

Structural Transformation and Productivity Growth in Africa

Uganda in the 2000s

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Abstract

Uganda's economy underwent significant structural change in the 2000s whereby the share of non-tradable services in aggregate employment rose by about 7 percentage points at the expense of the production of tradable goods. The process also involved a 12-percentage-point shift in employment away from small and medium enterprises and larger firms in manufacturing and commercial agriculture mainly to microenterprises in retail trade. In addition, the sectoral reallocation of labor on these two dimensions coincided with significant growth in aggregate labor productivity. However, in and of itself, the same reallocation could only have held back, rather than aid, the observed productivity gains. This was because labor was more productive throughout the

period in the tradable goods sector than in the non-tradable sector. Moreover, the effect on aggregate labor productivity of the reallocation of employment between the two sectors could only have been reinforced by the impacts on the same of the rise in the employment share of microenterprises. The effect was also strengthened by a parallel employment shift across the age distribution of enterprises that raised sharply the employment share of established firms at the expense of younger ones and startups. Not only was labor consistently less productive in microenterprises than in small and medium enterprises and larger enterprises across all industries throughout the period, it was also typically less productive in more established firms than in younger ones.

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Structural Transformation and Productivity Growth in Africa: Uganda in the 2000s

By

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1. Introduction: Theoretical framework

1.1. Issues and methodology

Economic growth has very much picked up in most countries in Africa over the past decade and a half. This has led to three interrelated questions: Whence the apparent growth turnaround? Will it be sustained long term? And has it been inclusive enough? The answers to all three depend to varying degrees on the nature and scale of structural transformation that economies of the region might have been undergoing. In particular, whether or not the current growth episode would continue for many more years to come and whether it has been and will be inclusive enough will very much depend on whether it is driven by productivity enhancing structural change of the kind that McMillan and Rodrik (2011) credit for the East Asian growth miracle of the 1980s and 1990s. Does the growth turnaround in Africa reflect the onset of that kind of change? Or, does it have little to do with long term trends in productivity or any lasting change in the structure of employment and production? Currently the balance of opinion seems to be that Africa is not undergoing that kind of structural change and may not therefore necessarily sustain current growth rates much longer especially in the event of adverse commodity price developments.²

This is no doubt a question that should be answered ultimately case by case at the level of the individual country before any generalization can be made about it meaningfully on a regional scale. This paper seeks to address it with respect to the experience of Uganda, which has been one of the fastest and most consistently growing economies of the region and which, according to Hausman et al. (2014), has seen its per capita income double over the last two decades. Uganda is also one of the very few countries in which the kind of household and establishment level information needed to investigate the question rigorously enough is available to the public. These include data from the Uganda Business Register (UBR) that the Government of Uganda has maintained since year 2000 and those from the business survey program of the central statistical office, namely, Uganda Business Inquiry (UBI). The paper uses these two sources in order to assess if Uganda's economy has been undergoing the kind of structural change that would sustain over the long term the pace of GDP growth observed over the past decade and a half.

The key questions motivating the analysis reported in the paper include the following. Is there evidence that there was significant and sustained reallocation of labor to sectors of the economy where labor is more productive on average and at the margin? If there is, which were (the less productive) sectors of origin of the reallocation and which were the (more productive) destination sectors? What has triggered the reallocation? And what would make us think that the reallocation would be sustained long enough, or that it signaled the economy was taking off into a process of self-sustaining growth? Or could it be

²² The most categorical statement of this position is probably Rodrik (2014) but that assessment is also implicit in McMillan and Hartgen (2014) and Resnick and Thurlow (2014).

that Uganda's economy did not undergo any significant structural change after all, or did so, but the change was not productivity enhancing?

1.2. Drivers of structural transformation

The paper addresses these questions by examining relevant data from the point of view of the reallocation of labor across a variety of dichotomies or pairings of sectors of origin and destination, namely: (a) traditional agriculture vs. industry and commercial agriculture as in the Lewis model (Lewis 1954); (b) the "formal" or modern sector of the economy vs. the unorganized or informal sector of microenterprises/household businesses as in Ranis and Fei (1961); (c) manufacturing vs. services as in Baumol (1967); (d) the tradable vs. non-tradable sectors models of export led growth or export led de-industrialization (or Dutch disease); and (e) within the traded sector, comparative advantage industries vs. comparative disadvantage industries.

But what is it that normally drives structural change itself? Why would labor shift, for example, from agriculture to industry in the course of development or from industry to services as it typically does in advanced economies? Economic theory offers two possible explanations of which one is differences in the income elasticity of demand across goods and services, which makes the composition of consumption demand shift as household incomes rise in the course of development in favor of the destination sector at the expense of the sector of origin of the reallocation process. The second is that the pace of productivity growth (and ultimately the level of productivity) generally differs across industries. In other words, technical change is typically sector biased. A shift in the composition of consumption expenditure or in inter-industry gaps in the rate of TFP growth leads in the first instance to changes in the price of the output of the destination sector and relative to that of the sector of origin, which would trigger the reallocation of labor between the sectors. Echevarria (1997) and Ngai and Pissaradis (2007) show that in principle either one of these two phenomena could be sufficient to generate structural change even in the absence of the other. However, it is more likely that in practice that the two forces reinforce each other as in the models of Beura and Kabuski (2009) and Duarte and Restuccia (2010).³ Ultimately, the shift in the relative output prices of the sectors of origin and destination brought about by a shift in the composition of consumption spending or change in their relative cost of production translates into inter-sectorial gap in the marginal productivity and, hence, the reward to labor, which in turn would drive the reallocation of labor between the sectors.

1.3. International integration, structural transformation and productivity

Tracing structural change to growth in per capita incomes in the course of development or to sector biased technical change only shifts the question of causation one step down a chain of links: what is it that could bring about the underlying changes in household incomes or make productivity grow faster in some sectors in the first place? One of the more common of such factors is the opening up of an economy to foreign trade for the first time or of an already open economy undergoing significant trade

³ See also Herrondorf et al. (2013)

liberalization. In such a case structural change would involve the reallocation of labor from comparative disadvantage industries to comparative advantage industries of the economy and would also be productivity-enhancing as shown in Romalis (2003) and Bernard et al. (2007).

This is often the main motivation behind an export-led growth strategy, which indeed is official policy in Uganda as it is indeed in much of the rest of the region. In the case of Uganda, all indications are that recent economic growth has benefited from fairly rapid expansion of exports over the past decade and a half. There also seems to be broad consensus among policy makers and experts that the country would need to maintain robust export growth by diversifying into new lines and enhancing the competitiveness of existing ones in order to sustain the current trajectory of GDP growth.⁴

In a world without international trade, prices would differ between countries by factor endowment such that a country would have lower relative prices in the goods that are intensive in the factor that it has in relative abundance. In this setting the opening up of any pair of countries to free trade (meaning trade with zero trade costs) with each other would lead to convergence in relative goods prices and relative factor rewards between the countries per the Factor Price Equalization (FPE) theorem through the reallocation of resources in each country towards the industry intensive in the relatively abundant factor as the two countries specialize according to comparative advantage (per the Heckscher-Ohlin theorem). This raises the relative price of the abundant factor per the Stolper-Samuelson theorem. Moreover, any increase in the availability of a factor would increase the production of the good intensive in that factor (per Rybczynski's theorem). These are all well-known results of neoclassical trade theory, which assumes away trade costs and other sources of market imperfection, but has been shown to hold up largely in more realistic settings of intra-industry and inter-industry trade under increasing returns, product differentiation, inter-firm differences in productivity and positive trade costs, and has obvious practical implications for policy.

One such implication is that opening up to costly trade or engaging in trade liberalization on a large enough scale would set in motion not only the reallocation of resources across industries per those predictions,⁵ but also a process of market selection that shifts resources and market share within each industry from the least productive firms, which are forced to exit or contract, to more productive firms, which expand as incumbents or enter the industry anew from outside. Moreover, market selection (defined as intra-industry reallocation of market share in favor of more productive firms) raises

⁴ This is certainly the view behind the current official export strategy (Republic of Uganda 2007) and is most directly argued for in Hausmann et al. (2014).

⁵ i.e. specialization according to comparative advantage per the H-O theorem, international convergence of factor prices as per the FPE, increase in the relative reward of the abundant factor as per the Stolper-Samuelson theorem, the growth of employment of the factor expanding in supply as per the Rybczynski theorem.

aggregate (average) productivity within each industry and does so more in the comparative advantage industries within each country than in the comparative disadvantage industries.⁶

1.4. Structural change and job growth

Unskilled labor being arguably the most abundant factor in Uganda, comparative advantage industries in that country would be more labor intensive than the rest of the traded sector. Major episodes of trade liberalization and initiatives of regional integration that the country has undergone over the years would therefore be expected to cause a shift of employment to exporting industries and away from more capital or more skill intensive industries, where the post-liberalization marginal productivity of labor would be lower than it would be in exporting industries. Because trade costs are always substantial and typically there are inherent productivity differences between firms within each and every industry, the episodes are also productivity enhancing. They would raise aggregate productivity within the tradable sector by raising productivity thresholds of entry and survival within each industry of the sector, which in effect reallocates resources and market shares from less productive firms to more productive ones everywhere but always does so to a greater extent in industries of comparative advantage than in comparative disadvantage industries thereby as a result of which net job gains from the episodes are always higher in comparative advantage industries.

The fact that unskilled labor is arguably the most abundant factor in Uganda in this context also means that any export led growth driven by “natural” (or H-O) comparative advantage industries would be more inclusive than alternatives as it would be accompanied by job growth as well as wage growth. If the structural change that the economy might have undergone over the period of interest was driven by trade liberalization leading to growth of exports per “natural” or H-O comparative advantage and if the latter is assumed to lie in labor intensive industries, one would expect growth to lead to net job gains by H-O and increase in wages (by the Stolper-Samuelson Theorem). Indeed the economy would respond to the increase in population through expansion in labor intensive activities and hence in employment per the Rybczynski Theorem under trade driven structural change. The authors test these predictions in a companion paper comparing trends in real wage growth and employment growth between exporting industries and the rest of the economy and investigate whether the reallocation of employment observed over the past two decades was from less labor intensive sectors to more labor intensive ones, and whether real wages were higher in destination sectors than in the sectors of origin.⁷

This leads to a set of questions that this paper should help address directly in its characterization of the structural change the Uganda economy has been undergoing from the standpoint of resource shifts

⁶ A policy shift from autarky to free trade (as opposed to trade in the presence of trade costs) does not generate market selection in either industry although it does shift resources from the comparative disadvantage industry to the comparative advantage industry.

⁷ See Caselli and Coleman (2001) on this point in the context of the role of trade in sub-national regional development.

within the traded sector: (a) Have jobs and output growth been faster in H-O (or “natural”) comparative advantage industries than in H-O comparative disadvantage industries over the past decade and a half? (b) How do the level and growth rate of labor productivity compare over the period between H-O comparative advantage industries and H-O comparative disadvantage industries? (c) Is there any evidence that the period saw significant across the board productivity gains from reallocation triggered by trade related policy interventions? (d) Is there any evidence that those gains are larger in H-O comparative advantage industries than in the rest of the economy?

1.5. *Comparative advantage vs. competitiveness*

If Uganda’s economy has indeed undergone structural change over the period of interest, that change need not be productivity enhancing or growth enhancing. It could also be reducing growth or productivity or both in the sense that the observed level of productivity or the observed growth would have been higher than it actually turned out to be if it were not for the change. In other words, it is possible that Uganda has been experiencing the wrong type of structural change over the period and that it might need to reverse or stop in order to increase the chances of the current pace of growth being sustained or surpassed in the long run. It is also possible that the observed structural change is one whereby labor and other resources are being reallocated from natural (or H-O) comparative advantage industries to comparative disadvantage industries and the non- traded sector. This would be unambiguously the wrong type of structural change if it turned out to be reducing aggregate labor productivity or otherwise entailed welfare losses.

The occurrence of the wrong type of structural change would pose the analytic and policy challenges of identifying and addressing the factors behind the losses –that is, factors that are distorting the direction of the reallocation process from what it would otherwise be either by impeding entry into H-O comparative advantage industries or more productive industries or by erecting domestic or foreign trade barriers around those industries or otherwise distorting the organization of those industries or undermining their export competitiveness.

There are two very common potential sources of distortion here. One is the presence of Dutch disease, that is, the undermining of the competitiveness of natural comparative advantage industries of a country by unmanaged natural resource and commodity price booms. Resources can be reallocated away from natural comparative advantage industries by problems of governance and economic institutions effectively barring entry and trade from those industries. Examples are lack of labor market flexibility which could affect comparative advantage as shown in Cunat and Melitz (2012) and also real exchange rate appreciation due to anti-inflationary monetary policy as highlighted in Krugman (1987) and McMillan and Rodrik (2011).

1.6. Policy distortions, misallocation, and productivity

Beyond and above the possible impact on inter-sectorial labor reallocation of exogenous commodity price booms and monetary policy on the competitiveness of specific industries, there are policy instruments and interventions that tend to generate idiosyncratic distortions at the firm level but end up reducing aggregate productivity more in some industries than in others by generating more misallocation within those industries even in the absence of policies explicitly favoring specific industries. Other policy interventions or institutional distortions may not necessarily cause intra-industry misallocation but could work against productivity growth (by impeding innovation or the adoption of new technology and the introduction of new products) in every industry but could do so more in H-O comparative advantage industries than in others for a variety of reasons.

The driving/ destination sectors of growth-enhancing and productivity enhancing structural change need not always be H-O comparative advantage industries. Indeed such sectors need not be part of the tradable sector. Even more importantly sector specific and idiosyncratic market distortions are not limited to barriers to international trade or cross border factor mobility and certainly are not limited in their impact to the tradable sector only. Households and firms typically operate in a policy environment that often imposes implicit or explicit taxes and subsidies that can vary almost from one producer to the next and household by household and are as powerful as sector-specific policies in distorting the allocation of resources and market shares across firms and activities from what it would be under a uniform business environment of pure competition where everyone would face parametrically uniform relative prices. The misallocation of resources and market share associated with these other distortions reduces aggregate productivity in the tradable as well as non-tradable sector and can be potentially as important a source of long term productivity growth as any major program for trade liberalization and international integration.

This is indeed the theme of the sizeable and expanding literature on policy distortions, intra-industry misallocation and aggregate productivity that includes Parente and Prescott(1994) on access to technology, Lagos (2006) on labor market distortions, Restuccia and Rogerson (2008) on taxes and subsidies, Beura et al. (2011), Erosa and Cabrillana (2008), and Moll (2014) on differential access to finance. The main papers discussing intra-industry misallocation in general beyond specific aspects and instances or it are Banerjee and Duflo (2005), Bartlesman et al. (2006), Banerjee and Moll (2009), Hsieh and Klenow (2009), Hopenhayn (2014), and Jovanovic (2014). Getting a sense of the relative importance of intra-industry misallocation as a source of structural change is also very much part of the motivation of the analysis in this paper but is directly taken up by the authors elsewhere in the companion paper cited earlier. Here we will only develop its broader context in the specific setting of Uganda in the 2000s by highlighting some of the specific features of structural change that could have been fostered or impeded by interventions distorting the inter-sectorial allocation of resources or helping correct specific instances of misallocation of labor and capital that would otherwise have arisen.

