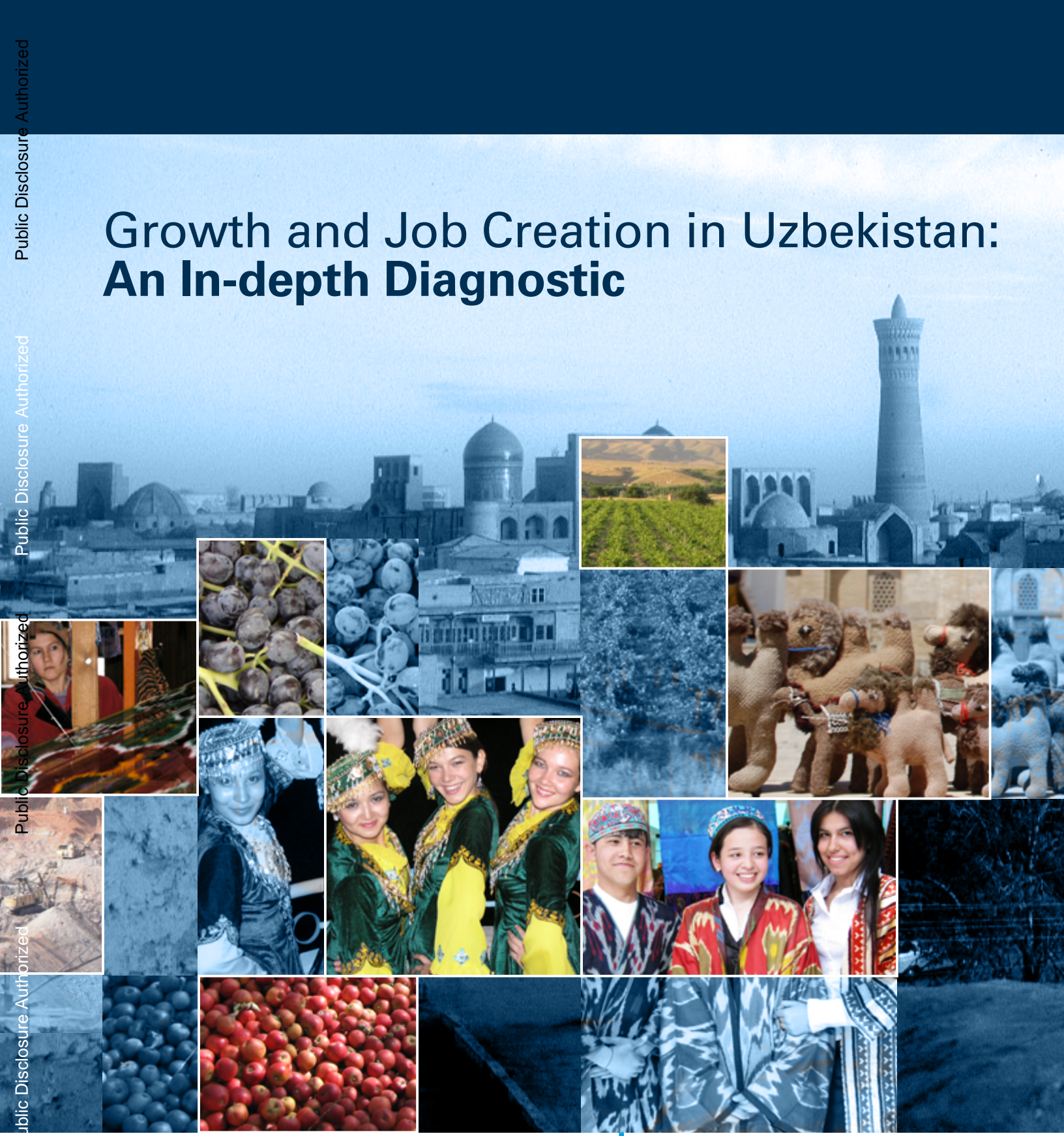


Growth and Job Creation in Uzbekistan: An In-depth Diagnostic

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GROWTH AND JOB CREATION IN UZBEKISTAN: AN IN-DEPTH DIAGNOSTIC

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ABBREVIATIONS AND ACRONYMS

CBU	Central Bank of Uzbekistan
CIS	Commonwealth of Independent States
ECA	Europe and Central Asia
FDI	Foreign direct investment
GDP	Gross domestic product
GNI	Gross national income
HICs	High-income countries
ICOR	Incremental Capital Output Ratio
ICT	Information and communications technology
IFMR	Institute for Forecasting and Macroeconomic Research
ILO	International Labor Organization
IMF	International Monetary Fund
JoGG	World Bank's Jobs Generation and Growth Decomposition Tool
LMICs	Lower-middle income countries
ML	Ministry of Labor
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
PPP	Public-private partnership
SCD	Systematic Country Diagnostic
SOE	State-owned enterprise
TFP	Total factor productivity
UMICs	Upper-middle income countries
UNIDO	United Nations Industrial Development Organization

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FOREWORD

This report presents a detailed growth decomposition of Uzbekistan’s per capita real GDP growth over a 21-year period (1996–2016). In this context, it closely examines the behavior of labor and capital productivity and intensity, as well as that of employment and real wages. In addition, it uses three unique enterprise surveys conducted (two surveys of large firms in 2013 and 2017, and one survey of small firms in 2017) to help identify the effects that labor productivity and employment in Uzbekistan’s manufacturing sector have had on economic growth. To the extent that a weak business environment, inadequate public policies, and other dynamics have constrained labor productivity growth and job creation, the report also distills measures to help tackle these constraints.

The author of this report is Eskender Trushin (Senior Economist). Anna Nagaraj and Bronwen Brown edited the report. The analysis benefited greatly from comments provided by Ivailo Izvorski (Lead Economist), Sergiy Zorya (Lead Agricultural Economist), and Miguel Sanchez Martin (Senior Economist). Sarah Babirye and Elena Klementyeva assisted with the production of the final draft.

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EXECUTIVE SUMMARY

Introduction

This report stems from the work initiated in the Systematic Country Diagnostic (SCD) for Uzbekistan in May 2016, which identified the quality of job creation as a central, cross-cutting theme. The SCD emphasized that “over the medium term, creating high-productivity, high-paying jobs for Uzbekistan’s growing population will be vital to sustaining economic growth, reinforcing social stability, and enabling further improvements in the welfare of households in the bottom 40 percent of the income distribution. Uzbekistan can expect to develop higher-paying jobs as it transitions from a factor-driven economy to an efficiency-driven economy.”¹ However, given data constraints, the SCD cited the need for a more detailed analysis and assessment of various dimensions of economic development, based on additional data. This report builds on the SCD and represents a further step in an ongoing strategic and analytical engagement with Uzbekistan.

In this context, the report deepens the analysis of the two key factors contributing to growth in GDP per capita in Uzbekistan: growth in labor productivity and growth in employment. This new analysis was possible by applying the growth decomposition tool to new data disaggregated by sectors of the economy and new data on constraints to productivity and employment growth generated by the three enterprise surveys conducted for this report. These surveys were carried out in 2013 and 2017 in five subsectors of Uzbekistan’s manufacturing sector (machinery building, chemicals and petrochemicals, light industry, food processing, and construction materials). The same questionnaire was used to survey 122 large firms in 2013, 111 large firms in 2017, and 478 small firms in 2017 across six regions of Uzbekistan. The survey data allowed a more systematic diagnostic analysis of Uzbekistan's growth challenges and the identification of the most binding constraints to jobs and productivity, which will help ensure more tailored and relevant policy advice.

Economic growth creates jobs that use labor, the main asset of the poor. Creating productive jobs is the key to economic growth and improvement in living standards. The economies that today have the highest incomes per capita are also those that have shown the most impressive increases in labor productivity growth over the past two centuries. This increase in productivity has led to the creation of ‘better,’ or higher-paying, jobs. GDP per capita is, in fact, a measure of the population’s productivity, and differences in GDP per capita between high-income and low-income countries largely reflect differences in their levels of labor productivity. To paraphrase Paul Krugman’s famous quote, rapid growth in productivity is nearly everything when it comes to determining an economy’s overall performance.² The driving force behind the rapid growth in labor productivity in advanced and rapidly developing economies has been a combination of investment in the quantity and quality of human capital, physical capital, technological progress,

¹ World Bank 2016.

² “Productivity isn’t everything, but in the long run it is almost everything.” (Krugman 1994).

and organizational capital at the firm level, and institutions (such as markets, the state, a national innovation system, and the legal framework) that determine the allocation of resources.

Uzbekistan, as a lower-middle-income country with GDP per capita³ of \$1,532 in 2018, must at least double its income per capita to achieve its goal of becoming an industrialized upper-middle-income country by 2030. Rapid capital and technology adaptation and diffusion should be the main channel through which Uzbekistan increases output, productivity, and job creation. This approach will help the country catch up with the labor productivity and GDP per capita levels of the upper-middle-income countries. What matters for economic growth, household income, and living standards, is the number of people who work and the productivity of those who work, as well as how the benefits are distributed in society.

This report assesses Uzbekistan’s productivity at the economy-wide, industry, and firm levels. Productivity analysis has become a topic of particular interest both in academic and policy circles as productivity growth has been slowing around the world. This phenomenon, known as the “global productivity slump,” has not been limited to advanced economies over the last 20 years. Total factor productivity (TFP) growth has been falling in China and many developing economies (including in Latin America, Sub-Saharan Africa, Southeastern Europe, Central Asia, and others).⁴ Our work follows this lead and seeks to identify and analyze the factors driving productivity in Uzbekistan by decomposing economic growth into labor productivity,⁵ employment, and demographics for the broad sectors in the economy, as well as for the manufacturing sector in more detail. It also explores the roles of resource misallocation and firms’ practices and capabilities in explaining productivity growth at the firm level and identifies the sources of economic distortions that affect allocative efficiency in Uzbekistan’s manufacturing firms.

This analysis takes place against a backdrop of significant challenges in the Uzbek labor market. The global trends of globalization and technological change create jobs that require a highly-skilled labor force. However, Uzbekistan is not well-positioned to adjust to these trends. Most of Uzbekistan’s labor force lacks higher education and a significant share of the working-age population is low-skilled or does not have the skills demanded by the market. Moreover, the country is not creating enough jobs. Uzbekistan creates about 280,000 new jobs per year on average (on a net basis), well below the 600,000 new jobs needed each year for demographic reasons alone. Thus, the economy needs at least to double the number of jobs created each year to be able to absorb all new entrants into the labor market. Most jobs will have to be created by establishing new firms, with some created by expanding existing firms. Other structural weaknesses in Uzbekistan’s labor market include disincentives to work, skills gaps and a limited

³ The World Bank classifies countries by income per capita using the gross national income (GNI) indicator rather than gross domestic product (GDP). Uzbekistan’s GNI per capita was estimated at \$1,950 in 2018.

⁴ Eichengreen, Donghyun and Shin 2015. See also the authors’ blog. <http://www.voxeu.org/article/global-productivity-slump>; World Bank 2019. Kazakhstan: Reversing the Productivity Stagnation, Country Economic Memorandum, Part 1, June 15, 2018, World Bank report #166091.

⁵ This report measures labor productivity as “value added per worker” rather than “value added per hour worked” because data on hours worked are not available for any sector in Uzbekistan.

supply of technical skills training, high youth unemployment, high economic inactivity and long-term unemployment, and limited labor mobility.

Uzbekistan has a finite time horizon—until 2040—to derive the dividends from favorable demographics and sustain high growth. Reflecting sharp downward trends in mortality and fertility rates since the 1960s, Uzbekistan’s working-age population as a share of the total population started to rise rapidly in the late 1990s. The proportion of people potentially available to work is projected to remain very high (at near 70 percent) until about 2040.⁶ As a result, the period between now and 2040 can become the prime period for realizing Uzbekistan’s economic potential. During this “demographic window,” the country’s labor force will be at historically high levels compared to its population, allowing for a one-time leap in growth that could put Uzbekistan on a path to rapid economic development.⁷ After 2040, the UN projects that the demographics of the Uzbek population will put the country in a situation similar to that currently facing the aging economies of Europe (that is, one characterized by high dependency ratios and a deficit of young workers). Harnessing the capabilities of young people in Uzbekistan, especially over the next 20 years, will help capitalize on the demographic dividend.

This Uzbekistan growth and jobs study is comprised of four chapters. Chapter 1 decomposes per capita output growth in Uzbekistan into four components—the contributions of productivity growth, employment growth, growth in the economically active population, and the change in the working-age population—using the Shapley decomposition method for a 21-year period (1996–2016). It describes the role of labor productivity changes in major sectors and subsectors of the economy and the nature and extent of the shift in employment from agriculture and industry to services. The report covers the period of 1996–2016 and the first half of 2017; the government has been implementing substantial reforms since the second half of 2017. Chapter 2 presents the trends in and relationships between labor productivity, capital productivity, capital intensity, labor intensity, employment, and real wages in the economy’s main sectors and subsectors. It categorizes Uzbekistan’s economic sectors and subsectors by the direction of changes in employment and labor productivity (whether structural shifts were productivity-enhancing or productivity-reducing), how growth in real wages affected employment, and how the challenge of firm survival and job sustainability over time affected job creation. Chapter 3 provides analysis of three enterprise surveys on the constraints to growth in labor productivity and employment in Uzbekistan’s manufacturing sector that were carried out specifically for this study—two surveys of large firms in 2013 and 2017 (the first such surveys of large firms in Uzbekistan) and one survey of small firms in 2017. Chapter 4 identifies measures to address the constraints to productivity and job creation revealed by the analysis and proposes a framework for prioritizing policy actions.

⁶ United Nations World Population Prospects 2017, World Bank’s World Development Indicators.

⁷ According to population projections from the United Nation, Uzbekistan’s dependency ratio—the number of the young and the old divided by the working-age population (those between the ages of 15 and 64)—will gradually decline, to below 50 percent for about 35 years starting in 2012. See IMF 2018, p. 4.

