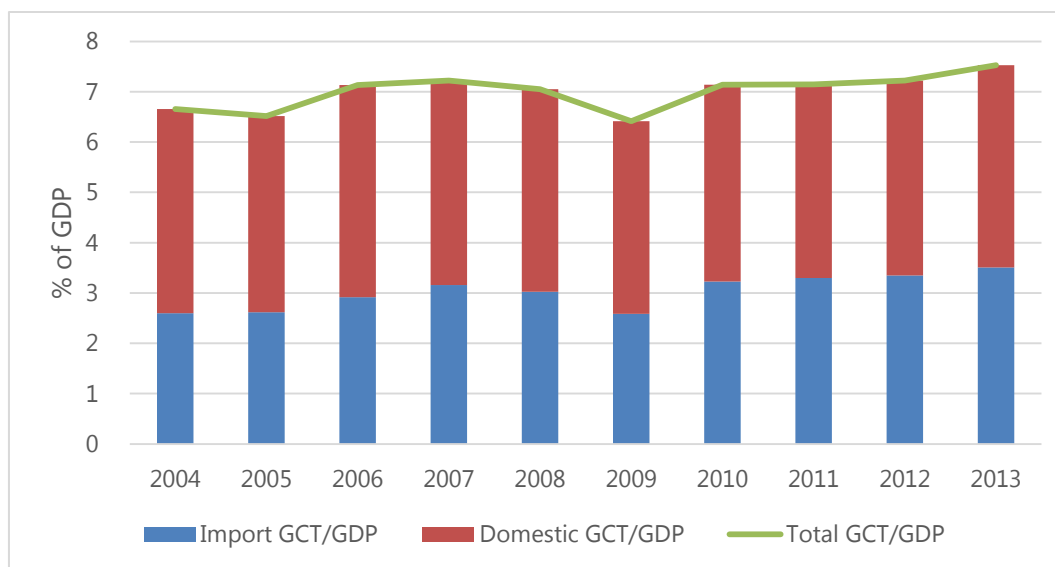
4. **Total GCT revenues are the sum of GCT imposed on net domestic production (domestic GCT) and GCT imposed on imports collected by Customs.** In Jamaica, import GCT

³ In this report, potential revenues refer to tax collections with full compliance under 'specific' tax policies; therefore, potential revenues are not relevant to the concept of 'tax capacity' showing the maximum level of tax revenue that a country can achieve by changing tax policies.

⁴ GCT revenue for each year is calendar year basis, calculated as the sum of monthly GCT collections from January to December. The monthly collection data were provided by MoFP.

accounts for 39 to 47 percent of total GCT, the ratio increasing from 41 percent to 46 percent in 2010 partly due to the introduction of an advance GCT prepayment scheme at Customs in January 2010.⁵ This scheme required importers of goods to prepay GCT at Customs with an additional 5 percent, allowing GCT taxpayers to claim corresponding input tax credits when they sell the imports in domestic markets.

Figure 5. GCT Revenues to GDP, 2004–13



Source: MoFP.

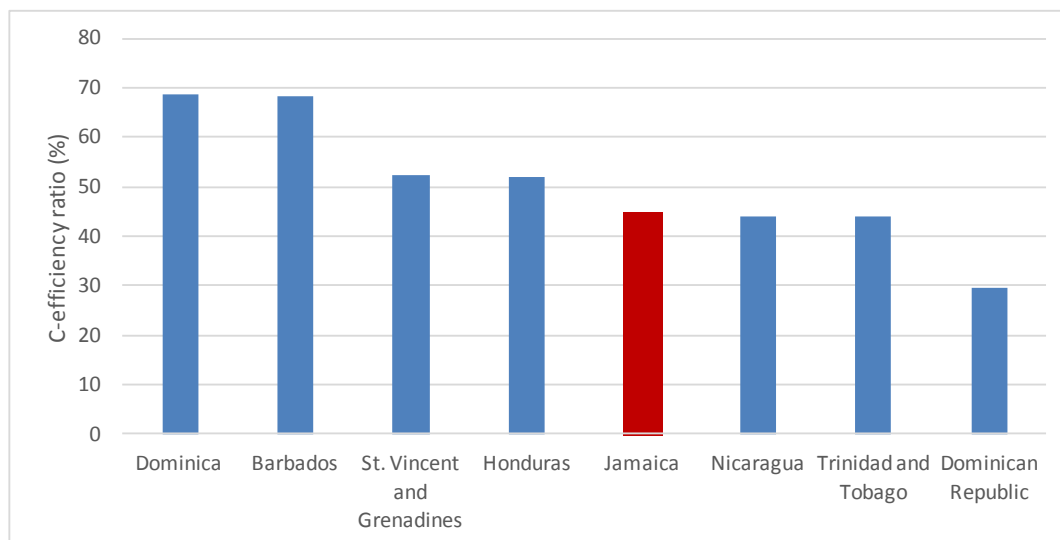
B. C-Efficiency Ratio in Jamaica

5. **The c-efficiency ratio can be used to analyze the overall efficiency of GCT revenues after taking into account changes in standard rate.** The c-efficiency ratio is calculated from GCT revenues, the GCT standard rate and final consumption aggregates to indicate the overall efficiency of GCT revenues. It presents the ratio of actual GCT collections to the theoretical revenues under a perfectly enforced tax levied at the standard rate on all final consumption.

⁵ Theoretically, the ratio of import GCT to total GCT is expected to be roughly similar to the ratio of overall imports (potential tax base of import GCT) to final consumption (potential tax base of total GCT). In Jamaica, however, the ratio of overall imports of goods and services to final consumption is 58 percent between 2004 and 2013, which is higher than the ratio of import GCT to total GCT. The reason for the smaller ratio of import GCT relative to total GCT is the application of exemptions and deferments of GCT payments at Customs.

6. **The average level of the c-efficiency ratio in Jamaica between 2008 and 2013 was 47.1 percent (Figure 6).**⁶ This level is in the middle of other Caribbean countries, but the considerable spread in efficiency range puts Jamaica considerably below countries such as Dominica and Barbados, suggesting that there is some room for Jamaica's GCT system to improve its efficiency by reducing compliance gaps and/or policy gaps (defined in Section 3 below).

Figure 6. C-Efficiency Ratio in Caribbean Countries⁷



Source: Staff calculations.

7. **Although the level of the c-efficiency ratio has not been high, it has shown an increasing trend after 2009 (Figure 7).**⁸ The increasing trend is consistent with the fact that GCT revenue as a percent of GDP has been increasing, even though the standard rate was reduced in 2012. The yearly changes in c-efficiency ratio can be decomposed into several factors: changes in the compliance gap, changes in the policy gap due to GCT tax expenditures, and changes in the

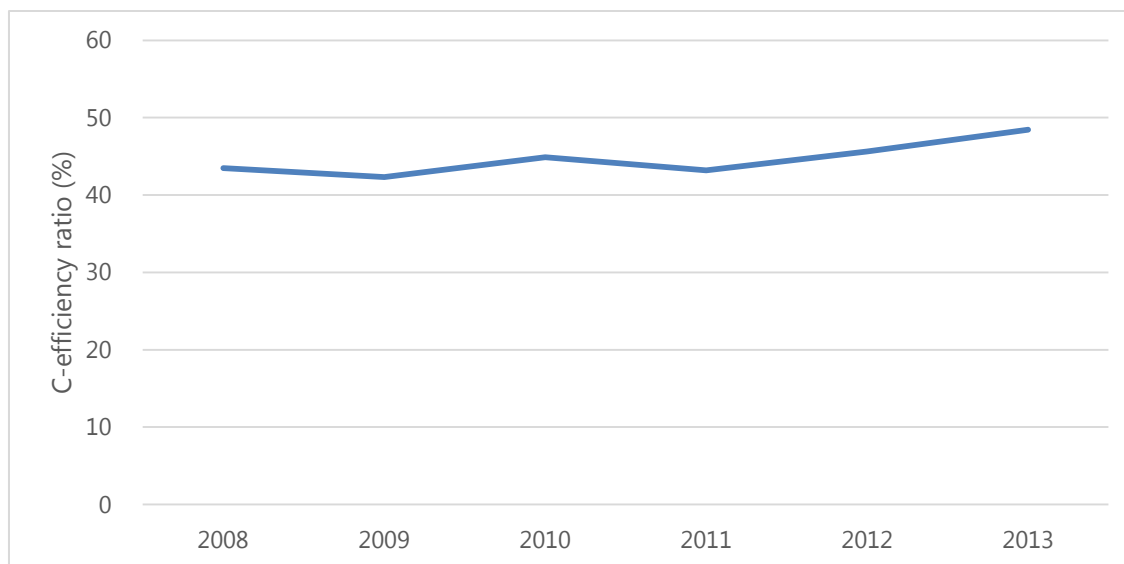
⁶ The c-efficiency ratio in this report is calculated by using final consumption including both private and government final consumption following the same method as IMF and OECD. The inclusion of government final consumption is based on the idea that government final consumption is at the last step in whole supply chains and its value includes certain amount of taxable transactions in the chains. This measure should be used for the purpose of international comparison. Up to 2013 in Jamaica, sales to government had been zero-rated and only private final consumption had been within the scope of GCT among whole supply chains. If the ratio is calculated by using only private final consumption, the calculated ratio was 53.9 percent between 2008 and 2013.

⁷ The calculated c-efficiency ratios are the average between 2008 and 2013 for Barbados, Jamaica, and Dominican Republic, and the average between 2008 and 2012 for other countries.

⁸ It is inappropriate to compare more recent c-efficiency figures to those before 2008 because prior to 2008 GCT revenue included additional revenues due to higher, specific GCT rates for different types of motor vehicles.

share of total final consumption represented by non-taxable consumption. The recent increasing trend of the c-efficiency ratio can be attributed to the decline of the compliance gap and the policy gap due to GCT tax expenditures, the effects of which are partially offset by increasing non-taxable consumption, such as increasing share of housing rents and fuels. Section 4.A below discusses these factors in more detail.

Figure 7. C-Efficiency Ratio in Jamaica, 2008–13



Source: Staff calculations.

2. ESTIMATION AND EVALUATION OF THE COMPLIANCE GAP

8. **The GCT 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 2013 in this report. Using this approach, the potential GCT revenues were estimated from detailed national accounts data. For actual GCT collections, tax returns and payment data for the years 2008 to 2013 provided by Tax Administration Jamaica (TAJ) and Customs were used to calculate collections on an accruals basis as at July 2014.⁹ **NB:** potential GCT revenues are calculated on the economic activity observed in GDP figures, i.e. they do not take into account possible behavioral change if the compliance gap was reduced, and the effective tax rate increased consequently.

A. Methodology for Estimating Compliance Gap

9. **Potential GCT revenues were estimated from a model of the GCT base constructed using various sets of statistical data.** To appropriately model the VAT base on a sectoral basis, reflecting GCT exemptions for specific goods and services, data on outputs and inputs in each economic sector need to be derived from the supply and use tables (SUT) compiled in a system of national accounts. At the time of estimation, SUT provided by the Statistical Institute of Jamaica (STATIN) were available only for 2007. To derive sufficiently detailed information about the composition of the tax base of GCT in subsequent years, the 2007 SUT was extrapolated to 2013 using data on the production of value added and outputs/inputs in 37 sectors in national accounts. The import and export matrices were derived from commodity import data in national accounts, supplemented by individual declarations of imports at Customs. The capital formation matrix for 2007 was compiled from data on consumption of fixed capital in SUT 2007, and then extrapolated to 2013 by using data on aggregate capital formation in national accounts and imports of capital goods declared to Customs. The reliability of the estimation depends upon the accuracy and consistency of these statistical data and the feasibility of the assumptions in extrapolations; therefore, it should be noted that their errors and inconsistencies would contribute to the measurement errors for potential GCT revenues and calculated gaps.

⁹ 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 GCT collections in Jamaica is explained in Appendix II, Section C.

10. **The GCT legislation for each year was applied to the GCT base modeled from the statistical data.** There have been consecutive changes in the GCT rates in Jamaica; the standard rate was raised from 16.5 percent to 17.5 in January 2010, and reduced back to 16.5 percent in June 2012.¹⁰ The rate for tourism services was raised from 8.25 percent to 10 percent in April 2010, and special rates for telephone services were increased from 20 percent to 25 percent in October 2009.¹¹ The tax base for GCT has also been broadened by reducing zero-rating and exemptions, although there still remain a number of items and transactions out of the scope of GCT.¹² In addition, in May 2011, there was a change in the timing permitted for claiming input tax credits on capital goods purchases.¹³ The GCT legislation in the RA-GAP model applied in each year is summarized in Appendix II, Section B.

11. **Future revisions of SUT and other data may necessitate corresponding revisions of estimated potential GCT values.** The extrapolation of SUT 2007 tables to 2013 was implemented on an assumption that the ratio of outputs and inputs in each sector in 2013 was the same as in 2007. However, there is a risk that structural economic changes year by year could affect this ratio, and aggregate data will be revised for more recent years. It is necessary to review potential revenues and gaps when newer SUT become available from STATIN.

