Business Taxation in a Low-Revenue Economy
A Study on Uganda in Comparison With Neighboring Countries

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Abstract

Using the marginal effective tax rate (METR) analysis for Uganda and its neighboring countries, this study demonstrates that it is indeed possible that, even when a country's public revenue is low at the macroeconomic level, rapidly increasing taxation may pose a constraint to private investment at the microeconomic level. There are two reasons. First, while the enterprise sector in these economies is typically small, it represents a high proportion of the effective tax base. Second, access to credit is limited, particularly for smaller firms, and hence most private investment is financed by profits. As a result, taxation reduces both the expected revenue from investment projects and the liquidity to finance them. From the perspective of foreign investors, Uganda is more highly taxed than Kenya and Tanzania. Uganda's tax disadvantage results mainly from its property tax, the depreciation allowance on buildings, and its high fuel taxation. As inventories and buildings are the highest taxed assets in Uganda, industries investing heavily in them (tourism, manufacturing, communications) incur a higher METR than the other sectors.

Tax administration, if not fair and efficient, can distort the best intentions of policy-makers and can in practice produce a very different tax burden than intended. Using firm survey evidence, we identify several factors that can alter a METR based on the formal tax regime, including
wide-spread tax evasion, delays in the VAT refunds, arbitrary tax assessments, and bribes.

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I. INTRODUCTION

Post-conflict countries often begin economic recovery at a low level of domestic revenue. At the same time the incidence of poverty is high and the need for public spending on social services and infrastructure is massive. These circumstances could lead one to conclude that a rapid increase in domestic revenue and a corresponding increase in public services should be a policy priority. Such a conclusion may not, however, stand a closer scrutiny. First, increased taxation may have adverse supply side effects by constraining already low private investment, thus undermining growth and the prospects for increasing public revenue in a sustainable manner. Second, the private sector may receive little value for their additional taxes because of weak delivery systems, which in themselves prevent the creation of a positive tax culture. At the margin, the cost of raising additional taxes in terms of foregone private investment could be much higher than the benefit from increased spending on service delivery.

In many low-income economies access to and the cost of credit are important constraints upon enterprise growth, particularly upon smaller firms; hence investment is largely financed by internal funds. For example, in Uganda 70 percent of private investment is financed by profits and personal savings. As a result, taxation is linked to private investment in two ways. First, it reduces the expected after-tax revenue from a given investment project. Second, it reduces the availability of investment finance. Even if an adequate number of profitable investment projects was available, high business taxation is likely to have a negative impact on the level of private investment by constraining investment finance.

The rebuilding of government’s revenue base from an almost complete collapse has been one of the key features of Uganda’s economic recovery. Institution building for tax administration was given priority, and a semi-autonomous Uganda Revenue Authority (URA) was established in 1991, inspired by Ghana’s example. As URA is not part of the civil service, it is able to offer higher pay and hence to attract more qualified staff. As a result, domestic revenue has increased to 11.4 percent of GDP by 1998, from mere 4.8

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1 The World Bank (1996), and Ablo and Reinikka (1998) provide qualitative and quantitative evidence on problems in service delivery in Uganda.
3 It is important to note that there are, of course, many other factors than taxation that affect investment decisions. For example, in Uganda the single most important constraint upon firms is poor and expensive infrastructure services. [Reinikka and Svensson (1999a,b)].
percent of GDP in 1986.\textsuperscript{5} This together with prudent expenditure management and sustained donor inflows has contributed to a stable macro economy since 1992.\textsuperscript{6}

Until recently, the main tax policy objective in Uganda was to raise public revenue rapidly. The target was to increase tax revenue by one percentage point of GDP per year. This policy was not, however, backed by a concrete medium-term strategy on policy and administrative measures which could be expected to deliver such growth. Over time \textit{ad hoc} increases in tax rates, particularly taxes on fuel, were increasingly relied upon to achieve the revenue target, with little information on the supply side effects. In a firm survey carried out in 1994, respondents found high tax rates to be their leading constraint to future operation and growth.\textsuperscript{7} This ranking applied for all size categories of firms and most sectors. It was noted at the time that as total tax collection had been relatively low in the past, but had risen rapidly, it could be expected that firms would complain about their tax burden. In a similar survey in 1998 taxes continued to rank high on the list of constraints, this time as the second leading constraint to private investment after cost of utility services.\textsuperscript{8} In both surveys, tax administration was the firms’ leading regulatory constraint, while regulations in general were found to impose little constraint on most Ugandan firms.

Given that firms throughout the world dislike taxes —even in relatively low-tax OECD countries, such as the United States, taxes are perceived as the leading constraint to business — perceptions alone are not an adequate measure for assessing the impact of increased revenue effort on firms. There is a need for a more quantitative analysis of the tax burden. As a range of tax instruments are also used for investment promotion by the Government, the final tax burden on firms is an outcome of multiple factors, some of which may operate in opposing directions. Where institutions are weak, tax administration has a major impact on the tax burden. Hence there is also a need to bring administrative practices to bear in the assessment.

A. PURPOSE OF THE STUDY

The purpose of this study is to take a closer look at the policy of rapidly increasing public revenue in a low-revenue and low-income economy. Most analytic work on tax issues by the IMF and others in low-income countries, including Uganda, has been conducted primarily from the tax collector’s perspective. This study focuses on the supply side and takes the viewpoint of firms. The study has two main objectives. First, it attempts to examine business taxation in Uganda to answer two questions: What is the actual tax burden today on capital investment and the overall cost of production across various industries? How does this burden compare to the neighboring countries, Kenya and Tanzania, which compete for the same foreign investment? To do this, the marginal

\textsuperscript{5} It is important to note that GDP in Uganda includes the non-monetary (subsistence) sector. Domestic revenue was 7.6 percent of monetary GDP in 1986 and 14.7 percent in 1998.

\textsuperscript{6} Henstridge (forthcoming).

\textsuperscript{7} World Bank (1994).

\textsuperscript{8} Reinikka and Svensson (1999a).
effective tax rate (METR) is chosen as the quantitative indicator. Second, as actual administrative practices can differ considerably from the stated policy in a tax culture dominated by lack of trust and weak institutions, the study explores compliance and tax administration to answer the following question: To what extent are the METRs that are calculated on the basis of the formal tax system likely to be different when administrative practices are taken into account? This is done using recent firm survey evidence. In addition, we examine whether tax exemptions—the Government’s main investment incentives until recently—have had an impact on firms’ investment rates.

B. METHOD OF DATA

The key assumption underlying the METR concept is that a profit maximizing firm invests (or produces) as long as the after-tax marginal revenue from its investment (production) exceeds the marginal cost. The two are equal in the equilibrium. While the marginal revenue is not easily observable in practice, data on the marginal cost can be obtained. For example, when we estimate the METR on capital, the marginal cost is the sum of the financing cost of investment and the economic depreciation rate, adjusted for all relevant taxes and tax allowances. Hence, the marginal effective tax rate measures the impact of a tax system on an incremental unit of capital investment or business activity. For example, if the gross-of-tax rate of return to capital is 15 percent and the net-of-tax rate of return is 12 percent, then the marginal effective tax rate on capital is 25 percent, if the after-tax return is used as denominator, or 20 percent if the before-tax return is the denominator. This study uses the former convention, given that it is more convenient when calculating the METR on the cost of production.

The METR incorporates the effects of both statutory tax rates and related tax incentives (tax depreciation, tax credit, tax deductibility, tax holidays, etc.) as well as various industry-specific and economy-wide factors interacting with these taxes (financial costs, inflation, capital structure, etc.). Due to this interaction, the effective tax rate can vary by industry or tax jurisdictions under the same tax regime. The difference in the METR across various investors or sectors quantifies the tax bias at the margin and indicates, other things being equal, how tax policy is likely to affect investment decisions.

An alternative measure of the impact of taxes is the average effective tax rate (AETR). As with the METR approach, the AETR is based on a cash flow calculation and can be used for comparisons among firms, industries, or jurisdictions. The main differences between the two measures are the following:

- AETR is the total amount of taxes payable divided by the total value of the taxable input or output. It is an accounting concept that provides a measurement for overall tax burden but lacks the economic underpinning that

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9 The method used to estimate the METR has been extensively documented. See, for example, Broadway, Bruce and Mintz (1984), Chen and Mintz (1993), McKenzie, Mintz and Scharf (1992), and Mintz (1990). Other references include Dunn and Pellechio (1990) and Shah (ed.) (1995). For a brief discussion of the method see also Appendix A.

10 Apart from the METR and the AETR, other analytic tools include cost of capital frameworks and computable general equilibrium models. For consumer behavior see de Bartolome (1995).
marginal rather than average factors drive economic decisions by firms. The AETR is also sensitive to taxpayers’ performance and hence not very reliable for policy simulations.

- METR is the incremental amount of taxes payable on the last unit of taxable input or output. It is an economic concept that provides a measurement for tax incidence on taxpayer behavior. It is sensitive to policy settings as well as certain economic indicators and hence a useful tool for policy simulations.

As mentioned earlier, when using the METR analysis in a low-income country where the tax administration tends to be weak, a key issue is how much the actual tax incidence differs from that of the formal tax structure. While the METR analyses can relatively easily be extended to the comparison of impact of the formal tax structure across industries or jurisdictions, obtaining adequate information about actual administrative practices as well as detailed industrial parameters is more difficult. The issue is not so much whether the METR model can handle the real world but how well we understand the real world and are able to quantify the differences between the formal tax structure and tax administration.