Key Empirical Takeaways from the Analysis of Productivity and Employment

Growth in GDP per capita in Uzbekistan has been rapid since the mid-1990s, largely driven by increases in labor productivity.⁸ Uzbekistan recorded a cumulative increase of 165 percent in GDP (value added) per capita between 1996 and 2016, which is equivalent to an average growth rate of 5 percent per year. Total output per worker (or labor productivity) increased by about 150 percent over this period. The growth in value added per capita over this period was driven by rising productivity and by demographic change, rather than by an increase in the employment rate. Practically all (91 percent) of the total change in value added per capita over this period can, therefore, be linked to changes in labor productivity, while 22 percent of the total change of GDP per capita can be linked to changes in demography. The positive contribution of demographic change (that is, the increasing share of the working-age population between 1996 and 2016) to the growth in GDP per capita was mitigated by a decrease (by 3 percent of the total change in GDP per capita) in the labor force participation rate and a decrease (by 10 percent of the total change in GDP per capita) in the employment rate over the same period. The fact that the growth in total per capita GDP is linked to a negative contribution of employment growth rate shows that the observed growth in Uzbekistan over the 21-year study period was not accompanied by sufficient job creation for the economically active population.

Labor productivity growth came mainly within sectors, rather than through inter-sectoral shifts (that is, a reallocation of the factors of production between sectors). Rising capital per worker and a modest increase in TFP played a positive role in the within-sector changes in labor productivity. Due to high growth in investment, the capital in the economy increased 18-fold between 1996–2016 and the capital per worker ratio increased almost 12-fold. TFP (net of inter-sectoral shifts) rose by only 16.4 percent during the same period, and the inter-sectoral shifts, on the whole, had a slightly negative effect on growth of value added per capita in that period. This is because some inter-sectoral shifts were productivity-enhancing, whereby workers moved from below-average-productivity sectors and subsectors (for example, cotton and wheat agriculture) to above-average-productivity subsectors (for example, transport and telecommunications services, and trade and catering). However, other inter-sectoral shifts involved workers moving from above-average-productivity subsectors (such as manufacturing and mining, for example) toward below-average-productivity sectors or abroad, or from below-average-productivity subsectors (such as agriculture) to other below-average productivity subsectors (for example ‘other services’ and construction).

Despite rapid expansion, job creation has failed to keep pace with economic growth and the growth of the working-age population. The ‘Uzbek model’ of economic development used between 1996 and 2016 was unable to ensure sufficient job creation for the rapidly-growing population. Total formal employment rose from 8.2 million in 1996 to 12.3 million in 2016 (a 50-percent increase). However, as a result of the simultaneous growth in the economically active population (and the working-age population), the employment rate declined by 0.52 percent per year on average

⁸ All economic sectors made positive contributions to the growth of value added per capita in Uzbekistan: the service sector accounted for 37 percent of the total increase in value added per worker in the economy, followed by agriculture (31 percent), and industry and construction (21 percent).

between 1996 and 2016. The pace of job creation on a gross basis was relatively high (about 970,000 jobs created every year in the 2004–16 period, including part-time, seasonal, and temporary jobs). However, net job creation averaged only 280,000 per year in the 2004–16 period and about 200,000 jobs per year during the last decade. This rate of job creation was well short of what was required to keep up with demographic changes, given the large number (about 500,000) of graduates from various educational institutions entering the labor market each year.

Job quality and inclusiveness are also of concern. At least 40 percent of all workers in Uzbekistan are employed in the informal sector.⁹ Employment rates (not controlling for job quality) are relatively high for men (70 percent of 16-64 year-olds), but much lower for women (40 percent), many of whom are self-employed in subsistence small-holder (*dehqan*) farms and households. Official unemployment rates before 2018 were low at 5.8 percent,¹⁰ masking the fact that households cannot productively employ many workers full-time and that an estimated two million Uzbeks have exited the national labor force and migrated to China, Kazakhstan, the Republic of Korea, the Russian Federation, and Turkey. According to official statistics, 17 percent of the youth population (aged 16-25) was unemployed in 2018 while female unemployment stood at 12.9 percent. According to a World Bank assessment, about 10 percent of youth in Uzbekistan are ‘discouraged’ (compared to 0.5 percent in OECD economies). The ‘working poor’ represent a significant share of the labor force (59 percent in 2003).¹¹

Job creation in the manufacturing subsectors has been a particular challenge, especially in labor-intensive subsectors such as food processing, light industry, apparel, and other manufacturing. Manufacturing employment in Uzbekistan was only about 9 percent of total employment in 2016, having declined during 1996–2016 despite government policies to support the sector, and contrary to the government’s expectations. The industrial sector (mining and manufacturing, excluding construction and utilities) is the least-important employer in Uzbekistan’s economy, accounting for just 13 percent of total employment. This share was lower than in comparator countries in 2016—45 percent in Turkmenistan, 32 percent in Belarus, 25 percent in Ukraine, 22 percent in the Kyrgyz Republic, 21 percent in Kazakhstan, 17 percent in Tajikistan, and 14 percent in Azerbaijan. The policy of large electricity and fuel subsidies in Uzbekistan seems to promote capital- and energy-intensive industries at the expense of labor-intensive industries that could provide jobs for the rapidly-growing workforce.

Many sectors and subsectors experienced simultaneous growth in employment and labor productivity. This was the case in construction, chemicals and petrochemicals, wholesale and

⁹ According to the 2013 Central Asia Labor and Skills Survey (CALISS). Official statistics for Uzbekistan indicate that 38 percent of all workers were employed in the informal sector in 2013. According to a study by the the National Scientific Center for Employment under the Ministry of Employment of Uzbekistan, 59.3 percent of workers in 2018 were employed in the informal economy.

¹⁰ Uzbekistan’s Ministry of Labor changed the definition of unemployment in 2018 by transferring most adult family members from the “employed” category to the “unemployed” category. This change in methodology has led to an increase in the official unemployment figure from 5.8 percent in 2017 to 9.7 percent in the first quarter of 2018 and 9.3 percent in the last quarter of 2018.

¹¹ World Bank 2007.

retail trade and catering services, transport and communications, and other services subsectors. The electricity industry and two subsectors of the mining sector (fuel and metallurgy) created jobs, but their labor productivity declined.

Uzbekistan’s relatively low labor force participation rate is one of the main risks to future economic growth. The economically inactive population (including discouraged youth) accounted for approximately 25 percent of the total working-age population in 2016. Also, the increase in the ratio of minors and the elderly relative to the working-age population that has been observed in the last five years has had a negative effect on value added per capita growth.

Uzbekistan has a competitive advantage in food processing and textiles and apparel, and good potential in selected subsectors of the chemical and petrochemical industry. The ratio of value added to total output when calculated in international prices (for both inputs and outputs) is significantly higher than the same ratio calculated in domestic prices for the food processing and textiles and apparel industries. For some industries (such as chemicals and petrochemicals and construction materials), however, this ratio is higher in domestic prices than in international prices—although, for some subsectors of the chemicals and petrochemicals industry the ratio is higher in international prices than in domestic prices. The large differences between domestic and international prices, among other things, show the level of price distortions in Uzbekistan’s economy. In addition, there is still a large productivity gap in manufacturing between Uzbekistan and the upper-middle-income countries (by 2.2 times in manufacturing overall, including almost 6 times in the chemical industry), but only a 50-percent gap in the food processing industry, a 30 percent gap in the apparel industry, a 10 percent gap in the textile industry, and no gap in general in the machinery building industry. These gaps show the untapped potential for productivity growth in Uzbekistan’s manufacturing subsectors that is possible to use by addressing the existing constraints to the business climate and productivity growth at macroeconomic, sectoral, and firm levels.

Enterprise surveys show that small manufacturing firms in Uzbekistan are, on average, much more productive than large firms—which are mostly state-owned or state-controlled enterprises—but that large firms employ relatively more employees than small firms. The average labor productivity in five manufacturing subsectors of Uzbekistan was about twice as high in small firms (\$75,000 per employee, compared to \$34,000 in large firms) in 2014 and 2016. Meanwhile, the average number of jobs created per unit of capital in 2016 was higher in large manufacturing firms (35 jobs per million U.S. dollars of capital, compared to 12 jobs in small firms). In a market economy in the long-run, firms with higher productivity can pay higher wages and should attract more employees. However, until 2018, Uzbekistan experienced the opposite; perhaps because there was high inertia in the manufacturing sector owing to limited information flows on wage differences between large and small firms, and a lack of market forces in the economy¹² that explains weak reallocation processes in the economy in general.

¹² More market forces were added at the end of 2017 with the introduction of convertibility of the national currency, a reduction in import tariffs, and the launch of the free trade of 27 key raw materials on the commodities exchange.

Despite the Uzbek's people strong entrepreneurial spirit, business climate constraints have resulted in limited new firm and job creation. The economic literature shows that, in most economies, young firms are a more important source of net job creation than existing (incumbent) firms.¹³ However, the average number of newly-registered firms per 1,000 of the working-age population over the 2006–16 period indicates that Uzbekistan (with 0.72 new firms) has the second-lowest business density of all CIS countries (higher only than Tajikistan with 0.35 new firms), and less than half the CIS average (1.67 new firms). Business density is also lower than the average for the lower-middle-income group of countries to which Uzbekistan belongs (1.99 new firms per 1,000 of the working-age population), and lower than the average for Europe and Central Asia (4.63 new firms) in 2014.¹⁴ The Uzbek people are known for their entrepreneurial abilities; it is primarily business climate constraints that are restricting an increase in the rate at which new firms and jobs are created. Uzbekistan was ranked 76 of 190 economies in the World Bank's 2019 Doing Business ranking; its most challenging areas were trading across borders, dealing with construction permits, resolving insolvency, paying taxes, getting credit, and registering property.

The business environment suffers from a number of underlying macroeconomic and regulatory issues. More than 70 percent of manufacturing firms consider the banking sector's credit terms to be unaffordable. High inflation is a constraint on investment for 62 percent of large firms and 66 percent of small firms. Costs and delays on imports at customs are much higher than for exports. Obtaining permits and licenses is costlier for small firms than large firms and getting construction permits is more difficult for small firms. About 45 percent of large firms and 36 percent of small firms experience a lack of raw materials on the domestic market and face difficulties importing them. More than 40 percent of firms struggle with non-payments or delays in payments for output. Slow banking services mean that about one-third of firms experience wage payment delays. About two-thirds of large and small firms cited high taxes as a top constraint to their expansion in 2016–17. The share of skilled workers in large manufacturing firms declined from 66 percent in 2012 to 50 percent in 2016. The lack of foreign exchange convertibility was also among the main barriers to growth up until the liberalization of the foreign exchange market in late 2017. In the presence of these constraints, large firms' profitability (measured as the ratio of net profit to total cost) declined from 16 percent in 2010 to 15 percent in 2012—and further to about 5 percent in 2014 and 2016—while small firms' average profitability was near 8 percent in 2014 and 2016.

Interruptions in physical infrastructure result in significant losses in potential manufacturing output each year. Small firms suffer more than large firms from interruptions of electricity, gas, and water supply, and from a lack of territory or high lease rates on land for expanding output production. Total self-estimated loss from all interruptions in physical infrastructure was 42 percent of potential output in large firms in 2012, 24 percent in large firms in 2016, and 38 percent in small firms in 2016.

¹³ World Bank 2012.

¹⁴ One caveat of this indicator is that it includes only businesses registered as legal entities, even though in 2016 about 210,000 individual entrepreneurs were operating in Uzbekistan without registering as legal entities and, so, were not captured by the indicator. Thus, the number of actual entities in Uzbekistan that create jobs, relative to the population, is slightly higher than this indicator would suggest.

By improving infrastructure services, the authorities can increase both output per worker and employment in firms.

Firm productivity is also constrained by the authorities diverting managers' time and firms' financial resources toward non-productive activities. About 31 percent of managers' time in large firms and 26 percent in small firms is lost on various non-productive bureaucratic activities such as dealing with central government ministries, local authorities, industry associations, or former line ministries concerning tax, customs, inspections, sanitary, and environmental issues. As a result, less time is available for more important work like improving their firms' productivity, efficiency, skills, technology, and profitability. Firms reported that 32 percent of employees in large firms and 30 percent in small firms participated in cotton picking or were distracted to other public works in 2016. About 23 percent of large firms and 11 percent of small firms said that local authorities requested "additional spending" from firms without compensation. In 2016, about 13 percent of large firms and 7 percent of small firms made unofficial payments to various authorities to get things done, and 8 percent of large firms and 6 percent of small firms knew in advance how much to reserve for illegal payments to local authorities. About 61 percent of large firms' total output and 46 percent of small firms' total output was subject to central distribution by a line ministry or industry association in 2016, rather than being decided by firms and the free market.

Key Policy Recommendations

As in many other countries that focus on jobs and productivity,¹⁵ the government of Uzbekistan's policies to increase productivity and create jobs should focus on the structural reforms that are critical for promoting economic growth: improving allocative efficiency, encouraging business-to-business spillovers, and strengthening firm capability. Uzbekistan needs to tap into the potential productivity gains associated with the cross-sectoral reallocation of labor from below-average to above-average productivity sectors. This process should be complemented by intra-sectoral reallocation from lower-productivity firms to higher-productivity firms within each sector. In the medium term, there is strong potential for economic growth from accelerating shifts of labor toward economic subsectors with above-average productivity (that would be expected to have higher wages), such as from agriculture to manufacturing, mining, transport, and services (financial and business services and telecommunications, for example) and within the agriculture sector (from cotton and wheat to horticulture). Reallocating labor from less- to more-productive subsectors of the economy will require policy interventions, including to mitigate the social impact of economic restructuring. Currently, the lack of appropriate unemployment insurance and poorly targeted social assistance undermine the effectiveness of existing policy instruments.

To strengthen productivity growth and job creation, Uzbekistan needs to accelerate and deepen delayed structural reforms. Necessary reforms include those to liberalize and demonopolize the goods markets (that is, inputs and outputs) and create better conditions for small and large private firms to become an engine of net job creation and productivity growth. Reallocation both across and within sectors (between firms) will require significant capital accumulation, investment in

¹⁵ World Bank 2018, p. 97.

human capital, and equal access to education and health services. However, these processes take time, limiting the extent to which structural transformation can absorb labor from agriculture in Uzbekistan in the medium term. Thus, raising agricultural productivity by accelerating market reforms in this sector (in the cotton and wheat subsectors, for example) is an important medium-term goal for growth and poverty reduction. As for encouraging business-to-business spillovers and strengthening firms' capability for economic growth, at this stage the report recommends agglomeration and spatial clustering to improve the efficiency of using land and infrastructure and encouraging firms to adopt existing technologies and simple organizational innovations rather than incentivizing advanced research by Uzbek firms.