12. **Actual GCT collections were allocated to the periods in which relevant economic activities took place between 2008 and 2013.** This reallocation of cash data is designed to capture underlying trends in compliance gaps more appropriately (because cash data can be generally more volatile than the underlying economic activities owing to arbitrary lags in payments and refunds). This approach reallocates cash collection and refund payments from the periods in which they were

¹⁰ The rate reduction in 2012 was accompanied by measures to widen the tax base.

¹¹ In addition, there had been multiple GCT rates above the standard rates applied to different types of motor vehicles. These GCT rates were converged to the standard rate (16.5 percent) in May 2008, augmented by a number of additional rates of the Special Consumption Tax (SCT) on motor vehicles.

¹² In 2010, the supply of electricity was added to the base of GCT with a 10 percent rate, and in 2012, some items of basic food were also included in the base. Under the current legislation, some items of raw foods, construction services, land transportation and postal services are exempted, in addition to financial services, rent for dwellings, healthcare services and education services. Petroleum products are exempted, with a separate SCT levy instead. Agricultural products and related products, and sales to government are zero-rated.

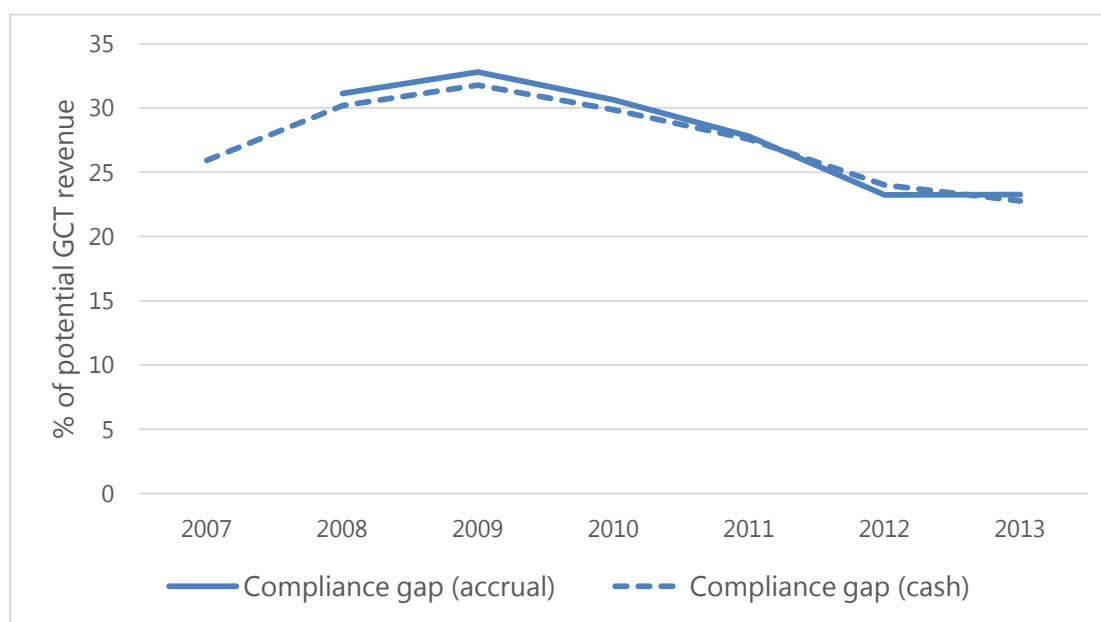
¹³ Before May 2011, taxpayers claimed input tax credits for machinery and equipment over a period of 24 months. The period was shortened to 3 months in May 2011, without any transitional measures. This was expected to reduce financial burdens for taxpayers and streamline administrative processes, and therefore improve tax compliance in the long run. In the short run, the lack of a transitional period led to an increase in input tax credits between 2011 and 2013.

paid into the periods in which the tax and credits due actually accrued. Anonymized individual tax transactions data between 2008 and 2013 provided by the TAJ were used to calculate net accrued collections as at June 2014.

B. GCT Compliance Gap in Jamaica

13. **The estimated GCT compliance gap in Jamaica looks hump-shaped between 2007 and 2013 (Figure 8).** The compliance gap increased to 30–35 percent of potential GCT revenues in 2008 and 2009, when global financial crisis significantly affected the Jamaican economy.¹⁴ After 2009, the gap numbers decreased, dropping to 20–25 percent of potential GCT revenues in 2013. The differences between gaps measured by accrual (solid line) and gaps measure by cash (dotted line) have not been significant, but the latter was lower between 2008 and 2011 due to accumulation of carried-over excess credit (delay of refund payments), which results in understating the compliance gaps during the period.

Figure 8. GCT Compliance Gap



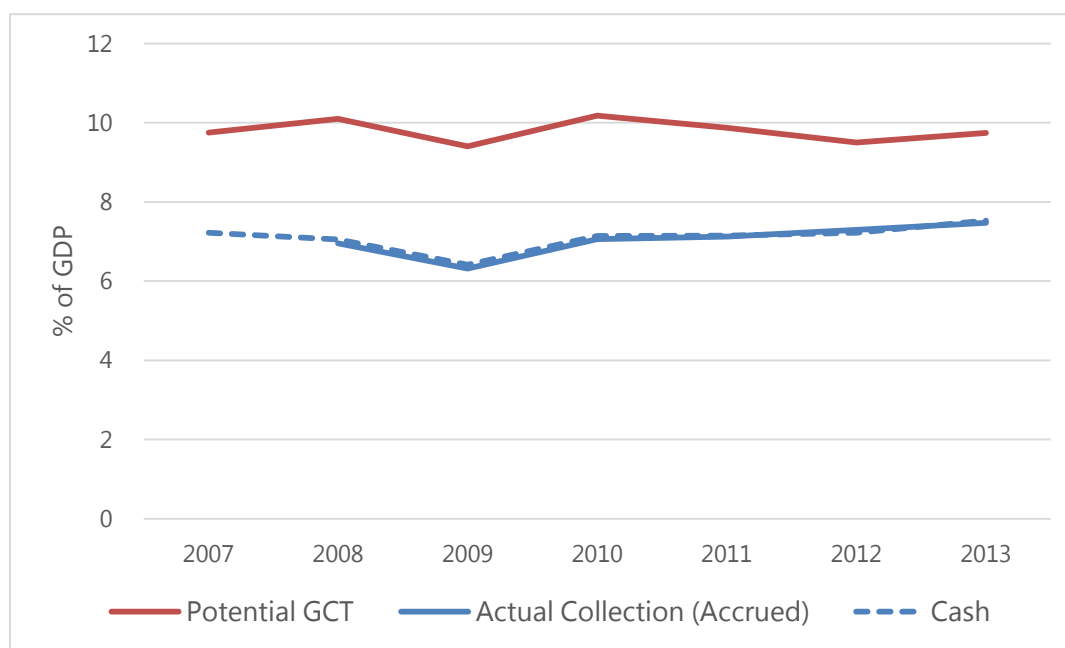
Source: Staff calculations.

14. **In 2008 and 2009, a steeper decline of actual GCT collections compared with potential revenues caused an increase in the compliance gap (Figure 9).** In 2009, actual GCT collections

¹⁴ The growth rate of real GDP was -0.5 percent in 2008 and -4.4 percent in 2009.

declined to 6.3 percent of GDP while potential GCT was 9.3 percent, and the compliance gap was at its highest level of 3.0 percent of GDP. After 2010, potential GCT revenues relative to GDP stayed between 9.5 percent and 10 percent of GDP, while GCT collections gradually increased to 7.5 percent of GDP. It resulted in a gradually decreasing trend of compliance gaps after 2010.

Figure 9. Potential GCT and Actual GCT Collection



Source: Staff calculations.

C. Composition of the Compliance Gap

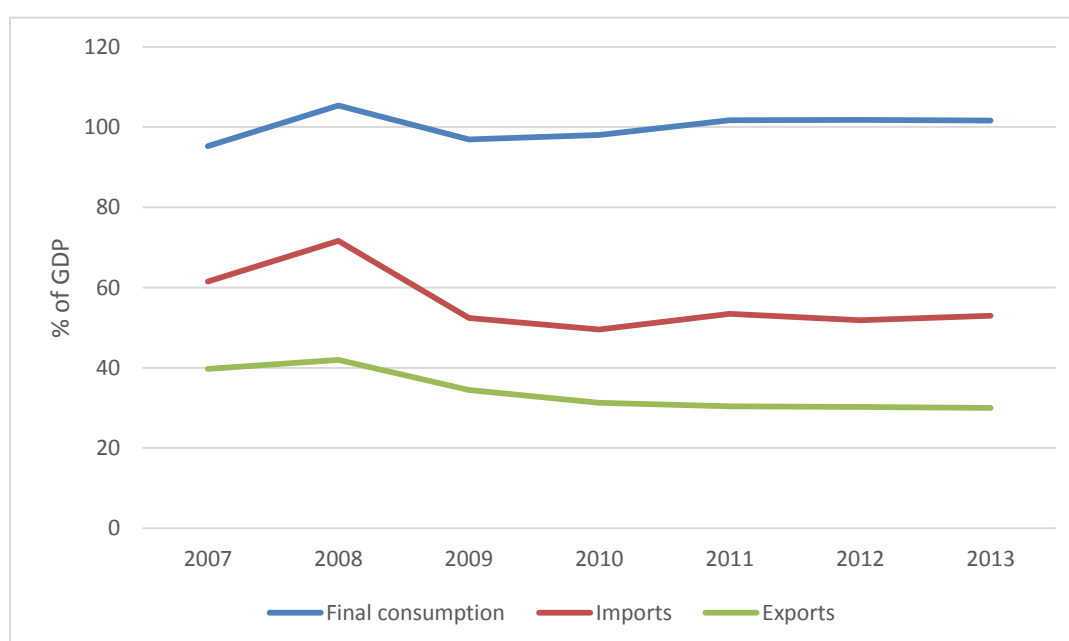
Changes in potential GCT revenues

15. **Potential GCT revenue varied between 9.4 percent of GDP and 10.2 percent of GDP during the period 2008–2013 (Figure 9).** Potential GCT revenue dipped in 2009, and after 2010 showed a downward trend. These movements of potential GCT revenues were caused by three factors: [1] changes in the size of the tax base relative to GDP, [2] changes in the timing of input tax credit claims for capital formation and [3] changes in the GCT rate.

16. **The increasing potential GCT revenue in 2008 and decline in 2009 was due to changes in final consumption and import relative to GDP.** In 2008, an increase in the ratio of final consumption to GDP resulted in higher potential GCT. In addition, the fluctuation of exports/imports

exaggerated the movements of potential GCT revenues; when an increase in the ratio of imports to GDP is larger than an increase in the ratio of exports to GDP, potential VAT revenues to GDP ratio tends to become larger, because potential VAT is estimated as the sum of import VAT plus domestic VAT calculated on domestic value added production minus zero-rated export. In 2008, the ratio of imports to GDP significantly increased, and decreased in 2009, compared with the ratio of exports to GDP (Figure 10). These movements of imports caused the observed fluctuation of potential GCT revenues between 2007 and 2009.

Figure 10. Final Consumption, Imports, and Exports Relative to GDP

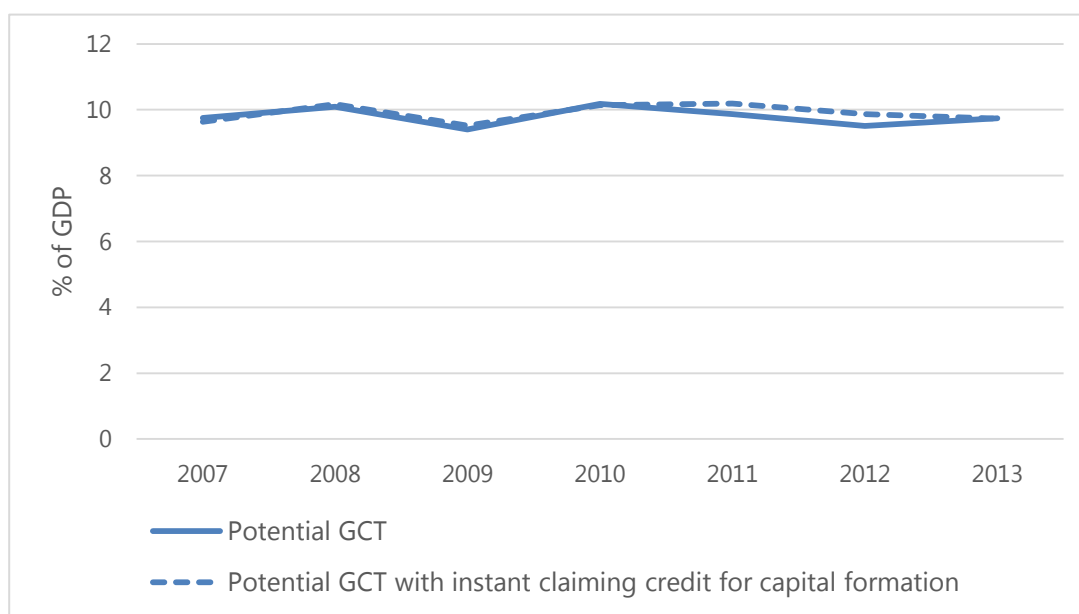


Source: STATIN.