1.7. Main Findings

The main finding of the paper is that Uganda's economy underwent significant structural transformation in the 2000's that raised the share of non-traded services in aggregate employment by 7 percentage points and reduced the combined share of manufacturing and commercial farming and commercial fishing by that amount. This was a major episode of reallocation of labor away from the production of traded goods to non-traded services. It also involved significant informalization of employment in as far as it shifted employment from SMEs and larger firms in manufacturing and commercial agriculture to microenterprises in retail trade and in the hotels and restaurants industry. The reallocation of labor from the production of tradables to that of non-tradables in and of itself must have reduced aggregate labor productivity from what it would otherwise have been since data from the UBI show that the labor is significantly more productive in the traded sector than labor in the non-traded sector. The informalization of employment that accompanied the sectoral shift in employment must have also been an additional factor in holding down aggregate labor productivity lower than it would otherwise have been as it amounted to a shift in employment to micro enterprises away from larger firms in which labor was consistently far more productive per UBI data. Far from being productivity-enhancing, the structural transformation that Uganda's economy underwent in the 2000s thus appears to have been productivity reducing. In that sense it is unlikely to have enhanced the prospects of Uganda sustaining the GDP growth rates of that decade into the current decade and beyond.

However, UBI data show that aggregate labor productivity in Uganda in fact increased a great deal in the course of the transformation. In the first instance this reflected the fact that labor productivity was indeed growing across all sectors –including the traded vs. non-traded divide and across the size distribution of firms within each industry. This meant that the transformation shifted labor across sectors within each of which labor productivity was growing albeit at a pace that was lower in the destination sectors –namely, micro enterprises in non-traded activities- than in the sectors of origin – larger firms in the traded sector. This leads to the question of where the gains in aggregate labor productivity (that more than made up for the losses via reallocation) came from.

One potential source of the gains could be the firm life cycle effects associated with a third aspect of the observed structural transformation, namely, the reallocation of labor across the age distribution of business enterprises. For the very process that raised the relative employment share of the production of tradable in relatively large commercial farms and manufacturing establishments to micro retail businesses and services in the non-traded sector was also one that reallocated labor across the age distribution of enterprises by raising the employment shares of established firms at the expense of younger firms and startups. Clearly this same process would be a source of gains in aggregate productivity only if established firms as the destinations of the reallocation also had higher labor productivity than younger firms and startups. However, it turns out that labor productivity was consistently higher in established firms than in younger ones throughout the period and across all major sectors and industries.

The growth in labor productivity that accompanied the structural transformation of Uganda's economy in the 2000s thus must have had sources that were far more deep seated than the internal economies of scale and life cycle effects that the transformation also entailed. The authors investigate some of these other sources in a companion paper drawing on the data being analyzed here.

1.8. Structure of the paper

The rest of the paper is organized as follows. We describe our data in section 2, where we also provide details of the various dimensions of the structural change that Uganda's economy underwent between the 2001 and 2010 waves of the UBR by breaking down the aggregate shift in employment between the traded and non-traded sectors, first, into flows across narrower industry categories, and, in the case of the traded sector, between comparative advantage industries and others and, secondly, into shifts across the size and age distributions firms within each sector and industry. Section 3 analyses the linkage between labor productivity and sectorial and inter-industry shifts in employment and the roles that employment shifts across the size and age distributions of employers play in that relationship. Section 4 concludes.

2. Inter-sectorial shifts in employment in the 2000s: UBR 2001 and UBR 2010

2.1. Sources of data: The UBR and the UBI data sets

2.1.1. The Uganda Business Register (UBR): The 2001 and 2010 Waves

We need data on two sets of variables in order to address the hierarchy of questions we just outlined about structural transformation in the Ugandan economy. First we need data on measures of changes over an extended period in the distribution of employment across major industries. Secondly, we need measures of gaps in labor productivity between those industries over the period of interest in order to determine whether or not the observed transformation has been productivity enhancing and, if it has been, to identify the specific sources of the productivity gains.⁸

⁸ Only two possible potential sources of productivity gains are considered in this paper. Other sources are taken up in the companion paper we have already alluded to.

Our data on the first set of measures come from the 2001 and 2010 waves of the Uganda Business Register, a nationwide census of business establishments that the Government of Uganda has taken three times since 2001. The 2001 wave of the census –UBR 2001 henceforth - covered nearly 165,000 business enterprises across the country. UBR 2010 covered about three times as many enterprises –at a little over 458,000 - mainly reflecting the scale of net business formation since 2001, but in part also because it covered all commercial farms and micro agribusinesses that the 2001 wave would have excluded. The distributions of enterprises covered by both waves of the census are shown in Table 1 by single digit ISIC categories.

===== Table 1- here=====

UBR 2001 and UBR 2010 both contain five key variables about each enterprise in the register, namely, the official name and identity of the enterprise, its exact location (in terms of GIS coordinates), description of its main activity in terms of a four digit International Standard Industrial Classification (ISIC) code, the number of persons engaged in the enterprise on the date of the census and the date that the enterprise started operating. For our purpose information on the last four of these variables has been transformed into counts of enterprises and their workers each of which is then aggregated for each census year in two dimensions, namely, spatially at the level of the sub-county as the basic unit of analysis and by industry at the four-digit ISIC level.

Disaggregating enterprise counts and employee counts at sub-county level or industry-level by enterprise age and enterprise size groups provides a picture of two important dimensions of the changes that may have taken place in the structure of employment and production over the decade spanning the two censuses. For example, comparing, enterprise counts, employment levels, and job growth rates across enterprise size groups provides a sense of how far the structure of the economy has changed in terms of the relative importance of the formal/modern sector. Likewise comparing enterprise counts and employment across business age groups tells us by how much the job growth observed over the decade can be attributed to start up investment or new entry as opposed to expansion investment of established businesses. This is on top of the basic task of mapping out the reallocation over the same decade of employment across the other three sectorial divides- that is, traded vs. non-traded, manufacturing vs. services, and comparative advantage industries vs others- that this paper does by aggregating up employment flows and enterprise counts from the individual four-digit ISIC industry and the individual sub-county as the basic unit of observation.

2.1.2. Uganda Business Inquiry (UBI): The 2002 and 2009 Waves

While UBR2001 and UBR2010 thus seem to have basic information for making an assessment of the scale and type of structural change that the Ugandan economy underwent in the 2000s, they have very little else of the information needed to infer the implications of the change to aggregate productivity. For that we need to use the 2002 and 2009 waves of the Uganda Business Inquiry (UBI), which, unlike the UBR is not a census but a sample survey of businesses carried out as part of the dataset feeding into

the system of National Accounts, but is almost as good as a census for our purpose as it covers all business establishments in the country employing 10 or more persons. The 2002 and 2009 waves covered about 4,700 establishments spread out across scores of industries on three-digit or four-digit ISIC and collected information on data on enterprise assets, employment, and purchase and sales based on which labor productivity and other indicators of productivity are measured at the level of the enterprise.

Moreover, because both waves of the UBI provide information on the activity of each enterprise in the form of a four-digit ISIC code, we have been able to link data from each wave to data from UBR 2001 and UBR 2010 at that level in order to measure the effect on aggregate productivity of the shift in employment between industries as observed over the period spanning 2001 and 2010. This is important because, as we have indicated already, our assessment of the scale and type of structural transformation that the Ugandan economy might have undergone over that decade has to be based on the measurement of the changes in employment and the count of enterprises between UBR 2001 and UBR 2010 in major three digit industries (on aggregate and by business size groups and business age groups). However, in trying to gauge the effect on aggregate labor productivity of that change we have to rely on the measurement of productivity gaps between those industries in UBI 2002 and UBI 2009 since the UBR dataset has no information on output or productivity.

It is equally important in that context that sample of UBI 2002 is a multi-stage stratified sample drawn from the same listing of enterprises as the census listing of UBR 2001 and that, likewise, the sample of UBI 2009 is also a multi-stage stratified sample drawn from the same listing of enterprise as UBR 2010. This provides us with appropriate sampling weights with the help of which we can obtain consistent estimates of the population values of variables interest for the years 2002 and 2009 from the observations of UBI 2002 and UBI 2009, respectively.

2.2. Broad sectors and comparative advantage industries

UBR 2001 and UBR 2010 covered all three digit ISIC Rev. 3 industries (with the exception of government institutions and embassies). So did the samples for UBI 2002 and UBI 2009. Unlike other sectors where informal businesses were also covered, only formal businesses activities were covered for the agricultural sector in UBR2001. This was changed in UBR 2010, which covered both formal and informal agricultural businesses.

As already noted each of the two datasets –that is, UBR 2001 and UBR 2010 on one hand, and UBI2002 and UBI2009 on the other- have been aggregated spatially to the sub-county level as the unit of observation and functionally to the four-digit –ISIC industry as the alternative unit of observation.

In describing the pattern of structural change as observed between UBR2001 and UBR2010 we have focused on four major divides , namely,

- i) the tradable sector and non-tradable sector, and
- ii) the formal/modern business sector (chiefly of SMEs and larger establishments) and informal activities (mainly of micro enterprises)
- iii) manufacturing vs. commercial agriculture vs. modern services within the traded sector
- iv) comparative advantage industries vs. other industries within the traded sector

2.2.1. The traded and non-traded sectors

Because employment in subsistence agriculture is largely excluded from the UBR we cannot say whether or not there has been a shift of employment between agriculture as a whole and the rest of the economy in 2000s simply by comparing different waves of the census. The most we can glean from the UBR in terms of reallocation of manpower between agriculture and the rest of the economy relates only to commercial farming and agribusiness as a single digit (ISIC) component of the traded sector.

Manufacturing is the second component. While there is a strong case for doing some of the analysis in terms of a broader industrial sector understood to include (beyond manufacturing) construction as its non-traded component, the construction sector and mining are both quite small in terms of their combined share in aggregate employment in Uganda. Focusing our analysis of structural change in terms of manufacturing and commercial agriculture as the main components of the traded sectors therefore seems to be appropriate. We also broadly equate the non-traded sector with services in the present context.

Although there is significant amount of service exports from Uganda and even more service imports the sector in Uganda is overwhelmingly non-traded for all practical purposes. It is also three times as large in terms of employment as the traded sector as a whole and accounts for 75 percent of the aggregate employment captured by the UBR (Table 2). It will therefore be useful to look at the breakdown of any reallocation of labor between services and the traded sector (i.e., commercial agriculture and manufacturing) in terms flows to and from the main service subsectors. A useful categorization from this point of view would include the following five subsectors: Utilities and transport and communication services, domestic trade and hotels and restaurants, finance and real estate, education and health services, and community services.

2.2.2. Comparative advantage industries

Uganda's revealed comparative advantage at present lies in primary commodities consisting mainly of agricultural ones and fishing and to a lesser extent mining, in the form of gold at this point but expected to include oil and gas over the coming years.⁹ But it is also widely believed that the country has scope for

⁹ For example in 2006, the latest year on which data are cited in the current Uganda Export Strategy , Uganda exported just under a billion US dollars' worth of goods and services two-third of which represented exports of agricultural commodities.

diversifying its exports out of agricultural commodities into food processing and agro-processing in general and into the textiles and garments industries and from oil and gas extraction into related chemical products. Ideally the sectors of comparative advantage and comparative disadvantage should be identified at the three or four –digit ISIC levels but, given the relatively large number of such industries, we have to settle for addressing the questions listed here at the two-digit level so as to keep the analysis tractable.

Among Uganda's main trading partners in relations to which the country's comparative advantage industries are identified here are fellow members of the East African Community (EAC). At the moment most of Uganda's trade within the EAC is with Kenya and Rwanda.¹⁰ For example, Uganda imported about half a billion dollars worth of goods and services from Kenya in 2008 (chiefly in the form of chemical products, steel, aluminum articles, electrical machinery and equipment, garment and textiles, and furniture and appliances) and exported about \$150 million in the form of fish, fruit and vegetables, coffee, tea, cereals, cotton, tobacco and raw hides and skins. It exported about \$120 million worth of goods and services to Rwanda that year in the form of chemical products, cotton and iron and steel while importing less than \$3 million worth of goods and services.¹¹

The two –digit ISIC industries that the Uganda Export Strategy of 2008-2012 sees as the country having comparative advantage in are the following (classified by single digit ISIC).¹² In agriculture: (1) crop and animal production, and (2) fishing and aquaculture. In mining: (3) extraction of crude petroleum and natural gas and (4) mining of metal ores. In manufacturing: (5) food and beverages, (6) tobacco

Gold accounted for 12 percent of the value of exports while manufacturing exports to DRC, South Sudan, Rwanda and Burundi accounted for 25% of total exports.

¹⁰ Isaac and Othieno (2011) compute revealed comparative advantage indices for Uganda vis-à-vis a selection of fellow EAC members and China –also a major trading partner- that are broadly consistent with the listing of comparative advantage industries as provided here. The list is also consistent with the exporting industries' potential in Uganda's current export strategy. Spelt out in Republic of Uganda (2007), the strategy also sees Uganda's comparative advantage in agricultural exports and their processing but does see scope for diversification into manufacturing especially in textiles and garments and also other areas with neighboring countries as the intended destinations. This very much tallies with the draft EAC industrialization strategy, which also claims that Uganda's comparative advantage within the Community lies in "hydro power generation, sugar, steel production, food processing, small scale beverages, textiles, cement, tobacco, natural gas production, copper mining".

¹¹ These figures are taken from Isaac and Othieno (2011), which also shows Uganda to be a net importer from Tanzania and a net exporter to Burundi importing about \$55 million of goods and services from Tanzania in 2008 in the form of textiles and garments, cereal, beverages, and iron and steel) while exporting about \$26 million from that country (in the form of live animals, meat, dairy products, coffee, tea, tobacco, chemical and plastics) and \$36 million from Burundi from which it imported not much. That same year Uganda exported less than \$15 million to China (in the form of cotton, coffee, leather, oilseeds, fish, timber and minerals) while importing \$231 million worth of textile and garments, footwear, furniture, pharmaceuticals and electrical and mechanical appliances.

¹² Republic of Uganda (2007).

products, (7) textiles, (8) garments, and (9) leather and leather products, (10) coke, refined petroleum products, and (11) basic metals. In other industry: (12) electricity. In services: (13) land transport and transport by pipelines, and (14) water transport.

It is important to note in this context that agriculture in Uganda is a mixture of a traditional and subsistence component and a much smaller monetized /commercial segment. The attribute of comparative advantage is naturally limited to the second part –that is, to commercial farming and commercial fishing and not to the traditional- cum -subsistence part which in fact engages far more people than the commercial part. With that caveat, we will be analyzing issues of employment structure and productivity gaps between those 14 industries as comparative advantage industries and the rest of the traded sector as comparative disadvantage industries.¹³

==== Table 2 and Table 3 here====

According to UBR 2010, the 14 industries had a combined workforce of about 125, 000 engaged in 28,600 commercial farms and urban business enterprises, ranging in size from micro businesses of 1-4 persons each to large establishments of more than a hundred employees each. The 125,000 employment total breaks down by major industry groups as follows (Table 3): 74,000 working in almost 20,000 craft shops and manufacturing enterprises; about 45,000 employed in some 8,000 commercial farms and fisheries and some 5,000 working in 640 transport businesses. Within manufacturing the main employers among the half dozen presumed comparative advantage industries were food and beverages and garments, which employed 47,000 and 20,000 people respectively. The leather and leather products and the basic metals industries were also significant employers in 2010. Even though they had a combined work force of less than 5,000 people at the time they were among the fastest growing industries in the sector.