Having addressed the first set of binding constraints on businesses, the government's economic liberalization plan for 2017–21 must accelerate private sector development by tackling the next set of constraints identified in this report. The government has already removed two top binding constraints to business by implementing two reforms: unifying exchange rates in September 2017 and cutting taxes in January 2019. The reforms demanded by manufacturing firms show that at this stage of Uzbekistan's economic development most firms are preoccupied with resolving simple constraints related to firm survival—such as lack of access to inputs and lack of access to markets for outputs. Addressing these issues can improve allocative efficiency and firm capabilities. The next phase of reforms should focus on the next set of binding constraints such as (i) ensuring an uninterrupted supply of electricity and natural gas; (ii) improving access to high-quality, affordable raw materials for all; (iii) improving access to credit (lower inflation, affordable interest rates and terms, and lower collateral requirements); (iv) providing additional territory (land) to allow production to expand (for example by developing markets for land user or ownership rights in the industry and services sectors); (v) increasing the availability of skilled personnel (workers, engineers, and top managers); (vi) improving regular provision of information to all firms in all sectors about the available new technologies and equipment (to help firms with capital rehabilitation and technology upgrading) and state support for exporting (such as ISO quality certification and export risk mitigation, promoting diversification, WTO accession, organizing trade fairs, providing regular information on foreign demand for products, and so on); and (vii) reducing the degree of domestic market monopolization by state-owned enterprises (SOEs) and banks, industrial holdings, and associations.

Removing barriers to market entry and exit, easing business regulations, lifting remaining price controls, strengthening private property rights, and tackling inefficiencies in the SOE sector would further improve overall productivity. A valuable lesson for Uzbekistan¹⁶ is that reducing government interference in the economy, deregulating, and removing barriers to entry and exit can spur organizational change at the firm level (such as more efficient management and additional research and development activities) and contribute to the growth of GDP per capita. Competitive pressures can boost technology absorption and innovation if firms have access to

¹⁶ India and China significantly liberalized their trade and import tariffs on manufactured goods. India halved import tariffs on most tradable goods and eliminated quantitative controls between 1990 and 1997. China has been moving away from the very restrictive regulation of 30 years ago. SOEs in China have been operating more like private sector firms following the governance reform, which expanded managerial independence and decoupled the SOE ownership function from other aspects of government policy making.

financial markets, raw materials, and other inputs. Business registration in Uzbekistan is relatively easy (Uzbekistan ranked 12 globally for starting a business in Doing Business 2019), but informal barriers and government failures—opaque regulations and a lack of adequate protection of property rights (for example land ownership and intellectual property)—remain significant. These constraints limit Uzbekistan’s ability to attract foreign direct investment (FDI) and absorb technology. Exiting the market is costly as bankruptcy procedures are slow or poorly developed. Measures to tackle these challenges could be accompanied by moving to international accounting and reporting standards (IFRS) in the real sector, hardening of state budget constraints for SOEs, strengthening corporate governance and restructuring and privatizing SOEs and banks, further liberalizing prices and sustaining trade liberalization, enhancing competition policy and demonopolization, and improving banking competition and liberalizing interest rates. Addressing market distortions slowly and selectively could exacerbate, rather than alleviate, them.

The government’s demand-side and supply-side policies need to work in tandem to increase employment and productivity in Uzbekistan. There are several possible solutions to overcome the problem of "jobless growth" (that is, there is a need for *more* jobs) in subsectors such as machinery building, the construction materials industry, light industry, food processing, and other manufacturing. These include (i) ensuring macroeconomic stability (low inflation and a balanced state budget); (ii) introducing counter-cyclical monetary and fiscal policies; (iii) improving the investment climate and reducing the cost of entry for firms; (iv) facilitating diversification through trade liberalization and creating the conditions to boost private sector investment (including quality infrastructure, well-functioning financial intermediation, and strong governance institutions); (v) reducing taxes on firms’ wage funds to stimulate hiring, reduce personal income tax to stimulate work and labor participation, and remove taxes on the lowest wages to protect the working poor; and (vi) equipping workers with job-relevant skills. For subsectors where "jobs created are low productivity" (that is, there is a need for *better* jobs)—including the electricity, fuel, and metallurgical industries and agriculture—possible solutions include: (i) expanding access to markets; (ii) fostering allocative efficiency by expanding product market competition; (iii) increasing urbanization; (iv) integrating small firms into value chains; (v) setting up technology adoption and export promotion councils; (vi) improving managerial capacity and establishing training centers to generate skilled workers; (vii) removing infrastructure bottlenecks and improving logistics; (viii) ensuring the availability of credit; (ix) encouraging the participation of female workers; and (x) accelerating the shift from cotton and wheat cultivation to horticulture and other higher-value crops; removing agricultural distortions (such as subsidized prices on irrigation water and some other inputs, and low domestic prices on outputs for cotton and wheat); boosting public spending on agriculture sector programs that are critical to productivity growth (research and development, extension and advisory services, and sanitary and phytosanitary measures); and supporting productive partnerships between small-holder (*dehqan*) farms and agribusinesses to expand the production of high-quality raw materials to help create more jobs in the food processing industry.

Although both large and small manufacturing firms in Uzbekistan have proposed measures to increase labor productivity and efficiency, many firms appear unprepared to take practical steps in this direction. Only 39 percent of large firms and 41 percent of small firms use relevant indicators to analyze their productivity and efficiency. Other firms use only absolute indicators of performance (absolute profit, revenue, or the amount of energy saved, for example) and do not use ratios to measure efficiency or productivity (such as the ratio of profit or revenue to all or some inputs such as labor, capital, and costs). Most Uzbek firms do not accurately measure productivity or the efficiency of input use. Such firms are not ready for a serious transition from a factor-driven economy (Uzbekistan’s current stage of economic development), to an efficiency-driven economy.¹⁷ The World Bank Enterprise Surveys conducted in 2017 for this report indicate that only 48 percent of large firms and 41 percent of small firms in Uzbekistan’s manufacturing sector have a formal document analyzing their efficiency or productivity using any indicators (whether suitable indicators or not). Of those firms that have carried out an analysis of their efficiency or productivity, about 87 percent of large firms—but only 37 percent of small firms—have a strategy or formal plan that sets out measures to improve efficiency or productivity. Sectoral associations (or former line ministries) should focus their attention on helping firms (both large and small) to develop such strategies to improve efficiency and productivity in the short and medium term, instead of their current focus on micro-management of and intervention in firms’ activities, inspections, and distribution of a significant share of firms’ output.

¹⁷ The terms ‘factor-driven’ economy, ‘efficiency-driven’ economy, and ‘innovation-driven’ economy are used as per the World Economic Forum’s (WEF) classification of all economies of the world in the WEF annual competitiveness reports.

1. AN INITIAL DECOMPOSITION OF AGGREGATE GROWTH PER CAPITA

1.1 Uzbekistan recorded a cumulative increase of 165 percent in GDP (value added) per capita between 1996 and 2016, which is equivalent to an average growth rate of 5 percent per year.¹⁸ The pace of growth was faster than the global average (1.7 percent) and the Europe and Central Asia (ECA) average (3.5 percent, excluding high-income countries), but slightly below the average of the Commonwealth of Independent States (CIS, 5.2 percent). Taking population growth dynamics into account this performance is even more impressive: Uzbekistan experienced the second-highest rate of population growth in the CIS (1.6 percent per year, after only Tajikistan at 2 percent per year), well above the CIS annual average of 0.5 percent for the period 1996–2016. GDP per capita increased faster in Uzbekistan than in the Kyrgyz Republic, Moldova, Russia, and Tajikistan, but slower than Armenia, Azerbaijan, Belarus, Georgia, and Kazakhstan.

1.2 In this report, the Shapley decomposition method is used to explore the drivers of growth in GDP per capita in Uzbekistan—specifically the impact of changes in productivity, employment, and demographics. This method allowed the decomposition of output per capita growth into four components: productivity growth, employment growth, growth in the economically active population, and the change in the working-age population relative to the total population. The main aim of the analysis was to understand the roles of (i) productivity and employment growth in driving growth in Uzbekistan’s key economic sectors, and (ii) the sectoral reallocation of labor in driving overall growth in Uzbekistan’s economy. Annex 1 provides a brief description of the methodology used for the analysis.

1.3 The results of the growth decomposition suggest that an increase in labor productivity (and, to a lesser extent, demographic change) drove most of Uzbekistan’s growth over the 21-year period. Between 1996 and 2016, growth linked to output per worker (labor productivity growth) explains 91 percent of total growth, while the increase in the share of the population that is of working age (demographic change) explains 22 percent. Growth was supported by an increase in average output per worker (productivity) of 4.55 percent per year and an increase in the working-age population of 1.11 percent per year. Figures 1.1 and 1.2 and Table 1.1 show the results for the Shapley decomposition of per capita growth into its main components at the aggregate level. Figure 1.1 shows the whole 1996–2016 period, and Figure 1.2 focuses on 2011–12, which was the period with the highest rate of employment growth in the study period.

¹⁸ While Uzbekistan recorded a GDP per capita growth rate of about 5 percent per year between 1996 and 2016, in current U.S. dollar terms GDP per capita has increased at a much slower pace since independence: it was approximately \$1,000 in 1991 and \$1,534 in 2017, following devaluation. The main reason for the difference in growth rates was the substantial devaluation of the official exchange rate for the Uzbek som every year over the two decades since 1994. Nevertheless, if measured in PPP constant international dollars, Uzbekistan’s GDP per capita increased from \$2,991 in 1991 to \$6,253 in 2017.

1.4 Reductions in the employment rate and participation rate partly offset the positive impact of productivity increases and demographic change. The employment rate (employed population as a share of the economically active population) fell by 0.52 percent per year, explaining a total of -10 percent of the contribution to GDP per capita growth between 1996 and 2016. The participation rate (economically active population as a share of the working-age population), fell by 0.13 percent per year, explaining a total of -3 percent of the contribution to GDP per capita growth.¹⁹ In the 2012–16 period, an increase in the participation rate started to positively contribute to growth (Table 1.1 and Figure 1.3).

Figure 1.1. Shapley Decomposition of Growth in Value Added per Capita, 1996–2016

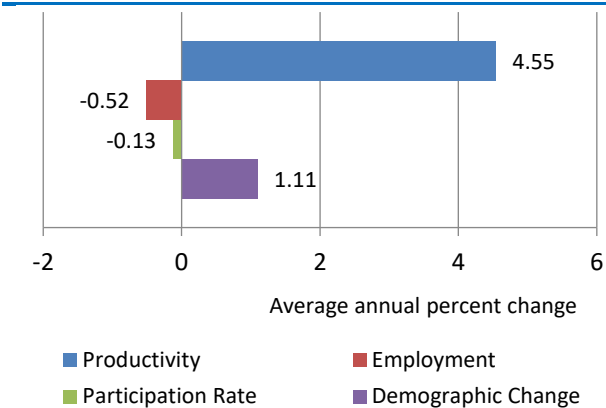
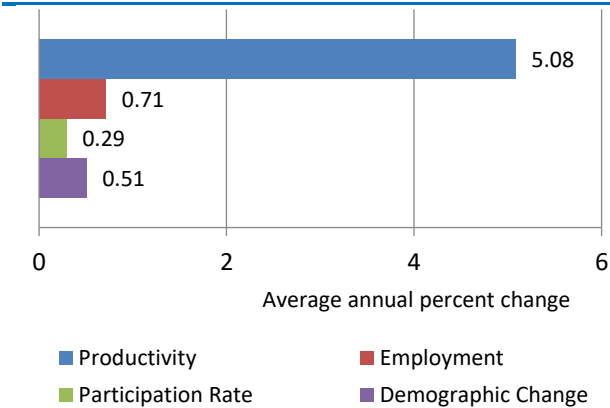


Figure 1.2. Shapley Decomposition of Growth in Value Added per Capita, 2011–12



Source: World Bank staff calculations using the World Bank’s GDP per capita Growth Decomposition Tool.

1.5 While the participation rate dropped in 2009–11, employment was maintained. The government’s anti-crisis policies in that period helped to preserve overall employment, especially in the public sector and SOEs and by supporting the development of small, private firms. However, the post-2008 crisis difficulties were reflected in a lower participation rate because the share of those actively seeking employment declined due to challenges in finding work. The “discouraged” youth, females, and older workers were less encouraged to seek jobs as real wages fell in 2009–11 due to much higher currency devaluation following the global crisis (devaluation accelerated from 4 percent per year in 2007 to 9 percent per year on average in 2009–11) and higher inflation. The decline in the official figure for labor force participation can also be interpreted as an increase in the importance of the shadow economy during that period.

¹⁹ The amount of growth that can be attributed to changes in output per worker (productivity) is calculated from the growth in per capita value added between two points in time under a hypothetical scenario in which both the employment rate and the share of the population that is of working age remain constant, while output per worker changes. Similarly, the amount of growth attributed to changes in the employment rate or in the share of the working-age population is calculated from the growth in per capita value added when the other two components are held constant.