Although the METR application presented in this paper is based on Uganda's formal tax system, it uses actual firm level data for key non-tax parameters. For example, the debt-to-assets ratio is obtained from the 1998 firm survey, which collected quantitative information on five sectors. The URA taxpayer database was used to obtain the capital structure by industry, while the 1992 input-output tables were used to estimate the cost structure by industry. As mentioned above, the survey data are also used to assess whether administrative practices are likely to produce a METR, which is different from that based on the formal tax system. In addition, we compare firms’ perceptions of compliance by their competitors and performance of tax administration over time, using results from an earlier survey. We also use regression analysis to determine whether tax holidays and exemptions are correlated with higher private investment.

The rest of this report is organized in the following five sections. Section II presents an overview of tax provisions in Uganda. The overview covers the taxes and tax-related incentives that affect capital investment and other business inputs, particularly labor and fuel. Section III analyses the METR on capital and cost of production for domestic firms. The former will focus on the cross-asset, cross-industry, and cross-tax-code (regular, tax-holiday, and small firms) comparisons. The latter will emphasize the impact of taxes levied on inputs other than capital. A cross-border comparison of the METR on capital and cost of production for foreign investors in Kenya, Tanzania and

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11 The 1998 firm survey, which was carried out by the World Bank and the Ugandan Private Sector Foundation, covered 243 firms in commercial agriculture, agro-processing, manufacturing, tourism and construction: 38 percent were small firms (5-20 employees), 36 percent were medium-scale (21-100 employees), and 26 percent large firms (over 100 employees). About 5 percent of the sample were 'very large' firms with several thousand employees. For details see the World Bank (1998) and Appendix B.


Uganda is presented in Section IV. Section V provides survey evidence on the impact of compliance and tax administration on the METR results. Finally, Section VI concludes and discusses policy implications of the study.

II. AN OVERVIEW OF BUSINESS TAXATION IN UGANDA

In tax policy there are two broad approaches with respect to attracting private investment. One is to apply standard tax provisions to all business activities combined with low tax rates. The other is to tax various business activities differently to achieve economic policy goals, such as increases in private investment, exports or employment. The latter is typically implemented through fine-tuned incentives, including tax holidays. Depending on revenue needs, the second approach can result in a relatively high tax rate in some sectors and hence induce problems for compliance, and adversely affect the general investment climate. The Ugandan tax system is being gradually reformed away from highly selective incentives towards more standard across-the-board provisions.

The Government instituted a range of tax incentives in the early-1990s to compensate firms that undertook major investment projects for prevailing market distortions. The 1991 Investment Code included project-based licensing of large investments. A typical license entitled its holder to a full or partial income tax holiday and duty exemptions on imported inputs. As market distortions were subsequently reduced, the Government implemented an income tax reform in 1997 to streamline the system of tax incentives. The reform was preceded by the introduction of duty-free treatment of imported capital goods to all firms. The objective of the income tax reform was to broaden the tax base, improve efficiency, increase administrative simplicity, and encourage long-term investment and technology transfer. The major changes introduced in 1997 were:

- Taxable income was broadened from domestic income to worldwide income;
- An initial allowance for investment in machinery and plant was made available to all regular taxpaying firms;
- Tax-holidays were abolished;
- A 20-percent annual depreciation allowance was made available to farm works, most of which were subject to an annual depreciation rate of 4 percent under the previous system; and
- Previously unregistered and hence non-taxable small firms are now required to register and subject to a presumptive tax of up to one percent on gross receipts, unless they opt to file an income tax return.
Table 1 summarizes key features of the pre- and post-1997 tax systems, including all key categories of business taxes, that is, capital taxes, indirect taxes applicable to business inputs, and payroll taxes.\textsuperscript{14}

A. CAPITAL TAXES

Capital taxes include company income tax (and related tax allowances), personal income tax on investment income, presumptive tax on small businesses, municipal property tax, and import duties applicable to capital goods. The company income tax is 30 percent in Uganda. Ugandan firms are allowed to carry over their operating losses indefinitely, except for the firms that enjoy a tax-holiday. Two types of deductions from the company income tax are allowed under the 1997 Income Tax Act: the initial investment allowance and the annual depreciation allowance. Investment in machinery and plant is strongly encouraged through tax incentives; it is entitled to both the initial allowance, and the annual depreciation allowance available to all taxable firms.\textsuperscript{15} For industrial buildings, there is no initial allowance, and the annual depreciation rate is much smaller (5 percent) than that for machinery. However, expenditures on acquiring farm structures are entitled to a higher annual depreciation allowance (20 percent).\textsuperscript{16}

There are two main accounting methods for writing off the cost of inventory for tax purposes. They are the first-in-first-out (FIFO) method and the last-in-first-out (LIFO) method. During a period of rising prices, the choice between these two methods can make a significant difference in taxable income. More specifically, when inflation is high and inventories are large, FIFO can penalize firms by taxing profits that are not genuine but derived from the low cost of inputs (i.e., the inventory sold is much more expensive to replace). Conversely, the LIFO approach would increase the tax burden if the value of inventory were falling rapidly. In principle, Uganda allows both inventory accounting methods but taxpayers are not allowed to change the method, which they initially chose. In practice, most firms use FIFO.

\textsuperscript{14} As our focus is on real rather than financial capital investment, we take into account only those taxes that affect real capital and production decisions. Taxes targeted to financial capital investment, such as tax treaties on repatriation of interest income, are beyond the scope of this study.

\textsuperscript{15} The initial allowance for investment in machinery and plant (except for vehicles) is 50 percent in five main industrial locations (Kampala, Entebbe, Namanve, Jinja and Njeru), and 75 percent elsewhere in Uganda. The annual depreciation rate is 40, 35, 30 and 20 percent for four different classes of machinery and plant, respectively. For example, when a Kampala-based firm purchases a computer (Class 1) for business use, it can claim 70 percent of the purchasing cost during the first year. That is, the firm is entitled to a 50-percent initial allowance plus a 40 percent annual depreciation allowance based on the balance. The remaining 30 percent of the cost can then be depreciated annually at 40 percent of the unclaimed balance.

\textsuperscript{16} Prior to the 1997 tax reform, the annual depreciation rate for structures was 4 percent, while machinery and plant were divided into three classes, with the annual depreciation rate at 50, 40, and 20 percent, respectively. The classification of machinery was also changed significantly in 1997. For example, computers that now enjoy the most generous tax depreciation allowance (40 percent), were allowed the smallest annual allowance (20 percent) under the previous system. Although there was an initial depreciation allowance under the previous tax system, it was only for ‘approved businesses’ as designated by the Minister of Finance. In practice, the Minister had never approved any firm for such an incentive.
Prior to the tax reform, a holder of the certificate of incentives was exempted from company income tax, withholding tax and tax on dividends for a certain period, depending on the total value of investment.\textsuperscript{17} As mentioned above, new tax holidays were repealed in 1997, but firms with current tax holidays can choose to retain them until they expire. Interest and dividends are taxed at the same rate (15 percent).

A presumptive tax on small business was introduced in 1997. Previously, most small firms did not have any tax obligations. Instead of paying a regular income tax, a small firm with annual turnover below U Sh 50 million (equivalent to about US$37,000) is subject to a presumption tax up to one percent of its gross turnover, unless it opts to file the regular income tax return. This tax is final and no deductions for capital expenditure or any other business expenses are allowed.

Finally, municipalities impose a property tax on immovable property or buildings but not on vacant land. For this study, the Kampala property tax system is used.\textsuperscript{18} The tax rate is 10 percent on the ‘ratable value’ which is obtained by deducting maintenance cost from the ‘gross value’, or the rent one may expect to receive from the property. Hence, the tax base for the local property tax is the same as for rental income, which is determined through an assessment conducted by government valuers. This property tax is deductible for income tax purposes.

**B. INDIRECT AND PAYROLL TAXES**

There are two main transaction taxes levied on business inputs in Uganda: import duties, applicable mainly on raw materials and taxes on petroleum products. Imports of capital goods were zero-rated in 1995. The fuel tax has been a special revenue source in the 1990s. The \textit{ad valorem} rate ranges from 100 percent to over 200 percent for paraffin, diesel and petroleum products. A weighted-average rate is estimated at 174 percent (see Appendix B for details). A high fuel tax is not uncommon in many developed economies, particularly for environmental reasons. As we will see below, what makes it problematic in the Ugandan context is that Kenya and Tanzania have much lower tax rates on fuel, resulting in substantial smuggling and a higher effective tax rate on the cost of production for the Ugandan firms that do not smuggle.

Payroll taxes include social security levies. Since 1985 the social security contribution by the employer has been 10 percent of the gross salary payments with no ceiling (excluding allowances which are commonly used in Uganda). The employee contribution is 5 percent but it is poorly enforced in practice.

\textsuperscript{17} In the case of an investment project of at least US$50,000 for domestic firms and US$300,000 for foreign investors, the tax holiday was three years. For larger investments the holiday was typically five years. It could be extended for an additional year for an investor operating in any of the priority areas specified in 1991 Investment Code, that is, agro-processing, manufacturing, construction, transportation, and tourism but not commercial agriculture or communications.

\textsuperscript{18} City Council of Kampala. For rating purposes, Kampala is divided into 15 rating zones that classify various properties by location.
III. MARGINAL EFFECTIVE TAX RATE FOR UGANDAN FIRMS

In this section, we estimate the marginal effective tax rate (METR) on capital and cost of production for large and medium-sized Ugandan firms operating in the following industries: commercial agriculture, agro-processing, manufacturing, construction, transportation, communication, and tourism. For simplicity, the analysis covers only firms located in the main industrial centers. Considering that a higher initial allowance is available for investment in machinery and plant elsewhere in Uganda, their effective tax rates will be generally lower. For the METR on capital, we include four types of assets (buildings, machinery, inventories, and land), two different tax regimes (the pre- and post-1997 tax system), and three tax codes (regular taxable, tax-holiday, and small firms). A number of policy options will also be simulated. The METR estimation on the cost of production includes three key inputs: capital, labor and fuel.