That leaves out six of the 14 presumed comparative advantage industries, which are textiles, tobacco, electricity, extraction of crude petroleum and natural gas, and coke and refined petroleum products. None of these is as yet a major employer, certainly compared to any of the 8 just listed. In the case of two of these industries, namely, the crude oil and natural gas industry and the related industry of coke and refined petroleum products, the growth and job creation prospects of the industry are all too well known but are nonetheless hardly discernible from the two waves of the UBR. Neither of these industries was a significant employer per UBR 2010 even though 14 companies were registered then as operating in them. There is even less information in the UBR about the metal ore extraction industry, which in fact had significant exports, but this was an industry that has so far provided not as many

¹³ This divide is obviously limited to the traded sector of the economy, which consists essentially of commercial agriculture, mining and manufacturing and a sizeable and growing part of the service sector. According to the latest DTIS total service imports were estimated to be \$1.8 billion in 2010 while service exports were valued at half and had the following breakdown: 56% from travel/tourism, 25% from export of government services, and 15 % from transport, communication and financial and other business services combined (Republic of Uganda 2013). We will nonetheless identify the service along with construction with non-traded sector.

employment opportunities as the 8 industries listed above and is not expected to in the future. Similarly, looking at the electricity industry, although there were –per UBR 2010 -some 50 enterprises of various size categories related to the generation and transmission and distribution power, their combined work force was fewer than 800 people. This was indeed half of the figure per UBR 2001. The perception of the industry as one in which Uganda has comparative advantage therefore does not seem to be warranted by recent job growth trends of the industry.

This seems to be the case also with two of the presumed comparative advantage industries within manufacturing, namely, the tobacco products industry and textiles. Thus, per UBR 2010, the textiles industry employed fewer than 1,500 workers and seemed to have shed as many jobs since UBR 2001. And with a workforce only of about 600 spread out among three companies, the tobacco industry was no major employer either per UBR 2010 and seemed to have lost as many jobs since UBR 2001.

Most of our analysis relating to the presumed comparative advantage industries as listed above will therefore focus on the 8 industries shown to have been significant employers in UBR 2010.

2.3. *Basic patterns in labor reallocation*

An analysis of UBR 2001 and UBR 2010 shows that the monetized, non-subsistence part of Uganda's economy underwent significant structural change over that decade involving a seven percentage point decline in the employment share of the traded sector (that is, manufacturing and commercial farming, fishing, forestry and mining combined), in favor of non-traded services. The decade clearly was one of rapid growth in employment economywide, whereby aggregate employment grew at the rate of 12 percent a year from 576,138 in 2001 to 1,191,805. As can be seen in table 2, the growth was spread across all the three broad sectors of commercial agriculture, manufacturing and services and relatively high everywhere. But there was wide disparity between sectorial annual rates these being 3%, 6% and 14% for commercial agriculture, manufacturing and services, respectively. This led to a decline in the employment share of both traded sectors (commercial agriculture and manufacturing) from about 24 percent in 2000 to 17 percent in 2001, which amounted to the reallocation of 7 percent of aggregate employment to the non-traded service sector, not necessarily in the sense that former agricultural workers or factory hands moving to non-traded services, but at least in part in as far as a higher percentage of new employment occurred in non-traded services than did in commercial agriculture and manufacturing combined as a result of which the relative share of non-traded services in aggregate employment rose all the same.

By contrast employment growth in the service sector averaged 16 percent a year for the decade pushing the sector's share in aggregate from 74% to 81%. This also largely represented a rise in the employment share of non-traded services. The growth rate of employment in traded services averaged only 1.2% a year throughout the decade – a rate that is so low that it actually led to a decline in the share of the traded services in aggregate employment from about one percent to half a percent.

Table 2 also shows that the larger part of the expansion of the employment share of non-traded services occurred in domestic wholesale and retail trade and the hotels and restaurants industry and, to a lesser extent, in real estate and finance, all of which gained in employment shares primarily at the expense of manufacturing, which also saw significant employment growth in absolute terms but not anywhere near as fast as that in the non-traded sector.

Within the traded sector, manufacturing grew the fastest in employment terms, at an annual growth rate of almost 6 %, which was twice as high as the rate of employment growth within commercial agriculture and agribusiness. The share of manufacturing in aggregate employment declined nonetheless by about 5 percentage points over the decade because employment expanded even faster in services. Thus the period was one of de facto reallocation of labor from the traded sector to the non-traded sector, and within the traded sector, from commercial agriculture and agribusiness, in which Uganda is reported to have had revealed comparative advantage vis-à-vis trading partners within the EAC and beyond, to comparative disadvantage industries in manufacturing.

Within manufacturing, employment grew far slower in the half dozen comparative advantage industries, where employment grew at a rate of 3 percent a year from about 58,000 to 74,000 (Table 3). As a result the share of presumed comparative advantage industries of the sector in aggregate economywide employment fell from about 12 percent to just about 7 percent. On the other hand employment grew twice as fast in comparative disadvantage industries of the sector from about 30,000 to 62,000. But because this was slower than the pace employment growth in the rest of the economy, the employment share of comparative disadvantage manufacturing industries also fell albeit slightly –by about half a percentage point from 6.2% to 5.7%.

Employment in all presumed comparative advantage industries combined –that is, those in primary industries, manufacturing, other industries and traded services included- grew at an annual rate of 4% over the decade from about 92,000 in 2001 to 125,000 in 2010. Again because this was slower than the pace at which employment grew in the rest of the economy, the combined share of presumed comparative advantage industries in aggregate employment fell by 5 percentage points, from about 16 percent to 11 percent.

While the bulk of employment growth in presumed comparative advantage industries occurred within the manufacturing sectors a good deal of it also took place in commercial agriculture and commercial fishing, where the work force grew from about 27,000 to 45,000 –that is at an annual rate of 7.3 percent which was lower than the pace of employment growth in the rest of the economy led to decline in the aggregate employment share of the sector by about a percentage point to 4 percent. In terms of the breakdown between the two industries, employment growth was faster in commercial fishing, where twice as many people worked in 2010 as did in 2001 raising the industry employment total by about 12,000 workers. The pace of growth was much lower in commercial farming where the rate averaged

2.3 percent a year but this was equivalent to 5,000 more people working in commercial farms in 2010 than 25,000 who did in 2001.

Among presumed comparative advantage industries within manufacturing, employment grew the fastest in the garments, leather and leather products and basic metal industries at respective annual rates of 25 percent, 36 percent and 18 percent. While the high growth rates have partly to do with the low bases against which measurement is taken, it should be noted that all three industries were significant employers by 2001. The high rates thus correspond to the net addition of thousands of jobs within each over the decade, which had made the garments industry one of the largest employers in the country and seem to have put the other two on course to being likewise. Employment also expanded in food and beverages albeit at the lower pace of 2 percent a year and added as many jobs in absolute terms as did the other presumed comparative advantage industries combined. By contrast the textile industry shed jobs at an average rate of 5 percent a year-casting doubt on the validity of its perception as a comparative advantage industry.

==Table 4 here==

===Table 5 here===

What was the implication of the shift in employment from traded activities to non-traded services to aggregate productivity in the 2000s? Was it productivity enhancing or was it associated with declining aggregate productivity. This is a question for which the answer is best sought through the analyses of returns to the 2002 and 2009 waves of the UBI. However, we should first draw attention to two features of the sectorial shift in employment read from UBR2001 and UBR2010 that should have strong bearing on that answer. One of the features is that the reallocation of labor from the traded sector to non-traded services entailed increasing informalization of employment in as far as it involved a sharp rise in the employment share of microenterprises in retail trade and a corresponding decline in SMEs and larger businesses in the tradable sector. A measure of the scale of this second shift (or “informalization”), shown in Table 4, is that it led to a rise in the employment share of microenterprises by 12 percentage points at the expense of large enterprises the share of which declined by that amount while leaving the share of the SME sector largely unchanged.

The second feature was that the shift raised the employment shares of established businesses at the expense of startups and younger (or up and coming) enterprises. Thus Table 5 shows that the employment share of established businesses, defined as those that had been operating for more than 10 years rose by 15 percentage points over the decade. Moreover the rise would have been even higher if it were not for the shift in employment from the traded sector to non-traded services. This is because the employment share of startups happens to be way higher in the non-traded sector in general and in retail trade in particular which was the part of the non-traded sector where employment shares increased the most. As a result the shift in employment from the traded sector to non-traded services

amounted to reallocation of labor from established and larger businesses to micro startups as an increasing number of people who could not get similar opportunities in established businesses in the other sectors took up to self-employment in activities where start-up costs or entry costs seemed to be far lower.

2.4. *More on reallocation within and across sectors*

2.4.1. Across enterprise size groups: Concentration vs. informalization

More than 93 percent of business establishments on the 2010 register were microenterprises engaging at most 4 persons each. This was also more or less the proportion of microenterprise in the UBR 2001 even though there were a little over 275,000 more microenterprises on UBR 2010 than on UBR 2001.

The 428,000 micro businesses on UBR 2010 had a combined workforce of 642,000, which was 60 percent of Ugandans working outside of the subsistence sector, but this comes to 1.5 persons per enterprise, reflecting the fact that the typical microenterprise in 2010 engaged one or two persons as it did in 2001.¹⁴

Based on UBR-2010, the rest of Uganda's non-subsistence economy employed a workforce of some 431,000 in 2010 spread across some 30,000 business establishments and public agencies on the register. Just a little shy of 27,000 of these were small businesses, which are defined as establishments employing anywhere between 5 and 20 workers (inclusive) and had a combined workforce of about 219,000. The balance of the workforce of the "formal economy" split almost evenly between those employed by about 3,000 medium sized enterprises, each of which had more than 20 but no more than a 100 workers, and those working for some 340 larger establishments.

Because the structure of product markets markedly differed between tradables and non-tradables, the seven-percentage point shift in employment (shares) from the traded sector to the non-traded sector that we saw between UBR 2001 and UBR 2010 also had implications to the distribution of employment across the size distribution of firms. Specifically, it led to a 12 percentage shift in employment share from the "formal economy" to microenterprises. This second shift raised the employment share of microenterprises from about 48% in 2001 to 60% in 2010 while reducing the share of large establishments by about the same percentage points thereby leaving share of SMEs more or less unchanged at about 30%, which in turn split 2:1 between small enterprises and medium enterprises respectively.

This was not surprising as employment was far more concentrated in microenterprises in the non-traded sector than in the traded sector. Thus in UBR 2010, more than 65 percent of employment in the non-traded sector was in microenterprises as compared to only about 34 percent of in manufacturing and

¹⁴ The share of microenterprise in the workforce of the non-subsistence economy would be 48 percent based on the 2001 UBR, which is far below that inferred from the 2010 UBR, but the gap that this bears in relation to the proportion in the 2010 is probably mainly explained as bias stemming from the omission of farm related microenterprises by the 2001 register.

about 27 percent of employment in commercial agriculture and agribusiness being in microenterprises. Moreover, SME vs. larger firms split of employment for UBR2010 was 14:3 (or 28% vs. 6%) in the non-traded sector as compared with 20:13 (or 40% vs. 26%) in manufacturing and 44: 19 (or 44% vs. 19%) in commercial agriculture and fishing.

In turn, the rise in the employment share of microenterprises was likely to have had a bearing on whether or not the structural change we see in the rise in the employment shares of the non-traded sector between UBR 2001 and UBR2010 was productivity enhancing since technology and productivity would normally vary across size groups even within narrowly defined industry groups. Indeed, if productivity happens to be lower in microenterprises than it is in SMEs or larger businesses within each industry, as typically the case, then the structural change at issue would involve some loss of productivity on that score alone even if there were no significant inherent differences in productivity between the traded and non-traded sectors.

2.4.2. Within the traded sector: Comparative advantage industries

Although the employment shares of manufacturing and of the traded sector as a whole declined over the decade, the 2000s were years of fairly rapid expansion and growing formalization of manufacturing employment and output in Uganda. There were 4,262 manufacturing SMEs and 101 larger plants in the country according to UBR 2010. These had a combined workforce of 350,000, as compared with 46,000, who worked in some 28,000 micro craft shops of an average of two people each. The number of manufacturing SMEs had nearly doubled relative to what it was in 2001. The combined SME workforce had also quintupled, making up scores of times over for the decline in the workforce of large manufacturing plants by about 8,000 and exceeding several times over the growth of small crafts shop workers from about 19,000 to about 46,000.¹⁵

Compared to that in manufacturing employment in commercial agriculture and commercial fishing has been quite small and did not expand much in the 2000s. It ranged between 25,000 and 32,000 people working on sizeable farms, and did undergo significant restructuring in the form of the downsizing of larger scale farms. There were 43 such farms and agribusinesses on UBR 2001 with a combined workforce of more than 20,000 at the time. More than half of those farms and agribusiness had dissolved by 2010, shedding in the process a little over 12,000 jobs. However, the job losses were just about made up for through the creation of some 1, 300 small farms and scores of mid-sized farms and fisheries, which between them employed about 16,000 workers in 2010. This added to about 8,000 in the remaining large scale commercial farms, to bring the total sectorial workforce back to the size it had in 2001. By 2010, more than half the sector's workforce was employed in small and mid-sized farms and

¹⁵ See Annex Tables 3 and 4 for details.

fisheries with the balance divided between farms in the 1-4 persons size category, on one hand, and the 20 plus large scale farms and fisheries on the other.

This structure was quite similar to that seen in the manufacturing sector, where SMEs accounted for about 40 percent of the workforce in 2010 and large manufacturers employed about 25 percent leaving the balance of about one-third to micro craft shops. But it bore sharp contrast to the structure of employment in the non-traded sector, the share of which in aggregate employment rose rather sharply in the 2000s at the expense of the traded sector.

The traded sector also underwent far less informalization over the decade than the non-traded sector, primarily because of what happened in manufacturing, which was by far the largest part of the sector in employment terms. It is true that substantial informalization occurred within manufacturing in that the employment share of microenterprises rose from what it was in 2001 by about 12 percentage points to about 34% while the employment share of large manufacturing plants declined nearly by half to about one-quarter. But that also meant that the employment share of SMEs rose as well from about 10 percentage points to about 40%, a level significantly higher than the share of SMEs economywide.

By 2010 the rest of the traded sector, including commercial farms, fisheries and agribusinesses and to a far lesser degree mining and quarrying enterprises, had an employment structure across business size groups similar to that of manufacturing. However, it appears to have undergone even greater informalization in getting there from what the situation looked like in 2001. This involved a sharp decline in the employment share of large farming estates and mines from about 75% to less than 25%, an increase in the share of microenterprises from under 5% to about 27% and an increase in the share of SMEs from less than 20% to 45%.

Thus the manufacturing as well as other parts of the traded sector saw significant informalization in the 2000s, but at the same time also witnessed the expansion of the employment shares of SMEs at the expense of large scale manufacturing plants and farming and mining estates the closing down or downsizing of which was also behind the rising employment shares of microenterprise. Moreover the degree of informalization that the traded sector underwent was rather small in comparison with what happened in the non-traded sector, where the share of microenterprises had always been far higher than it had ever been in the traded sector and rose over the decade from about 58 percent in 2001 to 66 percent in 2010, while the share of large scale enterprises, which had always been far lower than in the traded sector declined from about 12 percent in 2001 to half as much.

=== Tables 6 and 7 here===

The 2000s also saw significant informalization of employment in about half of the presumed (two-digit ISIC) comparative advantage industries over the decade just as there was in the rest of the traded sector and the rest of the economy in the sense that the employment share of microenterprises rose in most of the 8 industries. However, as is shown in Tables 6 and 7, this occurred at a much smaller pace compared to the rest of the traded sector, where the pace was lower than that of informalization of employment in the non-traded sector. Indeed the employment share of microenterprises remained largely unchanged or changed only slightly in the garments industry, basic metals, and transport services. The

share rose rather sharply in the other four industries such as food and beverages and water transport services.

2.4.3. Within the non-traded sector

As the relative employment share of the traded sector declined sharply over the decade despite the expansion of employment in that sector in absolute terms, the non-traded service sector saw even faster growth in the number of people employed and a sharper jump in its share of aggregate employment, which rose by about 7 percentage points (table 2). By far the largest component of increase was the growth of employment in retail trade and hotels and restaurants, which accounted for more than 57 percent of total employment outside of the subsistence sector of Uganda's economy in 2010. This represented a jump in the relative employment share of domestic wholesale and retail trade and hotels and restaurants by about 10 percentage points since 2001, itself the outcome of the expansion of employment in that sub-sector at a growth rate of 19 percent a year from about 234,000 in 2001 to 610,000 in 2010.