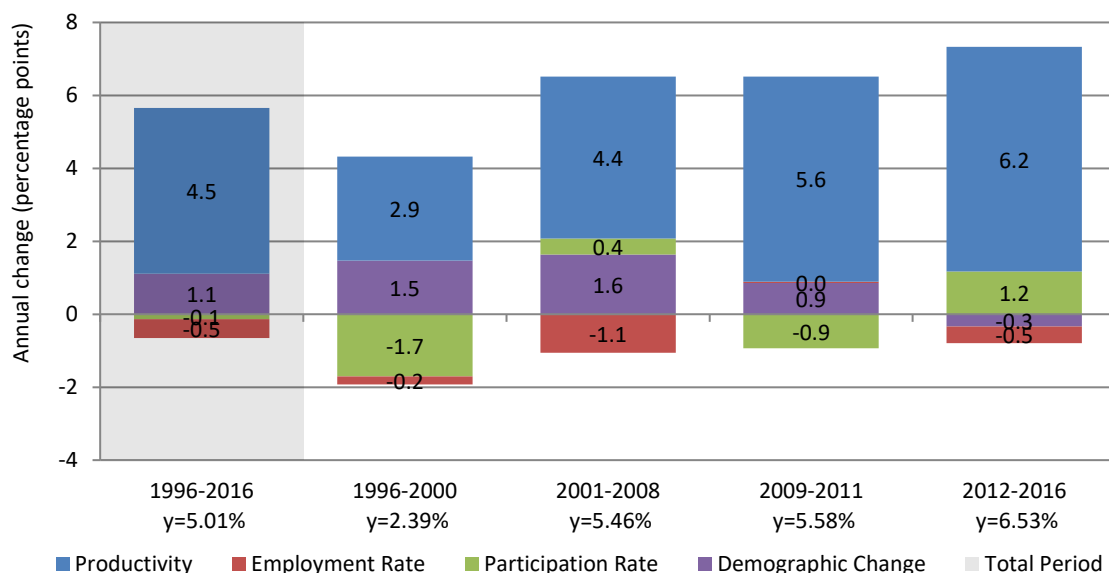
Table 1.1. Decomposition of Growth in Value Added Per Capita, 1996–2016

	Period 1 1996–2000		Period 2 2001–08		Period 3 2009–11		Period 4 2012–16		Whole Period 1996–2016	
	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution
Annual growth in per capita value added	2.39	100%	5.46	100%	5.58	100%	6.53	100%	5.01	100%
Change in productivity	2.85	119%	4.44	81%	5.63	101%	6.16	94%	4.55	91%
Change in employment rate	-0.22	-9%	-1.06	-19%	0.03	1%	-0.46	-7%	-0.52	-10%
Change in participation rate	-1.70	-71%	0.44	8%	-0.94	-17%	1.17	18%	-0.13	-3%
Change in share of population that is of working age	1.47	61%	1.64	30%	0.86	15%	-0.34	-5%	1.11	22%

Source: World Bank staff calculations using the World Bank’s GDP per capita Growth Decomposition Tool.

Note: The annual growth in per capita value added is the sum of the changes in productivity, employment rate, participation rate, and share of the population that is of working age. The employment rate in this table is the ratio of the number of people employed to the economically active population. The division of sub-periods is linked to the timing of specific domestic policies, which are mostly the government’s responses to regional and global economic developments. Period 1 (1996–2000) is the ‘renewed growth’ period after a deep GDP decline in 1991–95 due to the breakup of the Soviet Union. Period 2 (2001–08) is the ‘pre-global crisis’ period of accelerated growth driven by high global demand and high commodity prices. Period 3 (2009–11) is the global crisis and an immediate post-crisis period when the government of Uzbekistan maintained high growth through ‘anti-crisis measures’ that boosted domestic demand. Period 4 (2012–16) is the ‘Eurozone difficulties’ period when the government of Uzbekistan extended demand-boosting policies to support economic growth.

Figure 1.3. Shapley Decomposition of Growth in Value Added per Capita, 1996–2016



Source: World Bank staff calculations using the World Bank’s GDP per capita Growth Decomposition Tool.

Note: γ = annual growth of per capita value added (percent).

1.6 Demography has played a central role in Uzbekistan’s economic development. If the number of dependents per working-age person and the employment rate had both remained constant, increased labor productivity would have generated GDP growth of 143.8 percent between 1996 and 2016. However, the number of dependents per working-age person declined during this time. A fall in the dependency ratio creates an opportunity to boost income per capita and reduce poverty, but only if employment growth can accommodate the relative increase in the size of the working-age population. Small changes in the relative size of the working-age population have a significant impact on total growth (Tables 1.2 and 1.3). For example, the 11.3 percent increase in the share of Uzbekistan’s working-age population over the 1996–2016 period resulted in 7,867,792 potential new entrants to the labor market, of which 63.4 percent (4,988,180 people) would be expected to find employment. Given average per-worker productivity of UZS 1,982,227 (or about US\$1,781) during the period, this implies additional value added of almost UZS 9,887,707 million (in constant 2005 prices). Therefore, other things being equal, the changing age structure of the population would have contributed 22 percent of the observed growth.

Table 1.2. Employment, Output, Productivity, and Population in Uzbekistan, 1996–2016

	1996	2016	Percent Change
GDP (value added) (in trillion UZS)	9,467	34,533	264.8
Total population	23,225,000	31,848,000	37.1
Total population of working age	11,506,900	19,374,692	68.4
Total number of people employed	8,210,100	12,283,600	49.6
GDP (value added) per capita	407,629	1,084,318	166.0
Output per worker	1,153,116	2,811,339	143.8
Employment rate*	71.35	63.40	-11.1
Share of population of working age	49.55	60.83	11.3

Source: World Bank staff calculations using the World Bank’s Jobs Generation and Growth (JoGG) Decomposition Tool.

Note: Employment rate in this table is the ratio of the number of people employed to the working-age population.

1.7 The positive impact of demographic change on the growth of GDP per capita outweighed the negative impacts of decreases in the labor force participation rate and the employment rate. While demographic change (that is, change in the relative size of the working-age population) drove a 22 percent increase in total GDP per capita between 1996 and 2016, the decrease in the labor force participation rate reduced total GDP per capita growth by 3 percent. Demographic change also had a more significant effect on total growth of value-added per capita than the employment rate (which reduced total GDP per capita growth by 10 percent), suggesting that the elasticity of real GDP growth per capita to demographic change in Uzbekistan is larger than its elasticity to a proportionate change in the employment rate. However, in recent years (2012–16), the share of the population that is of working age declined. More minors and elderly now depend on each working adult, and the increase in the dependency ratio had a negative effect on per capita growth.²⁰ An overall decrease in the participation rate between 1996 and 2016 had a slightly negative

²⁰ The increase in the dependency ratio may suggest that reproductive health measures to curb population growth are still important to Uzbekistan’s development.

impact overall on value added per capita. However, between 2001 and 2008, and 2012 and 2016, changes in the participation rate had a positive impact, implying that in these two periods more adults became economically active and that they brought some value added to Uzbekistan's economy and contributed to per capita GDP growth.

Understanding the Role of Labor Productivity Changes by Major Economic Sectors and Subsectors

1.8 Labor productivity increases in all major sectors of the economy—but particularly in services and agriculture—were the principal driver of Uzbekistan's GDP per capita growth. Productivity can increase both within sectors or subsectors, and through inter-sectoral shifts of capital and labor from lower-productivity to higher-productivity subsectors. In the 1996–2016 period, the services sector accounted for 36 percent of the total increase in value added per worker in the economy (Table 1.3), followed by agriculture (31 percent), and industry and construction (27 percent). In the services sector, 42 percent of labor productivity growth came from the trade (wholesale and retail) and catering subsectors, 28 percent from transport and communications, and 30 percent from “other services.” In the agriculture sector, output per worker increased dramatically, but an 18 percent decrease in employment significantly—but not entirely—offset the sector's overall contribution to per capita GDP growth (Table 1.6). The reduction in agricultural employment mainly resulted from excess labor shifting from agriculture to various services and construction, which significantly increased those sectors' contributions to GDP growth. The agricultural sector's contribution to overall labor productivity has declined dramatically: from 90 percent in 1996–2000 to 14 percent in 2012–16. In the industry sector, about 69 percent of labor productivity growth between 1996 and 2016 came from the manufacturing subsectors and about 30 percent from construction. The mining subsector's contribution was negligible. In manufacturing, productivity growth and the sector's contribution to overall labor productivity (at 24 percent of total productivity) were at their highest in 2001–08. Productivity growth slowed down significantly in the crisis period, to just 0.2 percent per year in 2009–11, but then increased slowly (at an average of 0.8 percent per year) between 2012 and 2016. The manufacturing and construction subsectors increased their contributions to overall labor productivity growth in 2012–16. Labor productivity fell in the mining subsector in both the 2001–08 and 2009–11 periods and fell in the construction subsector in the 1996–2000 period. The mining and fuel industries made a relatively low or negative net contribution to Uzbekistan's GDP growth (either through relatively low labor productivity or limited employment generation), which suggests an urgent need to revise the development strategy for these industries.

1.9 Growth in Uzbekistan's GDP per capita between 1996 and 2016 was “jobless growth”—that is, satisfactory job creation did not accompany growth. The fact that -10 percent of the total change in value added per capita can be linked to changes in the employment rate implies that the observed GDP growth in Uzbekistan over the 1996–2016 period was not accompanied by sufficient job creation for the economically-active population. Our analysis suggests that the growth in value added per capita over this period was driven by increased productivity and by demographic change, rather than by an increase in the employment rate. The employment rate fell in all sub-periods except 2009–11 (Table 1.6). Fortunately, productivity growth offset the employment rate's negative contribution to the growth of value added per capita. Job creation

failed to keep pace with the increase in the working-age population, limiting the latter's positive impact on value added per capita. Had the employment rate remained unchanged, value added per capita would have grown by 199 percent between 2016 and 1996 (or by 12.5 percent more than the observed growth). However, a decline in employment as a share of the working-age population caused value added per capita to increase by just 144 percent over that time. Had productivity per worker and the number of dependents per working-age person both stayed the same, the slight reduction in the employment rate would have only marginally reduced GDP growth over the 1996–2016 period.

1.10 Growth in Uzbekistan's GDP per capita between 1996 and 2016 was mainly due to productivity growth within sectors (in agriculture, manufacturing, services, and construction), and only recently also due to inter-sectoral structural shifts of capital and labor. Economic sectors and firms in Uzbekistan can become more productive by either adopting new technologies and better management processes, or by relocating production inputs from lower-productivity activities (subsistence agriculture, for example) to higher-productivity activities or subsectors (commercial agriculture, manufacturing, and services).²¹ However, shifts in capital and labor between sectors and subsectors were limited between 1996 and 2016 and had an overall negative impact on GDP per capita growth. Administrative barriers and sunk costs limited the ability and willingness of both SOEs and private firms to move capital from one subsector to another. For private firms, moving capital is difficult because state regulations (not market forces) mostly allocate raw materials and outputs.²² The overall effect of inter-sectoral labor movements on growth in GDP per capita in the 1996–2016 period was negative (-3 percent of the total change). Shifts of labor between sectors reduced the growth of GDP per capita in 1996–2000 (by 15 percent) and 2001–08 (by 5 percent), mostly as a result of workers moving to below-average-productivity jobs (Table 1.3). The inter-sectoral movements of workers in these periods mainly were from agriculture toward the below-average-productivity construction and 'other services' (services other than trade, catering, and transport and communications) subsectors, rather than to manufacturing (Figure 1.4). As a result, they were not always productivity-enhancing. Movements of workers between sectors and subsectors have positively contributed to the growth of GDP per capita only since 2008—by 5 percent in 2009–11 and by 3 percent in 2012–16 (Table 1.3)—suggesting that the quality of jobs has generally risen in recent years. Nevertheless, the analysis indicates that some of the potential benefits (higher wages, driven by highly-productive employment and productivity increases) of the industrialization policy actively implemented by the government of Uzbekistan between 1995 and 2016 did not materialize.

²¹ In that sense, it may be important for Uzbekistan to create incentives for investing in employment-intensive subsectors that simultaneously have potential for higher-productivity growth.

²² Until the Presidential Resolution #PP-3479 dated January 17, 2018, "On measures for stable provision of sectors of economy with the demanded types of raw materials," was adopted, which launched the trading of 27 key raw materials on the commodity exchanges.

Table 1.3. Decomposition of Growth in Value Added per Capita and Changes in Labor Productivity by Subsector

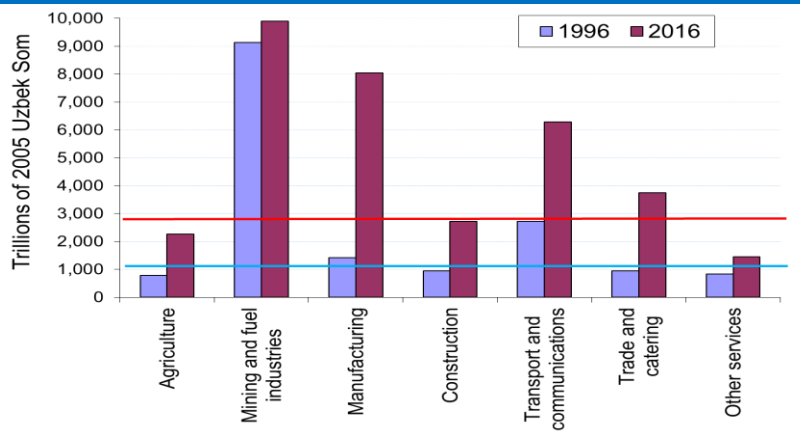
	Period 1: 1996–2000		Period 2: 2001–08		Period 3: 2009–11		Period 4: 2012–16		Whole Period: 1996–2016	
	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution
Annual growth in value added per capita	2.39	100%	5.46	100%	5.58	100%	6.53	100%	5.01	100%
Change in productivity	2.85	119%	4.44	81%	5.63	101%	6.16	94%	4.55	91%
Agriculture	2.16	90%	1.84	34%	1.68	30%	0.90	14%	1.53	31%
Mining	0.36	15%	-0.03	-1%	-0.45	-8%	0.10	2%	0.04	1%
Manufacturing	0.27	11%	1.29	24%	0.20	3%	0.83	13%	0.92	18%
Construction	-0.10	-4%	0.22	4%	0.16	3%	1.11	17%	0.41	8%
Trade and catering	0.57	24%	0.48	9%	1.53	27%	1.28	20%	0.77	15%
Transport and communications	0.35	15%	0.71	13%	1.13	20%	0.30	5%	0.51	10%
Other services	-0.39	-16%	0.20	4%	1.08	19%	1.44	22%	0.53	11%
Inter-sectoral reallocation effect	-0.37	-15%	-0.25	-5%	0.30	5%	0.20	3%	-0.17	-3%
Change in employment rate	-0.22	-9%	-1.06	-19%	0.03	1%	-0.46	-7%	-0.52	-10%
Change in participation rate	-1.70	-71%	0.44	8%	-0.94	-17%	1.17	18%	-0.13	-3%
Change in share of population that is of working age	1.47	61%	1.64	30%	0.86	15%	-0.34	-5%	1.11	22%

Source: World Bank staff calculations using the World Bank’s GDP per capita Growth Decomposition Tool.