As discussed above, the estimation of the METR is not only sensitive to tax policy but also to the choice of macroeconomic indicators and industry-specific parameters, such as inflation rate, interest rate, debt-to-assets ratio, economic depreciation rate, capital structure, and cost structure. While inflation and the interest rate are usually the same for all industries within an economy, the other parameters vary by sector. For example, depreciable assets used by different industries have a different useful life and replacement cost, which results in a different economic depreciation rate. Capital structures also vary by industry. For example, compared to tourism, the capital structure in manufacturing is more intensive in machinery and inventories and less intensive in buildings. To ensure that the choice of non-tax parameters does not drive the results, we provide sensitivity analyses for the base case assumptions (Table 2).

A. NON-TAX PARAMETERS

An important choice of a non-tax parameter is that of the expected inflation rate. Inflation mainly affects the METR on capital through its impact on the nominal interest rate. That is, for a given real interest rate, the higher the inflation rate, the higher the nominal interest rate will be. The nominal interest rate interacts with taxes mainly in the following manner. First, as interest costs are deductible for income tax purposes in nominal terms, the higher the nominal interest rate in relation to a given real interest rate, the lower the real after-tax financing cost. This effect will benefit the sectors with a high share of debt financing and contribute to a lower METR. Second, a higher inflation rate may, through a higher nominal interest rate, lower the accumulated present value of a given tax depreciation allowance. This effect will raise the METR on certain depreciable assets. Third, during periods of high inflation, using the FIFO inventory accounting method may cause inflated taxable income, and hence a higher METR on inventory capital. Therefore, a high inflation rate can affect the METR on different asset in different directions, depending on the financing structure. The net impact on the aggregate METR on capital in a given industry depends on how these effects offset each other through its industry-specific capital structure.
The debt-to-assets ratio measures the financing structure. For a given inflation rate and real interest rate, the higher the debt-to-assets ratio, the more a taxpayer can benefit from the tax deductibility of interest expenses. That is, the higher the debt-to-assets ratio, the lower the METR. To prevent tax-driven borrowing, or ‘thin capitalization,’ many jurisdictions implement restrictions on the debt-to-assets ratio for tax purposes.

In the case of depreciable assets, the economic depreciation rate interacts with the tax depreciation allowance, affecting the METR. The higher the economic depreciation rate relative to the tax depreciation allowance, the higher the METR. For example, given the mobility of capital and technology, one can assume that a given type of machinery is depreciated at the same economic rate everywhere. Therefore, a jurisdiction that grants a faster tax depreciation allowance for this type of machinery will have a lower METR. Non-tax parameters for Uganda used in this study are summarized in Table 2.

B. METR ON CAPITAL

Capital investment generally involves two categories of capital, that is, depreciable and non-depreciable assets. These two categories can be further divided into buildings and machinery (depreciable), and inventory and land (non-depreciable). As mentioned earlier, capital investment by asset type varies by industry. Consequently, even if a certain type of asset incurs the same METR, the different capital structure by industry will result in a different aggregate METR on capital across industries. Similarly, the cost structure by input varies by industry. Hence, the larger the share of an asset, or an input with a high METR, the higher is the METR on capital or cost of production in that industry.

Asset Type

Our base case is the 1997 regular taxable firm. We define the METR on capital as the percentage of the difference between gross- and net-of-tax revenue from an incremental unit of investment, using net revenue as denominator. As Table 3 shows, machinery is the lowest taxed asset in Uganda. This is mainly because of the very generous initial allowance (50 percent), along with the annual depreciation allowance, starting from the first year. In fact, the METR on machinery is found to be negative in a number of industries which indicates a tax subsidy.\(^\text{19}\) The transportation sector, however, incurs a relatively high METR on machinery (17 percent). This is mainly because vehicles are not eligible for the initial allowance.

Inventories are the highest taxed asset (a METR of 45 percent). This is mainly due to the FIFO accounting method combined with a positive inflation rate. Buildings, except those used by commercial agriculture, are taxed the second highest (a METR of over 40 percent), mainly because of the local property tax on buildings, combined with less generous tax depreciation allowances. Due to a more generous depreciation allowance for farm works, buildings used in commercial agriculture bear a low tax burden (a METR of

\(^{19}\) As a firm is taxed as a whole rather than by asset type or at the margin, this tax subsidy on machinery can be thought of as reducing the tax on income generated by other type of investment.
12 percent). Structures used by the construction industry incurred a higher METR than other sectors, mainly because of a higher economic depreciation rate. Finally, non-farm land is also subject to the local property tax, resulting in a relatively high METR (42 percent), while farmland incurs a significantly lower METR (28 percent).

As shown in Table 3, while non-depreciable assets, such as inventories and land, are taxed at the same level across industries (except land for commercial agriculture), depreciable assets, such as buildings and machinery, are taxed unevenly. The main reason is that depreciable assets used by different industries have different useful lives and different tax depreciation allowances. For a given depreciable asset, the wider the gap between the economic and tax depreciation rate, the higher the METR on this asset.

**Industries**

The aggregate METR for each industry is simply a proportional difference between the weighted average of the before-tax and after-tax rate of return by asset, based on the industry-specific capital structure. Obviously, the larger the share of the assets that are highly taxed, the higher is the industry’s aggregate METR. As shown in Table 3, tourism incurs the highest METR (39 percent) in the base case. This is mainly a result of its very high capital weight in buildings (71 percent), which is the second highest taxed asset. Manufacturing incurs the second highest METR (33 percent), mainly because the sector invests about two thirds of its total capital in the two highest taxed assets, inventories and buildings.

In contrast, transportation enjoys the lowest METR on capital of all sectors (21 percent). The primary reason is its heavy capital weight in machinery (84 percent), particularly vehicles which have a relatively high annual depreciation allowance (30 percent). For the same reason, agro-processing and construction (capital share of machinery is 48 percent) incur a relatively low METR (23 percent and 24 percent, respectively).

The METR on capital for commercial agriculture and the communications industry are somewhere in-between (a METR of 26 percent and 31 percent, respectively). The primary contributor to the former is its rather high capital share in inventories (33 percent). The main factor for the latter is its high capital share in buildings (57 percent).

**Small Firms**

As described above, small firms do not pay regular income taxes, unless they opt to do so, but are instead levied a presumption tax up to one percent of their gross turnover. In this section small firms refer to those firms qualifying for and choosing to pay the presumptive tax. Since the presumptive tax is imposed on the gross-receipts without any adjustments, small firms are neither entitled to the generous initial allowance for investment in machinery nor subject to any restrictions regarding writing off business expenditure. As a result, the METR for small firms is found to be lower than that for large and medium-sized regular taxable firms on all other assets but machinery (Table 4). However, except for those engaged in commercial agriculture, small firms still pay
municipal property taxes. Therefore, buildings and land are taxed higher than investment in machinery and inventory by small firms. As depreciable assets wear off at a different pace from industry to industry, buildings and machinery incur a different METR across industries even though they are subject to the same presumptive tax rate and have no differentiated sector-specific tax allowances. Compared to the base case (regular taxable firm) by industry, small firms are taxed significantly less as measured by the aggregate METR on capital. The gap ranges from 15 percentage points in agro-processing to over 24 percentage points in manufacturing. Furthermore, the inter-industry dispersion is smaller than in the base case of the regular taxable firm.

C. IMPACT OF TAX REFORM

Regular Taxable Firms

As shown in Table 3, the tax burden incurred by large and medium-sized regular taxable firms was significantly reduced following the 1997 income tax reform. The difference in the aggregate METR between the two systems ranges from 5 to 15 percentage points. The most striking change is the difference in the METR on machinery, ranging from 9 percentage points for transportation to 34 percentage points for the communications sector. This is mainly because of the generous initial allowance for investment in machinery and equipment (except vehicles) available to all tax-paying firms under the new system. The other contributor is the zero-rated import duty for imported machinery.

Following the reform, the METR on buildings declined about 3 percentage points. This is mainly due to the slightly higher annual depreciation allowance (increased from 4 to 5 percent). The wider gap (about 19 percentage points) for commercial agriculture reflects the effect of a higher annual allowance for farm works. There was no change in the METR for inventory and land.

Regular Taxable vs. Tax-Holiday Firm

Corporate tax holidays were abolished in 1997 and replaced mainly by an initial investment allowance for machinery. As a result, the METR on machinery was significantly reduced (around 25 percentage points lower across industries, except for the transport sector). This indicates that, given the generous allowances, profitable firms that invest heavily in machinery can benefit from opting out from the tax holiday status.\footnote{This holds provided that firms are not allowed to defer their depreciation allowance until after the holiday has expired.}

For all other assets, however, the METR was lower under the tax-holiday regime. First, as the annual depreciation allowance for buildings is relatively low, there is still a large balance left (76 percent of the total cost) to take advantage of the tax depreciation allowance even when the tax holiday has expired. Obviously, the longer the tax holiday, the less is the unclaimed balance worth in the present value terms. Second, the significantly lower METR on inventories is due to the fact that tax-holiday firms are able
to avoid the tax penalty caused by inflation when using the FIFO accounting method. Third, by investing in land, the only tax benefit a tax-holiday firm may lose is the interest deduction. When the debt-to-assets ratio is low (25 percent or less in Uganda), this loss is insignificant compared to the benefit gained from the tax holiday.

As can be seen from Table 3, inter-industry tax distortion actually increased following the tax reform. A further analysis shows that the main contributor is the difference in the METR between commercial agriculture and all other sectors. As farm works are entitled to a fast write-off, and properties used for commercial agriculture are exempted from municipal property tax, buildings and land are taxed much less than in the other sectors.