Employment also grew in other parts of the non-traded service sector over the decade, including education, health and social services, which had a combined employment total of 55,000 in 2001, and finance and the real estate industries, which had a combined employment of 29,000 that year. Employment in education, health and social services expanded almost as fast as that in manufacturing – at 5 percent a year – to 82,000 by 2010. Employment in finance and the real estate industry grew even faster – indeed, at 18% a year, and almost as fast as that in retail trade – to 81,000. Employment in utilities and transport and communication services grew at a rate of about 2 percent a year from about 15,000 in 2001 to about 20,000 in 2010.

As the main non-traded part of the industrial sector, construction was rather small in UBR 2010 employing about 1.3 percent of the economywide total or 14,000 workers. This was about a tenth of the size of Uganda's manufacturing workforce (and a little over one percent of total employment of the modern sector – i.e. the economy outside of the subsistence sector) that year, but implies a growth rate of about 10% a year which was nearly twice that of manufacturing employment.

As already noted employment is far more concentrated in microbusiness in the non-traded sector. Although the shares of small businesses (employing 5 to 20 people) in sectorial employment were comparable between the two sectors at about 20 percent, mid-sized and large businesses account for less than 15 percent of aggregate sectorial employment in the non-traded sector as compared with 45 percent in manufacturing and 35 percent in commercial agriculture and fishing. The other side of this is that 2 people worked in microbusiness in the non-traded sector for everyone employed in SMEs or larger business establishments while the reverse proportion applied in the traded sector.

It should be stressed that the non-traded sector is quite broad and heterogeneous in these terms. Indeed the structure of employment in the construction, energy and utilities and transport and communication sub-sectors is very similar to that in manufacturing and as sharply different from that of retail trade and hotels and restaurants that account for the bulk of employment in the non-traded

sector. The 2:1 ratio of employment in microenterprise vs. SMEs and larger businesses therefore strictly applies to the retail trade and hotels and restaurants component of non-traded sector, although that is component absorbing the bulk of the workforce that would otherwise be employed in manufacturing or in commercial agriculture and agribusiness.

According to UBR 2010, Uganda had some 7,800 small and medium sized wholesale and retail outlets and nearly 5,000 small and medium sized hotels and restaurants, which between them employed about 120,000. This dwarfed the combined 11,000 strong workforce that the two dozen large wholesale and retail outlets and about as many large hotels the country then had, but was also only one- third of the number of those working in micro retail outlets and eating and drinking places. Just as happened within the manufacturing sector, all three size categories of businesses had expanded relatively rapidly as did their workforce since 2001, when there were only about 3,000 small and medium sized trading outlets and even fewer small and medium sized hotels and restaurants. But nothing matched the pace of expansion of the number of those working in micro retail outlets and small eating and drinking places, which increased almost three-fold over the decade.

2.4.4. Reallocation across business age groups

How did the shifts in employment from the traded sector to the non-traded sector and from SMEs and larger businesses to microenterprises come about? Was the first of these the outcome of redeployment of existing capital from traded activities to non-traded activities or was it that firms stayed put in their respective original business lines but more of new investment was going to non-traded activities than to the traded sector? Did the second kind of shift involve the downsizing of existing businesses or did it merely mean that average scale at start up decline over time? The answers to these questions are likely to have strong bearing on whether or not the inter-sectorial employment shifts we just described raised aggregate labor productivity.

Table 5 provides part of those answers.¹⁶ Unlike the case with the number of persons engaged on which there are relatively few missing observations in UBR 2001 or in UBR 2010, a large number of enterprises on UBR 2010 did not report the date on which they had started operating. We need therefore be cautious in interpreting the information in the table always bearing in mind that the picture might be different from what we are describing here if the response rate for the age variable were as high as that for the number of workers.

The table shows that about 55 percent of all businesses on the register were startups, which we define as those that had been in business for less than 5 years. These accounted for 43 percent of all employment in the non-subsistence economy. Another 15 percent were “young incumbents” by which we mean those that had been in business for at least five years but for not more than 10 years. Between

¹⁶ See also Annex Tables 5 and 6 which provide the breakdown of employment by enterprise count by age group for each single digit ISIC industry.

them “startups” and “young incumbents” accounted for more than 70 percent of enterprises and about two-thirds of all employment in the (non-subsistence) economy. The remaining one-third of employment was in “established businesses”, which constituted about 30 percent of the census count of enterprises.¹⁷

Well over one half of all jobs held in Uganda’s non-subsistence economy of 2010 were thus held in enterprises set up within the decade (since 2001). More than 40 percent of these were in start-up businesses, all set up since 2006, while only a third of them had been in business for more than a decade. This averages out substantial differences between the traded and non-traded sectors with respect to the relative roles of start-ups and established businesses in employment creation. Thus the employment share of start-ups for 2010 was even higher than the economywide average at about 46 percent while the share of established businesses substantially lower. By contrast, the share of established businesses in employment was 36 percent and 50 percent in manufacturing and commercial agriculture respectively, where less than 30 percent of the employment was in jobs held in start-up businesses.¹⁸

The relatively high employment share of startups within the non-traded sector itself mainly reflects the dominance of the structure of employment in retail trade in which more than half of employment is in businesses set up within the past five years and more than 70 percent of it is in jobs held in enterprises created within the decade. Other parts of the non-traded sector including transport and infrastructure, finance and real estate and education and health services were closer in this regard to manufacturing and the traded sector more generally than to retail trade and catering businesses.

Beyond its defining characteristic of shifting employment from the production of tradables to the non-traded sector, the structural change that Uganda’s economy underwent in the 2000s also involved a reallocation of labor across the size and age distributions of business enterprises. In the first instance shift in employment towards non-traded activities entailed sharp rise in the employment share of microenterprises in retail trade and the hotels and restaurants industries and a corresponding decline in SMEs and larger businesses in the tradable sector. Because microenterprises in those sectors tend to be startups, the employment shift from SMEs and larger in manufacturing and commercial agriculture to micro enterprises in retail made the employment share of startups significantly higher than it would otherwise have been.

However, the decade also saw a very steep rise in the employment share of established businesses at the expense of startups and older but still up and coming enterprises. Between UBR 2001 and UBR 2010, the employment share of startups declined by 14 percentage points while that established businesses rose even faster as the share of “up and coming” businesses of the 5 to 10 years age group also declined by about a percentage point. The decline in the employment share of startups and “up and coming” businesses in the latter group may or may not have had implication to the pace of growth in aggregate productivity, which we will explore in the next section with help of data from the UBI.

¹⁷ Industry level details are provided in Annex Table 5 and Annex Table 6

¹⁸ Annex Table 6.

3. Labor productivity and sectorial employment shifts: UBI 2002 and UBI 2009

In this section we assess the effect of the structural change of the 2000s in Uganda (as captured between UBR 2001 and UBR 2010) on aggregate labor productivity by analyzing data from the 2002 and 2009 waves of the UBI. Did aggregate productivity increase because of the rise in the employment share of the non-traded sector at the expense of the traded sector? Or, did the inter-sectorial reallocation of labor involved in the process actually reduce productivity or remain neutral to it? And if aggregate productivity did in fact change one way or the other, what specific mechanisms brought the change about?

Our working hypothesis is that the shifts in employment across enterprise size and age groups that the reallocation of labor between traded and non-traded activity involved as described in section 2 must be a part of those mechanisms. If labor productivity differs at the firm level within each industry across business size groups or business age groups because of economies of scale or due to life cycle effects and there are inter industry differences in the level or duration of those effects, then a reallocation of labor from one industry of a given firm -age structure or firm- size structure of employment to another one with a different structure would change aggregate productivity even if there were no other technological or institutional differences between the two industries involved.

One would nonetheless expect other differences to exist as well at least in some cases in which case it would be useful to identify them as among the factors behind the aggregate productivity gains or losses we may associate with the observed structural change in Uganda along with factors contributing to inter-industry difference in technology, market structure, and rates of investment, on which the UBI surveys also provide information along with data on factor inputs.

If the microenterprises to which employment shifted in 2000s in Uganda are less productive on average than the large scale establishments the employment shares of which were declining, then the observed structural change would have reduced aggregate labor productivity other things being equal. One potential source of mitigation to this could be the fact that the employment share of established businesses also increased at the same time. For this would boost aggregate labor productivity if established businesses turn out to be more productive than startups or younger businesses. However, unlike that of the rising employment share of microenterprises, the effect on labor productivity of shifts in employment shares across the size distribution of firms are not clear cut. For, on one hand, startups and younger firms could be less productive on average in as far as they are less experienced and would need to fill the resulting skills gap through a costly process of learning by doing. On the other hand startups and younger firms could have greater potential for productivity enhancing innovation than more established firms. The overall effect on aggregate labor productivity of the reallocation of labor across the age distribution firms would depend on how these two factors balance out or reinforce each other in any given situation.

3.1. Estimating the sectorial and size distribution of output, employment and productivity from UBI sample values

3.1.1. The distribution of UBI samples by industry and size and age groups of enterprises

In analyzing UBI data we need to take into account the fact that, unlike the data from the UBR based on which we are gauging the extent of structural change the Ugandan economy underwent in the 2000s, observations from the UBI are not census data and cover only a sample of business establishments. While the UBI surveys cover all enterprises employing 10 or more people, their coverage of smaller establishments is limited to stratified random samples drawn from across all sectors and locations. Estimates of sectorial and spatial aggregates of employment, output and productivity based on UBI data need therefore be based on appropriate sampling weights in order to be consistent for true (population) values of those variables.

===Table 10 here==

It is quite significant in this context that the population distributions of employment across industries and business size groups in the UBR data sets shown in Tables 2 and 5 bear sharp contrast to the corresponding sample distributions from UBI data as portrayed in Tables 10 and 11 and the first panel of Table 12. The discrepancies reflect the fact that the UBI surveys were designed to oversample from some industries and from larger business size groups. They also underscore the critical importance of taking them fully into account by applying appropriate sampling weights (such as those shown in table 11 for single digit industries) for obtaining consistent estimates of sectorial productivity gaps from UBI sample data.

To illustrate, manufacturing plants constituted 23 percent of the sample of UBI 2009 even though the share of the traded sector as a whole in the population of enterprises was less than 10 percent (Table 11). And while a comparison of UBR 2001 and UBR 2010 shows that the employment share of the traded sector declined from about 24 percent to 17 percent over the decade, the employment share of enterprises sampled from the traded sector for UBI 2009 was lower than their share in the aggregate employment of the sample for UBI 2002 only by 2 percentage points. And within the traded sector, the UBI surveys oversampled manufacturing establishments relative to other industries and services. As a result the share of manufacturing enterprises in sample aggregate employment increased by 4 percentage points between UBI 2002 and UBI 2009 samples while that of the commercial farming declined by 7 percentage points. Each of these changes in sample composition was the opposite of what in fact happened to the actual share of manufacturing employment in aggregate employment in the economy between UBR 2001 and UBR 2010 (Table 12).

Similarly, the employment share of retail trading and hotels and restaurants in the sample of UBI 2009 was smaller than that sample of UBI 2002 by about a percentage point, while the true (population) employment share of retail trade and hotels and restaurants in fact increased sharply between UBR

2001 and UBR2010 and was indeed the main component of the increase in the employment share of the non-traded sector (of non-traded services), which was the defining feature of the structural change that the economy underwent over the decade.

UBI surveys also heavily oversampled larger establishments within each industry. Thus although microenterprises accounted for 93 percent of the businesses on UBR2010 and 60 percent of employment in Uganda's non-subsistence economy (Table 4), the share of microenterprises among the 4,700 plus businesses covered by UBI 2009 was only 34 percent (top panel of table 10). Moreover, these accounted between them for less than 2% of the combined employment in all covered enterprises. On the other hand, large businesses, as distinct from SMEs, were less than 1 percent of businesses in UBR2010 and accounted for about 9% of the employment in the non-subsistence economy according to the UBR, while large firms constituted 6% of the total sample size of UBI 2009 and yet accounted for 61 percent aggregate employment of the sample.

===== Tables 11 and 12 here =====

This in turn means that the scale and direction of employment shifts across business size group observed between UBR2001 and UBR2010 (table 4) is not necessarily reflected in the contrast between the size distribution of employment in the UBI 2002 sample and that of the UBI 2009 sample (in table 10). Indeed the two sets of employment distributions are so much at variance that the greater informalization of employment that we infer from UBR data is not at all evident in direct comparisons of the UBI sample size distributions of employment.

This refers to the 12 percentage point increase in the employment share of microenterprises between UBR 2001 and UBR 2010 we singled out earlier as a key feature of the structural change that the Uganda economy underwent over the period and shifted employment significantly away from the traded sector to the non-traded sector (Table 5). And yet informalization of employment would not appear to have occurred to any degree if we relied entirely on comparisons of unweighted sample employment totals by size group of UBI 2002 and UBI2009 of the kind shown in Table 10, where the share of microenterprises in total employment was just about 2 percent for each wave of the survey.

In the last two columns of table 11, we report the sampling weights for single digit ISIC for UBI 2002 and UB2009 that need to be applied to sample values in order to obtain consistent estimates of true (population) totals of enterprise counts and employment for each industry. The weights for UBI 2001 are based on the census listing of UBR 2001 while those of UBI 2009 are based on the census listing of UBR 2010. Sampling weights are provided by enterprise size groups for broad sectors in an annex table (Table A1).

Estimates of sectorial employment aggregates obtained by applying the weights to UBI sample values are reported in table 12 along with the sample values themselves (shown in the first panel of the table). The main thing to take from the table in this context is the fact that what we read from the (weighted) estimates in terms of sectorial shifts in employment between UBI 2002 and UBI 2009 is in agreement with what we read in terms the employment shifts that took place between UBR 2001 and UBR 2010.

Notably, we read from the weighted employment totals in the second panel of the table that the employment share of tradables declined by about 4 percentage points between UBI 2002 and UBI 2009, which is in agreement with the decline in the same share by 7 percentage points that we see between UBR 2001 and UBR 2010 (in table 2) but also contrasts with the fact that the share of the traded sector in the unweighted employment total of the UBI 2009 sample (shown in the first panel of table 11) was smaller than the share of the same in the aggregate for the UBI 2002 sample by less than 2 percentage points. Similarly, the weighted employment totals show that the share of the manufacturing sector declined by about 6 percentage points between UBI 2002 and UBI 2009, which is also the scale of the decline in the share of manufacturing between UBR 2001 and UBR 2010 (in table 2) but also contrasts with the fact that the share of manufacturing enterprises in the employment aggregate of the UBI 2009 sample was 4 percentage points higher than that employment share of the manufacturing enterprises in the UBI 2002 sample (shown in the first panel of table 12).

Similarly the application of sampling weights to sample values of UBI 2002 and 2009 leads to consistent estimates of the employment totals by enterprise size groups and enterprise age groups that are in sync with what we read from the UBR on the scale and direction of employment across the age and size distribution of firms but are also quite at variance with what we might infer by comparing unweighted sample totals of size or age groups between the 2002 and 2009 waves of the UBI. This can readily be seen in a comparison of the second and third panels of table 10 with corresponding panels of table 15, where sample weighted estimates of employment totals are reported for enterprise size and age groups. Thus the weighted size group total for 2002 and 2009 in table 15 imply a shift to have occurred in employment share to micro enterprises at the expense of large establishments over the seven year period on a scale consistent with that of the shift to microenterprises seen to have occurred between UBR 2001 and UBR 2010. By contrast, the corresponding (unweighted) sample employment total for size groups shown in table 10 might, not only exaggerate the employment share of larger firms, but also suggest that the employment share of larger enterprises had increased between UBI 2001 and UBI 2009.