17. **The change of timing for claiming input tax credits for capital formation has temporarily reduced potential GCT revenues after 2011.** In May 2011 the period for claiming input tax credits for capital formation was shortened from 24 months to 3 months, without any transitional measures. The effects of allowing earlier recovery of input tax credits are estimated to be a reduction of potential GCT revenues by 0.32 percent of GDP in 2011, and 0.37 percent of GDP in 2012 (the differences between the solid line and the dotted line in Figure 11). After 2013, the timing change had washed through VAT returns and the residual effects (if any) are negligible.

18. **Potential GCT revenues between 2010 and 2012 were higher than in other years due to the increased standard GCT rate of 17.5 percent.** The GCT standard rate was raised from 16.5 percent to 17.5 percent in January 2010, and reduced back to 16.5 percent in June 2012. Estimated potential GCT revenues adjusted for the effects of timing changes for input tax credits for capital formation show the effects of these rate changes (dotted line in Figure 11). The changes in potential GCT revenues also reflect the impacts of policy changes in exemptions and zero-rating treatments, but these are smaller.¹⁵

Figure 11. Potential GCT Revenues (% of GDP)



Source: Staff calculations.

Changes in actual GCT collections

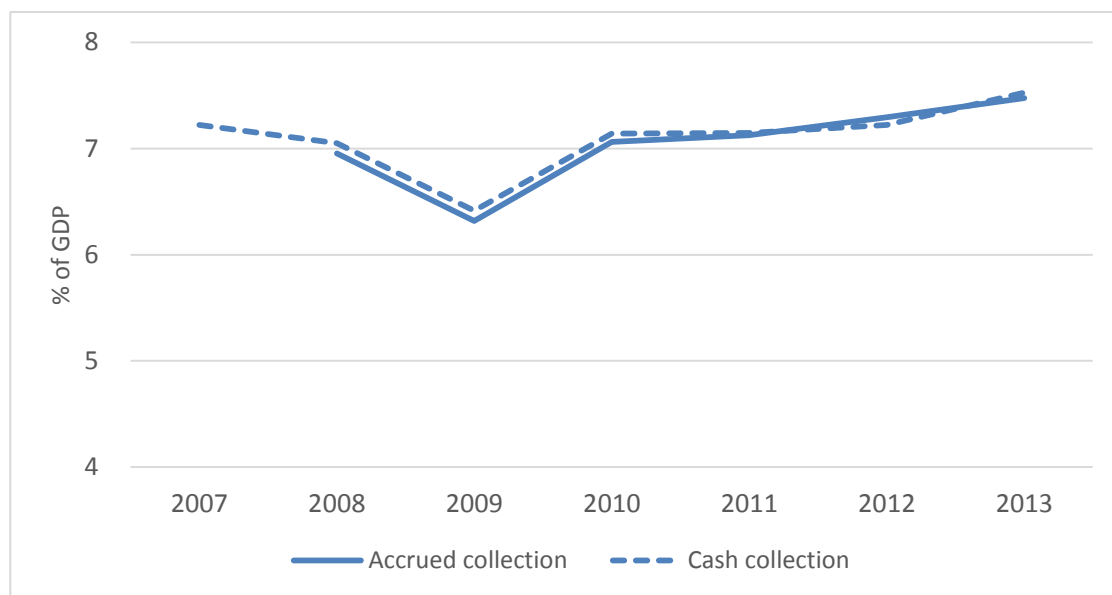
19. **Accrued GCT collections were lower than cash collections before 2012, due to delays of refund payments (Figure 12).** Accrued collections are calculated as the sum of cash payments for tax liabilities arising during each year and declared excess credits; while cash collections are the difference between cash receipts and refund payments in each year. Growing delays in paying

¹⁵ Throughout the scope of the analysis in this report, sales to governments had been zero-rated. In June 2014, this treatment was abolished, which is expected to increase potential GCT revenue. The overall fiscal effect of this change will be neutral if government expenditure is increased by the same amount.

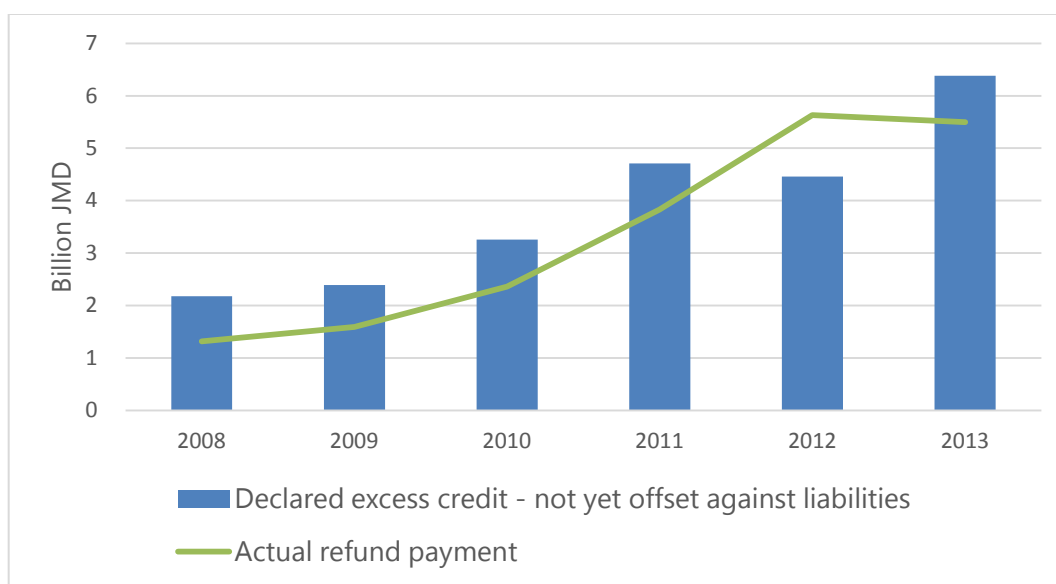
refunds to taxpayers before 2012 led to actual refund payments to vendors in each year being less than declared repayment returns that were not used to offset other tax liabilities (Figure 13).

20. **Although actual refund payments increased in 2010 and 2011, claims for excess credit increased more, but in 2012 refund payments exceeded excess credit claims.** The increase in excess credits after 2010 is attributable to the introduction of advance payments of GCT (with an additional 5 percent) at Customs in January 2010—this will have increased excess credit claims in domestic GCT. Shortening the period of claiming input tax credits for capital formation in May 2011 will also have contributed to an increase of excess credits. Although some claims for excess credit are offset against subsequent tax liabilities, the level of refund payments required to meet claims for excess credit is expected to remain at a higher level than before 2010.

Figure 12. Accrued Collection and Cash Collection of GCT (% of GDP)



Source: TAJ data and staff calculations.

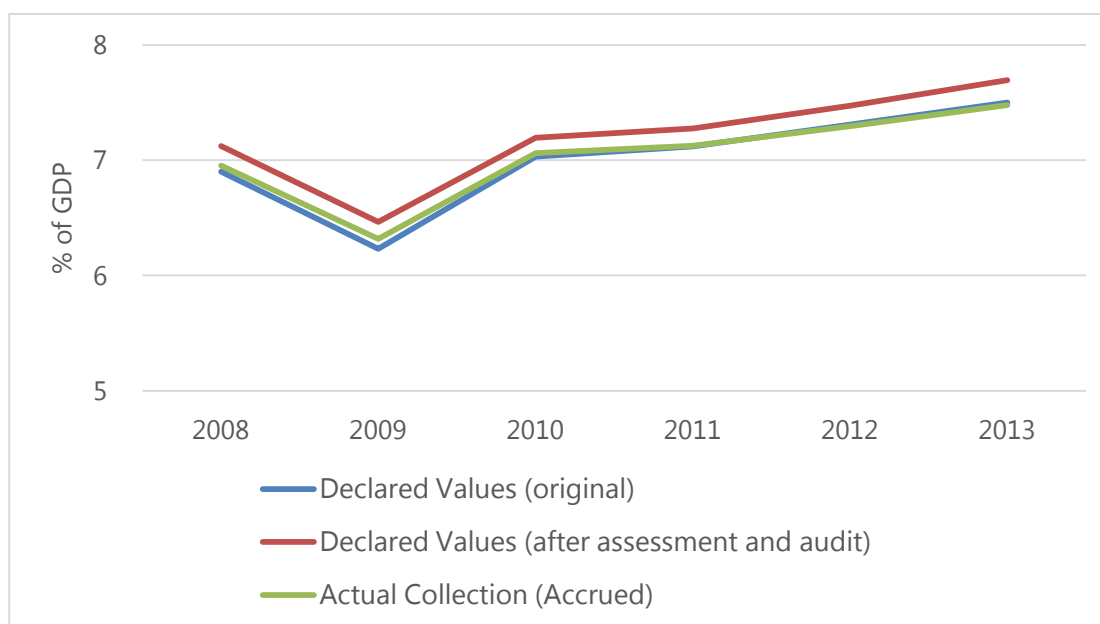
Figure 13. Actual Refund Payments and Declared Excess Credit

Source: TAJ data and staff calculations.

Changes in declarations of GCT

21. **Over the period from 2008 to 2013, declared values of GCT after assessment and audit (excluding penalties and interest) are higher than accrued collections by 0.13–0.22 percent of GDP (Figure 14).** The difference, called a collection gap, stayed broadly level. The steady collection gap means that payment compliance for the principal values has not changed through time.

22. **The difference between the GCT liabilities declared on initial returns and adjusted liabilities post-audit was 0.2 percent of GDP from 2008 to 2013 (Figure 14).** Actual collections are much the same as initial declarations, so the difference between values before and after TAJ interventions corresponds closely to the magnitude of collections gap.

Figure 14. GCT Declaration and Collection

Source: TAJ data and staff calculations.

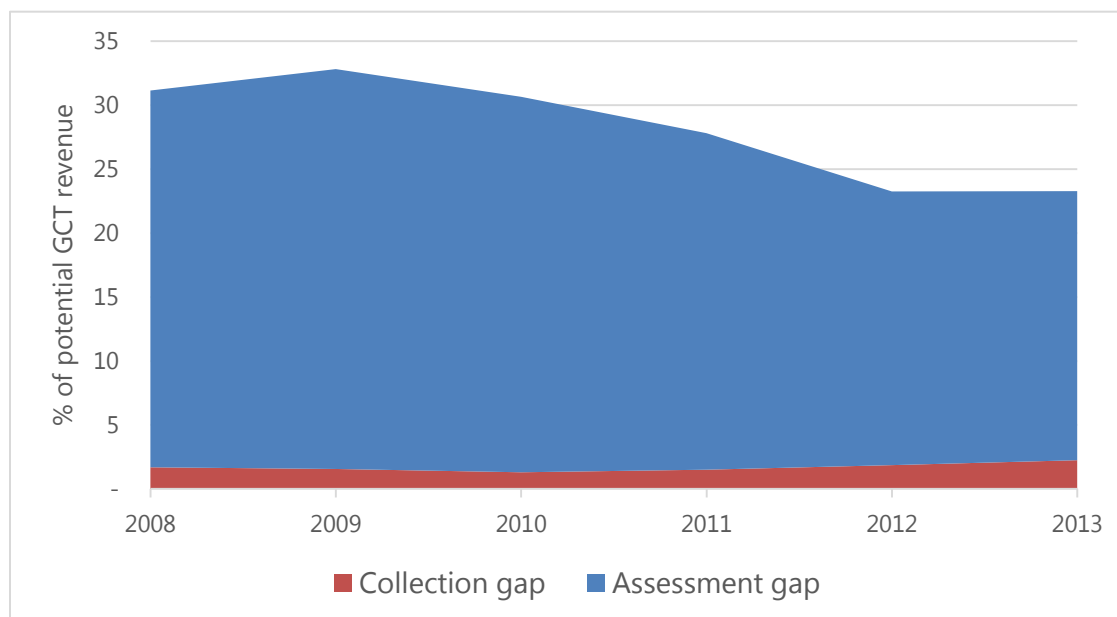
The assessment and collection gaps

23. **The compliance gap can be decomposed into two portions, an assessment gap and a collection gap.** The collection gap is the difference between actual GCT collections and the total amount of GCT declared or assessed as due from taxpayers,¹⁶ while the assessment gap is the difference between the amount of GCT declared or assessed and potential GCT. These two gaps correspond to the identified portion of the compliance gap (the collection gap) and the unidentified portion (the assessment gap) respectively.

24. **Over the period from 2008 to 2013, the collection gap stayed broadly level, while the assessment gap first increased in 2009 and then reduced, to a lower level than hitherto (Figure 15).** The steady collection gap means that the differences between declared and assessed GCT and collected GCT have stayed stable, and payment compliance for the principal values of tax liabilities has not changed through time.¹⁷

¹⁶ In calculating collection gap, declared and assessed values do not include surcharge and interest; only principal values are considered.