To summarize, industries investing heavily in machinery gained most from the tax reform, reflecting the policy-makers’ desire to provide incentives for acquisition of new technologies. The most evident example is the transportation industry where the advantage measured by the METR for regular taxable firms is 6 percentage points compared to their tax-holiday counterpart. However, the METR for the regular taxable firms in the tourism sector is significantly higher (13 percentage points) than their tax-holiday counterpart, due to the high capital share in structures. Similarly, commercial agriculture and manufacturing incur a higher METR under the new system (11 percentage points) as these industries invest more in non-depreciable assets, particularly inventories for which the tax holiday regime was more advantageous. Despite a relatively high capital share in machinery, the construction industry also lost slightly (3 percentage points) because of the opposite effect from large inventories.

D. SENSITIVITY ANALYSIS

This section provides three different policy simulations and sensitivity analyses for non-tax parameters. As before, our base case is the regular taxable firm under the 1997 tax system. First, we assess the importance of the choice of the accounting method, followed by an assessment of the impact of an initial allowance for buildings and that of municipal property tax on small firms. Second, we examine the extent to which the choice of inflation rate, debt-to-assets ratio, and economic depreciation rate changes the results.

Inventory Accounting Method

Table 5 provides a simulation to illustrate how the choice of the LIFO (last-in-first-out) accounting method could alter the base case results, other things being equal. While the Ugandan tax law allows firms to use either FIFO (first-in-first-out) or LIFO for writing off inventories, firms are not, however, allowed to change the method after their initial choice. In practice, most firms use FIFO.

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21 It is measured by the METR dispersion which is a weighted standard deviation across industries (Appendix A).
Our simulation shows that, with an inflation rate of 5 percent, the METR on inventory capital can be significantly reduced under LIFO. This would obviously benefit those industries that require large inventories for their business activities. For example, the METR on capital for commercial agriculture, agro-processing, manufacturing, and construction could be reduced by about 5 percentage points. As can be expected, there is no significant difference in the METR on capital between the two accounting methods for transportation, communication and tourism as these sectors do not require significant inventories.

Initial Allowance for Buildings

While investment in machinery has a high initial depreciation allowance (50 percent), investment in buildings has no such allowance. As a result, industries investing heavily in buildings tend incur a much higher METR than other sectors. For example, in tourism, with 71 percent of its investment in buildings, the METR on capital is the highest (39 percent). Such a large difference in the initial allowance also contributes to a rather high inter-industry dispersion in the METR.

Table 6 presents three simulations for an initial allowance for buildings (10, 15, 20 percent, respectively). A comparison with the base case shows that a 10-percent initial allowance for buildings would reduce the METR on tourism and the communications industry by four percentage points. Other industries, except commercial agriculture, would also experience a reduction in their METR on capital from one to two percentage points, and the inter-industry dispersion would decline. Table 6 also shows that each additional 5-percentage point increase in the initial allowance for buildings would translate into a reduction of another two percentage point in the METR of industries with heavy capital share in buildings (tourism and communication). As other (non-agricultural) industries would also benefit, the dispersion between industries would decline when the initial allowance for buildings increases.

Municipal Property Tax and Small Firms

This simulation for small firms attempts to disentangle the relative importance of the presumptive tax and the municipal property tax for their METR on capital (Table 7). In the absence of the property tax, the METR incurred by small firms would be considerably lower. Further, the inter-industry tax distortion among small firms would be close to zero. In other words, it is the property tax rather than the presumptive tax that is mostly responsible for both the tax burden and the inter-industry tax distortion among small firms.

Inflation

Annual average inflation in Uganda has varied between 6.5 percent to 7.8 percent in 1994-98. Our base case assumes an expected inflation rate of 4.9 percent. In order to determine the extent to which our inflation assumption affects the results, Table 8 provides a simulation with zero inflation. We find that all types of capital assets, except inventories, would be taxed higher than with a positive inflation. The main reason is that
the tax deductibility for the nominal interest expenses provides a shelter for the inflated cost of debt financing. In other words, Government actually subsidizes debt financing above the real interest cost. The higher the inflation rate, the more investors benefit from the tax deductibility of interest expenses. A lower METR on inventories tells a more complex story. When FIFO is used, inventories are taxed lower under zero inflation compared to a positive inflation rate. The opposite holds if LIFO is used.

Debt-to-Assets Ratio

Table 9 provides a simulation for debt-to-assets ratios that are either higher (40 percent) or lower (10 percent) than in the 1998 firm survey estimate for large and medium-sized firms (25 percent). A comparison between Table 9 and the first panel in Table 3 shows that, with a higher debt-to-assets ratio, the METR on all types of assets would be significantly lower, and vice versa. This is because for a given inflation rate and real interest rate, the higher the debt-to-assets ratio the more taxpayers benefit from the tax deductibility of interest expenses. Obviously, this tax benefit can be gained only when debt financing is available.

Economic Depreciation Rate

Table 10 provides two simulations for different economic depreciation rates. Compared to the base case, the first simulation has much higher economic depreciation rates (6 percent for structures and 25 percent for machinery), while the second simulation assumes lower rates (3.5 percent and 12 percent, respectively). As Table 10 shows, higher economic depreciation rates result in a higher METR on these assets, which in turn produce a higher aggregate METR on capital by industry. Obviously, the difference in the aggregate METR depends on the difference between the tax and economic depreciation rates as well as the capital weight on depreciable assets. The wider the gap between the tax and economic depreciation rate and the higher the capital weight in depreciable assets, the higher the aggregate METR on capital by industry.

E. METR ON COST PRODUCTION

The METR on cost of production is used to evaluate the impact of all business taxes, including capital, payroll and indirect taxes on overall business activities. It is estimated as an integration of the METR on various inputs, using the augmented Cobb-Douglas production function (Appendix A). Given that the fuel tax is an important revenue source in Uganda, motor fuel along with capital and labor is included as an input for production. As shown in Table 11, the cost structure varies across industries. Capital accounts for the largest share which probably reflects the very low labor costs in Uganda. Furthermore, as agro-processing requires a higher share of transportation services than commercial agriculture, the share of fuel in its total cost is nine percent, while it is only one percent in commercial agriculture.

Table 11 summarizes the METR on each of the three inputs as well as on the overall cost of production by industry. For the METR on capital we use the base case (regular taxable firm under the 1997 tax system), while the METR on labor is simply the
statutory payroll tax rate of 10 percent, and the METR on fuel is estimated at 174 percent (see Appendix B). As the METR on fuel is significantly higher than that on capital, industries with a higher share of fuel may incur a higher METR on production cost than on capital. Agro-processing and transportation which have the lowest METR on capital fall in that category. In other words, the high fuel tax may actually negate some of the benefits of the tax reform which strongly encourages investment in machinery and equipment in agro-processing and the transportation sector as the two sectors are the most fuel-intensive in terms of their cost structure. In contrast, all other industries incur a METR on cost that is lower than their METR on capital, mainly due to the low METR on labor and their small share of fuel in the total cost. On cost of production, tourism and manufacturing are still the highest taxed industries in Uganda, while construction becomes now the lowest taxed industry instead of transportation.

IV. CROSS-BORDER COMPARISON FOR FOREIGN FIRMS

This section compares the impact of taxation on foreign direct investment in Kenya, Tanzania and Uganda. It attempts to answer the following question: Which of the three countries is in the best position to attract foreign investors, if tax cost were the only factor in their investment decisions? We focus on manufacturing and tourism, as they are key areas for foreign direct investment in Eastern Africa. For simplicity, tax provisions and economic parameters for foreign firms are based on the United Kingdom’s tax system, as it accounts for the largest share (about 25 percent) of the total actual foreign investment in Uganda. To eliminate the effect of factors other than taxation, Uganda’s non-tax parameters are used for all three countries. A simulation using country-specific parameters is also carried out.

A. TAX PROVISIONS IN KENYA AND TANZANIA

In Kenya the corporation income tax rate is 32.5 percent, which is slightly higher than in Uganda (Table 12). A weighted-average annual depreciation rate for machinery (based on Uganda’s capital component weights) is 14 percent for manufacturing and 22 percent for the tourism sector. An initial investment allowance of 60 percent is available for investment in both structures and new machinery used in manufacturing and in the

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22 As the payroll tax in Uganda is imposed on the total payroll without ceilings, the statutory payroll tax rate can be seen as the marginal rate. By ignoring the shift effect, we also assume the employer’s share of payroll tax is fully borne by the employer.

23 Based on the Uganda Investment Authority data.

24 The annual depreciation allowance in Kenya is 2.5 percent for buildings over 40 years. Machinery and equipment are grouped into four classes with the annual depreciation allowance of 37.5, 30, 25 and 12.5 percent, respectively, based on the declining balance.
hotel industry. Both FIFO and LIFO are allowed for inventory accounting in Kenya. Most firms choose FIFO, despite the relatively high inflation rate in 1990s. As in Uganda, operating losses can be carried forward indefinitely.

A withholding tax of 7.5 percent is imposed on dividends received by individuals. There is also a land tax imposed on the rental value by local authorities at a rate varying by location. The highest rate (8 percent) is in Nairobi. However, there is no property tax on buildings in Kenya. Import duty for most capital goods is 5 percent, and that for most of raw materials is 15 percent. The average fuel tax is 62 percent. The payroll tax in Kenya is a contribution made by employers to the national provident fund. The rate is 5 percent on the base, with an extremely low annual ceiling (K Sh 80, or about US$1.30). As a result, the effective payroll tax rate is less than 0.1 percent.

In Tanzania, the corporation income tax rate is the same as in Uganda (Table 12). The weighted-average annual depreciation rate for machinery (based on Uganda’s capital component weights) is 14 percent for manufacturers and 20 percent for tourism. Unlike in Kenya and Uganda, Tanzania has no initial allowances for capital investment. For inventory accounting, obsolete stocks are allowed to be written off. There seems to be no clear specification on inventory accounting methods in Tanzania.