===== Tables 13 and 14 here=====

In table 13, we report unweighted sample values of annual value added for each single digit industry at constant prices for UBI 2002 as well as UBI 2009 alongside weighted industry totals. Here also unweighted sample values overstate the share of tradable goods and services in GDP while understating the extent of resource shifts towards the non-traded goods and services. Thus enterprises sampled from the traded sector accounted for 33 percent to 36 percent of the aggregate for each of the samples of UBI 2002 and UBI 2009 while the true magnitude must have been around the 15 percent to 22 percent shown as the range of sample weighted estimates in the same table. This also means that the unweighted sample values would understate the scale of the resource shift from the traded sector to the non-traded sector. The weighed estimates show a decline in the share of the traded sector by about 14 percentage points which is about the same order of magnitude as the (weighted) estimate of the decline in the employment share of the sector between the two waves of the UBI but contrasts with the 4 percentage point increase in the share of enterprises sampled from the sector in the UBI sample total value added.

3.2. Sectorial gaps in labor productivity

3.2.1. The traded and non-traded sectors

In Table 14 we report sample values and weighted sectoral aggregates of labor productivity (defined as annual value added per worker at constant prices). Although sample value added per worker is higher for enterprises drawn from the non-traded sector than that in the traded sector for both waves of the UBI, sample weighted aggregates show labor productivity to have been consistently higher in the traded sector than in non-traded sector. For example value added per worker was 50 percent higher in the traded sector than in the non-traded sector in 2002. The productivity gaps was even higher in 2009 when value added per worker in the traded sector was three times as high as that in the non-traded sector. The shift in employment observed between 2002 and 2009 per the UBI must therefore have been reducing aggregate labor productivity in so far as it amounted to a reallocation of labor to the sector where it was less productive. However, table 14 does also show that aggregate labor productivity did in fact increase substantially regardless of that very reallocation, because aggregate productivity did increase substantially within each sector – traded as well as non-traded – over the same period. Labor productivity grew by about 28 percent a year economywide between 2002 and 2009. It also grew by about 21 percent a year in the traded sector over the same period and even faster at 31 percent a year in the non-traded sector.

The 2000s in Uganda were thus not only a decade of significant structural change in the economy, but also one of fairly rapid growth in labor productivity. However, these trends did not seem to reinforce each other as the observed structural change held down the productivity gains rather than aiding them in as far as it essentially reallocated labor from relatively more productive employment in the traded sector to less productive employment in the non-traded sector.

===== Tables 15 here=====

===== Table 15 A here=====

3.2.2. Productivity gaps within the traded sector: Comparative advantage industries vs. comparative disadvantage industries.

It is significant and to be expected that, within the traded sector, comparative advantage industries registered far higher labor productivity than comparative disadvantage industries during both waves of the UBI. This is based on the sample weighted estimates of industry aggregates of the UBI 2002 and UBI

2009 shown in the middle panel of table 15A. Per UBI 2002, average labor productivity in comparative advantage industries was 44 percent higher than average labor productivity in the traded sector as a whole. The labor productivity premiums of comparative advantage industries over the rest of the traded sector per UBI was significantly lower than in that UBI 2009 but still quite high at about 30 percent. Table 15A also shows that labor productivity increased between the two waves in both components of the traded sector growing faster in comparative disadvantage industries than in comparative advantage industries.

Because labor nonetheless remained to be more productive in comparative advantage industries between the two waves, the shift in employment from comparative advantage industries to the rest of the traded sector captured between UBR 2001 and UBR 2010 must in and of itself has held back the pace of productivity growth within that sector just as the shift from the production of tradables to that of non-tradables must have reduced the pace productivity growth in the economy as a whole. We can see from table 15 that the scale of reallocation of labor observed between UBI 2002 and UBI 2009 was consistent with and comparable to that captured between UBI 2001 and UBR 2010.

===Table 16 and table 16A here===

3.3. Labor productivity gaps across the size and age distribution of firms

3.3.1. Across the size distribution of firms: Micro enterprises vs. SMEs and larger firms

Part of the reason that the traded sector was more productive than the non-traded sector was because employment was more concentrated in microenterprises in the non-traded sector than it was in the traded sector, which can be seen from the UBI (table 16) as well as we saw it earlier from the UBR. Tables 16 also shows that microenterprises contributed far less to value added than they did to employment as they lagged relative to larger employers in labor productivity (table 16A). The greater informalization of employment that accompanied the reallocation of labor from the traded sector to the non-traded sector must therefore have been part of the reason why the structural change observed in the 2000s was productivity reducing.

===Tables 17, 18 and 19 here===

Tables 17, 18 and 19 illustrate that the patterns seen in tables 16 and 16A in labor productivity gaps across employment size groups of businesses economy-wide also holds across all single digit ISIC

industries. Within each single digit industry labor productivity is (a) far lower in microenterprises than in SMEs or larger firms and (b) highest in medium sized enterprises (with the single exception of the hotels and restaurants). Moreover, small enterprises occupy the middle of the productivity spectrum, being more productive than microenterprises in every industry but also always falling short of the productivity levels of mid-sized and larger firms, the only exceptions to this second rule being that two of the fourteen (two-digit ISIC) comparative advantage industries, namely, garments and food and beverages, where labor productivity is on average significantly higher in small enterprises not only relative microenterprises but also compared to medium sized and large ones.

This pattern means that economies of scale have been important in producing the effects of the observed sectorial employment shifts on aggregate sectorial productivity. In particular, it would mean that internal economies of scale are potentially a major source of productivity growth and job growth in most industries. But it also suggests that those internal economies are limited to the growth of micro and small enterprises. In most industries the scope for productivity growth through such internal economies would be exhausted by the time an enterprise has grown into midsized company (Tables 17 and 18). The scope for enterprise growth is even more limited in the garments and food and beverages industries where the optimal scale seems to occur at a work force of 20 or fewer people.

3.3.2. Across age-groups: Established employers vs. younger businesses

To the extent that reallocation is driven by the expansion or contraction or exit decisions of incumbents those decisions are likely to depend on how long the firm has been in operation -that is, on its age. This in turn is likely to be reflected in some type of life cycle effect on firm level productivity whereby established businesses are more or less productive than younger firms. Our characterization of Uganda's structural transformation in the 2000s should therefore include a determination not only of the relative importance of the three age groups - as sources and destination of inter-sectorial reallocation of labor, but also if that is associated with systematic productivity gaps across the three groups.

====Tables 20, 20A and 21 here====

Table 21 shows that labor productivity is higher in startups and younger businesses than in established businesses while tables 20 and 20A broadly confirm the pattern of reallocation of employment and output across age groups observed between UBR 2001 and UBR2010. The productivity gap between the two age groups holds across the economy as well as within each broad sector including commercial agriculture, manufacturing and services (Table 21). Labor productivity is significantly higher in startups than even the 5 and 10 year age group in samples drawn from commercial farming and services. Businesses in the 5 to 10 year age group do show higher labor productivity than in startups and established enterprises in samples drawn from manufacturing and construction as well. But in no sector

other than financial services do established firms seem to have a productivity advantage over younger businesses.

The shift in employment from startups and younger enterprises to established ones observed between UBR 2001 and UBR 2010 must then have reduced the growth of labor productivity in manufacturing, commercial farming and tradable services very much in the same way that the employment shift from SMEs and larger firms to microenterprises was seen to have done.

4. Summary and conclusion

An analysis of UBR 2001 and UBR 2010 census data shows that Uganda's non-subsistence economy underwent significant structural transformation in the 2000s involving a 7 percentage point shift in aggregate employment from the production of tradable goods in the primary and secondary sectors to non-tradable services. This is a major episode of sectorial reallocation of labor given the relatively short time interval in which it occurred, not necessarily in the sense of people moving from occupation in one sector to employment in another, but in large part as the redirection of new entrants to the labor market away from traditional ports of entry to new destination sectors.

The central theme of the paper is that the transformation could be a key factor in whether the economy will sustain or surpass the high growth rates of recent years over the coming decade and beyond depending on whether and how far it raised or depressed aggregate labor productivity over the long term. The effect of the transformation on aggregate labor productivity in turn hinges partly on how far the transformation altered the allocation of labor across the size and age distributions of business firms.

On the first of these, the paper has reported that the transformation involved a shift in employment from large scale business enterprises in commercial farming and manufacturing activities in the traded sector to microenterprises in retail trade and the hotels and restaurants industry in the non-traded sector. On the second, UBR data also show large scale reallocation of labor across the age distribution of business firms between 2001 and 2010, in which the employment shares of established businesses (meaning those that had been in operation for at least a decade) rose sharply at the expense of younger firms including start-ups. On aggregate, the employment share of microenterprises rose by 12 percentage points over the decade at the expense of the share of SMEs and larger firms. The accompanying employment shift across business age groups was on an even more pronounced scale.

An analysis of the two waves of the UBI sample surveys-namely, UBI 2002 and UBI 2009- replicates the same patterns of shifts in employment shares as we read from UBR 2001 and UBR 2010, showing a shift in employment from the traded sector to the non-traded activities, SMEs and larger firms to micro enterprise and from startups and up and coming businesses to established firms, all on scales comparable to the corresponding shifts as observed in the UBR.

This is very important because UBI 2002 and UBI 2009 also show that the 2000s were indeed a decade of fairly rapid growth in labor productivity across all industries economywide. The structural transformation that the economy underwent over the decade as captured by the UBR censuses was thus accompanied by large gains in productivity. However, UBI data also suggest that the observed structural change probably held back the growth of aggregate labor productivity rather than fuel it and, in that sense, may not have been growth enhancing after all.

This is because UBI data show that non-traded services, which gained 7 percentage points in employment share, had lower value added per worker on average than the traded sector, which had lost in employment share by that much. They also show that the tendency of this to reduce aggregate labor productivity was reinforced by the informalization of employment involved in the employment shifts toward microenterprises as well as by the consolidation of employment in established businesses. As one would expect labor productivity was far lower in microenterprises than in SMEs and larger establishments per UBI 2002 as well as UBI 2009. Moreover, both waves of UBI, show that labor productivity was significantly lower on average in established firms than in younger firms including startups economywide, and within broad sectors and within most single digit ISIC industries,.

The rise in aggregate labor productivity that accompanied the structural transformation of Uganda's non-subsistence economy in the 2000s cannot thus be explained in terms of the economies of scale or life cycle effects associated with the reallocation of labor across the size and age distributions of employers. The authors assess the merits of other possible explanations of the rise in aggregate labor productivity during the decade in a companion paper also based on the UBI data.

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Table 1: Number of enterprises by single digit ISIC industry-Uganda Business Registry 2001 and 2010

One Digit Industry (ISIC Rev. 3.1)	Number of enterprises			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
Traded sector:					
A - Agriculture, hunting and forestry	465	4,964	107.5	0.3	1.1
B - Fishing	241	3,147	134.0	0.1	0.7
C - Mining and quarrying	427	713	7.4	0.3	0.2
D - Manufacturing	12,011	31,814	18.3	7.3	6.9
<i>Traded sector total</i>	13,144	40,638	23.2	8.0	8.9
Non-traded sector:					
<i>Other industry:</i>					
E - Electricity, gas and water supply	29	100	27.2	0.0	0.0
F - Construction	253	665	18.1	0.2	0.1
Services:					
G - Wholesale/retail trade; repair of motor vehicles, etc.	107,552	289,110	18.8	65.3	63.1
H - Hotels and restaurants	20,492	64,545	23.9	12.4	14.1
I - Transport, storage and communications	1,198	2,514	12.2	0.7	0.5
J - Financial intermediation	656	3,364	45.9	0.4	0.7
K - Real estate, renting and business activities	2,433	11,307	40.5	1.5	2.5
L - Public administration and defense; compulsory social security	134	11	-10.2	0.1	0.0
M - Education	3,370	2,702	-2.2	2.0	0.6
N - Health and social work	3,336	8,082	15.8	2.0	1.8
O - Other community, social and personal service activities	12,092	34,869	20.9	7.3	7.6
P - Activities//undifferentiated activities of private households		177			0.0
Q - Extraterritorial organizations and bodies	50	8	-9.3	0.0	0.0
<i>Non-traded sector total</i>	151,595	417,454	19.5	92.0	91.1
Grand total	164739	458092	19.8	100.0	100.0

Table 2: Number of workers by single digit ISIC Industry- Uganda Business Registry 2001 and 2010

One Digit Industry (ISIC Rev. 3.1)	Number of workers			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
Traded sector:					
A - Agriculture, hunting and forestry	25,023	31,579	2.9	5.1	2.9
B - Fishing	1,358	13,887	102.5	0.3	1.3
C - Mining and quarrying	1,494	3,161	12.4	0.3	0.3
D - Manufacturing	88,277	135,548	5.9	18.0	12.6
<i>Traded sector total</i>	116,152	184,175	6.5	23.7	17.2
Non-traded sector:					
<i>Other industry:</i>					
E - Electricity, gas and water supply	2,631	1,464	(4.9)	0.5	0.1
F - Construction	7,491	14,362	10.2	1.5	1.3
Services:					
G - Wholesale/retail trade; repair of motor vehicles, etc.	179,680	462,687	17.5	36.6	43.1
H - Hotels and restaurants	54,277	153,490	20.3	11.1	14.3
I - Transport, storage and communications	12,071	18,272	5.7	2.5	1.7
J - Financial intermediation	8,879	27,060	22.8	1.8	2.5
K - Real estate, renting and business activities	19,690	54,997	19.9	4.0	5.1
L - Public administration and defense; compulsory social security	7,292	229	(10.8)	1.5	0.0
M - Education	37,010	26,754	(3.1)	7.5	2.5
N - Health and social work	18,095	55,095	22.7	3.7	5.1
O - Other community, social and personal service activities	26,527	72,265	19.2	5.4	6.7
P - Activities//undifferentiated activities of private households		1,842			0.2
Q - Extraterritorial organizations and bodies	1,212	293	(8.4)	0.2	0.0
<i>Non-traded sector total</i>	374,855	888,810	15.2	76.3	82.8
Grand total	491,007	1,072,985	13.2	100.0	100.0

Table 3: Number of workers in in presumed comparative advantage industries (single digit ISIC)- Uganda Business Registry 2001 and 2010

Two Digit Industry (ISIC Rev. 3.1)	Number of workers			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
	Primary sector: Agriculture, Forestry, Fishing and Mining				
Crop and animal production	25,023	30,849	2.6	5.1	2.9
Fishing and aquaculture	1,358	13,887	102.5	0.3	1.3
Extraction of crude petroleum and natural gas		125			0.0
Mining of metal ores	761			0.2	
<i>Primary industries total</i>	27,142	44,861			
	Manufacturing				
Food and beverages	46,316	47,044	0.2	9.4	4.4
Tobacco products	1,374	605	-6.2	0.3	0.1
Textiles	2,898	1,333	-6.0	0.6	0.1
Garments	5,742	20,180	27.9	1.2	1.9
Leather and leather products	482	2,198	39.6	0.1	0.2
Coke, refined petroleum products and nuclear fuel	280	151	-5.1	0.1	0.0
Basic metals	897	2,448	19.2	0.2	0.2
<i>Manufacturing sub-total</i>	57,989	73,959			
	Other industry				
Electricity, gas, steam and hot water supply	1,843	749	-6.6	0.4	0.1
	Services				
Land transport; transport via pipelines	4,708	4,712	0.0	1.0	0.4
Water transport	115	617	48.5	0.0	0.1
<i>Services sub-total</i>	4,823	5,329			
Grand Total	91,797	124,898			