¹⁷ In calculating compliance gaps, the actual collection does not include surcharges and interests, and collection gap does not reflect payment compliance for the surcharges and interests, which is discussed in Section 4.D.

Figure 15. Assessment Gap and Collection Gap

Source: Staff calculations.

Actual collections and potential GCT by sectors

25. **GCT collections from taxpayers in the trade sector account for more than one third of total GCT revenues (Figure 16).**¹⁸ Financial services, telecommunication, and food manufacturers are the next largest, accounting for more than 10 percent of total GCT revenues each. At the other end of the scale, because transactions related to the bauxite and aluminum industries and government have been zero-rated, GCT payments from these sectors are negligible.

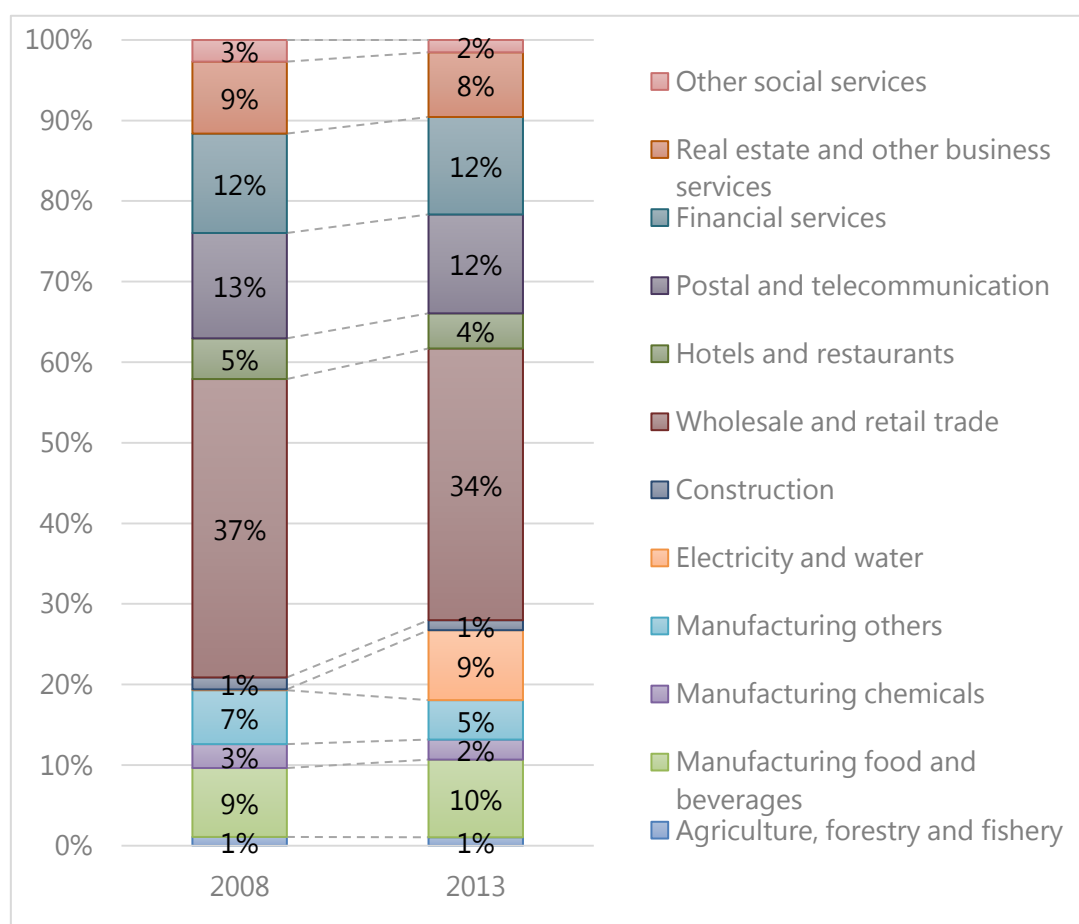
26. **Electricity providers accounted for 8 percent of total GCT collections in 2013 following the abolition of the exemption for supply of electricity in 2010.** In 2010 the supply of electricity for business users became taxable.¹⁹ The change did not have significant impacts on the estimate for the overall potential GCT revenues because most of the inputs for electricity sector (petroleum products) were also exempted and therefore the exemption of electricity supply had not have large cascading effects. However, it seems to have resulted in significant changes in GCT payers. Before

¹⁸ GCT collections for each sector are calculated as the sum of import GCT paid at Customs and net domestic GCT paid to TAJ. The individual vendors are classified into sectors based on GCT activities in registration data.

¹⁹ In February 2010, electricity supply to business users and residential users over 200kWh became taxable at 10 percent, and in June 2012, the rate for electricity supply to business users became 16.5 percent, while residential supply became zero-rated.

the abolition of the exemption, users of electricity were expected to pay GCT for the total value of their outputs, including the value of electricity, at the end of GCT chains, if their outputs were taxable. After the abolition of the exemption, GCT for the value of electricity was initially collected by electricity suppliers in the GCT chains.²⁰ This should have helped tax authority to ensure that the GCT due on electricity services is paid correctly, because the number of electricity suppliers is much smaller than the number of business users of electricity.

Figure 16. Sector Share of Actual GCT Collections



Source: TAJ data, Customs data, and staff calculations.

27. **Potential GCT revenues can be decomposed into sectors using currently available data and information (Figure 17).** Although there are some difficulties in matching classifications of

²⁰ The electricity users can claim input tax credit for GCT on electricity, if their outputs are taxable.

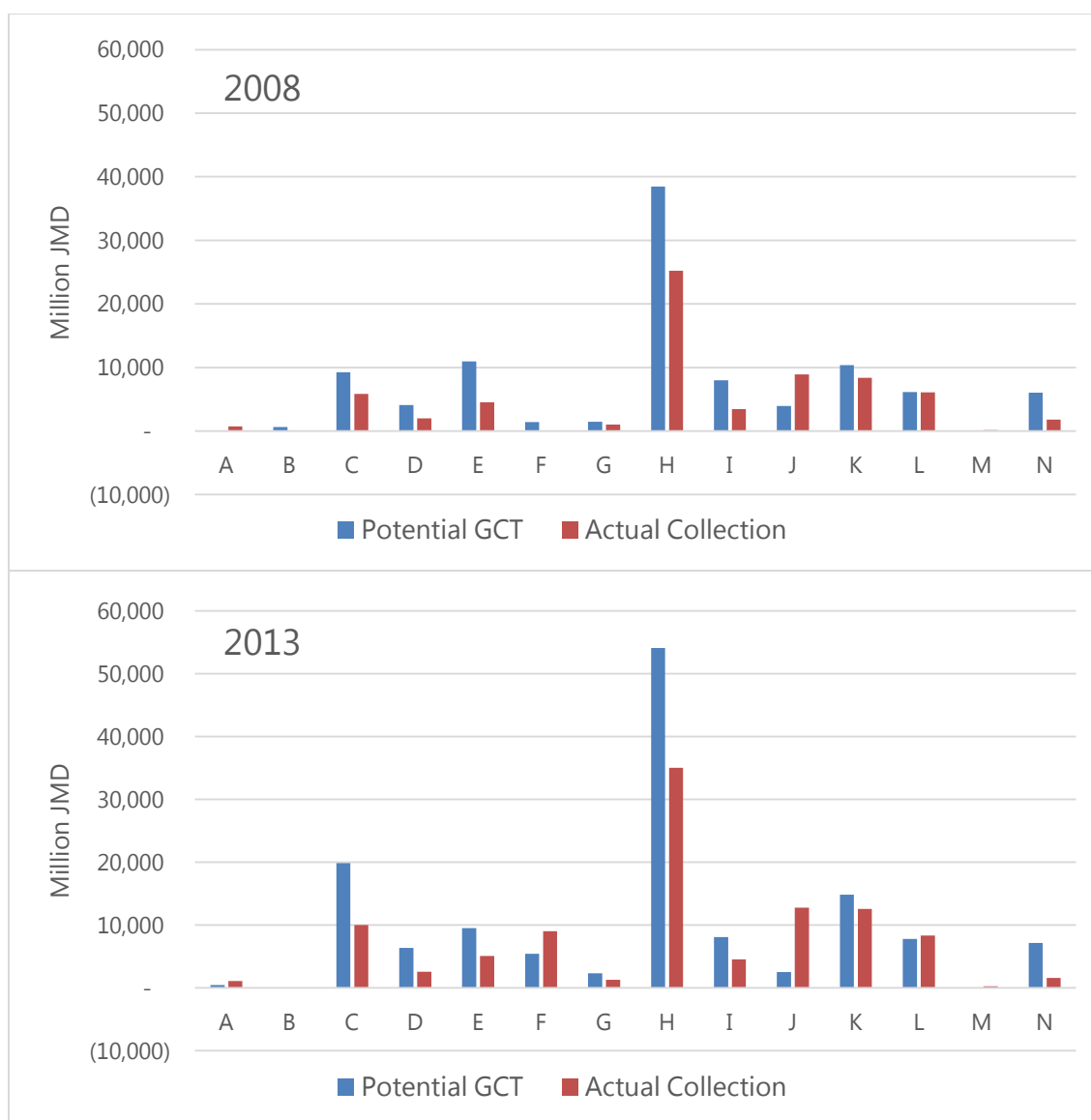
economic behavior used in national accounts with classifications used in TAJ and Customs so as to infer sectoral compliance gaps, the comparison does allow useful insights into taxpayers' compliance in each sector.²¹

28. Potential GCT revenues in the wholesale and retail trade (H), manufacturing (C, D & E), hotels and restaurants (I) and other social services (N) sectors are estimated to be greater than actual collections. Notwithstanding the inherent uncertainties over the precise level of the gaps for each individual sector (for example due to classification differences, the impact of registration thresholds or special treatments by some enhancement laws), this is a reasonable set of findings. Tax administrations around the world generally find that these sectors, with high levels of sales to final consumers, very often present higher compliance risks. For manufacturing sector, the deferments of import GCT should have effects of reducing actual collections compared with estimated potential revenues.

29. Potential GCT revenues in the electricity (F) and telecommunication (J) sectors are estimated to be less than actual collections. This is clearly an unlikely scenario in reality, and it is possible that potential revenues have been under-estimated due to different classifications being used in SUT and GCT registration. Vendors may well be engaged in providing additional goods and services beyond their primary business (such as sales of appliances and devices), which will be separately recorded in their respective sectors in the SUT.²² There is no available data to infer the reasons for the difference between potential and actual revenues in these sectors, but suppliers in these sectors are typically large businesses falling within the purview of the TAJ's Large Taxpayers Office (LTO) which will assess each vendor's compliance position individually.

²¹ The major issue is the use of different classification systems in national accounts data and GCT administration: sectoral economic activities in SUT are recorded according to an activity-based classification system, while actual collections are classified by only the main activity of individual GCT registrants. So, for example, the outputs of a hardware retailer that also provides telecoms services would be split in national accounts between the two sectors but recorded in just one sector in GCT data. In principle this would be a particular issue for large GCT vendors with multiple activities, but in practice this can generally be overcome—such vendors are generally relatively easy to identify and make an allowance for.

²² In such a scenario, the under-estimate of potential GCT revenues in these sectors implies corresponding over-estimates in others—most obviously retail and wholesale—and an over-estimate of the gap in those sectors. The net effect of such classification differences on the total estimated compliance gap will therefore be neutral, and such issues do not affect the reliability of the overall estimate.

Figure 17. Potential GCT and Actual Collection by Sector

A. Agriculture, forestry and fishery
 B. Mining
 C. Manufacturing food and beverages
 D. Manufacturing chemicals
 E. Manufacturing others
 F. Electricity and water
 G. Construction

H. Wholesale and retail trade
 I. Hotels and restaurants
 J. Postal and telecommunication
 K. Financial services
 L. Real estate and other business service
 M. Government and education
 N. Other social services

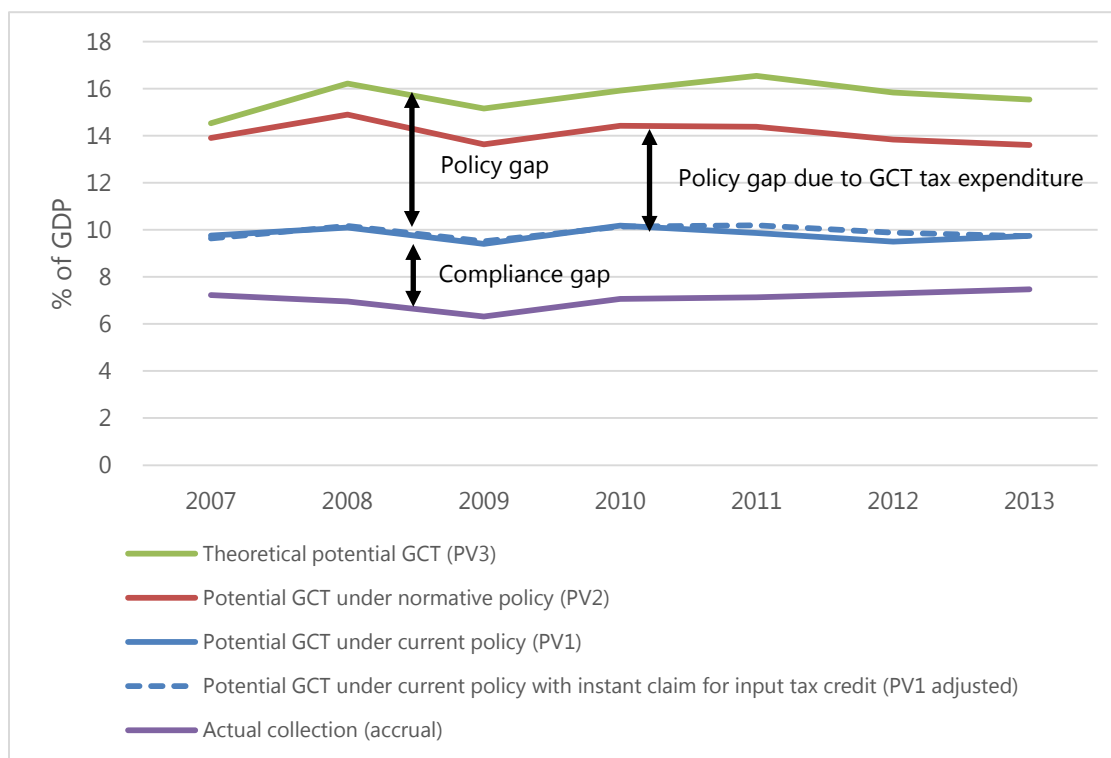
Source: Staff calculations.