The withholding tax on dividends received by individuals is 15 percent for residents and 20 percent for non-residents. There is also a land tax imposed on the rental value. The rate on non-agricultural/pastoral land ranges from 11.5 percent to 12.5 percent. The Minister of Finance may grant an exemption from this tax on an individual basis. There is no property tax on buildings.

The import duty in Tanzania is between 0 and 5 percent for capital goods, and between 10 and 20 percent for raw materials. Ad hoc exemptions, particularly for large investors, seem to be more common than in Uganda. However, detailed data on exemptions are not available. The uneven practice of granting exemptions may render the METR comparison somewhat less reliable across countries. The fuel tax in Tanzania is estimated at 26 percent. Finally, the payroll tax payable by the employer is a contribution to the national social security fund. The rate is 4 percent on the total payroll without a ceiling.

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25 This rate is estimated based on the aggregate fuel tax per liter (including import duty, excise duty, road maintenance levy and petroleum development levy) using Uganda’s sales by product as weights.

26 The estimate is based on the latest year available for the annual average salary in manufacturing (1991), published in the ILO Yearbook of Labour Statistics (1997).

27 The annual depreciation allowance is 4 percent for industrial buildings, and 6 percent for hotels. Machinery and equipment are grouped into three classes, with the annual depreciation allowance of 37.5, 25 and 12.5 percent, respectively.

28 The valuation of inventory is based on “cost or market, whichever is the lower”. It is not clear whether this valuation is for writing-off or evaluating in-house inventory. If this is for writing off inventory, it indicates FIFO during the period of inflation, otherwise LIFO.

29 This rate is estimated based on the aggregate fuel tax per liter (including import duty, excise duty, the road toll tax on petroleum and diesel fuels) using Uganda’s sales by product as weights.
B. CROSS-BORDER COMPARISON OF METR ON CAPITAL

In order to focus the cross-country comparison exclusively on the impact of taxation, Uganda’s non-tax parameters and capital structure are applied to Kenya and Tanzania as well. With these assumptions, we find that Uganda has a tax disadvantage compared to Kenya in both manufacturing and tourism, mainly due to Kenya’s preferential tax treatment targeted to these two sectors (Table 14). In tourism, Uganda is also less competitive than Tanzania in terms of taxation, mainly due to its local property tax on buildings, which accounts for 71 percent of capital in the tourism sector.

There are a number of factors contributing to this outcome. First, there is no property tax on structures in Kenya and Tanzania. As a result, even without taking into account the initial investment allowances available in Kenya, buildings are taxed significantly less in Kenya and Tanzania than in Uganda. A slightly more generous tax depreciation rate for buildings in the tourism sector (6 percent vs. 5 percent) also contributes to a lower METR on buildings in Tanzania. Second, Kenya provides an initial investment allowance of 60 percent for both buildings and machinery for manufacturing and tourism. Despite its slightly higher corporate income tax rate, buildings in Kenya are therefore taxed much more lightly than in Uganda and Tanzania. Third, a non-zero import duty on most machinery imported to Kenya and Tanzania is the main contributor to their higher METRs on machinery compared to Uganda. Fourth, the higher corporate income tax rate in Kenya results in a higher METR on inventory through inflated taxable income under FIFO. In the case of Tanzania, a higher dividend withholding tax rate induces a higher financing cost that contributes to a higher METR on inventory compared to Uganda. Finally, the different property tax rates on land play a major role on the variation in the METR on land. As a result, the highest METR on land is in Tanzania (39 percent), followed by Uganda and Kenya (33 percent and 28 percent, respectively).

Table 15 provides a simulation of the base case using their country-specific interest rate and inflation rates. As shown in Table 13, both Kenya and Tanzania have had much higher inflation (9 percent and 18 percent, respectively, compared to 5 percent in Uganda) and nominal interest rate (30 percent and 25 percent, respectively, compared to 21 percent in Uganda). As a result, inventories are taxed much highly in Kenya and Tanzania. On the other hand, tax deductibility for debt financing benefits other types of assets more in Kenya and Tanzania, as their nominal debt financing costs are higher. Therefore, considering that manufacturing has a high share of inventory capital and that the share of structures is extremely high in tourism, it is not surprising that Tanzania exhibits a much higher METR in manufacturing and a much lower one in tourism when using its country-specific non-tax economic parameters.

C. CROSS-BORDER COMPARISON ON COST OF PRODUCTION

Again, in order to isolate the impact of taxation, Uganda’s non-tax parameters, including the cost structure, are applied to Kenya and Tanzania. As before, the METR on

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30 Should buildings also be exempted from the municipal property tax in Uganda, Uganda could gain a tax advantage over Kenya and Tanzania in manufacturing, and over Tanzania in tourism.
labor is the average payroll tax payable by employers, and the METR on fuel is the effective average tax rate on motor fuels. As shown in Table 16, Kenya has the lowest METR on labor, followed by Tanzania (0.1 percent and 4 percent respectively, compared to 10 percent in Uganda). Tanzania has the lowest METR on fuel, followed by Kenya (26 percent and 64 percent, respectively, compared to 174 percent in Uganda). As a result, measured on cost of production Uganda becomes the highest taxed country in both manufacturing and tourism. Tanzania's tax competitiveness in tourism becomes more evident, while its manufacturing sector has now a lower tax burden than its counterpart in Uganda. Kenya has an even greater tax advantage over Uganda in both sectors.

V. SURVEY EVIDENCE ON COMPLIANCE, TAX INCENTIVES AND ADMINISTRATION

A typical METR analysis provides an assessment of the tax structure without dealing with administrative realities. Administration can, however, create major distortions no matter how well designed a tax system if it is not managed efficiently and fairly. This section examines key features of taxpayer compliance, tax incentives for investors and tax administration in Uganda, based on firm survey evidence. The purpose is to isolate factors which are likely to make the true tax burden different from that resulting from the formal system.

A. SURVEY EVIDENCE ON TAX COMPLIANCE

Taxpayer compliance depends on economic incentives embedded in the tax structure and the effectiveness in detecting and penalizing non-compliance. At the margin, people engage in tax evasion when the expected benefits (lower taxes) are equal to the expected costs (bribes, punishment etc.). According to the 1998 firm survey, one third of Ugandan firms were in a tax-loss position in 1997, that is, they neither paid the CIT nor had a tax holiday (Table 17). While it may appear high, this ratio is not out of line with international experience. For example, the Canadian statistics show that, on average, over 40 percent of active non-financial firms are in the tax-loss position. Twenty-six percent of Ugandan firms did not pay the VAT in 1997 which is not unexpected either as many smaller firms may not be registered for the VAT. Commercial agriculture has the largest share of non-VAT paying firms. This is broadly consistent with the design of the VAT system (i.e., foods are zero-rated in general). Eight percent of Ugandan firms with five or more employees do not pay any taxes at all.

Whether or not firms are contented with their own level of taxes, they clearly feel disadvantaged when they see their competitors escaping taxation. In the 1994 survey of

Ugandan firms, respondents identified competitors' evasion of taxes as a major constraint. Some 60 percent of firms reported that they faced unfair competition. Furthermore, firms estimated the informal economy (part of the economy evading taxes, duties or laws and regulations) to be substantial, with estimates centering around 43 percent. In 1998 this perception remains, with tax evasion being the leading constraint from unfair competition. However, the numerical constraint scores for competitors evading taxes, or smuggling have declined, with the most marked apparent change in the latter.

Despite some improvement in perceptions, the legacy of a predatory state, coupled with little improvement in service delivery, continues to have an adverse effect on tax compliance in Uganda. In the 1998 survey, firms in manufacturing, which is the second highest taxed sector measured by the METR, estimated that one half of their competitors gain an advantage through tax evasion. In construction and agro-processing the reported share was about 40 percent. In tourism, which is the highest taxed sector as measured by the METR, firms reported that one third of their competitors engage in tax evasion, while in commercial agriculture, where the share of tax paying firms is the lowest, only 5 percent of competitors were perceived to evade taxes.

**B. TAX EXEMPTIONS**

The 1994 firm survey suggested that one strong source of a sense of unfairness in taxes was tax holidays and exemptions. Although the structure of tax incentives is changing, the unevenness of exemptions continues. For example, the 1998 survey, which collected information for three years, found that roughly 35 percent of respondents reported receiving corporate tax breaks in 1997, while 32 percent reported receiving them in 1995. Import tax exemptions were enjoyed by 16 percent of all firms in 1997 but only by 12 percent three years earlier. This situation is expected to change in the next few years, given that tax holidays were repealed in 1997 and exemptions from import duties have been curtailed. Consistent with the new policy, firms reported that their tax holidays will expire on average in the year 2000. Roughly a quarter of respondents reported having applied for *ad hoc* tax exemptions (most often from import duties) from the Ministry of Finance in the last three years, of which a little more than half actually received them.

Using the firm survey data, we carry out a regression analysis to find out what determines firms' access to tax exemptions. The dependent variable is an index of profit and import related tax exemptions granted to firms (average for 1995-97). Given that such exemptions have been the principal investment incentive and were supposed to be granted to relatively large investment projects, one would expect, *ex ante*, that the size of the firm be positively correlated with exemptions. We also use a number of other firm characteristics, such as age, sector and location as explanatory variables to test empirically whether access to tax exemptions depends on these factors. Similarly, profits that are calculated as gross sales less operating costs and interest payments, are included as an explanatory variable.

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As shown in Table 18, the size of the firm is indeed significant and positively correlated with tax exemptions, while the coefficient is relatively small. The other two firm characteristics that enter significantly are the age of the firm and the construction sector dummy. Both variables are negatively correlated with tax exemptions. In other words, older firms and those in the construction sector, other things being equal, benefit less from tax exemptions. This result is not unexpected, as older firms are less active investors in Uganda, while construction firms do not have productive investment projects and consequently investment incentives in the same sense as the other four sectors included in the survey. The fact that any other sector dummies do not enter significantly is also fairly easy to explain by the non-discriminatory nature of tax incentives in Uganda, as little sector-targeting has been applied in investment promotion. Neither profit nor location are significant for firms’ access to exemptions.