Table 4: Number of Enterprises and Workers by Enterprise Size Group- Uganda Business Registry 2001 and 2010

Enterprise Size group	Number of enterprises			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
Less than 5 workers	151,879	428,111	20.2	92.2	93.5
5-20 workers	11,330	26,623	15.0	6.9	5.8
21-100 workers	1,274	3,016	15.2	0.8	0.7
More than 100 workers	257	342	3.7	0.2	0.1
Total	164,740	458,092		100.0	100.0
Enterprise Size group	Number of workers			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
Less than 5 workers	236,725	642,876	19.1	48.2	59.9
5-20 workers	95,441	218,670	14.3	19.4	20.4
21-100 workers	50,044	112,611	13.9	10.2	10.5
More than 100 workers	108,797	98,828	-1.0	22.2	9.2
Total	491,007	1,072,985		100.0	100.0

Table 5: Number of workers by enterprise age group- Uganda Business Registry 2001 and 2010

Enterprise age group	Number of enterprises			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
<5 yrs.	95,336	251,198	18.2	57.9	54.8
5-10 yrs.	14,322	70,121	43.3	8.7	15.3
More than 10 yrs.	10,083	127,363	129.2	6.1	27.8
Total	119,741	448,682			
Enterprise age group	Number of workers			% share of total	
	2001	2010	Avg. Annual % Growth	2001	2010
<5 yrs.	194,782	458,787	15.1	60.7	46.6
5-10 yrs.	58,945	172,215	21.4	18.4	17.5
More than 10 yrs.	66,966	354,322	47.7	20.9	36.0
Total	320,693	985,324	23.0	100.0	100.0

Table 6: Count of enterprises in presumed comparative advantage industries by employment size group, UBR 2001 and UBR 2010

<i>A. All comparative advantage industries</i>					<i>E. Commercial farming</i>			
Size Group (number of workers)	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
less than 5	5,934	24,400	78.7	85.2	93	3,198	20.0	65.2
5-20 workers	1,309	3,668	17.4	12.8	286	1,602	61.5	32.6
21-100 workers	178	483	2.4	1.7	43	87	9.2	1.8
More than 100	122	95	1.6	0.3	43	20	9.2	0.4
Total	7,543	28,646	100.0	100.0	465	4,907	100.0	100.0
<i>B. Comparative advantage primary industries</i>					<i>F. Food and beverages industry</i>			
Size Group (number of workers)	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
less than 5	215	5,745	30.2	70.9	1,946	4,742	70.5	79.9
5-20 workers	401	2,174	56.3	26.8	685	927	24.8	15.6
21-100 workers	50	160	7.0	2.0	79	212	2.9	3.6
More than 100	46	23	6.5	0.3	52	51	1.9	0.9
Total	712	8,102	100.0	100.0	2,762	5,932	100.0	100.0
<i>C. Comparative advantage manufacturing industries</i>					<i>G. The garments industry</i>			
Size Group (number of workers)	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
less than 5	5,360	18,178	84.2	91.6	3,298	13,062	96.3	97.4
5-20 workers	835	1,338	13.1	6.7	120	324	3.5	2.4
21-100 workers	103	263	1.6	1.3	6	17	0.2	0.1
More than 100	67	67	1.1	0.3	2			0.0
Total	6,365	19,846	100.0	100.0	3,424	13,405	100.0	100.0
<i>D. Comparative advantage services</i>					<i>H. Land transport services</i>			
Size Group (number of workers)	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
less than 5	359	477	78.6	68.3	324	260	77.88	60.75
5-20 workers	73	156	16.0	22.3	62	118	14.9	27.6
21-100 workers	25	60	5.5	8.6	23	46	5.5	10.7
More than 100		5		0.7	7	4	1.7	0.9
Total	457	698	100.0	100.0	416	428	100.0	100.0

Table 7: Number of workers in presumed comparative advantage industries, UBR 2001 and UBR 2010

A. All comparative advantage industries						E. Commercial farming				
Size Group (number of workers)	Number of workers		% share in sector total		Growth rate (% pa)	Number of workers		% share in sector total		Growth rate (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
less than 5	10,419	39,228	11.4	31.5	30.7	250	6,726	1.0	21.8	223.9
5-20 workers	11,132	31,029	12.1	24.9	19.9	2,573	12,866	10.3	41.7	34.6
21-100 workers	7,558	20,191	8.2	16.2	18.6	1,991	3,396	8.0	11.0	6.1
More than 100	62,688	34,073	68.3	27.4	-5.1	20,209	7,861	80.8	25.5	-5.3
Total	91,797	124,521	100.0	100.0	4.0	25,023	30,849	100.0	100.0	1.8
B. Comparative advantage primary industries						F. Food and beverages industry				
Size Group (number of workers)	Number of workers		% share in sector total		Growth rate (% pa)	Number of workers		% share in sector total		Growth rate (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
less than 5	503	12,188	1.1	27.3	258.1	4,463	8,265	9.6	17.6	7.4
5-20 workers	3,432	18,011	12.6	40.4	47.2	5,657	8,265	12.2	17.6	4.0
21-100 workers	2,259	6,318	8.3	14.2	20.0	3,317	9,127	7.2	19.4	15.1
More than 100	20,948	8,069	77.2	18.1	-6.8	32,879	21,387	71.0	45.5	-3.0
Total	27,142	44,586	100.0	100.0	7.1	46,316	47,044	100.0	100.0	0.1
C. Comparative advantage manufacturing industries						G. The garments industry				
Size Group (number of workers)	Number of workers		% share in sector total		Growth rate (% pa)	Number of workers		% share in sector total		Growth rate (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
less than 5	9,362	25,866	16.1	35.0	19.6	4,653	16,990	81.0	84.2	22.9
5-20 workers	6,879	11,266	11.9	15.3	7.1	884	2,164	15.4	10.7	12.5
21-100 workers	4,282	11,394	7.4	15.4	18.5	205	584	3.6	2.9	16.0
More than 100	37,466	25,276	64.6	34.2	-3.6	0	442		2.2	
Total	57,989	73,802	100.0	100.0	3.0	5,742	20,180	100.0	100.0	19.6
D. Comparative advantage services						H. Land transport services				
Size Group (number of workers)	Number of workers		% share in sector total		Growth rate (% pa)	Number of workers		% share in sector total		Growth rate (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
less than 5	554	1,174	8.3	19.1	12.4	477	605	10.1	12.8	2.3
5-20 workers	821	1,752	12.3	28.6	12.6	703	1,431	14.9	30.4	8.9
21-100 workers	1,017	2,479	15.3	40.4	16.0	915	2,069	19.4	43.9	10.9
More than 100	4,274	728	64.1	11.9	-9.2	2,613	607	55.5	12.9	-6.6
Total	6,666	6,133	100.0	100.0	-0.9	4,708	4,712	100.0	100.0	0.0

Table 8: Count of enterprises in presumed comparative advantage industries by enterprise age group, UBR 2001 and UBR 2010

<i>A. All comparative advantage industries</i>					<i>E. Commercial farming</i>			
Age Group (years)	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
<5	3,685	12,985	64.7	46.2	102	1,958	26.4	40.6
5-10	957	5,077	16.8	18.1	77	883	19.9	18.3
More than 10	1,050	10,053	18.4	35.8	208	1,976	53.7	41.0
Total	5,692	28,115	100.0	100.0	387	4,817	100.0	100.0
<i>B. Comparative advantage primary industries</i>					<i>F. Food and beverages industry</i>			
Age Group	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
<5	208	2,773	34.0	34.7	1,476	3,083	67.1	53.5
5-10	138	1,751	22.6	21.9	355	871	16.1	15.1
More than 10	265	3,462	43.4	43.4	368	1,807	16.7	31.4
Total	611	7,986	100.0	100.0	2,199	5,761	100.0	100.0
<i>C. Comparative advantage manufacturing industries</i>					<i>G. The garments industry</i>			
Age Group	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
<5	3,229	9,979	68.9	51.1	1,677	6,721	70.7	50.6
5-10	737	3,162	15.7	16.2	358	2,215	15.1	16.7
More than 10	720	6,374	15.4	32.7	336	4,348	14.2	32.7
Total	4,686	19,515	100.0	100.0	2,371	13,284	100.0	100.0
<i>D. Comparative advantage services</i>					<i>H. Land transport services</i>			
Age Group	Number of enterprises		% share in sector total		Number of enterprises		% share in sector total	
	2001	2010	2001	2010	2001	2010	2001	2010
<5	248	233	62.8	37.9	224	162	44.8	45.5
5-10	82	164	20.8	26.7	71	86	19.9	24.2
More than 10	65	217	16.5	35.3	61	114	17.1	32.0
Total	395	614	100.0	100.0	356	362	100.0	101.7

Table 9: Number of workers in presumed comparative advantage industries by enterprise age group, UBR 2001 and UBR 2010

<i>A. All comparative advantage industries</i>						<i>E. Commercial farming</i>				
Age Group (years)	Number of workers		% share in sector total		Growth (% pa)	Number of workers		% share in sector total		Growth (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
< 5	15,739	35,510	28.9	33.0	14.0	3,579	4,445	28.9	33.0	2.69
5 to 10	16,857	18,348	30.9	17.0	1.0	11,340	16,208	30.9	17.0	4.77
More than 10	21,888	53,827	40.2	50.0	16.2	66	66	40.2	50.0	
Total	54,484	107,685	100.0	100.0	10.8	14,919	20,719	100.0	100.0	4.3
<i>B. Comparative advantage primary industries</i>						<i>F. Food and beverages industry</i>				
Age Group (years)	Number of workers		% share in sector total		Growth (% pa)	Number of workers		% share in sector total		Growth (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
<5	5,012	12,447	29.2	29.2	16.5	11,674	5,061	24.3	29.2	-6.3
5 to 10	3,929	7,789	19.0	18.3	10.9	8,792	20,910	19.0	18.3	15.3
More than 10	11,692	22,418	56.7	52.6	10.2	28	28	56.7	52.6	
Total	20,633	42,654	100.0	100.0	11.9	20,494	25,971	100.0	100.0	3.0
<i>C. Comparative advantage manufacturing industries</i>						<i>G. The garments industry</i>				
Age Group (years)	Number of workers		% share in sector total		Growth (% pa)	Number of workers		% share in sector total		Growth (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
<5	9,959	21,353	35.5	35.5	12.7	582	3,420	16.6	35.5	54.2
5 to 10	12,596	9,347	39.0	15.6	-2.9	656	6,594	39.0	15.6	100.6
More than 10	9,703	29,384	30.1	48.9	22.5	74	387	30.1	48.9	47.0
Total	32,258	60,084	100.0	100.0	9.6	1,312	10,401	100.0	100.0	77.0
<i>D. Comparative advantage services</i>						<i>H. Land transport services</i>				
Age Group (years)	Number of workers		% share in sector total		Growth (% pa)	Number of workers		% share in sector total		Growth (% pa)
	2001	2010	2001	2010		2001	2010	2001	2010	
<5	768	1,710	34.6	34.6	13.6	295	853	15.5	34.6	21.0
5 to 10	332	1,212	20.8	24.5	29.5	418	1,661	20.8	24.5	33.0
More than 10	493	2,025	30.9	40.9	34.5	66	129	30.9	40.9	10.6
Total	1,593	4,947	100.0	100.0	23.4	779	2,643	100.0	100.0	26.0

Table 10: Number of enterprises and employees in the UBI Samples by employment size group, 2002 and 2009

A. Number of enterprises in the sample										
Size Group (number of workers)	All sectors				Number of enterprises					
	Number of enterprises		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	1,266	1,583	26.8	34.1	42	47	101	384	1,123	1,152
5-20 workers	2,505	1,562	53.0	33.6	165	52	575	353	1,765	1,157
21-100 workers	787	1,233	16.7	26.5	34	25	207	260	546	948
More than 100	164	270	3.5	5.8	16	14	73	83	75	173
Total	4,722	4,648	100.0	100.0	257	138	956	1,080	3,509	3,430
B. Number of workers in sampled enterprises										
Size Group (number of workers)	All sectors				Number of workers					
	Number of workers		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	2,238	3,584	1.6	1.9	109	106	203	924	1,926	2,554
5-20 workers	24,977	16,951	18.1	8.8	1,800	516	5,587	3,632	17,590	12,803
21-100 workers	31,600	52,357	22.9	27.2	1,471	1,158	8,708	11,172	21,421	40,027
More than 100	76,896	117,672	55.8	61.1	11,507	6,407	29,614	55,710	35,775	55,555
Total	137,712	192,573	100.0	100.0	14,887	8,187	44,112	71,438	76,712	110,939
C. Number of enterprises with known age in UBI samples :										
Age Group (years)	All sectors				Number of enterprises					
	Number of enterprises		% share of total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
< 5	1,583	1,836	47.7	40.4	57	28	280	392	1,246	1,416
5 to 10	853	1,147	34.6	25.3	32	32	225	270	596	845
More than 10	882	1,556	26.6	34.3	128	76	194	388	560	1,092
Total	3,318	4,539	100.0	100.0	217	136	699	1,050	2,402	3,353
D. Number of workers in enterprises with known age in UBI samples										
Age Group (years)	All sectors				Number of workers					
	Number of workers		% share of total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
< 5	14,804	31,826	22.0	16.9	1,482	910	3,540	8,721	9,782	21,683
5 to 10	17,491	38,716	26.0	20.5	1,292	2,195	6,655	9,099	9,544	26,649
More than 10	34,886	118,128	51.9	62.6	10,542	5,024	7,009	51,058	17,335	60,171
Total	67,180	188,670	100.0	100.0	13,316	8,129	17,204	68,878	36,661	108,503

Table 11: Number of enterprises and sampling weights in UBI 2002 and UBI 2009 by single digit ISIC industry

One Digit Industry (ISIC Rev. 3.1)	Number of enterprises		% of share of total		Sampling weights	
	2002	2009	2002	2009	2002	2009
Traded sector:						
A - Agriculture, hunting and forestry	152	94	3.2	2.0	28	420
B - Fishing	96	7	2.0	0.1	5	449
C - Mining and quarrying	9	37	0.2	0.8	66	79
D - Manufacturing	956	1,080	20.2	22.9	537	910
<i>Traded sector total</i>	1,213	1,218	25.7	25.8	635	1,857
Non-traded sector:						
Other industry:						
E - Electricity, gas and water supply	3	17	0.1	0.4	22	15
F - Construction	97	91	2.1	1.9	15	27
Services:						
G - Wholesale/retail trade and services	1,117	1,347	23.7	28.5	2,646	6,211
H - Hotels and restaurants	626	416	13.3	8.8	51	278
I - Transport/storage/communications	492	161	10.4	3.4	165	234
J - Financial intermediation	95	120	2.0	2.5	73	342
K - Real estate, renting business	323	265	6.8	5.6	146	679
L - Public administration and defense	14	48	0.3	1.0	72	8
M - Education	132	603	2.8	12.8	115	53
N - Health and social work	257	207	5.4	4.4	65	154
O - Other social and personal	347	155	7.3	4.5	308	2,271
Q - Extraterritorial organizations	6		0.1		8	1
<i>Non-traded sector total</i>						
<i>total</i>	3,509	3,430	74.3	73.9	3,649	10,232
Grand total	4,722	4,648	100.0	99.7	4,323	12,135

Table 12: Number of workers in enterprises sampled for UBI and weighted estimates of industry employment-2002 and 2009