3. ESTIMATION AND EVALUATION OF THE GCT POLICY GAP

A. Definitions and Methodologies

30. While actual GCT collections are known, there are various possible measures (definitions) of potential GCT revenues which lead to different measures of the gaps (Figure 18). Potential GCT revenue under current policy is referred to here as PV1, and the difference between PV1 and actual collections is defined as the compliance gap. The difference between potential GCT revenue under a normative GCT structure with only a minimum of exemptions (PV2)²³ and PV1 is called the policy gap due to GCT tax expenditures, and the difference between potential revenue under a theoretical GCT structure applying the standard rate to all final consumption (PV3) and PV1 is called the policy gap. The ratio of actual GCT collections to PV3 is the C-efficiency ratio.

Figure 18. Various Measures of Potential GCT Revenues



Source: Staff calculations.

²³ In the context in Jamaica, the minimum exemptions are set to be financial services, residential housing rent, public administration services (due to technical reasons) and fuels, casino services (because other taxes are levied) in calculating PV2, as explained in footnote 25.

31. **The policy gap (PV3–PV1) shows the difference between the theoretical revenue calculated by applying the standard rate to all final consumption and the potential revenue under current policy.** In reality, such a policy framework in which all final consumption (as measured in national accounts) is taxed at a standard rate would be virtually impossible to implement.²⁴ This is, nonetheless, an important measure; as the gap value arrived at with this measure is comparable to the value arrived at using c-efficiency.²⁵ (In turn, the c-efficiency ratio is an important metric because it is straightforward to calculate on a consistent basis in different countries, allowing comparisons with peer administrations, as in Section 1.B above.)
32. **The policy gap due to GCT tax expenditures (PV2–PV1) shows difference between a certain normative GCT structure with minimum exemptions and the current GCT structure.** Under this normative policy framework, it is assumed that GCT at the standard rate is applied to all supplies except for financial services, residential housing rent, fuels, casino services and public administration services, which are all assumed to be exempt.²⁶ This means that the calculated policy gap due to GCT tax expenditures will mainly capture the effects of policies for the other exempted goods and services and differentiated rates.²⁷
33. **In calculating the policy gap and the part of the gap due to GCT tax expenditures, it is not assumed that taxpayers' behavior would be different under the normative policy frameworks.** So they should not be interpreted as estimates of the amount of additional revenues that would accrue following transition to the normative policy framework. Rather, they provide quantitative indicators of the efficiency of GCT policy.

²⁴ Final consumption in national accounts includes consumption on which it is difficult to levy GCT (such as financial intermediation), and imputed transactions (such as government final consumption and imputed rents)

²⁵ C-efficiency is calculated by dividing actual GCT collections by theoretical potential revenues calculated as PV3.

²⁶ The rationales for keeping these reliefs are largely pragmatic, as follows:

Fuels and casino services are assumed to be exempted because other taxes (SCT and casino tax) are levied on these in place of GCT; changing these taxes into GCT will not itself result in net revenue gains

Financial services and housing rents are assumed to be exempt, because their value added is difficult to tax, and almost all countries exempt them

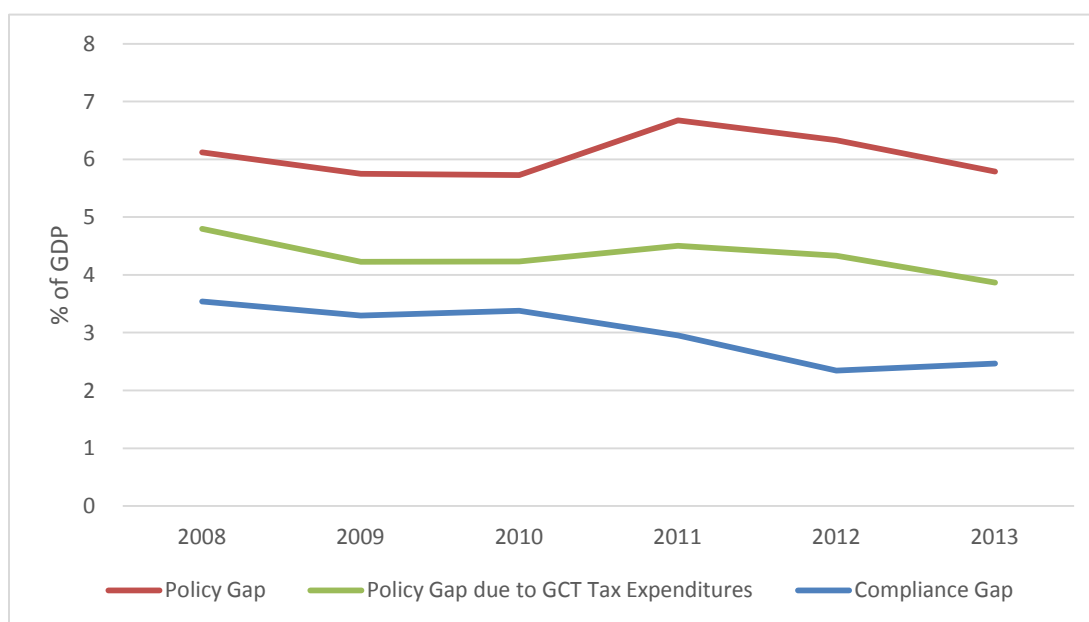
²⁷ It should be noted that the existence of specialized GCT rates higher than standard rate will reduce the magnitude of GCT policy gap and its part due to tax expenditures because potential revenues are expected to increase due to these rates.

B. GCT Policy Gaps in Jamaica

34. **The policy gap due to GCT tax expenditures in Jamaica exceeds the GCT compliance gap, although current GCT tax expenditures are mainly associated with hard-to-tax sectors.**

The policy gap in Jamaica is equivalent to 5–6 percent of GDP, and the policy gap due to GCT tax expenditures has been between 4 percent and 5 percent of GDP (Figure 19). The relative sizes of the policy gap and tax expenditure have stayed larger than the compliance gap, which has stayed between 2 percent and 3 percent of GDP.²⁸ However, the policy gap due to GCT tax expenditure mainly consists of exemptions for construction, agricultural and land transportation sector, which are comprised of large amount of small vendors doing business-to-consumer transactions. It seems more difficult to enforce taxpayers' compliance in these sectors than currently taxable sectors, and therefore substantial revenues from these sectors could not be expected without having more efficient revenue administration.²⁹

Figure 19. GCT Policy Gap and Part of Gap Due to GCT Tax Expenditures, 2008–13



Source: Staff calculations.

²⁸ Notwithstanding this, it is perhaps worth noting that the policy gap expressed as the ratio to the theoretical potential GCT (PV3)—between 34 percent and 38 percent—is lower than the average in European countries, 41 percent.

²⁹ As discussed in Section 2.C, the current compliance gaps in business-to-consumer sectors are estimated to be much higher than other sectors.

35. **The policy gap due to GCT tax expenditures (PV2–PV1) in Jamaica has been decreasing over the period 2008–2013 due to policy measures widening the tax base.** A decrease of policy gap due to GCT tax expenditures generally implies streamlining and simplifying GCT legislation, and such measures could have contributed to improving taxpayers' compliance. However, the decreasing trend of policy gap due to GCT tax expenditures has been mild so it is perhaps unlikely that these measures will have had a strong impact on compliance.³⁰

36. **However, the overall GCT policy gap (PV3–PV1) has remained fairly steady at the level of 6 percent of GDP after 2008, because of other contributing factors (PV3–PV2).** The base broadening measures above have been offset by changes to the composition of GDP, showing increasing non-taxable final consumption, such as financial services, housing rent, fuels, education and healthcare services, and government activities.

³⁰ The increase in policy gap due to GCT tax expenditures (and hence policy gap) in 2008 was attributable to the abolishment of multiple GCT rates above the standard rates applied to different types of motor vehicles.

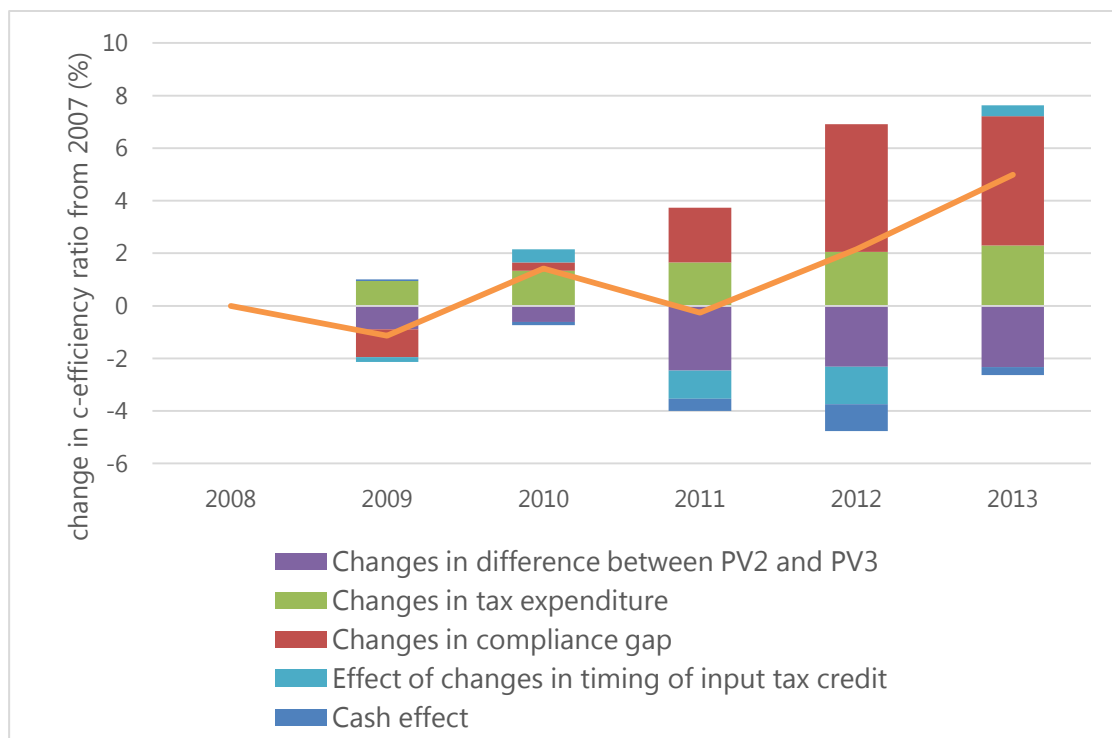
4. APPLICATION OF RA-GAP RESULTS FOR GCT GAP

A. Changes in C-Efficiency Ratios in Jamaica

37. **Annual changes to calculated c-efficiencies were analyzed using the estimated compliance and policy gaps.** The results of the analysis of the policy gap were used to decompose year-on-year changes in c-efficiency ratios after 2008 into five components:

- Compliance gap changes;
- Changes in policy gap due to GCT tax expenditures;
- Changes in the share of non-taxable consumption;
- Timing changes in claims for input tax credit for capital formation; and
- Changes in differences between cash collections and accrual collections (cash effect).

38. **The decomposition of c-efficiency changes suggests that recent increases in c-efficiency have been caused by a combination of decreasing compliance gaps and policy gaps due to GCT tax expenditures (Figure 20).** The decline of c-efficiency ratios in 2009 can be explained by the increasing compliance gap. Subsequently, c-efficiency increased as the compliance gap and the policy gap due to GCT tax expenditures decreased, more than offsetting the impact of increasing non-taxable final consumption (on the policy gap) which otherwise would have reduced c-efficiency. In 2011 and 2012, the temporary effect of the changes in timing for claiming input tax credit for capital formation reduced the c-efficiency ratio, but the effect has diminished in 2013. The increasing trend of non-taxable final consumption also results in the decrease of the c-efficiency ratio. Increasing share of housing rents and fuels have been major contributors to increasing non-taxable final consumption.