The Ugandan firm survey data have been used in Reinikka and Svensson (1999a) to relate the probability of a firm to invest and its investment level to a number of variables, including the above-mentioned firm characteristics, changes in demand, profit, etc. When introduced to their (flexible accelerator) investment model, tax exemptions enter negatively but insignificantly. Hence, despite their important role as policy instrument, tax exemptions do not seem to explain either the probability that a firm invests, or the level of investment of Ugandan firms in 1996-97.

C. TAX ADMINISTRATION

In the 1994 survey of Ugandan firms, the revenue authority was rated, by far, the most difficult government agency with which businesses must deal. Clearly, tax authorities are not popular in most countries, but a number of firms had objections to URA administration that went beyond normal enforcement of tax obligations and three quarters of the sample identified the URA as an agency that caused them difficulties. In fact, two thirds of firms ranked it as among the three most difficult agencies with which they deal, primarily due to what they regarded as high tax rates and excessive bureaucracy. These difficulties included arbitrary assessments, lengthy delays in clearance of documents and goods, and hostile attitudes of some revenue officers.

Not surprisingly, URA was the least popular agency in the 1998 firm survey as well. There is some evidence, however, that tax and customs administration is either holding steady or improving. Specifically, on average, firms indicated there had been no change in the administration of some taxes, while a slight improvement in others. For example, tourism firms reported a small improvement in the administration of the VAT, and firms that import noted some improvement in the administration of import taxes.

A prominent feature of the Ugandan tax administration are frequent tax audits which are either desk or field operations, or a mixture of both. Predetermined criteria do not exist for conducting an audit but factors, such as compliance record, quality of returns submitted, and the size of the firm are said to be important. Sixty-eight percent of all firms were audited either for the CIT, VAT or both during 1995-97. Forty-one percent of firms reported that they were audited for the CIT, while as many as 60 percent of all firms were audited for the VAT. The latter is equivalent to three-quarters of the VAT
paying firms. In the international comparison, Uganda’s audit figures are very high. For example, in Canada all large corporations (about 1,000) are audited, while for the rest (about 13,000) face audit rates of 5 percent or less. The high auditing frequency indicates a serious lack of voluntary compliance and a low level of mutual trust between the tax authority and the taxpayer.

The URA routinely ‘assesses’ tax returns submitted by taxpayers. These assessments are typically desk reviews of self-declarations and supporting documents. The tax officer may accept the taxpayer’s declaration as is, or ‘assess’ an additional tax to be paid. A tax audit may also be involved which may lead to a demand for any additional taxes to be paid in the form of an ‘assessment’. As shown in Table 17, as many as 51 percent of Ugandan firms had a disagreement with the URA on their assessment during 1995-97. Sixty-eight percent of these cases were resolved through negotiation between the firm and the URA officers, while 10 percent appealed to a third party. None of the disputes were taken to court. The rest remained unsettled at the time of the survey. At the end, roughly one third of the resolved disputes ended with a result closer to the taxpayer’s own assessment, one third closer to the URA’s assessment, and the rest between the two assessments.

Depreciation allowances appear to be one of the main causes for disputes in the CIT assessments. The poorly designed tax return form may partly contribute to this situation. The firm survey also indicates that most tax-holiday firms have little or no involvement with the tax authority, which may be an additional incentive for initially acquiring the tax holiday status.

D. THE IMPACT OF TAX ADMINISTRATION ON THE METR

The firm survey reveals three key differences between the formal tax system and actual practice which can affect the METR results presented in this paper. First, according to the Ugandan income tax law, firms that enjoy a tax holiday are subject to mandatory tax depreciation. In other words, they are required to write off their depreciable assets annually during the tax holiday period, and should not be able to claim tax depreciation on the full cost of capital invested in the beginning of or during the holiday period. Typically, the mandatory depreciation is incorporated into the METR model as it is part of the formal tax system. However, if the practice is that tax-holiday firms do not file their income tax returns at all and hence manage to claim for the full tax depreciation allowance after the tax holiday ends, then their real effective tax burden can be much lower than predicted by the standard model.

The tax return form currently used in Uganda is based on the 1974 decree and hence out of date. It contains only limited information on the taxpayer’s business, income, and deductions. Individuals and firms actually share the same tax return form, which is mainly tailored for the former. For firms, the main drawback is its lack of standardized format to conduct a reconciliation of net income per financial statements with net income for income tax purpose. In other words, the form does not provide observability of tax liabilities or benefits which makes resolving disagreements in a case-by-case format very time-consuming.

The METR model can, of course, incorporate the actual practice of postponing the depreciation instead of using the mandatory tax allowance that is not being enforced. In that case, the METR would be significantly lower than that presented for the tax holiday firm in Table 3.
Second, among the firms that were audited, at least every third had to pay additional taxes, while every fourth firm incurred additional costs, such as bribes. It is interesting to note that all firms whose tax assessment differed by 100 percent or more reported that they ‘always’ had to pay bribes to the URA officials, while on average all survey firms reported that they were required to pay bribes only ‘seldom’. Payment of bribes may affect the effective tax burden in two ways. On the one hand, despite being a cost, bribes can reduce the tax burden (measured by the METR) if they provide an opportunity to tax evasion. On the other hand, the extra costs may increase the tax burden when used, say, to avoid a lengthy appeal and settlement process (which in itself would increase the burden but is not captured by the METR based on the formal tax system).

Third, as the VAT is a consumption tax and therefore should not have any impact on capital investment and taxable business activities, it is generally ignored in the METR model. However, if the input tax credit under the VAT system is not timely refunded, or not refunded at all, then VAT can cause an additional tax burden on the business sector.\textsuperscript{35} As the VAT was introduced to Uganda only in 1996, implementation problems can be expected to arise. In 1998 the main complaint from the business sector concerns refunding of the input VAT credit. As Table 17 shows, 81 percent of firms purchase inputs from VAT-registered suppliers but only 56 percent of these firms claim for input tax credits. It is somewhat unclear whether this results from the VAT credit and liability offset procedure.\textsuperscript{36} Another potential reason is that firms with excess input tax credits simply decline to claim for refunds, for example, due to higher compliance costs. This could be tempting for firms that can pass on the input VAT cost to consumers but less so for the firms that have to absorb the cost themselves. In the former case, it would result in the VAT cascading so as to increase tax revenue in a short term but at the cost of consumer welfare in the long run. In the latter case, firms may incur a profit loss that can, in turn, affect the CIT revenue.

Fifty-two percent of the firms that claimed for an input tax refund received their expected amount in 1998. However, a significant portion (18 percent) of firms that claimed the input tax credit did not receive any refund at all, while the rest (40 percent) received a partial refund. Furthermore, the waiting period for even a partial refund of the input VAT credit can be lengthy. For example, among the firms that received at least a portion of refund, over a half waited for more than six weeks, while 10 percent waited for more than half a year. The lengthy process for input VAT refund is likely to curb compliance as well as increase the cost of doing business, tying a considerable portion of working capital that has a high opportunity cost, considering a current bank lending rate of over 20 percent.

There are mainly two reasons for the delay in the VAT refunds: a lack of sufficient funds on the refund account, and a lack of sufficient human resources to perform a full

\textsuperscript{35} When the input tax credit is not refunded at all, the VAT could be modeled as a sales tax on capital or any other taxable input. In the case where the refund period is abnormally long and no interest is paid by the revenue authority, the interest cost could be modeled as an increment on the cost of financing.

\textsuperscript{36} It appears that when offset procedures are being used, no supporting documentation is required and the approval is granted after a desk review, subject to an audit at some later date. However, such a loose arrangement can lead to major difficulties at the audit stage.
audit on all claims within the stipulated one-month time limit. These problems are not uncommon in countries that do not have an established tax culture and that have introduced the VAT only recently. A functional VAT system, however, would require adequate funds for the refund process and limiting the full audit only to those claims with greatest revenue risk.

Hence, in terms of compliance and tax administration, two types of factors emerge from the analysis of survey evidence that could alter the METR results. These factors operate in opposite directions. First, tax evasion in general and avoidance of the mandatory depreciation during the tax holiday in particular would reduce the actual METRs compared to the formal tax system. As compliance is firm-specific and tax administration also tends to treat firms differently, this impact is not the same across the industries or even within a particular sector. Second, delays in the VAT refunds and in some cases payment of bribes could have the opposite effect of increasing the tax burden compared to the formal tax system. The net effect is ambiguous. Finally, the impact of frequent tax audits and assessments on the METR is also ambiguous, depending on whether they simply contribute to enforcement of the formal rules, or cause an extra cost to firms over and above the METR.

VI. CONCLUSIONS

The marginal effective tax rate (METR), as calculated in this paper, provides important findings on the tax burden that the formal tax system places on firms in Uganda. As this study demonstrates, it is indeed possible that, even when the country’s level of public revenue is low at the macroeconomic level, rapidly increasing taxation may pose a constraint to private investment at the microeconomic level. There are two reasons for this. First, the formal enterprise sector in these economies typically represent a small share of output but a high proportion of the effective tax base. Second, access to credit is limited and interest rates are often high, particularly for smaller firms, and hence most private investment is financed by profits and personal savings. As a result, taxation is linked to private investment in two ways: it reduces both the expected revenue from a given investment project and the availability of finance. Even if there were an adequate number of profitable investment projects available, high business taxation is likely to have a negative impact on the level of private investment by constraining liquidity.