1.11 The division of subsectors’ productivity relative to average productivity in the economy is important when analyzing the movements of workers across subsectors. In 1996, subsectors with below-average productivity included agriculture, construction, trade and catering, and ‘other services’ (Figure 1.4). Subsectors with above-average productivity included the mining and fuel industries, manufacturing, and transport and communications services. By 2016, agriculture, construction, and ‘other services’ still had below-average productivity. Nevertheless, average agricultural productivity more than tripled between 1996 and 2016—by 2016, measured in constant prices, it was higher than average productivity in the “other services” subsector and almost as high as average productivity in the construction sector. In 2016, trade and catering had above-average productivity, after increasing its value added per worker more than threefold in constant prices. All subsectors that had above-average productivity in 1996 still had above-average productivity in 2016 (Figure 1.4). Movements of workers from subsectors with below-average productivity to subsectors with above-average productivity generally increase overall productivity in the economy. Movements in the opposite direction decrease overall productivity (see the next section on employment shifts for more detailed analysis).²³

²³ The large part of reasons for poverty originates from the large size of low-productivity subsectors in the economy and low mobility of workers and capital across the subsectors and sectors (or low ‘inter-sectoral shifts’). Many people do not like the idea of improving their qualifications, education or change occupation. However, the economy is subject to permanent changes based on the scientific and technical progress, and growth in the labor productivity has an effect of reducing the value of some types of economic activity, increasing other types, and removing certain types of activity completely. And workers, managers, and owners of capital must adapt to these changes.

Figure 1.4. Uzbekistan: Value Added (Output) per Worker, 1996–2016



Source: World Bank staff calculations based on official data.

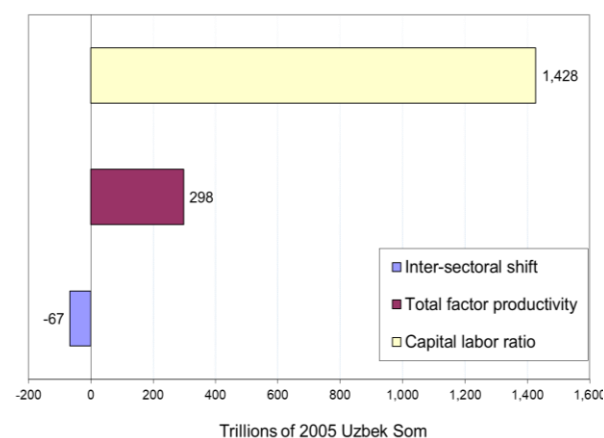
Notes: Blue line denotes the average output per worker in 1996; red line denotes the average output per worker in 2016.

1.12 Uzbekistan’s productivity was influenced by increases in the capital to labor ratio, increases in total factor productivity (TFP) within particular sectors, and reallocation of labor from low- to high-productivity sectors. Increases in capital per worker and TFP contributed to productivity increases within sectors (Figures 1.5 and 1.6). Total output per worker net of inter-sectoral shifts increased by about 150 percent between 1996 and 2016. Due to continuously-high growth in investment during 1996–2016, the economy’s capital stock increased 18-fold and the capital per worker ratio increased 12-fold. However, the TFP residual net of inter-sectoral shifts increased by only 16.4 percent during the same period (Table 1.4) and the inter-sectoral shifts had no positive effect on the growth of value added per capita (Figure 1.5). In 2009–16, however, TFP and inter-sectoral shifts both became more important drivers of labor productivity growth: TFP (net of inter-sectoral shifts) increased by 19.9 percent between 2009 and 2016, and inter-sectoral shifts started to have a positive impact on GDP per capita growth in recent years (Table 1.4 and Figure 1.6).

1.13 The positive impacts of increases in the capital-to-labor ratio and TFP outweighed the negative growth impact of a decline in inter-sectoral shifts in employment between 1996 and 2016. Total output per worker increased by 144 percent in the 1996–2016 period (Table 1.4 and Figure 1.5). The rising capital-to-labor ratio contributed UZS 1,427,517 billion to total productivity growth, while TFP added UZS 297,562 billion. Declining inter-sectoral shifts in 1996–2016 slowed the growth of output per worker but did not offset the combined positive effect of the capital-to-labor ratio and TFP dynamics. Table 1.4 presents the data used for this decomposition. Our analysis—which assumes constant returns to scale—captures changes in the capital-to-labor ratio net of inter-sectoral shifts (that is, all sources of growth not related to changes in technology or inter-sectoral shifts in employment). We assume that capital generated

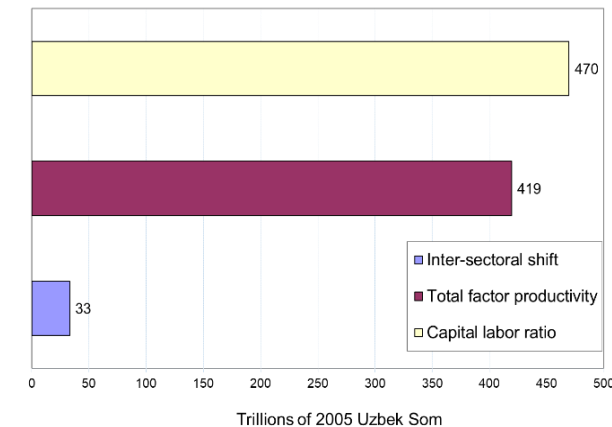
30 percent of total income ($\alpha=0.3$)²⁴ in Uzbekistan in 1996, 2009, and 2016. Capital data are based on national statistics,²⁵ and we used 2005 as the base year for the capital investment deflators.

Figure 1.5. Decomposition of Changes in Output per Worker, 1996–2016



Source: World Bank staff calculations using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool.

Figure 1.6. Decomposition of Changes in Output per Worker, 2009–16



Source: World Bank staff calculations using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool.

1.14 Productivity growth in Uzbekistan's economy has been much more a result of expansion *within* sectors, rather than of inter-sectoral shifts (structural change). Within-sector productivity growth could, however, come at the expense of employment growth in some sectors. Technological upgrading, for example, can reduce the demand for labor, forcing workers to find new jobs in lower-productivity subsectors (lower quality jobs). To check if this hypothesis is correct, we analyze inter-sectoral employment shifts in the next section.

Table 1.4. Data Used for Decomposition of Output per Worker, Capital Stocks, Capital Labor Ratio and Share of Capital in Total Income, 1996–2016

	1996	2009	2016	% Change, 1996–2016	% Change, 2009–16
Share of capital in total income (%)	30	30	30	0	0
Capital	3,287	26,866	62,508	1,801.5	132.6
Total output per worker	1,153,116	1,889,322	2,811,339	143.8	48.8
Output per worker net of inter-sectoral shifts	1,153,116	1,889,322	2,878,194	149.6	47.0
Capital to labor ratio	400,388	2,580,241	5,088,705	1,170.9	97.2
TFP residual net of inter-sectoral shifts	24,051	22,532	27,999	16.4	19.9

Source: Calculations made using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool.

Note: Monetary values are in constant 2005 billions of Uzbek Som.

²⁴ Average in estimates for Uzbekistan (from 0.25 to 0.39) by the Institute of Forecasting and Macroeconomic Research, IFMR (See, for example, IFMR 2010).

²⁵ Statisticheskii ezhegodnik Uzbekistana, Tashkent: State Statistics Committee, 2005, 2013 and 2015, p.28.

Employment Shifts: From Agriculture and Industry To Services?

1.15 Over the 1996–2016 period, employment increased in absolute terms, while the employment rate declined. Total formal employment rose from 8.2 million jobs in 1996 to 12.3 million in 2016 (Table 1.5), an increase of 50 percent. The most substantial increases in absolute employment during the period occurred in construction (134.3 percent) and trade and catering (112.6 percent). Several other sectors also experienced an increase in absolute employment: transport and communications (104.2 percent), other services (88.3 percent), the mining and fuel industries (35.2 percent), and agriculture (a 5.1 percent increase, or 179,000 new jobs). The manufacturing subsectors saw a reduction in employment (net job destruction) of 24.7 percent (or 138,000 jobs) between 1996 and 2016. However, as a result of the simultaneous growth in the economically active population and the working-age population, the annual average employment rate declined by -0.52 percent per year in 1996–2016 (Table 1.6).

1.16 Not all jobs created in Uzbekistan’s economy during the study period were ‘productivity-enhancing’; many jobs moved from subsectors with above-average productivity to those with below-average productivity. As noted above, increases in the share of employment in sectors with above-average productivity will, other things being equal, increase overall productivity (and vice versa). In Uzbekistan over the 1996–2016 period, many jobs moved from manufacturing and mining (which have above-average productivity) to “other services” (which have below-average productivity). This shift contributed to slower overall productivity growth. As employment is the main link between economic growth and poverty reduction, such a move of jobs to below-average productivity subsectors cannot generate ‘better quality jobs’ (with higher pay) as defined by the literature.²⁶ Our data suggest that the lack of quality employment (fewer jobs with high wages) in Uzbekistan is a symptom of a lack of structural change.

Table 1.5. Changes in Employment by Sectors and Subsectors of the Economy (1,000 people), 1996–2016

	1996	2016	Share in 1996, %	Share in 2016, %	Average Share, %	Change in Share, %	Movement of Workers Across Sectors
Agriculture	3,505	3,684	42.7	30.0	36.3	-12.7	Productivity-enhancing
Mining	196	265	2.4	2.2	2.3	-0.2	Productivity-reducing
Manufacturing	559	421	6.8	3.4	5.1	-3.4	Productivity-reducing
Construction	539	1,263	6.6	10.3	8.4	3.7	Productivity-reducing
Trade and catering	713	1,516	8.7	12.3	10.5	3.7	Productivity-enhancing
Transport and communications	358	731	4.4	6.0	5.2	1.6	Productivity-enhancing
Other services	2,339	4,404	28.5	35.9	32.2	7.4	Productivity-reducing
Agriculture	3,505	3,684	42.7	30.0	36.3	-12.7	Productivity-enhancing
Industry	1,294	1,949	15.8	15.9	15.8	0.1	Productivity-reducing
Services	3,410	6,651	41.5	54.1	47.8	12.6	Productivity-reducing
Total employment	8,209	12,284	100	100			

Source: World Bank staff calculations using the World Bank’s Jobs Generation and Growth (JoGG) Decomposition Tool.

²⁶ Byiers and others 2015.

1.17 Many workers that moved out of agriculture and manufacturing sought jobs abroad, rather than moving into other sectors of Uzbekistan’s economy or tapping the potential of the agriculture sector. Although many of the inter-sectoral labor shifts did not improve overall productivity, movements of workers out of agriculture (a below-average productivity sector) into higher-productivity sectors (transport and communications, and trade and catering) had a positive effect on overall productivity and GDP per capita growth in Uzbekistan. However, Uzbekistan’s economy did not absorb all the labor that moved out of agriculture and manufacturing, and it seems that a large net outflow of workers was absorbed abroad. At the same time, Uzbekistan’s agriculture sector has a high potential for growth in value added and productivity that could be tapped through the diversification of outputs—for example, away from cotton and wheat and toward horticultural and other higher value-added products. In terms of job creation, agriculture in Uzbekistan also has high potential: Table 1.6 and Figures 1.7 and 1.8 show that agriculture has contributed more than any other sector of the economy to total job creation in recent years (2012–16).²⁷

Table 1.6. Decomposition of Growth in Value Added per Capita and Changes in Employment by Subsector

	Period 1: 1996–2000		Period 2: 2001–08		Period 3: 2009–11		Period 4: 2012–16		Whole Period: 1996–2016	
	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution	%	Contri- bution
Annual growth, value added per capita	2.39	100%	5.46	100%	5.58	100%	6.53	100%	5.01	100%
Change in productivity	2.85	119%	4.44	81%	5.63	101%	6.16	94%	4.55	91%
Change in employment rate	-0.22	-9%	-1.06	-19%	0.03	1%	-0.46	-7%	-0.52	-10%
Agriculture	-1.75	-73%	-1.15	-21%	-0.72	-13%	0.17	3%	-0.89	-18%
Mining	-0.05	-2%	-0.02	0%	0.04	1%	-0.01	0%	-0.02	0%
Manufacturing	-0.18	-7%	-0.35	-6%	0.12	2%	-0.10	-2%	-0.21	-4%
Construction	0.32	13%	0.08	2%	0.17	3%	0.03	0%	0.16	3%
Trade & catering	0.01	1%	0.22	4%	0.14	3%	0.10	2%	0.15	3%
Transport & communications	0.02	1%	0.08	1%	0.05	1%	0.05	1%	0.06	1%
Other services	1.40	58%	0.08	1%	0.24	4%	-0.70	-11%	0.24	5%
Change in participation rate	-1.70	-71%	0.44	8%	-0.94	-17%	1.17	18%	-0.13	-3%
Change in share of population that is of working age	1.47	61%	1.64	30%	0.86	15%	-0.34	-5%	1.11	22%

Source: World Bank staff calculations using the World Bank’s Jobs Generation and Growth (JoGG) Decomposition Tool.

1.18 Although employment grew in absolute terms in all economic sectors except manufacturing, the employment rate made a small negative contribution to total GDP per capita growth in the 1996–2016 period. Uzbekistan’s overall employment rate declined in all

²⁷ Measuring average labor productivity as “value added per worker” may be somewhat misleading in Uzbekistan because most small-holder farms (which account for more than two-thirds of total food production) are operated by part-time farmers who are not employed full-time on their farms, in contrast to workers in other sectors of the economy. If agricultural productivity could be measured as “value added per hours worked,” then labor productivity in Uzbekistan’s agriculture sector would be relatively higher. As a result, labor moving out of agriculture is not always productivity-enhancing as productivity in some high value-added subsectors could be higher than productivity in construction and some services. Given the lack of skilled workers for industry creation of better jobs in Uzbekistan in the short-term may be associated with moving workers from less productive to more productive activities within the agriculture sector with comparable skills.

periods except 2009–11 (Table 1.6). Employment shifted mostly from agriculture (contribution to total change in employment rate of -18 percent) and manufacturing (contribution to total change in employment rate of -4 percent) toward the construction, trade and catering, transport and communications services, and “other services” subsectors. The decline in manufacturing sector employment occurred despite government policies to support the sector, and contrary to the government’s expectations. The employment rate in the manufacturing sector rose only in 2009–11 when the government implemented an anti-crisis program. In that period, growth in the manufacturing sector employment rate contributed 2 percent of the growth in GDP per capita.