One Digit Industry (ISIC Rev. 3.1)	Workers in enumerated enterprises					Weighted estimate of total number of workers				
	Number		% share in total		Growth rate (% pa)	Estimated total		% share in total		Growth rate (% pa)
	2002	2009	2002	2009		2002	2009	2002	2009	
Traded sector:										
A - Agriculture, hunting and forestry	13,966	7,047	10.3	3.6	-7.1	39,802	320,284	2.4	4.9	100.7
B - Fishing	785	82	0.6	0.0	-12.8	1,971	36,687	0.1	0.6	251.7
C - Mining and quarrying	136	1,058	0.1	0.5	96.8	6,117	13,409	0.0	0.2	17.0
D - Manufacturing	44,112	71,438	32.5	36.9	8.8	233,098	467,782	13.8	7.1	14.4
Traded sector total	58,999	79,625	43.5	41.1	5.0	280,987	838,162	16.7	12.7	28.3
Non-traded sector:										
Other industry:										
E - Electricity, gas and water supply	1,853	358	1.4	0.2	-11.5	19,240	2,014	1.1	0.0	-12.8
F - Construction	4,460	9,490	3.3	4.9	16.1	10,851	64,828	0.6	1.0	71.1
Services:									0.0	
G - Wholesale/retail trade and services	13,883	17,846	10.2	9.2	4.1	781,035	3,357,276	46.4	50.9	47.1
H - Hotels and restaurants	8,326	10,579	6.1	5.5	3.9	200,282	886,824	11.9	13.4	49.0
I - Transport/storage/communications	7,507	8,849	5.5	4.6	2.6	54,681	168,922	3.2	2.6	29.8
J - Financial intermediation	4,732	13,379	3.5	6.9	26.1	27,779	517,303	1.6	7.8	251.7
K - Real estate, renting business	10,712	16,770	7.9	8.7	8.1	42,955	197,120	2.6	3.0	51.3
L - Public administration and defense	5,389	1,520	4.0	0.8	-10.3	64,457	1,749	3.8	0.0	-13.9
M - Education	8,479	22,105	6.2	11.4	23.0	87,176	95,451	5.2	1.4	1.4
N - Health and social work	7,073	7,285	5.2	3.8	0.4	45,500	242,458	2.7	3.7	61.8
O - Other social and personal	4,164	2,758	3.1	2.9	-4.8	68,213	221,823	4.1	3.4	32.2
Q - Extraterritorial organizations	134		0.1	0.1		1,117	293	0.1	0.0	-10.5
Non-traded sector total	76,712	110,939	56.5	58.9	6.4	1,373,197	5,689,218	81.5	86.3	44.9
Grand total	135,710	190,564	100.0	100.0	5.8	1,684,275	6,594,222	#####	100.0	41.6

Table 13: Estimated annual value added (in million LCU at 2000 prices) based on UBI 2002 and 2009

One Digit Industry (ISIC Rev. 3.1)	Sample values of					Weighted estimate of industry total				
	Annual value added		% share in total		Growth rate	Estimated total		% share in total		Growth rate
	(million LCU)									
	2002	2009	2002	2009	(% pa)	2002	2009	2002	2009	(% pa)
Traded sector:										
A - Agriculture, hunting and forestry	27,642	64,532	19.1	1.9	1.1	78,186	185,151	2.3	0.9	19.5
B - Fishing	2,135	335	-12.0	0.1	0.0	4,076	31,983	0.1	0.2	97.8
C - Mining and quarrying	493	35,231	1007.2	0.0	0.6	3,960	97,992	0.1	0.5	339.2
D - Manufacturing	508,739	1,673,992	32.7	34.3	27.3	683,988	2,800,640	19.8	13.3	44.2
<i>Traded sector total</i>	539,009	1,774,090	32.7	36.3	29.2	770,209	3,115,766	22.3	14.8	43.5
Non-traded sector:										
<i>Other industry:</i>										
E - Electricity, gas and water supply	107,543	145,193	5.0	7.3	2.4	197,595	993,210	5.7	4.7	57.5
F - Construction	37,805	1,880,337	696.3	2.5	30.6	83,507	6,381,847	2.4	30.3	1077.5
<i>Services:</i>										
G - Wholesale/retail trade and services	158,980	496,129	30.3	10.7	8.1	750,000	6,278,287	21.7	29.8	105.3
H - Hotels and restaurants	37,493	137,985	38.3	2.5	2.2	170,502	1,200,459	4.9	5.7	86.3
I - Transport/storage/communications	169,300	386,902	18.4	11.4	6.3	254,261	623,627	7.4	3.0	20.8
J - Financial intermediation	237,843	667,343	25.8	16.0	10.9	537,083	829,805	15.5	3.9	7.8
K - Real estate, renting business	60,238	101,799	9.9	4.1	1.7	144,352	642,130	4.2	3.1	49.3
L - Public administration and defense	25,411	36,762	6.4	1.7	0.6	53,946	36,762	1.6	0.2	-4.6
M - Education	38,978	116,357	28.4	2.6	1.9	276,099	149,365	8.0	0.7	-6.6
N - Health and social work	31,651	307,668	124.6	2.1	5.0	80,592	558,714	2.3	2.7	84.8
O - Other social and personal	30,284	34,447	2.0	2.0	0.6	84,173	237,146	2.4	1.1	26.0
Q - Extraterritorial organizations	8,550			0.6	0.6	52,579		1.5	0.0	
<i>Non-traded sector total</i>	944,075	4,310,922	50.9	63.7	70.8	2,487,094	10,556,295	72.0	80.7	46.3
Grand total	1,483,084	6,085,012	44.3	100.0	100.0	3,454,898	21,047,118	100.0	100.0	72.7

Table 14: Annual Value Added per Worker by industry (in million LCU) at 2000 prices

One Digit Industry (ISIC Rev. 3.1)	UBI Sample		Estimated		Annual growth (% pa)	
	total		total		Sample	Weighted
	2002	2009	2002	2009	average	estimate
Traded sector:						
A - Agriculture, hunting and forestry	2.0	9.2	2.0	0.6	51.8	-10.1
B - Fishing	2.7	4.1	2.1	0.9	7.2	-8.3
C - Mining and quarrying	3.6	33.3	0.6	7.3	117.0	147.0
D - Manufacturing	11.5	23.4	2.9	6.0	14.7	14.9
<i>Traded sector total</i>	9.1	22.3	2.7	3.7	20.6	5.1
Non-traded sector:						
<i>Other industry:</i>						
E - Electricity, gas and water supply	58.0	405.6	10.3	493.2	85.5	671.8
F - Construction	8.5	198.1	7.7	98.4	319.6	168.5
<i>Services:</i>						
G - Wholesale/retail trade and services	11.5	27.8	1.0	1.9	20.4	13.5
H - Hotels and restaurants	4.5	13.0	0.9	1.4	27.1	8.4
I - Transport/storage/communications	22.6	43.7	4.6	3.7	13.4	-2.9
J - Financial intermediation	50.3	49.9	19.3	1.6	-0.1	-13.1
K - Real estate, renting business	5.6	6.1	3.4	3.3	1.1	-0.4
L - Public administration and defense	4.7	24.2	0.8	21.0	59.0	344.5
M - Education	4.6	5.3	3.2	1.6	2.1	-7.2
N - Health and social work	4.5	42.2	1.8	2.3	120.5	4.3
O - Other social and personal	7.3	12.5	1.2	1.1	10.2	-1.9
Q - Extraterritorial organizations	63.8		47.1			-14.3
<i>Non-traded sector total</i>	12.3	38.9	1.8	1.9	30.8	0.3
Grand total	10.9	31.9	2.1	3.2	27.5	7.9

Table 15: Distribution of employment in presumed comparative advantage industries, 2002 and 2009

Two Digit Industry (ISIC Rev. 3.1)	Workers in enterprises in the sample					Weighted estimate of total number of workers				
	Number		% share in total		Average growth rate	Estimated total		% share in total of the economy		Average growth rate
	2002	2009	2002	2009	(% pa)	2002	2009	2002	2009	(% pa)
Primary sector:										
Crop and animal production	13,966	7,045	10.3	3.6	-7.1	39,802	319,621	2.4	4.8	100.4
Fishing and aquaculture	785	82	0.6	0.0	-12.8	1,971	36,687	0.1	0.6	251.7
Extraction of crude petroleum		250		0.1			1,766	0.0	0.0	
Mining of metal ores	30	60	0.0	0.0	14.3	461	254	0.0	0.0	-6.4
Primary sector total	14,781	7,437	10.9	3.8	-7.1	42,233	358,328	2.5	5.4	106.9
Manufacturing:										
Food and beverages	26,255	45,743	19.3	23.6	10.6	103,589	157,449	6.2	2.4	7.4
Tobacco products	729	321	0.5	0.2	-8.0	1,823	428	0.1	0.0	-10.9
Textiles	2,573	4,310	1.9	2.2	9.6	5,748	30,165	0.3	0.5	60.7
Garments	496	611	0.4	0.3	3.3	24,613	63,172	1.5	1.0	22.4
Leather and leather products	242	788	0.2	0.4	32.2	2,778	6,612	0.2	0.1	19.7
Coke, refined petroleum products	14	199	0.0	0.1	188.8	42	498	0.0	0.0	154.9
Basic metals	737	1,108	0.5	0.6	7.2	1,341	8,652	0.1	0.1	77.9
Manufacturing total	31,046	53,080	22.9	27.4	10.1	139,932	266,976	8.3	4.0	13.0
Other industries										
Electricity, gas, steam and water	1,394	176	1.0	0.1	-12.5	15,338	899	0.9	0.0	-13.4
Services:										
Land transport; transport via pipelines	3,681	1,999	2.7	1.0	-6.5	10,328	17,774	0.6	0.3	10.3
Water transport	99	87	0.1	0.0	-1.7	108	1,253	0.0	0.0	151.9
Total services	3,780	2,086			-6.4					
Grand total	96,827	123,296	36.6	32.3	3.9	207,939	645,230	12.3	9.8	30.0

Table 15 A: Annual value added per worker in presumed comparative advantage industries (in million LCU) at 2000 prices

Two Digit Industry (ISIC Rev. 3.1)	UBI Sample total		Estimated total		Sample Annual growth rate (% pa)	Estimated Annual growth rate (% pa)
	2002	2009	2002	2009		
Primary sector:						
Crop and animal production	2.0	9.2	2.0	0.6	51.8	-10.1
Fishing and aquaculture	2.7	4.1	2.1	0.9	7.2	-8.3
Extraction of crude petroleum		41.1				
Mining of metal ores	0.2	60.3		14.2		
Primary sector total	2.0	10.6	1.9	0.6	60.8	-9.8
Manufacturing:						
Food and beverages	11.0	18.2	3.5	8.2	9.4	19.3
Tobacco products	36.4	2.9	29.1	3.2	-13.2	-12.7
Textiles	6.0	20.7	2.9	5.6	34.9	12.8
Garments	1.1	13.7	0.3	3.7	163.1	150.1
Leather and leather products	13.9	43.2	1.3	9.0	30.0	83.3
Coke, refined petroleum products	2.1	148.7	0.7	60.6		1207.6
Basic metals	20.0	4.5	14.3	2.2	-11.1	-12.1
Manufacturing total	11.2	18.8	3.3	6.7	9.6	14.9
Other industries						
Electricity, gas, steam and water	62.1	814.5	11.3	1097.2	173.0	1373.5
Services:						
Land transport; transport via pipelines	11.0	12.8	8.2	3.1	2.4	-9.0
Water transport	2.4	6.3	2.5	4.9	23.4	13.9
Total services	10.8	12.6	8.2	3.2	2.3	-8.7
Grand total	9.9	19.9	3.9	4.8	14.2	3.3

Table 16: Weighted estimates of sectoral employment and sectoral value added based on UBI Samples, 2002 and 2009

A. Estimates of sectoral employment by enterprise size group:										
Size Group (number of workers)	All sectors				Number of workers					
	Number of workers		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	245,557	886,972	45.8	62.8	1,310	13,633	18,471	60,967	225,777	812,372
5-20 workers	112,097	268,506	20.9	19.0	4,574	21,006	19,865	34,505	87,658	212,995
21-100 workers	48,948	127,321	9.1	9.0	2,473	6,295	9,709	24,165	36,766	96,861
More than 100	129,144	129,855	24.1	9.2	42,736	11,010	39,941	58,049	46,466	60,796
Total	535,746	1,412,653	100.0	100.0	51,093	51,943	87,985	177,686	396,667	1,183,023
B. Estimates of sectoral value added by enterprise size group:										
Size Group (number of workers)	All sectors				Value added (million LCU)					
	Value added (million LCU)		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	723,565	5,972,619	20.9	28.4	3,694	44,285	31,427	473,061	688,444	5,455,273
5-20 workers	885,454	4,477,487	25.6	21.3	14,504	74,778	67,913	615,987	803,037	3,786,722
21-100 workers	680,600	8,226,620	19.7	39.1	3,284	116,031	145,037	690,117	532,279	7,420,473
More than 100	1,165,280	2,370,391	33.7	11.3	64,738	80,032	439,612	1,021,475	660,930	1,268,885
Total	3,454,898	21,047,117	100.0	100.0	86,221	315,126	683,988	2,800,640	2,684,689	17,931,353
C. Estimates of sectoral employment by enterprise age group:										
Age Group (years)	All sectors				Number of workers					
	Number of workers		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
< 5	517,735	1,941,121	63.6	28.4	6,868	50,493	46,988	98,958	463,879	1,791,669
5 to 10	123,840	1,208,573	15.2	17.7	4,372	51,971	21,848	71,349	97,620	1,085,254
More than 10	173,020	3,675,973	21.2	53.9	19,709	154,918	17,903	221,334	135,409	3,299,722
Total	814,595	6,825,667	100.0	100.0	30,949	257,382	86,739	391,641	696,908	6,176,645
D. Estimates of sectoral value added by enterprise age group:										
Age Group (years)	All sectors				Value added (million LCU)					
	Value added (million LCU)		% share in total		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
< 5	1,596,063	36,300,000	60.7	28.6	42,922	481,680	159,705	2,062,682	1,393,436	33,800,000
5 to 10	454,156	29,500,000	17.3	23.2	12,453	339,847	84,724	2,730,023	356,979	26,400,000
More than 10	580,637	61,100,000	22.1	48.1	24,726	1,760,790	69,295	4,943,875	486,616	54,400,000
Total	2,630,856	126,900,000	100.0	100.0	80,100	2,582,317	313,723	9,736,580	2,237,032	114,600,000

Table 16A: Annual value added per worker by enterprise age and size group: UBI 2002 and UBI 2009

<i>A. Annual value added per worker (million LCU) by enterprise size group</i>								
Size Group (number of workers)	All sectors		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	2.9	6.7	2.8	3.2	1.7	7.8	3.0	6.7
5-20 workers	7.9	16.7	3.2	3.6	3.4	17.9	9.2	17.8
21-100 workers	13.9	64.6	1.3	18.4	14.9	28.6	14.5	76.6
More than 100	9.0	18.3	1.5	7.3	11.0	17.6	14.2	20.9
Total	6.4	14.9	1.7	6.1	7.8	15.8	6.8	15.2
<i>B. Annual value added per worker (million LCU) by enterprise age group</i>								
Age Group (years)	All sectors		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009
< 5	3.1	18.7	6.2	9.5	3.4	20.8	3.0	18.9
5 to 10	3.7	24.4	2.8	6.5	3.9	38.3	3.7	24.3
More than 10	3.4	16.6	1.3	11.4	3.9	22.3	3.6	16.5
Total	3.2	18.6	2.6	10.0	3.6	24.9	3.2	18.6

Table 17: Number of workers in presumed comparative advantage industries by size groups of enterprises