From the perspective of foreign investors, Uganda appears to be a more highly taxed environment compared with its neighboring countries, particularly Kenya. Raising tax rates is therefore no longer a feasible policy option for Uganda. Interestingly, at the microeconomic level the Kenyan tax system appears to place the lowest burden on firms investing in manufacturing and tourism, while at the macroeconomic level Kenya's share of tax revenue in GDP is the highest of the three countries (22.7 percent in 1997/98 compared to 11.2 percent in Tanzania and 10.7 in Uganda). Uganda's tax disadvantage
results mainly from its property tax on buildings, which does not exist in Kenya and Tanzania, and its significantly higher fuel taxation. There is a strong case for harmonization of fuel taxes within the region. The findings also point to a difference in treatment of investment in non-agricultural buildings between the three countries. Kenya grants a generous initial allowance for investment in structures, while Uganda and Tanzania do not.

To level the playing field, discretionary corporate tax holidays were abolished in 1997 in Uganda and replaced by an initial investment allowance for machinery for all firms. As a result, the METR on machinery was significantly reduced. The analysis indicates that profitable firms that invest heavily in machinery clearly benefited from this policy change. However, for all other assets the METR was lower under the tax-holiday regime. The inter-industry tax distortion was also slightly increased in 1997 due to the introduction of a generous depreciation allowance exclusively for farm works. Future changes in tax policy should ensure that the inter-industry dispersion will be reduced.

Inventories and buildings are the highest taxed assets in Uganda. Hence, industries investing heavily in them, particularly tourism, manufacturing and communications incur a higher METR than the other sectors. Small firms that are subject to a presumptive tax are taxed much less than large and medium-sized firms. The heavy fuel taxes increases the tax burden in some industries, particularly in agro-processing, transportation and manufacturing.

The METR estimates presented in this paper tell mostly a story of the formal tax structure. Tax administration, if not fair and efficient, can distort the best intentions of policy-makers and produce a very different outcome in terms of the actual tax burden faced by firms. Using recent firm survey evidence, we identified several factors that can alter the METR results. First, there are factors that are likely to reduce the METRs, including widespread tax evasion in a number of sectors reported by firms, evasion of mandatory depreciation during the tax holiday period, and firm-specific exemptions which, despite efforts to curb them in recent years, show up strongly in the 1997 data. Second, delays in the VAT refunds and in some cases payment of bribes are likely to have the opposite effect of increasing the METR compared to the formal tax system. The net effect is ambiguous. Like in many other low-income countries, tax administration is a key area to be tackled in the Ugandan tax policy. In particular, efforts to combat corruption, including the tax authority, and mechanisms to resolve grievances between the business sector and the tax authority would be important. These efforts require regular dialogue with the private sector in order to build trust, and tax education and training for both taxpayers and administration staff.
APPENDIX A: MARGINAL EFFECTIVE TAX RATE

The marginal effective tax rate (METR) on capital calculated in this study is the effective corporate tax rate on capital, while the marginal effective tax rate on cost of production is an integration of the METRs on all inputs, using the augmented Cobb-Douglas production function. The METR is estimated for both domestic and foreign firms. Unless otherwise specified, all estimates are based on the 1997 tax regime and the latest economic indicators available.

A. CONCEPT OF MARGINAL EFFECTIVE TAX RATE

The METR calculation is based on the assumption that profit-maximizing firms base their investment or business decisions on the foreseeable incremental net revenue at the present value. Taxes reduce the profits accruing to the firm, while tax allowances mitigate such a reduction. Due to the interaction between statutory tax provisions and actual economic and industrial conditions, the effective tax rate can vary by industry under the same tax regime. Furthermore, for a cross-jurisdiction comparison, the effect of taxation can be singled out by applying the same set of economic and industrial conditions to different tax regimes.

For profit-maximizing firms, the gross rate of return on capital (net of economic depreciation) must be equal to the financing cost of capital, adjusted for taxes. The size of the adjustment for taxes on investment is the METR on capital. For example, if the gross-of-tax rate of return to capital is 15 percent and the net-of-tax rate of return is 12 percent, then the marginal effective tax rate on capital is 25 percent when the net-of-tax rate is used as denominator, or 20 percent when the gross rate is the denominator.

In the case of the METR on cost of production, the gross rate of return on production must be equal to the total cost of all inputs. For example, if the gross-of-tax rate of return to production is 15 percent and the net-of-tax rate of return is 12 percent, then the marginal effective tax rate on cost of production is either 25 or 20 percent, depending on the choice of denominator.

It should be noted that the METR analysis in this study deals with ‘profitable’ firms only. By ‘profitable’ we mean those firms that have taxable income, if not granted a tax holiday. This assumption is important because, according to the Ugandan tax law, operating losses can be carried forward indefinitely. However, those firms that obtained a tax holiday are not able to carry forward any losses incurred during and before the tax holiday. Therefore, a tax holiday is irrelevant to an unprofitable firm that does not have to pay taxes and can carry forward its losses indefinitely.
B. METRON CAPITAL

As described above, the marginal effective tax rate on a given type of real capital investment is defined as the proportional difference between the gross-of-tax rate of return \((r^G)\) and the net-of-tax rate of return \((r^N)\) required by financial investors. \(r^G\) is the marginal revenue product, or user cost of capital, net of economic depreciation. The net-of-tax rate of return is the weighted-average of the return to debt and equity securities held by the financial investor. Thus, the effective tax rate \((t)\) is defined as:

\[
t = \frac{(r^G - r^N)}{r^G}\text{ or } t = \frac{(r^G - r^N)}{r^N}
\]  

(1)

We use the latter definition in this study.

Real Cost of Financing

For domestic firms, the real cost of financing \((r^f)\) is defined by:

\[
r^f = \beta i(1 - U) + (1 - \beta)p - \pi
\]  

(2)

with \(\beta = \) debt-to-assets ratio, \(i = \) cost of debt, \(U = \) the statutory corporate income tax rate, \(p = \) cost of equity, and \(\pi = \) inflation rate. While interest costs are deductible for the income tax purpose, cost of equity is not. That is, the cost of financing for a domestic firm is the weighted-average cost of financing, net of inflation rate.

For foreign firms, the real cost of financing \((r^f)\) is defined by:

\[
r^f = \left[ \beta 'i'(1 - U') + (1 - \beta ')\rho ' \right] * (1 - \gamma)/(1 - x) + \gamma *[i(1-U) - \pi + \pi'] - \pi'
\]  

(2')

with \(\beta ' = \) debt-to-assets ratio in home country, \(i' = \) cost of debt in home country, \(U' = \) the statutory corporate income tax rate in home country, \(\rho ' = \) cost of equity in home country, \(\gamma = \) the ratio of debt raised in host country to total investment fund, \(x = \) weighted average withholding tax rate in host country, \(i = \) cost of debt in host country, \(U = \) statutory corporate income tax rate in host country, \(\pi' = \) inflation rate in home country, and \(\pi = \) inflation rate in host country.

According to the above formula, the cost of financing to a foreign firm is the weighted average of cost of its investment funds taken from home country and debt raised in host country. The former is the weighted average of cost of financing at home net of withholding tax payable in host country, and the latter is the cost of debt in host country adjusted for income tax deductibility and the difference in inflation rates between home and host country.
Net-of-Tax Rate of Return on Capital

For domestic financial investors, the net-of-tax rate of return on capital is defined by the formula:

$$r^N = \beta i + (1 - \beta) p - \pi$$

(3)

This is the rate of return on capital required by the financial investor, or the supplier of investment funds.

For foreign investors, the formula is:

$$r^N = \beta i'(1 - U') + (1 - \beta') p' - \pi'(1 - \gamma') + \gamma(i - \pi)$$

(3’)

This is the net-of-tax rate of return on capital required by fund suppliers, including foreign financial investors in host country. Applying (3) and (3’) to equation (1), respectively, yields us the effective corporate tax rate on capital for domestic and foreign firms.

Gross-of-Tax Rate of Return on Capital

For domestic firms, the formula is:

$$r^G = (1 + tm)(r^f + \delta)(1 - k)[1 - A + \pi(1 - U)/[(\alpha + r^f + \pi)]]/[(1 - U)(1 - tp - tg)] - \delta$$

(4)

with $tm =$ tax on transfer of property, or transaction tax (e.g., import duty) on capital goods where is applicable, $\delta =$ economic depreciation rate, $k =$ investment tax credit rate, $A =$ present tax value of the accumulated capital cost allowance, $\tau =$ capital tax rate, $\alpha =$ tax depreciation rate, $tp =$ property tax rate, and $tg =$ gross receipts tax rate, or presumptive tax.

For international firms, the formula is the same except that the

Inventory

For domestic firms, the formula is:

$$r^G = (1 + tm)(r^f + \zeta \pi)/[(1 - U)(1 - tg)] + \tau$$

(5)

with $tm =$ sales tax on inventory where it is applicable, and $\zeta = 1$ for FIFO accounting method and 0 for LIFO. For international firms, the formula is the same except that the
financing cost should be the one relevant to the international firms, that is, \( r' \) should be replaced by \( r'f' \).

**Land**

For domestic firms, the formula is:

\[
r^G = r'f' (1+tm) \left[ (1 + (1-U)/(r' + \pi)j) / ((1-U)/(1-tp-tg)) \right]
\]  

(6)

For international firms, the formula is the same except that the financing cost should be the one relevant to the international investors, that is, \( r' \) should be replaced by \( r'f' \).

**Aggregation**

The effective tax rate for a given industry is the proportional difference between the weighted average of before-tax rate of return by asset type and the after-tax rate of return which is the same across asset type within the industry. That is, the marginal effective tax rate \( t_i \) for industry \( i \) is calculated as:

\[
t_i = \frac{\sum_j r^G_j w_{ij} - r^N_j}{r^N_i}
\]  

(7)

where \( j \) denotes asset type (i.e., investments in buildings, machinery, inventories, and land), \( w_{ij} \) denotes the weight of asset type \( j \) in industry \( i \).