Figure 1.7. Uzbekistan: Employment in Economic Sectors, 1996–2016

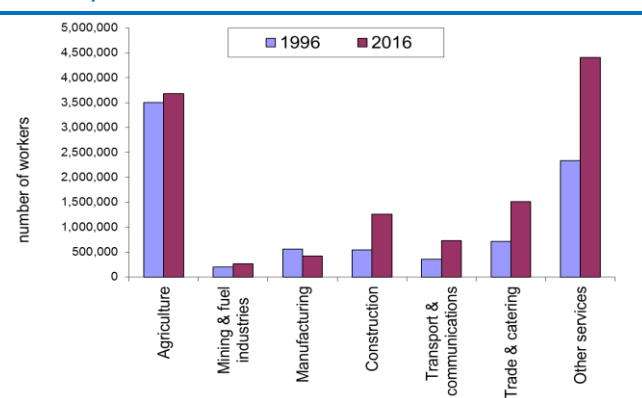
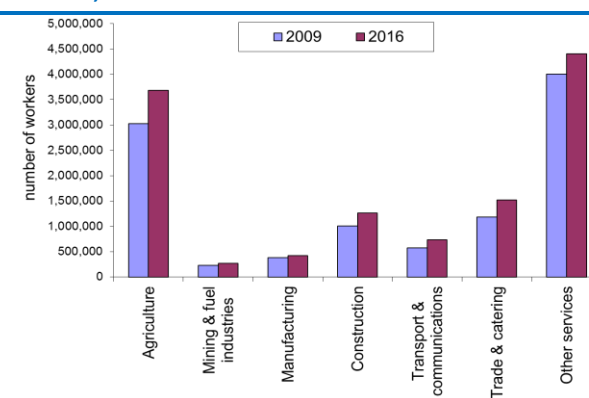


Figure 1.8. Uzbekistan: Employment in Economic Sectors, 2009–16



Source: World Bank staff calculations based on official data.

1.19 In 2009–16, the inter-sectoral shifts generally made positive contributions to growth in GDP per capita, but changes in employment still made a negative contribution. Between 1996 and 2008, inter-sectoral shifts contributed negatively to growth in GDP per capita. Between 2009 and 2016, however, employment also shifted toward manufacturing on a net basis (Figure 1.8), to construction, transport and communications, and trade and catering services, and from “other services” back to the agriculture sector (Table 1.7). However, trends within manufacturing have been mixed as employment declined in the power industry, metallurgy, machinery building, light industry, and other manufacturing while increasing in the fuel, chemicals and petrochemicals, construction materials, and food processing industries. The overall low contribution of the agriculture sector to the inter-sectoral shifts in this period was because many workers had moved out of agriculture in the earlier years of economic growth in Uzbekistan (1996–2011), then moved back to agriculture in recent years (the agriculture sector contributed 3 percent to total per capita GDP growth in 2012–16). Light industry, which is generally labor-intensive, did not absorb workers in 2009–16; instead, workers left this sector during the period. The net effect of inter-sectoral shifts on growth in GDP per capita after 2009 appears to be slightly positive. The government policies that helped the inter-sectoral shifts to have a more positive impact on GDP per capita growth after 2009 were a mixture of (i) distortive measures (for example, providing cheaper loans to the ‘localization program’—essentially, import-substitution—and implementing limited increases in the administrative prices for utilities) and (ii) non-distortive measures (such as improving the business

environment, implementing public works, investing in infrastructure, giving more land to small-holder farms, and recapitalizing banks).

Table 1.7. Decomposition of Inter-Sectoral Shifts, 2009–16

	Direction of Employment Share Shift	Contribution to Inter-Sectoral Shifts (%)
Agriculture	+	-8.87
Electricity industry	-	-2.77
Fuel industry	+	13.28
Metallurgy industry	-	-19.33
Chemical and petrochemical industry	+	1.67
Machinery building and metalworks industry	-	-16.89
Construction materials industry	+	1.57
Light industry	-	-4.63
Food processing industry	+	0.80
Other manufacturing	-	-8.83
Construction	+	-4.65
Transport and communications	+	40.69
Trade and catering	+	16.53
Other services	-	91.41
Total contribution of inter-sectoral shifts		100

Source: Calculations made using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool

2. TRENDS IN LABOR PRODUCTIVITY, CAPITAL PRODUCTIVITY, CAPITAL- AND LABOR-INTENSITY, EMPLOYMENT AND REAL WAGES

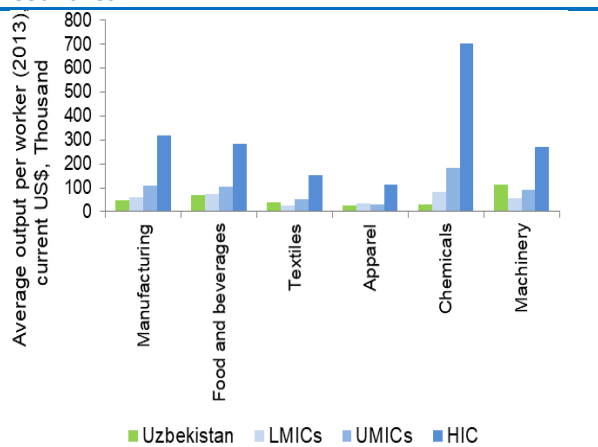
The sizable productivity gap between Uzbekistan and upper-middle income countries in manufacturing may be reduced by promoting subsectors with faster growth in value added and productivity (such as food processing, textiles, and apparel) that have clear competitive advantages in international trade.

2.1 Uzbekistan needs to address its lower labor productivity and higher wages in manufacturing compared to other lower-middle income countries. A comparison of Uzbekistan's productivity in different manufacturing subsectors with that of other lower-middle income countries and of upper-middle income countries (Figure 2.1) shows that Uzbekistan's average productivity in manufacturing (as of 2013) was on average 16 percent lower than that of lower-middle income countries and 54 percent lower than that of upper-middle income countries. In other words, the upper-middle income countries were 2.2 times more productive in manufacturing, including almost 6 times in the chemical industry. This difference was much smaller in the food processing industry (50 percent higher productivity in upper-middle income countries), the apparel industry (30 percent higher) and the textile industry (10 percent higher). There was no labor productivity gap in the machinery building industry. However, in terms of wages in the manufacturing sector, in 2013 wages were 57 percent higher in Uzbekistan than in its lower-middle income peers. Uzbekistan's average wages exceeded the average wages of other lower-middle income countries by 33 percent in textiles, 36 percent in chemicals, 40 percent in apparel, 50 percent in machinery building, and 88 percent in the food and beverages subsector (Figure 2.2).

2.2 Several constraints will need to be removed for Uzbekistan to overcome its productivity gap in manufacturing. The gap in manufacturing sector productivity between Uzbekistan and other lower-middle income countries is small, but the gap between Uzbekistan and upper-middle income countries is substantial. To narrow the gap, Uzbekistan needs to remove constraints to productivity and promote technology acquisition. The Uzbekistan Productivity Constraints Surveys, conducted for this report, have identified the policies needed. The surveys aimed to determine the reasons for the lower productivity of Uzbekistan's manufacturing sector and ways to improve it (from the point of view of manufacturing firms themselves).²⁸ Chapter 3 discusses the survey results.

²⁸ The surveys covered 122 medium and large firms in 2013, 111 medium and large firms in 2017, and 478 small firms in 2017. The surveyed firms operated in six provinces of Uzbekistan, in five key manufacturing subsectors: food processing, light industry (textiles, apparel, and furniture), construction materials, chemicals and petrochemicals, and machinery-building (electromechanical, automobile, refrigerators, and equipment-assembly).

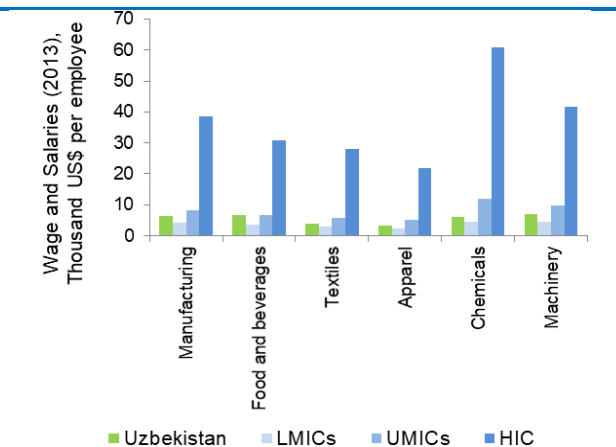
Figure 2.1. Labor Productivity Gap in Manufacturing Subsectors between Uzbekistan and Other Countries



Source: World Bank staff calculations based on UNIDO data, 2013. The UNIDO database includes 184 economies ranging from low- to middle- and high-income (See <https://www.unido.org/researchers/statistical-databases>).

Note: UNIDO lower-middle income (LMICs) category in 2013 includes countries with a GNI per capita of \$1,036-\$4,085; upper-middle income (UMICs) category includes countries with a GDP per capita of \$4,086-\$12,615; and high-income (HICs) includes countries with a GDP per capita of more than \$12,615.

Figure 2.2. Average Wages Gap in Manufacturing Subsectors between Uzbekistan and Other Countries



Source: World Bank staff calculations based on UNIDO data, 2013. The UNIDO database includes 184 economies ranging from low- to middle- and high-income.

2.3 Policies should focus in particular on manufacturing subsectors in which Uzbekistan has a competitive advantage (such as food processing, textiles, and apparel) or strong potential to develop one (construction materials and selected subsectors of chemicals and petrochemicals). The ratio of value added to total output, when calculated in international prices (for inputs and outputs), is significantly higher than the ratio calculated in domestic prices²⁹ for the food processing, textiles, and apparel industries (Figures 2.3, 2.5, and 2.6). This suggests that these three manufacturing subsectors have competitive advantages in international trade but suffer from domestic price distortions generated by government policies. These efficient subsectors do not face a level playing field as current government policies favor and subsidize heavy, capital-intensive industries (such as machinery building, metallurgy, chemicals, electricity, and fuel). The food processing, textiles, and apparel industries do not need state subsidies; state support should focus on export promotion (market information, ISO certification, marketing, packaging, reducing the cost of export procedures at customs, transport and logistics, and skills training). The growth of textiles and food exports since the liberalization of trade in September 2017 and the removal of its quotas for food exports also suggest that Uzbekistan may have an international competitive advantage in these subsectors.

²⁹ Using domestic prices for this calculation cannot reveal comparative advantages because domestic prices in Uzbekistan are not currently determined by the market. Prices are heavily distorted and reflect cross-subsidization and other government policies, and therefore do not reflect international relative prices.

Uzbekistan even managed to increase textile and garment exports to textile-exporting countries (China and Turkey). However, our surveys indicate that 81 percent of both large and small firms in the food processing industry, and 45 percent of large firms and 49 percent of small firms in light industry (including textiles and apparel), did not export in 2017. In the chemical and petrochemical industries (nitrogen fertilizers, polyethylene, and polypropylene) there is a positive ratio of value added in total output, as measured in international prices. However, this ratio is higher in domestic prices (Figures 2.7 and 2.8), meaning that these sectors are subsidized in domestic prices (for example, they are intensive users of electricity and natural gas, for which domestic prices are two or three times lower than world prices). In the construction materials industry (cement and concrete production) this ratio is negative in international prices, although it has improved significantly in recent years (Figure 2.4), which suggests it has the potential to become positive in the future.

Figure 2.3. Share of Value Added in Total Output in the Food Processing Industry, 2014–16

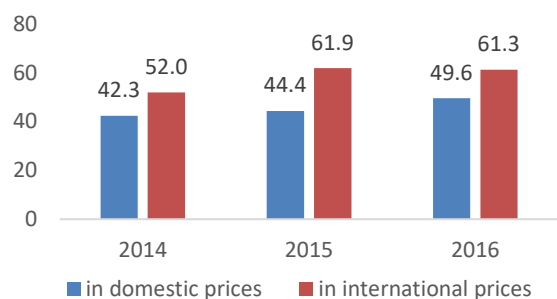


Figure 2.4. Share of Value Added in Total Output in the Construction Materials Industry, 2014–16

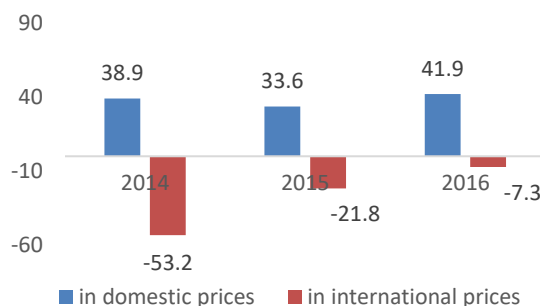


Figure 2.5. Share of Value Added in Total Output in the Textile Industry, 2014–16

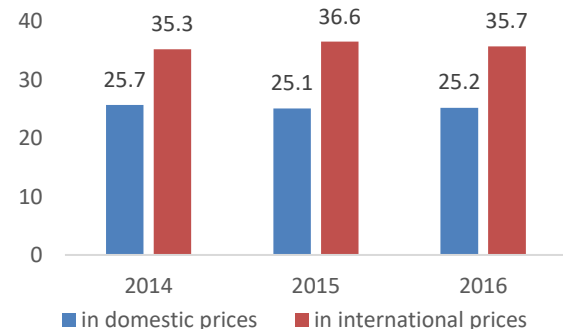


Figure 2.6. Share of Value Added in Total Output in the Apparel Industry, 2014–16