Figure 20. Decomposition of Changes in C-Efficiency Ratios After 2008

Source: Staff calculations.

B. Comparison of RA-GAP Results with Other Measures

39. **The MoFP has previously estimated the GCT compliance gap in Jamaica from final consumption data for 2010/11.**³¹ The estimate was based on an assumption that the ratio of the taxable supplies to total supplies in Jamaica was 50 percent, and calculated the compliance gap to be 39.98 billion JMD, corresponding to 3.4 percent of GDP. This result, albeit calculated using a simplified method, is generally consistent with the RA-GAP results.

40. **This simplified method, however, will not be able to correctly trace the yearly changes in taxpayers' compliance.** The method is simply based on the data of overall final consumption, and yearly changes calculated by this method may include the effects of changes in non-taxable portions, such as financial intermediation (intrinsically non-taxable consumption) or petroleum products (exempted consumption by policy), which are irrelevant to the situation of compliance. The

³¹ See 'Tax Capacity, Tax Effort and Tax Gap in Jamaica', Research & Analysis Unit, Taxation Policy Division, Ministry of Finance and the Public Service, Jamaica (2012, June 22).

movement of this estimate is expected to be similar to the inverse of c-efficiency ratio movements, and it can move in opposite directions to the compliance gap estimates based on the RA-GAP approach, as is seen, for example, in 2011 (see Figure 7 and Figure 8). Therefore, it is recommended that the TAJ adopts estimates reached using detailed supply and use information to judge the evolution of taxpayers' compliance.

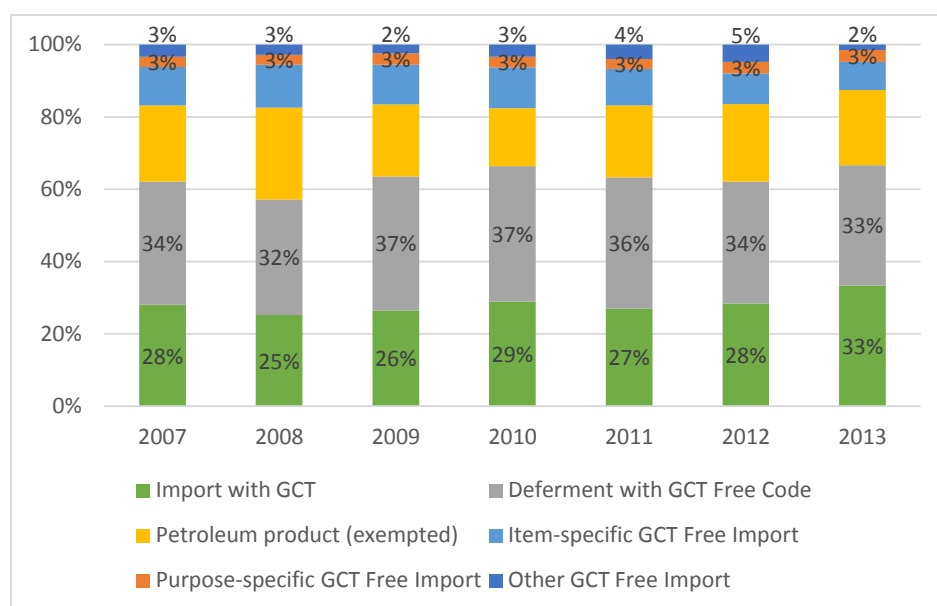
C. Import GCT and Domestic GCT

41. **It is worth considering the decomposition of compliance gaps and potential GCT revenues into import GCT and domestic GCT when analyzing administrative performances and sector collections.** Given currently available data sets and the high levels of deferments and exemptions, however, it is not easy to implement a reliable analysis. In the RA-GAP model, potential GCT revenues are calculated as the sum of potential import GCT derived from aggregate import data and potential domestic GCT derived from domestically produced aggregate value-added. However, the comparison between potential import GCT revenues and actual import GCT does not give the compliance gap for import GCT because of the various deferments allowable for import GCT. Deferments allow importers to delay the timing of declarations and payments of import GCT, thus changing them into domestic GCT liabilities, and so reduce the adverse cash flow impact of paying GCT at import and later recovering it as input tax credits.³²

42. **From 2007 to 2013, 32–37 percent of total imports deferred import GCT payments under the GCT and other Acts (Figure 21).**³³ In general, deferments may not necessarily cause significant risks for compliance, but prevalent deferments with attendant low levels of voluntary compliance and weak monitoring can create gaps in GCT compliance. Since the sector analysis in Section 2.C indicated larger compliance gaps in downstream industries, lack of sufficient controls of deferments may allow revenue losses from every stage of supply chains rather than at just the business to consumer stage.

³² Under the current advance payment requirement for additional 5 percent GCT at the Customs for commercial importers, deferments also have an effect of enabling importers to avoid having to claim input tax credit for additional import GCT and then wait for the corresponding refund.

³³ In this report, the value of deferred imports was calculated as the sum of imports with GCT-free code 910.00, 920.00, 940.00, 950.00, 951.00, 952.00, 980.00, 981.00, 990.00, 991.00, 992.00, 993.00, 995.00, and 996.00. These categories includes the deferment under the GCT Act (990.00) and other treatments which were not specified as 'item-specific exemptions/zero-rating' and 'purpose-specific exemptions/zero-rating' explained in Appendix IIB.

Figure 21. Imports with GCT Free Treatments

Source: Customs and staff calculations.

43. **Purpose-specific (or purchaser-specific) exemptions for imported goods, which account for 3 percent of total imports, are another category that are difficult to monitor appropriately.** Purpose-specific exemptions are defined as exempted treatments applied to specific purchasers, such as the exempted treatment for goods purchased by or on behalf of charitable organizations and government. Such treatments aim at reducing or eliminating tax burdens on the final purchaser (or selected institutions), but may increase the administration and audit cost due to the need to check that the imported goods are finally purchased by qualifying institutions. If these treatments are weakly monitored, loopholes in GCT collections can be created.³⁴

44. **To enhance the efficiency of overall GCT system in Jamaica, individual and joint efforts by Customs and TAJ are necessary.** To appropriately manage the deferments and exemptions, it is desirable that Customs keep appropriate records for individual transactions with GCT-free

³⁴ A previous FAD technical assistance report (Norregard et al. (2009) 'Improving the performance of consumption taxes') recommended that the provisions that give certain classes of purchasers the right to acquire a normally taxable supply as exempt be eliminated, instead allowing them to claim input tax credits on their purchases, or providing a post purchase refund of tax paid in the). The abolishment of exempted purchases for or on behalf of government in 2014 was a significant step to that direction.

treatments.³⁵ Information and data about individual deferments and exemptions can be utilized for risk analysis and audit if they are shared appropriately with TAJ, and shared audit results and integrated risk analysis between Customs and TAJ would improve internal operations in both institutions.

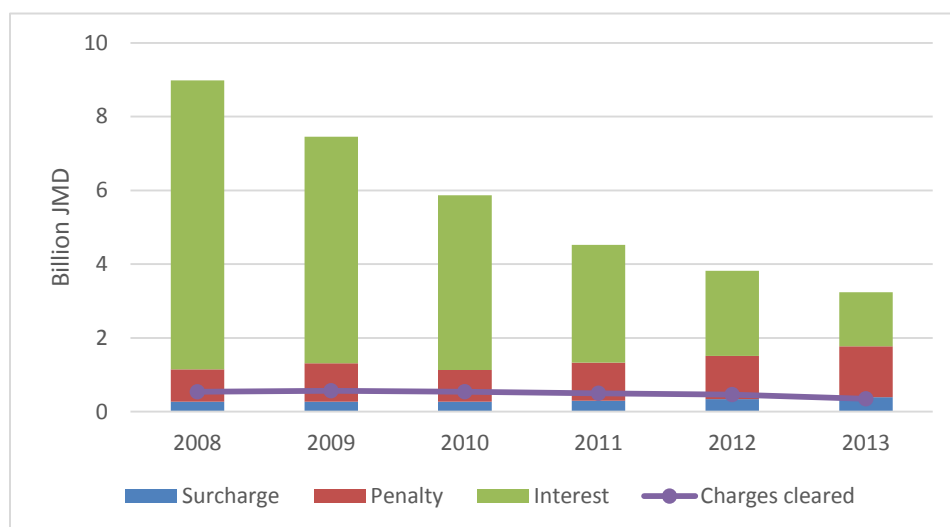
D. Cash Collections and Accruals—Surcharge and Interest

45. **In calculating compliance gaps, the RA-GAP estimate compares accrued (reallocated) collections of principal tax liabilities, not including collections for surcharges and interest, with potential revenues.**³⁶ This is based on the principal that collections of surcharges and interests reflect secondary effects of taxpayers' compliance, and these values could not be related with potential revenues derived from statistical data. Therefore, the collection gaps presented in Section 2.C indicate payment compliance for the principal tax liabilities, and do not reflect payment compliance for surcharges and interests.

46. **Payment compliance for surcharges and interests has been weaker than that for principal tax liabilities in Jamaica (Figure 22).** Cleared (paid or offset) values for surcharges and interest have been proportionately much smaller than values for delinquent tax liabilities during the year, and interest charges for unpaid tax and surcharges have in many cases accumulated to the levels that could not be easily recovered. These results indicate a necessity for better management of debt and enforceable rules for interest charges for arrears.

³⁵ Between 2007 and 2013, 2–5 percent of total import was imported as GCT free without having any corresponding GCT-free code (Figure 21).

³⁶ Compliance gaps calculated by using cash collections include payments for surcharges and interests. This is one of the reasons why compliance gap numbers with cash collection have been slightly smaller than the gaps using accrual numbers.

Figure 22. Payments for Surcharges and Interests

Source: Staff calculations.

5. COMPLIANCE PLANNING IN JAMAICA

A. TAJ Compliance Planning

47. **The TAJ is undertaking a series of far reaching reforms to address identified compliance and administration weaknesses.** Previous technical assistance provided to the TAJ since 2008 by FAD has identified a number of areas of tax administration in Jamaica where improvements can be made. The TAJ, with support from FAD's resident tax administration advisor is implementing these recommendations, and has made progress in organizational change, in particular in headquarters functions.

48. **The TAJ produces annual compliance plans, which address over-arching plans for the whole organization and headquarters, and are cascaded down to operational levels through individual compliance plans for operational units.** The TAJ compliance plan for financial year 2015/16 and 2016/17, seen in draft, provides updated planning for the three year plan implemented from 2014/15. It sets out the TAJ's compliance approach, which is based on international standards for the compliance model, risk management and a risk differentiation compliance framework. It also sets out a large number of risk treatment strategies, with three specific strategic priorities, as follows:

- **Large Taxpayer Office (LTO):** strengthening the Large Taxpayer Office audit capability with a significant increase in better trained and equipped auditors using modern risk profiling auditing techniques together with enhanced legislation to tackle complex domestic and international taxation issues.
- **Information matching and forensic data mining:** exploiting existing IT capacity and recent legislation to use large third party data sets systemically in risk assessment and profiling.
- **Measuring the tax gap:** with RA-GAP support, estimating the GCT compliance gap, and developing the capacity for analyzing compliance gaps for other taxes.
- **The role of intermediaries in helping to ensure tax compliance:** using external tax professionals to leverage voluntary compliance by taxpayers.

49. **The TAJ's development of a compliance plan represents a positive, but only a first, step.** The draft plan addresses behavioral issues (for example non-registration and non-filing) across

all taxpayers. As the plan is cascaded down from headquarters to operational levels it will need to target more specific taxpayers populations (for example, small/medium/large or industry sectors), addressing a range of non-compliance behaviors for each group to achieve optimal operational efficiency. Similarly, over time, as TAJ's business and risk intelligence develops, future HQ-level compliance plans should detail more focused approaches to specific, high-risk taxpayer segments.

50. **The compliance plan is appropriately evidence based.** The compliance plan presents an evaluation of TAJ's 2014/15 performance, using revenue analysis, costs of collection and compliance indicators for the four core roles of a revenue agency—registration, filing and payment compliance, and correct reporting. This evaluation reports progress made in the TAJ reform program, but notes weaknesses in filing and payment compliance and audit results. Particular problems were noted with taxpayers using the objection process to delay significantly their due payments in the hope of benefiting from period amnesties. In spite of additional resources being allocated to objection resolution, the inventory of cases is still increasing, with the total value of assessments that were objected being reduced by 50 percent.