The above are general formats of the formulas used in this study. Due to the variance among different sectors or jurisdictions, some variables can be zero for some sectors or jurisdictions. For example, in all three countries under this study, there are no taxes based on capital and hence \( \tau = 0 \) in equation (4) - (6).

**METR Dispersion**

METR dispersion, or the weighted standard deviation, is used to measure the tax distortion. There are three measures of dispersions: overall, inter-industry, and inter-assets dispersion. Only inter-industry dispersion is estimated in this study.

Let \( w_i, w_j, \) and \( w_{ij} \) denote the capital weights for the \( i \)th industry and the \( j \)th type of asset, respectively. The inter-industry METR dispersion \( \sigma_I \) is calculated as the weighted standard deviation:

\[
\sigma_I = \sum_j w_j \left( \sum w_{ij}(t_{ij} - t_j)^2 \right)^{1/2}
\]  

(8)

The expression \( t_j \) is the average effective tax rate for the asset \( j \) across industries, and \( t_{ij} \) is the effective tax rate for the \( j \)th asset type in the \( i \)th industry.
C. METR IN OTHER INPUTS AND COST OF PRODUCTION

**METR on Labor**

For this study, we assume that only payroll taxes paid by employers are effective labor taxes borne by employers. Another assumption is that the marginal unit of labor input is an average worker. Therefore, the METR on labor is the total payroll taxes paid by employers on average labor costs. Since the payroll taxes in Uganda and Tanzania are imposed on total payrolls, the statutory tax rate itself can be seen as the effective tax rate on labor. In the case of Kenya, the ceiling of taxable payroll is K Sh 80 per month, which is well below the monthly payroll. As a result, the METR on labor in Kenya is estimated as low as 0.1 percent. According to 1997 ILO Yearbook of Labour Statistics, the average monthly payroll in Kenya was K Sh 3,324 for manufacturing industry and tourism (1991 figure).

**METR on Other Inputs**

The METR on other inputs for production is the transaction taxes firms have to pay on these inputs. In our study, motor fuel is the only other input included apart from capital and labor. The average transaction tax rate, i.e., the fuel tax rate is used as the METR.

**METR on Cost of Production**

By using the augmented Cobb-Douglas production function, the METR on cost of production $T$ can be estimated as:

$$T = \Pi (1+t_{i})^{\alpha_{i}} - 1$$

In the formula, $i$ indicates an input, i.e., capital, labor, and fuel, $t_{i}$ = the METR on each input $i$, and $\alpha_{i}$ = share of total cost for input $i$. The detailed derivation may be found in McKenzie, Mintz, and Scharf (1992).
APPENDIX B: DATA SOURCES

A. TAX PARAMETERS

The formal tax parameters for Kenya, Tanzania and Uganda are obtained from their income tax laws and related official documents (e.g., the 1991 Foreign Investment Code in the case of pre-1997 tax holiday regime for Uganda).

Apart from the formal rates that are directly used for the METR calculation (e.g., corporate income tax and property tax rate), there are mainly two types of tax parameters that require derivation. The first is the combined tax depreciation rate for machinery by industry. It is estimated as a weighted average of tax allowances by class for each industry based on the actual URA data on large firms. The second is the combined fuel tax rate for each country. In Uganda, the ad valorem rate on the “total CIF destination warehouse cost”, including all handling charges, ranges from 100 percent to over 200 percent for paraffin, diesel and petroleum products, respectively. A weighted-average rate was estimated as 174 percent based on the data, provided by the URA on fuel sales by product in 1997. For Kenya and Tanzania, the fuel tax rate by product was estimated based on the tax and the price per liter, while Uganda’s shares of various products in total sales were used as weights to estimate the combined fuel tax rate.

B. NON-TAX PARAMETERS

The expected inflation rates and interest rates are obtained from the IMF and the World Bank. The expected inflation rate is based on the consumer price index, while the interest rate is the bank lending rate in each country.

The debt-to-assets ratio is estimated based on the 1998 World Bank-Private Sector Foundation of Uganda firm survey data for large and medium-sized firms (over 20 employees).

The economic depreciation rates for buildings and machinery by industry are adopted from the International Centre Tax Studies (University of Toronto) METR model for small-sized firms in Canada. Considering the differences between Uganda’s economy and the Canadian one, we assume that the average capital investment size for Uganda’s large- and medium-sized firms is equivalent to that for small Canadian firms.

The capital structure by industry shown in Table 2 is estimated based on financial statistics by industry provided by the URA. As buildings and land are grouped into a single category in the URA data, this category was disaggregated based on the Canadian proportional relationship between buildings and land by industry.

The cost structure by industry is estimated based on Uganda’s 1992 input-output table (IO table), the latest one available. The capital input within an industry is estimated as the given industry’s total inputs of building materials, machinery and metal products,
and operating surplus. The labor input is estimated as the wages and salaries. The fuel input is estimated based on the total fuel imports in 1992 and the transportation share by industry based on the 1992 IO table. Then the three inputs are summed up as the total cost of production, which is used to arrive at the input share of capital, labor and fuel.

C. THE 1998 FIRM SURVEY

A private enterprise survey for Uganda was carried out between February and July 1998 jointly by the World Bank and the Ugandan Private Sector Foundation. The survey design benefited from the Regional Program for Enterprise Development (RPED) model, particularly the Ghana and Zimbabwe surveys, but it is more limited in scope, focusing mostly on physical investment, exports, infrastructure services, taxation, policy credibility, regulation, and corruption. However, the survey in Uganda covered a wider range of industrial sectors than the RPED. Apart from manufacturing (which was divided into agro-processing and other manufacturing), the survey included firms from tourism, commercial agriculture and construction as these sectors are expected to have substantial growth potential. Data were collected for the period of 1995-97. Given that the survey required confidential information, such as the firm's costs, sales and tax payments, interviews were carried out by the Uganda Manufactures Association to obtain maximum cooperation of the firms. Special emphasis was laid on enumerator training and the questionnaire was carefully piloted beforehand. In addition to quantitative data, the survey also collected information on firms’ perceptions on various constraints to investment. The latter component was modeled on a similar survey carried out in 1994 by the World Bank, allowing an examination of dynamics of the business environment and constraints, as perceived by the private sector.

The latest complete industrial census in Uganda dates back to 1989. An updated industrial census was carried out in 1996 but it includes only eight (out of 45) districts. Despite its limited geographical coverage, the districts included in the 1996 update actually represent 80 percent of value-added in the private industrial sector and 70 percent of employment, based on the 1989 census. It was thus decided to base the sampling frame of the survey on the 1996 update instead of the complete but much older census, particularly as the number of new enterprises has increased dramatically in the past decade. Based on the 1996 update, 37 percent of the firms active today started up since 1990. Although the district of Mbarara was not included in the census update, it was added to the survey, given its importance as a regional business center today.

As mentioned above, the firm survey was confined to five sectors—commercial agriculture (includes fishing), agro-processing, other manufacturing, construction and tourism. Table 19 shows the distribution of establishments and employment by firm size and sector in the 1996 updated industrial census. Firm size is defined by employment. Neither the update nor the 1989 census includes firms with less than five employees, so the initial size breakdown was small (5-20 employees), medium (21-100 employees),

More specifically, an industry’s transportation share is estimated by dividing its total transportation cost by the total national transportation cost. This industry’s transportation share is then used to disaggregate the total fuel imports in the same year to arrive at the fuel cost by industry.
large (101-500 employees) and very large (over 500 employees). Subsequently, large and very large firms were treated as one group. The five sectors selected for the survey comprise 52 percent of all enterprises included in the census update and almost 80 percent of employment.

Table 20 shows the distribution of establishments and employment within the five selected industrial sectors by firm size and sector. The within-sector distribution of employment shows large variations across sectors. Most of the employment within commercial agriculture and construction is concentrated in two to three very large firms, while most of the employment in tourism is in the small firms. Employment in agro-processing and other manufacturing is relatively evenly distributed across firm size.

We constructed a stratified random sample for the survey. The following criteria were taken into account:

- The sample should be reasonably representative of the population of establishments in the specified five industrial categories.
- The establishments surveyed should account for a substantial share of national output in each of the industrial categories.
- The sample should be sufficiently diverse in terms of firm size.
- There should be enough representation outside Kampala to draw conclusions about industrial activity in Uganda as a whole.

The final sample consisted of 243 surveyed firms and was similar with respect to size and regional distribution to the stratified sample constructed initially [see World Bank (1998)]. The characteristics of the sampled firms are set out in Table 21 by firm size, sector, location and ownership. Over 80 percent of large firms, about 30 percent of medium-sized firms and about 10 percent of small firms in the five sectors were included. Five different geographical areas were covered: Kampala, Jinja/Iganga, Mbale/Tororo, Mukono, and Mbarara. The first four make up 98 percent of total employment in the five selected sectors reported in the 1996 census update. In terms of ownership—which was not a criteria for sample selection—70 percent of firms were Ugandan owned, 16 percent foreign owned and 14 percent in joint ownership.

The survey typically consisted of at least two visits to each firm by one or two enumerators. While the manager's perceptions were relatively easy to obtain during a single interview, quantitative data on costs, sales and taxation which were collected for three years, usually required another visit to consult the accountant. During the course of the survey it was found that a number of firms had changed business activity since 1996, for example, by shifting to trading instead of manufacturing. Similarly, a number of firms were difficult to locate, which indicates that either they had exited since 1996, moved to another address, or that the 1996 industrial census update may have contained firms from the 1989 census which had exited before 1996. A few firms refused to participate in the survey. For all these reasons, 39 percent of the firms in the final sample were randomly chosen alternates to the initially drawn random sample.
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