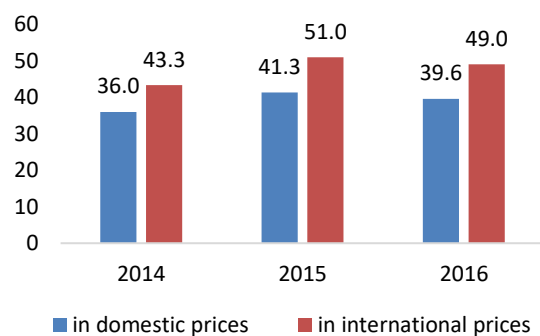


Figure 2.7. Share of Value Added in Total Output in the Chemical & Petrochemical Industry – Nitrogen Fertilizers, 2014–16

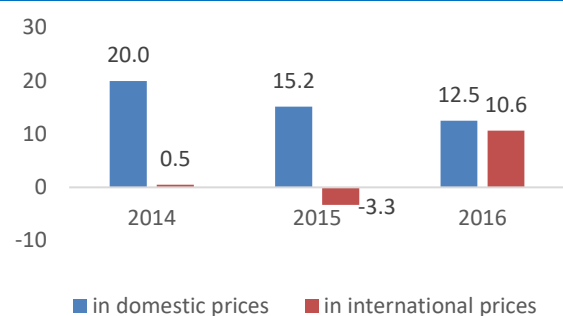
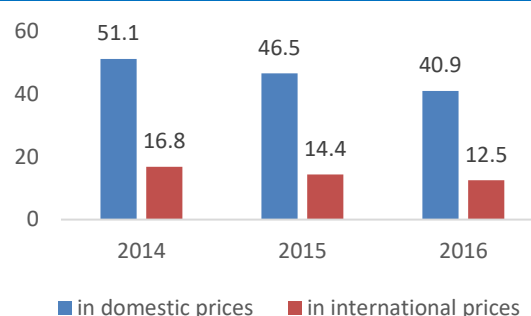


Figure 2.8. Share of Value Added in Total Output in the Chemical & Petrochemical Industry – Polyethylene and Polypropylene, 2014–16



Source: Calculations by Zulfiya Kostyuchenko for Figures 2.3-2.8 are based on the official data. Sources of domestic and international price data include the State Statistics Committee of Uzbekistan; Uzkimyosanoat JSC; Commodity Markets Outlook, a World Bank Report, October 2017; AMIS Market Monitor No. 58, May 2018; Volkova A.V., *Rynok krupnotonnazhnikh polimerov*, chast 1, Poliethilen, 2016; www.polymerbranch.com; http://plastics.ru; FAOSTAT; O‘zqurilishmateriallari JSC; Mineral Commodity Summaries 2018, USGS; Cotton Outlook, January 2017; and the International Energy Agency (IEA).

Note: Total output in each subsector includes: (i) Food processing industry–milk and milk products, canned foods, horticultural foods, bread and bakery products, flour, and cereals; (ii) Construction materials industry–cement, concrete products; (iii) Textile industry–cotton-fiber, cotton-yarn, and cotton fabric; (iv) Apparel industry–outer-garments, knitted or crocheted garments, and underwear; (v) Chemical fertilizers–carbamide, ammonium nitrate, and super-phosphate; and (vi) Other chemicals–polyethylene and polypropylene. For each product

Many of Uzbekistan’s manufacturing subsectors did not achieve the optimal outcome of simultaneous growth in both employment and labor productivity.

2.4 It is not clear whether labor productivity and employment growth are negatively related, such that productivity improvements occur at the expense of employment reduction (the “jobless growth” that occurred in Uzbekistan in 1996–2016). Is there a trade-off between productivity and employment? Our review of the literature showed that there is a weak relationship between productivity growth and employment growth.³⁰ An increase in productivity only coincides with a decline in employment in a limited number of cases, mostly where structural reforms were implemented in the 1990s to correct for major defects of the economic model in the former socialist economies of Central and Eastern Europe and most economies of the Former Soviet Union. The massive job losses experienced by these countries in the 1990s were not the result of productivity growth; on the contrary, they were partly the result of stagnating productivity levels during the final decades of the communist era. At the same time, China boosted productivity growth without reducing labor input growth. In some cases, an acceleration (or deceleration) of productivity growth has accompanied a deceleration (or acceleration) in employment growth. Up to the mid-1990s, labor productivity growth in the European Union was substantially higher than in the United States, but with a much less impressive labor input performance. In fact, labor input growth in Europe was negative up to the 1990s, whereas it increased on average at 1.6 percent per year in the United States. Labor input growth in Europe accelerated in the 1990s, but this was at the cost of a substantial deceleration in labor productivity

³⁰ van Ark, Frankema, and Duteweerd 2004.

growth. In contrast, in the United States, productivity growth accelerated during the 1990s without a slowdown in labor input growth. In some cases where growth in productivity has accompanied a decline in labor intensity, there has been a decline in working hours per employee or the employment to population ratio, suggesting that income per capita has increased more slowly than productivity. Finally, even if job creation accompanies productivity growth, the new jobs may be of lower quality (requiring lower skill levels and offering lower real wages).

2.5 In response to the call to ‘move policies for jobs to the center stage’,³¹ the challenge is to create employment while increasing productivity (both by increasing worker productivity within sectors and facilitating a shift of labor from lower- to higher-productivity sectors). This transition involves utilizing government policies that actively target improvements in job quantity (more jobs), quality (better jobs), and access (inclusive jobs) as they relate to sectoral labor demand and supply dynamics. Demand-side policies focus on the investment climate and tax regime and include strategies to facilitate the creation, entry, and growth of firms and to promote technology that favors capital over labor. Supply-side policies relate to the ability of the population to fill job vacancies, such as creating incentives for citizens to participate in the labor force and to work, job-matching education and training, labor mobility, and social protection services to support transitions between jobs according to sectoral growth dynamics.³²

2.6 During 1996–2016, many of Uzbekistan’s sectors and subsectors experienced simultaneous growth in employment and labor productivity, which is ideal. While, intuitively, an acceleration of productivity growth may cause employment to fall, Uzbekistan’s experience suggests that many subsectors can have both productivity and employment growth at the same time. Between 1996 and 2016, this simultaneous growth in employment and labor productivity was observed in construction, chemicals and petrochemicals, wholesale and retail trade and catering services, transport and communications, and other services subsectors (Tables 2.1 and 2.2). Agriculture experienced high growth in labor productivity, which allowed it to become the principal source of workers for other sectors. However, despite a small increase in agricultural employment (which we believe was due to the urgent demand for temporary jobs from the large influx of Uzbek migrants that returned from Russia between 2014 and 2016), we do not consider this sector to be a simultaneous source of net job creation and labor productivity growth (Table 2.2). While the electricity industry and two subsectors of the mining sector (the fuel industry and the metallurgical industry) created jobs, they also experienced a decline in labor productivity. Most manufacturing industries (machinery building, construction materials, light industry, food processing, and other manufacturing) progressed significantly in terms of labor productivity between 1996 and 2016 but failed to create sufficient jobs.

³¹ World Bank 2012.

³² Hallward-Driemeier 2015; Byiers and others 2015.

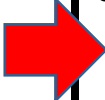
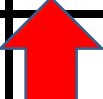
Table 2.1. Changes in Employment and Labor Productivity by Subsector of the Economy, 1996–2016

	Total Employment			Labor Productivity (output per worker)		
	1996	2016	% Change	1996	2016	% Change
Agriculture	3,505,000	3,683,700	5.10	738,066	2,274,954	208.23
Electricity industry	37,000	51,000	37.84	10,570,934	10,263,126	-2.91
Fuel industry	18,300	51,600	181.97	30,715,430	16,043,467	-47.77
Metallurgy industry	62,300	106,300	70.63	11,371,317	9,753,278	-14.23
Chemical and petrochemical industry	33,900	53,400	57.52	3,828,712	6,533,040	70.63
Machinery building metalworks industry	157,000	91,300	-41.85	1,354,279	6,968,650	414.57
Construction materials industry	78,100	55,800	-28.55	1,830,938	4,195,634	129.15
Light industry	212,000	140,200	-33.87	1,811,351	6,031,102	232.96
Food processing industry	81,900	71,200	-13.06	1,697,534	10,649,535	527.35
Other manufacturing	74,600	64,400	-13.67	48,257	12,284,544	25,356.30
Construction	539,000	1,263,300	134.38	957,406	2,730,176	185.16
Transport and communications	358,000	731,000	104.19	2,715,281	6,285,703	131.49
Trade and catering	713,000	1,516,000	112.62	1,068,270	3,751,018	251.13
Other services	2,339,000	4,404,400	88.30	856,643	1,457,748	70.17
Total	8,209,100	12,283,600	49.63	1,158,969	2,811,339	142.57

Source: World Bank staff calculations made using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool.

2.7 The decline in employment in most manufacturing subsectors—especially in labor-intensive food processing and light industry (which have competitive advantages and a high potential for output and employment growth)—should concern policy makers. The importance of these subsectors to Uzbekistan is underscored by the fact that they represent the economy's current competitive advantage in international trade and have the potential to produce and export significantly more output and employ many more workers, and yet they demonstrate substantial decreases in the number of jobs. Efforts should be made to (i) identify the factors that constrain employment generation in these and other labor-intensive subsectors and firms, (ii) revamp Uzbekistan's food processing and light industries to increase their employment dramatically, and (iii) increase labor productivity in the electricity, fuel, and metallurgical industries (Table 2.2 shows that not all sectors and subsectors in Uzbekistan generate growth in employment and productivity simultaneously). The red arrows in Table 2.2 indicate the ideal scenario in which all economic subsectors move toward the 'win-win' situation of simultaneous labor productivity and employment growth (the top right quadrant).

Table 2.2. Economic Subsectors by Direction of Change in Employment and Labor Productivity Growth, 1996–2016

Employment	Growth	Electricity industry Fuel industry Metallurgical industry		Construction Chemical and petrochemical industry Trade and catering services Transport and communications Other services
	Decline	-		Agriculture Machinery building Construction materials industry Light industry Food processing industry Other manufacturing
		Decline		Growth
		Labor Productivity		

Source: World Bank staff presentation of calculations using the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool.

2.8 The movement of workers from agriculture into services, construction, and some industry subsectors appears to be a factors in driving the growth of value added per capita, but the large influx of workers into ‘other services’ and large outflow of workers from most manufacturing subsectors (including labor-intensive manufacturing) had a negative impact on growth. Both value added and employment in trade and catering services (also known as ‘traditional services’ due to their low technology and low knowledge intensity) have increased in the past two decades. This subsector mostly offers lower quality jobs, though it became more productive (in terms of growth in value added) in recent years. Trade and catering services started in 1996 with below-average productivity, and by 2016 had above-average productivity, suggesting a natural competitive advantage in Uzbekistan. This subsector not only created jobs and increased labor productivity simultaneously but also experienced productivity-enhancing structural shifts as it raised its productivity above the average. On the other hand, although the ‘other services’ subsector has also experienced simultaneous increases in jobs and labor productivity, its productivity remained below-average. Sectoral shifts of labor into this subsector were productivity-reducing because the productivity of ‘other services’ is far below the average productivity in Uzbekistan, and even below the average for the agricultural sector. As a result, the shift of employment from manufacturing to ‘other services’ or agriculture negatively impacted the overall growth of value added per capita in Uzbekistan and implied a reduction in average earnings that may have slowed income growth and poverty reduction. This dynamic may partly explain the high share of low-quality employment (the need for better jobs) in Uzbekistan.

2.9 Our analysis raises an important question: If the value added in ‘other services’ is lower than in manufacturing and agriculture, and if this difference is reflected in relative wages, then why are workers moving from the manufacturing subsectors to ‘other services’ and agriculture? One hypothesis is that this dynamic is driven by unskilled, low-wage workers who tend to earn the same or more in the ‘other services’ subsectors despite its below-average labor productivity status

and that workers who move into ‘other services’ may be further depressing the official value added per worker. Another hypothesis is that the ‘other services’ subsectors have a large informal economy and unaccounted incomes, which attract workers. These informal incomes tend to mask officially low incomes in the ‘other services’ subsectors. Further analysis will be required to verify these hypotheses.

2.10 The analysis suggests that rising labor productivity in below-average productivity subsectors and rising employment in above-average productivity subsectors is necessary to generate rapid growth in GDP per capita. The most efficient ways to bolster overall productivity in Uzbekistan would be to promote (i) job creation in high-productivity sectors, including manufacturing, construction, and certain agricultural (horticultural) subsectors, and (ii) productivity growth in the services sector, including public services, construction, and certain agricultural subsectors that are characterized by low output per worker. Over the medium term, the majority of Uzbekistan’s workforce—and the majority of the working poor³³—are likely to remain employed in less-productive jobs in below-average-productivity subsectors. Therefore, productivity growth in below-average-productivity subsectors (for example, ‘other services’ such as public services, and some types of agriculture) should be a policy priority. For example, Uzbekistan’s labor-intensive agricultural subsectors (such as horticulture) are already internationally competitive, do not need state subsidies, and could be fully liberalized from state ownership and management. Nevertheless, there is significant scope for productivity growth in small-holder farms, which produce two-thirds of all food products in Uzbekistan but do not receive state support for the supply of inputs or the promotion of outputs for domestic sale or export. Other examples of where urgent reforms could improve productivity in the services subsectors are public services (for example, streamlining employment within the public sector, and building the capacity of regional and central authorities), and attracting foreign direct and domestic private investment in tourism as well as in various business services subsectors. The services sector contributes more than half of GDP and employment, but the government’s analytical capacity to design policies to develop the services subsectors needs development.

2.11 Further analysis at the subsector level would help determine whether employment-intensive or productivity-intensive growth is more closely correlated with rising wages (and falling poverty rates) and whether these relationships vary by subsectors. Areas for further research include the specific sources of employment growth in the industry, construction and services subsectors and their sustainability over time. More detailed data on compensation by job type, especially in the agricultural and service sectors, would help explain recent shifts in sectoral employment. An analysis of the types of jobs being created most rapidly would enable policy makers to identify emerging skills gaps. Finally, it will be important to assess the extent to which the poor have access to higher paying jobs in above-average-productivity sectors.³⁴

³³ According to the Uzbekistan Living Standards Assessment Update, more than half of the poor in Uzbekistan had jobs. See World Bank 2007.