51. **The compliance plan sets out national focus areas for 2015/16 and 2016/17.** To maintain existing voluntary compliance and improve taxpayer compliance overall, the plan identifies a number of areas or particular focus for the coming two years, consistent with TAJ strategic objectives and modernization plans. These are as follows:

- **Registration:** using third party data to identify potential registrants to improve the current low registration rate, estimated at 50 percent. The high proportion of taxpayers failing to register is attributed mainly to low income taxpayers operating in the informal economy.
- **Filing:** current filing rates overall are low, at around 50 percent, again attributed largely to lower income taxpayers. Filing rates for large taxpayers controlled by the LTO are much higher, at over 90 percent. TAJ will use a new workflow and information management system, Revenue Administration Information System (RAiS) and e-filing to improve filing compliance processes.
- **Payment:** high rates of filing non-compliance translate naturally into high rates of payment noncompliance, again largely by lower income taxpayers. Process administration problems and weak enforcement are acknowledged to be major issues here, and RAiS will be used to modernize and improve collections. In addition, legislative changes, staff training and a recently

launched write-off policy are expected to facilitate better debt management and reduced arrears. Auditors will also take more ownership of debt management for audit assessments.

- **Correct reporting:** RAiS will be used to support audit and reporting procedures, with increased use of third party data matching to identify risk and better training of auditors. In addition, audit coverage will be increased by increased use of desk audits and checks, and leveraged with increased education and guidance for taxpayers.

52. **The compliance plan also presents critical enablers of performance improvements, as well as planned performance monitoring and reporting.** The key performance indicators (KPI) are an appropriately small number of metrics for the four key roles of a revenue agency, as above. As well, there are a number of KPIs for improving the handling of objections, as an area of particular concern. The enablers identified are:

- Taxpayer service and education program for 2015/16 (endemic low tax morale is identified as a major issue in Jamaica).
- Implementation of tax administration reforms.
- Transition (of TAJ) to a semi-autonomous revenue agency (SARA).

B. Revenue Performance Reporting

53. **In addition to KPI monitoring for the compliance plan, revenue performance is analyzed and reported quarterly by TAJ.** A summary of the most recent available report is presented in Appendix III. The report presents an appropriately detailed series of key revenue metrics for taxes administered by TAJ, with commentary on year-on-year changes, deviations from forecast revenues and medium-term trends. Although the report presents appropriate metrics with a good coverage of different aspects of revenue performance, it does not present any analysis of the determinants of these metrics and time series or the reasons for any shortfalls.

54. **One area of concern in revenue performance is persistent over-forecasting.** A previous FAD mission in 2012 reviewed the reasons for shortfalls against revenue forecasts, and found a number of compliance and compliance process weaknesses. The recommendations of that mission have been taken up in TAJ strategic and operational planning. However, shortfalls against forecasts have persisted over recent years. In a technical sense, these shortfalls are actually the result of

persistent ‘optimism bias’ in the forecasts produced by the MoFP. These forecasts are growth models, generally assuming tax receipts will increase in line with GDP growth, but they also include adjustments for assumed compliance improvements.

55. **The positive adjustments to forecast revenues to allow for expected reductions in the compliance gap are high, generally between 0.5–1 percent of GDP.**³⁷ Such adjustments represent reductions in the compliance gap of the order of 5–10 percent of potential revenues, which are probably unrealistic, based on trends observed in the compliance gap (above), and unlikely to be achieved in a single year. Any projected revenue from compliance improvement should be tied to specific compliance actions which should be agreed on MoFP and TAJ and fully implemented. This is an area where tax gap and associated revenue and performance analysis can be used to improve the forecast, perhaps setting more realistic expectations of the lag between the planning and implementation of administration reforms—particularly structural reforms and capacity improvements—and increased compliance.

56. **The revenue performance report also presents very high levels of outstanding debts.** Despite the recent large-scale write-off of aged debts by the TAJ, the stock of debt outstanding is extremely high, around twice annual revenues, about 400 billion Jamaican dollars. Arrears owed by other government departments represents around a quarter of this total. However, much of this apparent debt was suspended (described by the TAJ as ‘written off’) in a major debt amnesty exercise in 2012. The legislation for the amnesty did allow for the future enforcement of these debts if taxpayers’ circumstances changed, but it is not clear in the compliance plan whether or how this provision will be executed. In the meantime, the revenue performance report should make it clear how much of the outstanding debt is suspended from normal enforcement action. If a decision is taken to write off all or part of the suspended debt, the outstanding debt should be adjusted accordingly, so as to avoid presenting a false picture of contingent assets.

³⁷ Optimism bias in economic growth and revenue forecasts has been observed in many (not all) countries around the world to varying degrees. A more recent study (“*Over-optimistic Official Forecasts and Fiscal Rules in the Eurozone*”, Jeffrey Frankel and Jesse Schreger, Harvard University, 2013, *Review of World Economics* (Weltwirtschaftliches Archiv) 149, no. 2) found an average optimism bias in forecasts of tax revenues in 17 European countries of 0.5 percent of GDP at the one-year stage. The same study also reviewed previous papers that had previously found optimism bias in revenue forecasts, but often due to over-optimism in forecast economic growth.

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.³⁸

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,

³⁸ 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 ,

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

η_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.

τ_c : This is the first of the two “policy variables” in the model. The values for τ_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 τ_c , apart from those supplies typically exempted internationally (margin-based financial services, life insurance, and residential rents).

η_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 η_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.³⁹

³⁹ 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 τ_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 τ'_c is a vector which distinguishes whether commodity c is exempt ($\tau'_c = 1$) or taxable ($\tau'_c = 0$).⁴⁰

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.⁴¹

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

To determine the value for τ_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,

τ_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' .

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.

⁴⁰ 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.

⁴¹ 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.

Accommodating complexities in the policy structure

While the two policy variables τ_c and η_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 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, τ_c^s , instead of the simple vector in commodity space, τ_c , for the treatment of the tax to be applied to output, and in the computation of input tax credits. The simple τ_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.⁴² 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

⁴² 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.

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.

RS: To determine the amount of excess credit in a tax period, data from the tax returns database is required.⁴³ The data to be extracted would include: the value of excess credit, the 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.⁴⁴

OPS: 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.⁴⁵

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

⁴³ 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.

⁴⁴ 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.

⁴⁵ 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 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 the data as originally submitted by the taxpayer.⁴⁶ 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.⁴⁷ 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:

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

⁴⁶ 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.

⁴⁷ 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.

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.⁴⁸ 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.

⁴⁸ 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 JAMAICA

A. Introduction

Potential GCT revenues (PV1 and PV2) are calculated for each year between 2007 and 2013 by using extended supply and use tables (27 sectors and 57 commodities) for each year with the policy parameters specified in B. The extended supply and use tables are constructed from original supply and use tables in 2007 provided by STATIN and sector production of value added from 2008 to 2013 provided in national income and product data.

Actual GCT collections for each year are calculated as the sum of [1] payments allocated to the tax period starting each calendar year; [2] payments at Customs during each calendar year minus [3] excess credits declared in the tax period starting each calendar year.

B. RA-GAP Model for Potential GCT Revenues

GCT rates

For the calculation of PV1 (potential GCT revenues under the current policy structure), the following rates are used. When the rates had been changed during the year, the weighted average of the different rates is calculated.

	2007	2008	2009	2010	2011	2012	2013
Standard	16.5%	16.5%	16.5%	17.5%	17.5%	16.9%	16.5%
Tourism	8.3%	8.3%	8.3%	9.6%	10.0%	10.0%	10.0%
Electricity	0.0%	0.0%	0.0%	10.0%	10.0%	13.8%	16.5%
Telephone	20.0%	20.0%	21.3%	25.0%	25.0%	25.0%	25.0%
Motor vehicles ⁴⁹	27.6%	20.2%	16.5%	17.5%	17.5%	16.9%	16.5%

GCT exemptions

Goods and services listed on the Third Schedule of GCT Act, and petroleum products are exempted from payment of GCT. There are two types of exemptions: [1] item-specific exemptions and [2] purpose-specific (or purchaser-specific) exemptions.

⁴⁹ The rates for motor vehicles in 2007 and 2008 are calculated from average GCT rates for imported motor vehicles in Customs data.

[1] Item-specific exemptions

Item-specific exemptions are defined as exempted treatments for specific items irrespective of who purchases the goods and services, or exempted treatments for specific items within a single commodity category on SUT. For goods with records of imports, the ratio of supply and use of exempted goods for each commodity items on SUT tables is assumed to be the same as the ratio of exempted imports derived from actual exempted import data showing the quantities of GCT-free imports. For other goods and services that do not have import data, the ratio is calibrated from available commodity decomposition data in similar countries. The ratios used in the model from 2007 to 2013 are shown in the following table.

Table 1. Item-Specific Exemption Ratio (Outputs)

		2007	2008	2009	2010	2011	2012	2013
011-2	Growing of bananas and plantains	5%	5%	5%	5%	5%	5%	5%
011-3	Growing of citrus	5%	5%	5%	5%	5%	5%	5%
011-5	Growing of other export crops	5%	5%	5%	5%	5%	5%	5%
011-6	Growing of root crops (excl. ginger)	5%	5%	5%	5%	5%	5%	5%
011-7	Growing of vegetables, corn, pulses etc	5%	5%	5%	5%	5%	5%	5%
011-8	Growing of crops nec	5%	5%	5%	5%	5%	5%	5%
012-1	Animal farming except poultry and eggs	5%	5%	5%	5%	5%	5%	5%
012-2	Production of poultry and eggs	5%	5%	5%	5%	5%	5%	5%
050	Fishing and aqua-culture	100%	100%	100%	100%	100%	100%	100%
151-1	Processing and preserving of meat and meat products	87%	86%	88%	89%	89%	60%	44%
151-2	Processing and preserving of fruit and vegetables	2%	2%	2%	3%	2%	2%	2%
152	Manufacture of dairy products	51%	45%	26%	39%	39%	18%	7%
153-1	Manufacture of grain mill products	64%	86%	64%	71%	62%	67%	63%
154-1	Manufacture of bakery products	80%	80%	80%	78%	79%	37%	2%
154-2	Manufacture of sugar, molasses	37%	36%	36%	27%	29%	36%	1%
154-3	Manufacture of food n.e.c.	10%	10%	8%	7%	7%	6%	6%
180	Manufacture of textiles and wearing apparel	4%	4%	5%	4%	5%	6%	7%
210	Manufacture of paper and paper products	7%	8%	10%	11%	8%	11%	12%
220	Printing and publishing	64%	82%	57%	57%	54%	48%	49%
240	Manufacture of chemical & chemical products incl petroleum	55%	54%	62%	68%	70%	73%	72%
250	Manufacture of rubber and plastic products	2%	3%	3%	3%	3%	2%	2%
401/410	Electricity & Water supply	100%	100%	100%	45%	49%	32%	20%
450	Construction	100%	100%	100%	100%	100%	100%	100%
600	Transport & Auxiliary services to transport	30%	30%	30%	30%	30%	23%	7%
640	Communications	9%	9%	9%	9%	9%	9%	9%
650	Finance and insurance services	56%	57%	55%	51%	49%	48%	50%
701	Operation and letting of dwellings	100%	100%	100%	100%	100%	100%	100%
750	Producers of Government services	100%	100%	100%	100%	100%	100%	100%
800	Education services (non-government)	100%	100%	100%	100%	100%	100%	100%
850	Health and social work services (non-government)	100%	100%	100%	100%	100%	100%	100%
920	Recreational, cultural & sporting activities	52%	52%	52%	52%	52%	52%	52%
930	Other community, social and personal services	20%	20%	20%	20%	20%	20%	20%

[2] Purpose-specific exemptions

Purpose-specific exemptions are defined as exempted treatments applied to specific purchasers, and to items in multiple categories on SUT commodity classification. A typical example is the exempted treatment for goods purchased by or on behalf of charitable organizations. The purchased items under this category may fall into several commodity categories.

Where such goods are imported, the amount of imports exempt from GCT at Customs for purpose-specific reasons (as classified by corresponding GCT free codes) are extracted from Customs data from 2007 to 2013 for each sector. The 'purpose-specific GCT-free import ratio' (together with purpose-specific zero-rating) is calculated for each sector to discount the effect of these treatments on sector potential import GCT revenues.

For domestically produced goods and services, it is assumed that there are no purpose-specific exemptions because there is no reliable data on the amount of domestically produced goods and services (value added) that are exempted in a purpose-specific manner. It is assumed that the proportion of all goods that are so exempted is non-material.

GCT zero-rating

Goods and services listed on the Part II of the First Schedule of GCT Act are zero-rated. There are three types of zero-rating treatments: [1] item-specific zero-rating treatment, such as animal feeds and agricultural produce; [2] purpose-specific zero-rating treatment, such as goods purchased or imported on behalf of government and for place of worship; and [3] zero-rating of imports under special rules. In calculating potential GCT revenues, different treatments are applied.

[1] Item-specific zero-rating

The ratios of zero-rated outputs are specified in Table 2.