(weighted estimates of totals) , UBI 2002 and UBI 2009

<i>A. All comparative advantage industries</i>						<i>E. Commercial farming</i>				
Size Group (number of workers)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
less than 5	9,942	48,897	29.8	29.8	56.0	185	7,393	0.4	20.6	556.6
5-20 workers	13,496	34,902	11.7	21.3	22.7	3,469	15,040	7.2	41.9	47.7
21-100 workers	7,550	18,047	6.5	11.0	19.9	1,971	3,228	4.1	9.0	9.1
More than 100	84,424	62,293	73.1	38.0	-3.7	42,323	10,228	88.3	28.5	-10.8
Total	115,412	164,140	100.0	100.0	6.0	47,948	35,888	100.0	100.0	-3.6
<i>B. Comparative advantage primary industries</i>						<i>F. Food and beverages industry</i>				
Size Group (number of workers)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
less than 5	500	12,460	1.0	26.1	341.5	4,294	10,112	9.7	14.0	19.4
5-20 workers	4,459	20,005	8.9	41.9	49.8	6,671	8,733	15.1	12.1	4.4
21-100 workers	2,220	4,976	4.4	10.4	17.7	3,399	8,261	7.7	11.5	20.4
More than 100	42,736	10,358	85.6	21.7	-10.8	29,758	44,895	67.4	62.4	7.3
Total	49,915	47,799	100.0	100.0	-0.6	44,121	72,001	100.0	100.0	9.0
<i>C. Comparative advantage manufacturing industries</i>						<i>G. The garments industry</i>				
Size Group (number of workers)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
less than 5	8,946	35,532	16.0	32.1	42.5	4,581	24,773	78.2	86.5	63.0
5-20 workers	8,130	13,096	14.6	11.8	8.7	1,071	3,347	18.3	11.7	30.4
21-100 workers	4,387	10,795	7.9	9.8	20.9	205	282	3.5	1.0	5.4
More than 100	34,308	51,249	61.5	46.3	7.1		240	0.0	0.8	
Total	55,770	110,673	100.0	100.0	14.1	5,857	28,642	100.0	100.0	55.6
<i>D. Comparative advantage services</i>						<i>H. Land transport services</i>				
Size Group (number of workers)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2001	2009	2001	2009	rate (% pa)	2001	2009	2001	2009	rate (% pa)
less than 5	496	906	16.0	16.0	11.8	420	333	8.0	8.0	-2.9
5-20 workers	907	1,801	9.3	31.8	14.1	869	1,287	12.7	30.8	6.9
21-100 workers	944	2,276	9.7	40.1	20.2	944	1,875	13.8	44.8	14.1
More than 100	7,380	687	75.9	12.1	-13.0	4,592	687	67.3	16.4	-12.1
Total	9,726	5,669	100.0	100.0	-6.0	6,824	4,181	100.0	100.0	-5.5

Table 18: Annual value added (in million LCU) in presumed comparative advantage industries by size group of enterprises (weighted estimates of totals at 2000 prices) , UBI 2002 and UBI 2009-

<i>A. All comparative advantage industries</i>					<i>E. Commercial farming</i>			
Size Group (number of workers)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	18,866	305,614	2.4	10.0	340	29,547	0.2	16.0
5-20 workers	59,139	1,448,219	7.4	47.2	10,780	42,566	13.8	23.0
21-100 workers	94,443	406,874	11.8	13.3	2,769	34,766	3.5	18.8
More than 100	629,905	906,487	78.5	29.6	64,297	78,008	82.2	42.2
Total	802,353	3,067,194	100.0	100.0	78,186	184,886	100.0	100.0
<i>B. Comparative advantage primary industries</i>					<i>F. Food and beverages industry</i>			
Size Group (number of workers)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	931	34,793	1.1	15.8	7,905	125,318	9.7	9.7
5-20 workers	13,542	62,486	16.5	28.3	27,098	280,266	7.5	21.8
21-100 workers	3,064	45,201	3.7	20.5	63,826	169,733	17.7	13.2
More than 100	64,738	78,008	78.7	35.4	262,056	712,511	72.6	55.3
Total	82,275	220,488	100.0	100.0	360,886	1,287,828	100.0	100.0
<i>C. Comparative advantage manufacturing industries</i>					<i>G. The garments industry</i>			
Size Group (number of workers)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	14,068	263,390	3.0	14.6	6,155	134,532	78.2	57.9
5-20 workers	32,610	398,261	7.1	22.1	1,594	96,823	20.3	41.6
21-100 workers	84,379	313,625	18.3	17.4	122	1,118	1.5	0.5
More than 100	330,582	824,502	71.6	45.8		52	0.0	0.0
Total	461,639	1,799,779	100.0	100.0	7,871	232,525	100.0	100.0
<i>D. Comparative advantage services</i>					<i>H. Land transport services</i>			
Size Group (number of workers)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	3,867	7,431	1.5	0.7	3,752	1,660	3.1	3.1
5-20 workers	12,987	987,472	5.0	94.3	12,838	14,924	15.1	27.4
21-100 workers	7,001	48,048	2.7	4.6	7,001	33,869	8.2	62.2
More than 100	234,584	3,977	90.8	0.4	61,349	3,977	72.2	7.3
Total	258,440	1,046,927	100.0	100.0	84,940	54,431	100.0	100.0

Table 19: Annual value added per worker (in million LCU) in presumed comparative advantage industries by size group of enterprises (weighted estimates of totals at 2000 prices)

(weighted estimates of totals at 2000 prices) , UBI 2002 and UBI 2009-

<i>A. All comparative advantage industries</i>			<i>E. Commercial farming</i>	
Size Group	Annual value added per worker		Annual value added per worker	
(number of workers)	2002	2009	2002	2009
less than 5	1.9	6.3	1.8	4.0
5-20 workers	4.4	41.5	3.1	2.8
21-100 workers	12.5	22.5	1.4	10.8
More than 100	7.5	14.6	1.5	7.6
Total	7.0	18.7	1.6	5.2

<i>B. Comparative advantage primary industries</i>			<i>F. Food and beverages industry</i>	
Size Group	Annual value added per worker		Annual value added per worker	
(number of workers)	2002	2009	2002	2009
less than 5	1.9	2.8	1.8	12.4
5-20 workers	3.0	3.1	4.1	32.1
21-100 workers	1.4	9.1	18.8	20.5
More than 100	1.5	7.5	8.8	15.9
Total	1.6	4.6	8.2	17.9

<i>C. Comparative advantage manufacturing industries</i>			<i>G. The garments industry</i>	
Size Group	Annual value added per worker		Annual value added per worker	
(number of workers)	2002	2009	2002	2009
less than 5	1.6	7.4	1.3	5.4
5-20 workers	4.0	30.4	1.5	28.9
21-100 workers	19.2	29.1	0.6	4.0
More than 100	9.6	16.1		0.2
Total	8.3	16.3	1.3	8.1

<i>D. Comparative advantage services</i>			<i>H. Land transport services</i>	
Size Group	Annual value added per worker		Annual value added per worker	
(number of workers)	2002	2009	2002	2009
less than 5	7.8	8.2	8.9	5.0
5-20 workers	14.3	548.2	14.8	11.6
21-100 workers	7.4	21.1	7.4	18.1
More than 100	31.8	5.8	13.4	5.8
Total	26.6	184.7	12.4	13.0

Table 20: Number of workers in presumed comparative advantage industries by age groups of enterprises (weighted estimates of totals) , UBI 2002 and UBI 2009

<i>A. All comparative advantage industries</i>						<i>E. Commercial farming</i>				
Age Group (years)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
< 5	24,544	108,451	22.2	22.2	48.8	5,035	32,576	14.9	14.9	78.1
5 to 10	17,110	91,929	24.4	18.9	62.5	3,671	49,892	14.2	22.8	179.8
More than 10	28,520	287,187	40.6	58.9	129.6	17,136	136,257	66.3	62.3	99.3
Total	70,175	487,568	100.0	100.0	85.0	25,842	218,725	100.0	100.0	106.6
<i>B. Comparative advantage primary industries</i>						<i>F. Food and beverages industry</i>				
Age Group (years)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
< 5	5,852	46,873	21.2	19.0	100.1	12,354	30,438	40.4	23.7	20.9
5 to 10	4,060	49,886	14.7	20.2	161.2	10,345	22,787	33.8	17.8	17.2
More than 10	17,689	150,485	64.1	60.9	107.2	7,880	75,044	25.8	58.5	121.8
Total	27,601	247,245	100.0	100.0	113.7	30,579	128,268	100.0	100.0	45.6
<i>C. Comparative advantage manufacturing industries</i>						<i>G. The garments industry</i>				
Age Group (years)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2002	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
< 5	18,168	58,843	44.2	26.0	32.0	5,607	20,455	58.5	32.9	37.8
5 to 10	12,610	39,172	30.7	17.3	30.1	1,862	11,012	19.4	17.7	70.2
More than 10	10,307	128,453	25.1	56.7	163.8	2,112	30,626	22.0	49.3	192.9
Total	41,085	226,469	100.0	100.0	64.5	9,581	62,093	100.0	100.0	78.3
<i>D. Comparative advantage services</i>						<i>H. Land transport services</i>				
Age Group (years)	Number of workers		% share in sector total		Average growth	Number of workers		% share in sector total		Average growth
	2001	2009	2002	2009	rate (% pa)	2002	2009	2002	2009	rate (% pa)
< 5	525	2,734	35.3	19.7	60.1	469	2,370	33.6	19.5	58.0
5 to 10	440	2,871	29.5	20.7	79.0	403	2,137	28.9	17.5	61.4
More than 10	525	8,249	35.2	59.5	210.3	523	7,677	37.5	63.0	195.6
Total	1,489	13,854	100	100	118.6	1,395	12,184	100.0	100.0	110.5

Table 20 A: Annual value added (in million LCU) in presumed comparative advantage industries by age group of enterprises weighted estimates of totals at 2000 prices , UBI 2002 and UBI 2009-

<i>A. All comparative advantage industries</i>					<i>E. Commercial farming</i>			
Age Group (years)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
< 5	64,235	1,703,575	30.1	17.3	23,064	243,546	11.4	11.4
5 to 10	64,750	2,326,414	30.3	23.7	10,691	327,455	19.6	15.3
More than 10	84,376	5,791,994	39.5	59.0	20,770	1,567,851	38.1	73.3
Total	213,361	9,821,983	100.0	100.0	54,525	2,138,852	100.0	100.0
<i>B. Comparative advantage primary industries</i>					<i>F. Food and beverages industry</i>			
Age Group (years)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
< 5	25,104	363,313	42.5	15.8	25,462	310,718	20.9	7.1
5 to 10	11,454	327,455	19.4	14.2	43,730	1,746,088	35.9	40.2
More than 10	22,454	1,610,412	38.0	70.0	52,786	2,291,475	43.3	52.7
Total	59,013	2,301,179	100.0	100.0	121,978	4,348,281	100.0	100.0
<i>C. Comparative advantage manufacturing industries</i>					<i>G. The garments industry</i>			
Age Group (years)	Annual value added		% share in sector total		Annual value added		% share in sector total	
	2002	2009	2002	2009	2002	2009	2002	2009
< 5	36,875	1,333,328	25.5	21.7	8,673	861,239	67.7	87.4
5 to 10	50,582	1,976,504	34.9	32.2	1,672	57,873	13.1	5.9
More than 10	57,288	2,829,166	39.6	46.1	2,463	66,573	19.2	6.8
Total	144,746	6,138,998	100.0	100.0	12,808	985,686	100.0	100.0
<i>D. Comparative advantage services</i>					<i>H. Land transport services</i>			
Age Group (years)	Annual value added		% share in sector total		Number of workers		% share in sector total	
	2001	2009	2002	2009	2002	2009	2002	2009
< 5	2,255	6,934	23.5	0.5	2,161	6,612	23.0	2.8
5 to 10	2,714	22,456	28.3	1.6	2,607	10,354	27.7	4.4
More than 10	4,634	1,352,415	48.3	97.9	4,632	218,371	49.3	92.8
Total	9,603	1,381,805	100.0	100.0	9,400	235,336	100.0	100.0

Table 21: Annual value added per worker (in million LCU) in presumed comparative advantage industries by age group of enterprises - weighted estimates of totals at 2000 prices) , UBI 2002 and UBI 2009-

A. All comparative advantage industries			E. Commercial farming	
Age Group (years)	Annual value added per worker		Annual value added per worker	
	2002	2009	2002	2009
< 5	2.6	15.7	4.6	7.5
5 to 10	3.8	25.3	2.9	6.6
More than 10	3.0	20.2	1.2	11.5
Total	3.0	20.1	2.1	9.8

B. Comparative advantage primary industries			F. Food and beverages industry	
Age Group (years)	Annual value added per worker		Annual value added per worker	
	2002	2009	2002	2009
< 5	4.3	7.8	2.1	10.2
5 to 10	2.8	6.6	4.2	76.6
More than 10	1.3	10.7	6.7	30.5
Total	2.1	9.3	4.0	33.9

C. Comparative advantage manufacturing industries			G. The garments industry	
Age Group (years)	Annual value added per worker		Annual value added per worker	
	2002	2009	2002	2009
< 5	2.0	22.7	1.5	42.1
5 to 10	4.0	50.5	0.9	5.3
More than 10	5.6	22.0	1.2	2.2
Total	3.5	27.1	1.3	15.9

D. Comparative advantage services			H. Land transport services	
Age Group (years)	Annual value added per worker		Annual value added per worker	
	2002	2009	2002	2009
< 5	4.3	2.5	4.6	2.8
5 to 10	6.2	7.8	6.5	4.8
More than 10	8.8	163.9	8.9	28.4
Total	6.4	99.7	6.7	19.3

ANNEX TABLES

Table A1: Sampling weights of UBI by major sector and enterprise size and enterprise age group, 2002 and 2009

A. Weights by enterprise size group:								
Size Group (number of workers)	All sectors		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009
less than 5	9,199	19,098	292	3,390	1,004	1,035	7,903	14,672
5-20 workers	854	3,342	39	499	242	344	573	2,500
21-100 workers	416	603	35	98	136	173	244	331
More than 100	346	320	33	98	134	127	178	164
Total	10,814	23,363	400	4,086	1,516	1,679	8,898	17,667
B. Weights by enterprise age groups :								
Age Group (years)	All sectors		Primary sector		Manufacturing		Services & other industries	
	2002	2009	2002	2009	2002	2009	2002	2009
< 5	7,006	12,006	97	954	388	694	6,521	10,358
5 to 10	2,149	7,063	148	198	265	412	1,735	6,453
More than 10	1,535	16,552	57	551	251	620	1,227	15,381
Total	10,690	35,621	302	1,702	905	1,726	9,483	32,192

Table A2: Distributions of enterprises in presumed comparative advantage industries UBR 2001 and UBR2010

Two Digit Industry (ISIC Rev. 3.1)	Number of 3-digit industries in Uganda in 2010	Number of enterprises in the UBR		Number of enterprises in UBI samples	
		2001	2010	2002	2009
Primary sector:					
Crop and animal production	11	465	4,907	152	93
Fishing and aquaculture	3	241	3,147	96	7
Extraction of crude petroleum	2		7	0	1
Mining of metal ores	2	6		1	1
Primary sector total	18	712	8,061	249	102
Manufacturing					
Food and beverages	23	2,762	5,932	332	318
Tobacco products	1	5	4	2	3
Textiles	9	81	189	24	42
Garments	2	3,424	13,405	69	128
Leather and leather products	3	79	271	7	26
Coke, refined petroleum products a	1	3	7	1	2
Basic metals	3	11	44	5	5
Manufacturing total	42	6,365	19,852	440	524
Other industries					
Electricity, gas, steam and water	3	12	51	1	9
Services:					
Land transport; transport via pipelines	5	416	428	350	42
Water transport	2	38	212	35	14
Total services	7	454	640	385	56
Grand total	70	7,543	28,604	1,075	691