Table 2. Item-Specific Zero-Rating Ratio (Outputs)

		2007	2008	2009	2010	2011	2012	2013
011-1	Growing of sugar cane	95%	95%	95%	95%	95%	95%	95%
011-2	Growing of bananas and plantains	95%	95%	95%	95%	95%	95%	95%
011-3	Growing of citrus	95%	95%	95%	95%	95%	95%	95%
011-4	Growing of coffee and cocoa	95%	95%	95%	95%	95%	95%	95%
011-5	Growing of other export crops	95%	95%	95%	95%	95%	95%	95%
011-6	Growing of root crops (excl. ginger)	95%	95%	95%	95%	95%	95%	95%
011-7	Growing of vegetables, corn, pulses etc	95%	95%	95%	95%	95%	95%	95%
011-8	Growing of crops nec	95%	95%	95%	95%	95%	95%	95%
012-1	Animal farming except poultry and eggs	95%	95%	95%	95%	95%	95%	95%
012-2	Production of poultry and eggs	95%	95%	95%	95%	95%	95%	95%
014	Agricultural services incl. post harvest crop activities	95%	95%	95%	95%	95%	95%	95%
153-2	Manufacture of prepared animal feeds	91%	85%	91%	88%	83%	87%	86%
240	Manufacture of chemical & chemical products incl petroleum	2%	2%	2%	2%	2%	2%	2%
401/410	Electricity & Water supply	0%	0%	0%	0%	0%	23%	39%

Agricultural products are zero-rated when they are sold to GCT registrants. Since there is no reliable data about the outlet of agricultural products, it is assumed that 95 percent of total sales is zero-rated, and other are exempted. The output shares of zero-rated animal feeds and pesticides are derived from the share of usage for agricultural sector on use tables. The zero-rated share of electricity supply was derived from final consumption of electricity.

[2] Purpose-specific zero-rating

Values of imports zero-rated for purpose-specific reasons are extracted from Customs data from 2007 to 2013 (with the purpose-specific exemptions). The effects of purpose-specific zero-rating on potential import GCT revenues are included in the calculation of 'GCT-free import' values.

The list of purpose-specific zero-rating is as follows:

Table 3. Purpose-Specific GCT Free Import Ratio

		2007	2008	2009	2010	2011	2012	2013
CC01	Agriculture	2%	2%	3%	1%	0%	0%	0%
CC02	Forestry	38%	25%	42%	51%	71%	56%	13%
CC03	Fishing	14%	17%	18%	17%	6%	11%	22%
CC06	Food, Beverages & Tobacco	0%	0%	0%	0%	0%	0%	0%
CC07	Textile & Leather Products	0%	0%	0%	0%	0%	0%	0%
CC08	Wood, Wood Products & Furniture	0%	0%	0%	0%	4%	1%	0%
CC09	Paper & Paper Prod; Printing & Publishing	1%	2%	2%	2%	1%	2%	2%
CC10	Chemicals, Chemical Products, Rubber & Plastic Products	0%	0%	0%	0%	0%	0%	0%
CC11	Other Manufacturing	0%	0%	0%	0%	0%	0%	0%
CC12	Electricity & Water Supply	0%	0%	0%	0%	0%	0%	0%
CC13	Construction	7%	2%	7%	10%	15%	6%	2%
CC14	Wholesale & Retail Trade	4%	4%	4%	5%	3%	4%	4%
CC15	Repair of Motor Vehicles, Household & Personal Goods; Install	2%	0%	0%	0%	0%	1%	0%
CC16	Restaurant & Hotel	2%	1%	2%	2%	2%	3%	1%
CC17	Transport & Auxiliary services to transport	20%	47%	45%	28%	58%	54%	22%
CC18	Post & Telecommunications	1%	0%	0%	0%	1%	1%	1%
CC19	Finance & Insurance Services	0%	0%	0%	0%	6%	18%	17%
CC20	Operating of Owner-Occupied Dwellings & Rental of Residenti	0%	0%	0%	0%	0%	0%	0%
CC21	Other Real Estate Activities, Business Activities incl. Renting o	1%	1%	1%	1%	3%	2%	3%
CC25	Recreational, Cultural & Sporting Activities	1%	1%	0%	1%	3%	1%	5%
CC26	Community, Social & Personal Services n.e.c. & Private Househ	2%	4%	3%	2%	2%	2%	3%

For domestically produced goods and services, it is assumed that all sales to the government sector⁵⁰ and bauxite and alumina sector, and a part of sales to the health and education sectors are zero-rated.

[3] Zero-rating of imports under special rules

It is assumed that zero-rating treatments for items under special rules that enable importers to not make payments of customs duty and GCT will not affect the total and sectoral potential GCT revenues, because it will affect only the timing of payments for GCT (by moving them from Customs, to domestic transactions after importation).

Petroleum products are treated differently; values of imports of goods categorized under HS27 without payment GCT are treated as exempted imports of petroleum products.

Treatment of transactions under GCT threshold

The GCT registration threshold was raised from 1 million JMD to 3 million in January 2009. Since there is no reliable data about the economic activities under the threshold, it is assumed that 10% of

⁵⁰ Zero-rating for the sales to government was abolished in April 2014.

value added produced in the wholesale and retail sector and hotel and restaurant sector would be produced by the vendors under the threshold of GCT, and their sales would not be purchased by GCT registrants.

C. Measurement of Actual Collections for GCT

Aggregate cash collection

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

Accrued collection

Accrued collections are calculated as the sum of [1] payments reallocated to the tax period starting each calendar year; [2] excess credits declared in the tax period starting each calendar year; and [3] payments at Customs during each calendar year. Reallocation of payments to tax periods is based on individual payment data from 2007 to 2013, and the reallocation of excess credits is based on individual GCT declaration data for the period.

D. Data Used in the RA-GAP Model

For estimating potential GCT revenues

Supply and use tables, 2007 (STATIN; provided in May 2014)
 Capital formation by general government, 2007 (GFS; downloaded in November 2014)
 National Income and Product, 2013 (STATIN; provided in August 2014)
 Sector output and input, 2007–2013 (STATIN; provided in July 2014)
 Imports and exports by commodities 2007–2013 (STATIN; provided in August 2014)
 Customs declaration for imports 2007–2013 (Customs; provided in November 2014)

Tax collections data (aggregate)

Monthly cash collection of GCT 2007–2014 (MoFP; provided in July 2014)
 [For calculating Accrued GCT collections] (Anonymized)
 GCT Payments and Refunds from January 2007 to July 2014 (TAJ; provided in July 2014)
 GCT Returns from January 2007 to July 2013 (TAJ; provided in July 2014)
 Customs Import GCT declaration from 2007 to 2013 (Customs; provided in November 2014)

APPENDIX III. DOMESTIC TAX PERFORMANCE REPORTING

1. **As part of their governance and transparency reforms, the TAJ produces a quarterly review of domestic tax performance.** A copy of the report for the third quarter (December) of Financial Year 2014/15 was reviewed by staff. The report presents a series of comparative data reporting outturns against previous year results and forecast projections, with some additional tables presenting medium term time series. The coverage of the report is those taxes administered by TAJ, i.e. domestic taxes that exclude GCT collected on imports by the Customs agency.

2. **The time series presented in the report provide a comprehensive, detailed and clear view of domestic tax performance, but with some scope for extended coverage.** For the purposes of comparisons, the data presented is all on a year-to-date basis, i.e. all figures are as at December in each year. For convenience, figures for previous years could also be shown for full years, but this is not critical. Similarly, the performance of taxes administered by other agencies, particularly Customs, could also be shown, so as to present a more rounded picture of taxes as a whole and to put TAJ taxes into context. In particular, it would be helpful to include import GCT collected by Customs, as it could be misleading to try to understand trends in domestic and import GCT in isolation from each other.

3. **The data in the report covers the essential elements of revenue trends and administration actions.** The report presents the data under the following headings:

- Domestic revenue performance
- Audit
- Refund payments
- Arrears
- Property tax
- Compliance (filing and payment)

Appendices present comparative collections (compared to previous year), collections vs. forecast projections, and detailed current year collections and projections.

4. **The performance metrics are presented with a brief commentary on changes and trends.** The presentation of the data is clear, with concise commentary on important changes and trends. However, there is no analysis of the determinants of such changes and trends or risk analysis for future revenues, which would aid understanding of tax performance and strategic risk management by the TAJ.

Summary results

5. **Most domestic taxes are growing in nominal terms, but falling short of projections, not just in the current year but persistently since fiscal year 2009/10 (Table 4).** Although nominal revenues have generally increased in nominal terms year-on-year since 2009/10 (likely largely due to inflation and GDP growth), they have persistently fallen short of forecast projections. While there are some particular exceptions to this result, for example property taxes; this persistent shortfall strongly indicates ‘optimism bias’ in the revenue forecasts produced by the MoFP (see Section 5.C above). Overall, tax collections to date in the current year are 94 percent of projections (a shortfall of J\$3.3 billion). Within this, companies income tax collections are 30 percent (J\$1.9 billion) below projections; and GCT collections are 13 percent (J\$2.3 billion) below their projected year to date figure. Nominal collections for both these taxes also fell slightly from the previous year. No analysis is presented of the potential reasons—economic, policy or compliance—for these shortfalls.

Table 4. Revenue Performance Against Projections for Primary Taxes, Q3

	FY 14/15	FY 13/14	FY 12/13	FY 11/12	FY 10/11	FY 09/10
Companies income tax	71.1%	75.7%	77.4%	73.8%	72.4%	68.8%
PAYE	108.6%	96.1%	93.7%	114.0%	89.2%	105.1%
Individual income tax	82.6%	69.8%	59.8%	75.4%	73.6%	53.6%
Tax on interest	59.3%	116.7%	151.7%	54.0%	86.0%	128.1%
SCT	83.7%	90.1%	173.6%	116.5%	44.1%	42.5%
Accommodation tax	114.4%	112.0%	70.5%	0.0%	0.0%	0.0%
Education tax	103.8%	94.2%	91.2%	97.6%	100.9%	101.4%
Tax/Call termination tax	132.4%	117.0%	95.2%	0.0%	0.0%	0.0%
GCT (local)	87.9%	99.5%	91.0%	80.1%	90.0%	86.2%
Stamp duty	131.0%	81.4%	110.4%	90.8%	99.7%	58.0%
Overall	94.1%	95.8%	96.3%	95.4%	94.2%	91.5%

6. **Audit coverage increased slightly from the same period in the previous year, but audit results declined very sharply (Table 5).** The number of audits increased from 4,214 by Q3 in 2013/14 to 4,667 in the year to date 2014/15, and the number of returns audited also increased from 11,370 to 11,455. However the total yield from audits fell very sharply, from J\$8.9 billion to J\$2.7 billion, and the net yield from J\$7.1 billion to J\$1.0 billion. These figures suggest one or just a few very large (i.e. outlier) cases successfully completed in 2013/14 that were not repeated in 2014/15, but no reasons are given for the very sharp decrease.

Table 5. Comparative Audit Yield—Year to Date, Q3

	FY 14/15	FY 13/14
Number of taxpayers audited	4,667	4,214
Number of tax returns	11,455	11,370
Total yield from audits (J\$ million)	2,706	8,911
Average yield per audit (J\$ million)	0.2	0.9
Net yield (J\$ million)	972	7,133

7. **Tax refunds increased from the previous year, but are at a very low level generally for GCT.** Total refunds increased from J\$14.0 billion to J\$16.0 billion, and GCT refunds from J\$4.2 billion to J\$5.7 billion. Overall, current year GCT refunds represent only around 5 percent of net GCT collections, which is very low—VAT refunds in modern administrations typically represent 30–40 percent of net collections. However, there is no evidence of accumulating stocks of unpaid refunds in the payments data used in the RA-GAP GCT gap estimate. It is apparent that a large part of the reason for the low level of refunds is because of very extensive coverage of import GCT deferrals (see Section 4.C above)—essentially refunds, which are an integral part of GCT, have been moved back up the supply chain to the import stage.

8. **Arrears collections have increased significantly over the previous year.** Overall, arrears collections increased in the year to date 2014/15 to J\$16.5 billion, from J\$14.2 billion in the previous year. GCT arrears collections increased from J\$2.3 billion to J\$3.3 billion. In both, the proportion of arrears collections attributable to the current financial year as opposed to previous financial years increased, which is a possible indicator of debt management more focused on preventing aged debt turning into bad debt.

9. **Filing compliance for GCT improved in 2014/15 compared to 2013/14, but very low rates were observed in other taxes.** The filing rate for GCT increased from 74 percent to 78 percent, with on-time filing increasing from 64 percent to 67 percent. Filing rates for other taxes in 2014/15 varied from 14 percent for individuals' income tax (IIT) to 88 percent for SCT. Filing compliance rates by tax liability were not presented. Filing compliance for large taxpayers in the current year is reasonably high, at 94%.

10. **GCT payment compliance rates also improved in the current year, but very low rates were again observed in other taxes, and there is scope for improvement in all taxes, particularly for large taxpayers.** The payment compliance rate for GCT increased from 65 percent to 68 percent, with on-time payment increasing from 55 percent to 58 percent. Payment compliance rates for other taxes in the current year varied from 13 percent for IIT to 86 percent for SCT. Although payment compliance was strongly positively correlated with the size of taxpayers, GCT payment compliance in the current year is 81 percent, and for IIT only 44 percent, despite filing compliance rates of 89 percent. As large taxpayers account for a large share of potential revenues, there is scope for improving these compliance rates, particularly in IIT.