³⁴ The main sources of rapid growth for lower-middle income countries such as Uzbekistan are usually low-cost labor and easy technology adoption and, based on these, rapid labor and capital productivity increases and job creation. Such lower-middle-income countries can compete in international markets by producing labor-intensive, low-cost products using technologies developed abroad. Large productivity gains occur through a reallocation of labor and

Uzbekistan has untapped potential to increase manufacturing employment, especially in labor-intensive subsectors.

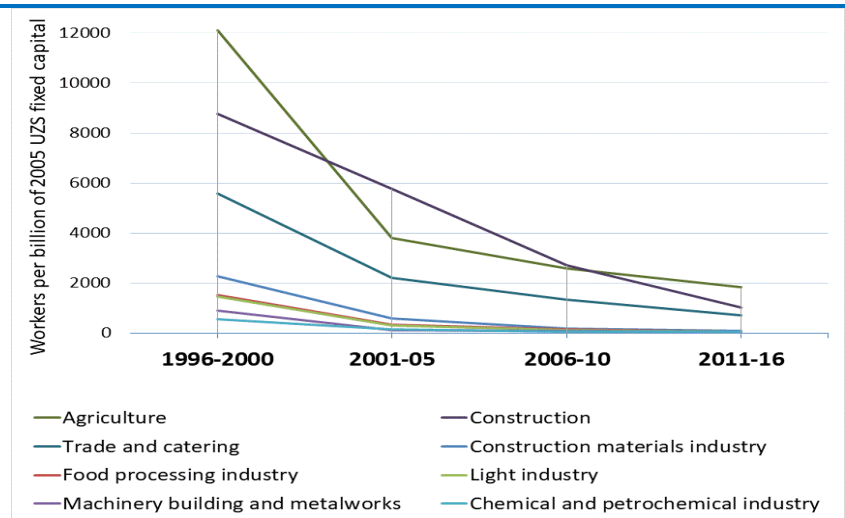
2.12 Uzbekistan’s manufacturing sector has not been creating sufficient jobs. The partial liberalization of the economy since 2003, along with the introduction of currency convertibility and some economic reforms between 2014 and 2016 to improve the investment climate, resulted in a modest improvement in the performance of the industry sector (in terms of increasing employment and value-added growth rates, which were lower than those of Uzbekistan’s other economic sectors). Manufacturing performance over the two decades following independence suggests a period of ‘jobless growth’—a period of growth without net employment creation. In Uzbekistan, the share of the entire industry sector, including manufacturing, in total employment was less than 13 percent in each year during the 1996–2016 period. In recent years, in China, Malaysia, the Republic of Korea, Turkey, and Vietnam, the share of industry in total employment averaged between 25 and 27 percent. To follow these countries, Uzbekistan will need to double its industry employment in the coming years. Although Uzbekistan’s mining subsectors (fuel and metallurgical industries) created about 252,000 new jobs over 1996–2016, the number of jobs in manufacturing declined from 637,500 in 1996 to 476,300 in 2016 (a loss of 161,200 jobs) in the same period. The net increase in jobs in Uzbekistan’s entire industrial sector was only about 90,800 over the study period (an average increase of just 4,300 jobs per year).

2.13 The labor intensity of Uzbekistan’s labor-intensive manufacturing subsectors has decreased over time, suggesting that these subsectors’ employment potential could be sharply enhanced in the coming years. Why, despite good growth performance, are the labor-intensive subsectors³⁵ of Uzbekistan’s industry sector (including manufacturing) still unable to generate significant employment growth? To answer this question, we analyzed the labor intensity (measured as the ratio of the number of people employed to the fixed capital in constant prices over the period 1996–2016) of selected labor-intensive subsectors (Figure 2.9). Our key observation is that labor intensity has been continuously declining over time across all labor-intensive subsectors, including labor-intensive manufacturing. This trend brings into question the ability of firms/subsectors with more labor per unit of capital to generate employment.

capital from low-productivity agriculture to high-productivity manufacturing (and services). As countries reach upper-middle income levels, the underemployed rural labor force has been exhausted and wages rise (in manufacturing and services), eroding countries’ competitiveness. Productivity growth from sectoral reallocation and technology catch-up are eventually exhausted while rising wages make labor-intensive exports less competitive internationally. From upper-middle income to high-income and advanced status, a country should increase productivity further, mostly through domestic science and innovation (rather than continuing to rely on foreign technology). If it is unable to do this, it finds itself trapped at the middle-income level.

³⁵ Labor-intensive subsectors include construction, textiles, apparel, carpets, footwear, luggage and handbags, games, toys, sporting goods, porcelain and ceramics, furniture, leather, and food processing industries. The labor-intensive food industries in Uzbekistan include processed fruits, vegetables, tobacco products, cereals and baked goods, and livestock products.

Figure 2.9. Uzbekistan: Labor-Intensity in Economic Subsectors, Measured as a Ratio of Labor/Fixed Capital in Constant Prices, 1996–2016



Source: World Bank staff calculations based on official data.

Note: Labor intensity is defined as the number of workers per unit of gross fixed capital stock.

2.14 Declines in employment in textiles and apparel and food processing were mainly the result of an undersupply of high-quality raw materials for processing, including a shortage of high-quality cotton fiber. The decline in the labor intensity of labor-intensive sectors in part seemed inevitable due to the inclusion of new and sophisticated technologies in more capital-intensive production processes. The firm surveys conducted for this report indicate that a lack of raw materials was the main barrier to job creation by manufacturing enterprises (apart from the lack of foreign exchange, which was the dominant barrier before the September 2017 reforms). Twenty-nine percent of large textile firms and 44 percent of small textile firms cited access to foreign exchange as a constraint in 2016 and the first half of 2017. Significant job losses also resulted from reductions in wages and employment as textile firms either went out of business in the face of intense competition (both domestic and foreign) or scaled back operations in an effort to survive. Evidence of large informal inflows of imported textiles and garments could be found in the Tashkent bazaars. In the textile industry, 66 percent of large firms and 59 percent of small firms cut wages to save costs in 2016; 77 percent of large textile firms implemented wage cuts in 2012. In the food processing industry, 75 percent of large firms and 58 percent of small firms reduced wages in 2016. Our firm surveys also point to other factors that led to employment cuts in these industries, namely a lack of access to bank credit (cited by 25 percent of food processing and 30 percent of textile firms, both large and small) and excessive payroll taxes (cited by 31 percent of both textile and food processing firms). In some cases, investment in new technological advancements also led to job cuts.

2.15 Reductions in manufacturing employment were also driven by a lack of government support to the textile and food processing industries and high payroll and personal income taxes. Uzbekistan’s new government started paying more attention to these subsectors from mid-2017. However, it is not yet clear to what extent recent policy changes have supported job creation. Unfortunately, data are currently insufficient to assess to what extent frequent worker

layoffs in manufacturing are a response to mechanization vis-à-vis the result of excess capacity and production cuts. The firm surveys conducted for this report also show that Uzbek manufacturing firms considered the high rate of personal income taxes (22.5 percent until January 2019) applied to relatively low wages in Uzbekistan (the average monthly wage was equivalent to \$280 in 2017, and \$209 in 2018 following devaluation) and high payroll taxes (25 percent for large firms and 15 percent for small firms until January 2019) to be constraining incentives for work and job creation in the formal sector. Recognizing these constraints, in January 2019 the government reduced personal income tax to a flat rate of 12 percent and payroll tax for large and small firms to 12 percent.

2.16 If Uzbekistan’s manufacturing sector is to perform at the level of China and other rapidly-developing East Asian economies, the government will need to implement policies to boost the sector’s share of employment generation. Focused policy initiatives will be required, including market-creation measures; improving access to loans, raw materials, skilled labor, and other inputs for food processing, light industry, the construction materials industry, and other labor-intensive subsectors; tax and other policy incentives; and state support to improving export performance. The government should also consider expanding the labor-intensive manufacturing subsectors—both traditional and new—including apparel, leather, footwear, luggage and handbags, gems and jewelry, sporting goods, bicycles, invalid carriages, ceramic products, games and toys, plastic products, printing and publishing, and animal feeds and forage. There is little research on how best to promote Uzbekistan’s labor-intensive manufacturing and services subsectors to increase their employment generation potential. No study has attempted to understand the determinants of declining labor intensity in Uzbekistan’s labor-intensive manufacturing.

To ensure labor productivity growth in Uzbekistan’s manufacturing sector, the sector’s capital intensity has been growing to counterbalance the underperformance in capital productivity.

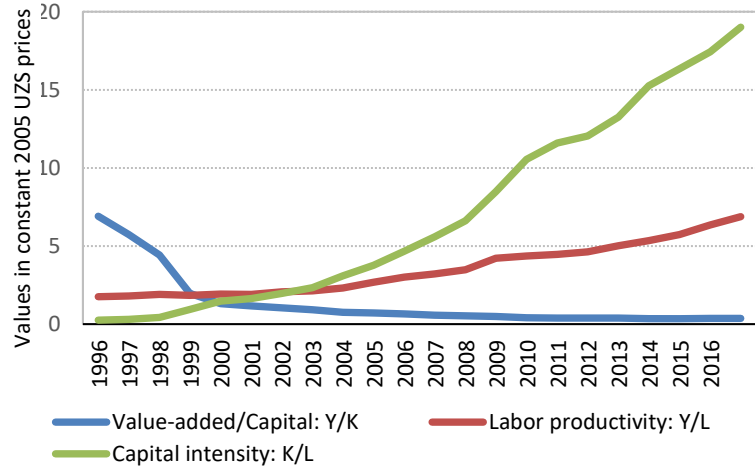
2.17 The average labor-intensity in three of Uzbekistan's major labor-intensive manufacturing subsectors (food processing, light industry, and the construction materials industry) declined continuously between 1995 and 2016. The average combined value-added share of these three industries (as a percentage of total manufacturing value added) fell from 93 percent in 1995 to 54 percent in 2016. The decline in labor-intensity in these labor-intensive subsectors seemed inevitable due to the introduction of new and sophisticated technologies in production processes that are more capital-intensive. However, these internationally-competitive labor-intensive industries have a higher potential than capital-intensive subsectors to create jobs in the near future. The government's policy in 1996–2016 of favoring capital-intensive subsectors³⁶ by providing them with better access to foreign exchange, banking credit, key raw materials at subsidized prices, and tax policies favoring capital over labor (through high payroll taxes) have de-facto (although unintentionally) created constraints to increasing job creation in labor-intensive manufacturing subsectors.

³⁶ Capital-intensive subsectors include machinery building, chemical and petrochemical industry, metallurgy, and fuel and electricity supply industries.

2.18 While manufacturers in rapidly-developing economies increase their capital intensity to ensure scale and price competitiveness and generate an increasing return on capital, capital productivity (return on capital) has generally been declining in Uzbekistan, as measured by the ratio of value added to capital in constant prices (Figure 2.10). This begs the question: Why invest in Uzbekistan where, on average, the return on capital in real terms has been falling? This question has serious implications not only for investment but also for employment—in a country like Uzbekistan with limited resources and a relatively poor (but improving) business climate, spending more on capital that yields declining capital productivity limits employment and lowers labor productivity in labor-intensive manufacturing (Figure 2.9).

2.19 Nevertheless, greater investment in capital-intensive subsectors in Uzbekistan ensured that capital intensity in manufacturing grew fast enough to counterbalance the continuous decline in the return to fixed capital and to maintain labor productivity growth. Because Uzbekistan has an oversupply of labor (underscored by the large number of underemployed workers), labor-biased technological change would be the optimal path for economic development. However, over the 21-year study period, the government of Uzbekistan paid more attention to the capital-intensive subsectors and the country’s development was capital-biased, rather than labor-biased. High energy and capital subsidies encouraged capital-intensive industrialization. In addition, Uzbekistan had to import industrial technologies that were mostly capital-biased—the technologies and machinery the country needed were produced in advanced economies that have had capital-biased development and do not have surplus labor. The capital-intensive bias in the economic development of advanced and some other developing economies contributed to the trade-off between labor productivity and employment in Uzbekistan. Policies to support labor-biased technological change—substituting labor productivity increases for employment creation—do not appear to be a viable alternative for Uzbekistan in the long run.

Figure 2.10. Labor Productivity, Capital Productivity, and Capital Intensity in all Labor-Intensive Manufacturing, 1996–2016



Source: World Bank staff calculations.

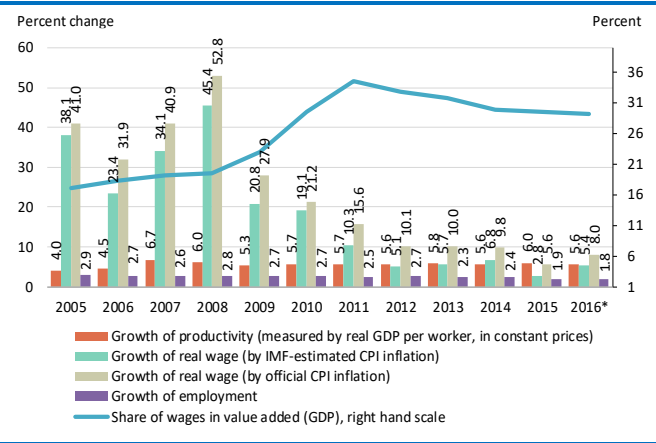
Note: The argument is based on the following identity: Rate of growth of labor productivity = Rate of growth of capital productivity + Rate of growth of capital intensity. See Das and Kalita (2009), p. 5-6.

Worldwide technological development will continue to be heavily biased toward capital over labor, bringing into question the ability of firms with more labor per unit of capital to enhance employment creation. An alternative could be the widescale application of mini-technologies in the labor-intensive manufacturing subsectors in Uzbekistan that require less capital per worker and, therefore, have the potential to create more jobs per unit of physical capital.

Paying higher real wages to employees may incentivize Uzbekistan’s inactive workers and increase employment, but, if not accompanied by adequate productivity growth, may also increase the unit cost of production and thereby undermine competitiveness.

2.20 Real wages grew faster than labor productivity between 2005 and 2016 (Table 2.3), which may have adversely affected Uzbekistan’s competitiveness. Reflecting the government’s commitment to raising wages every year between 2004 and 2008 and countercyclical anti-crisis measures in 2009–14, real wages grew quickly, significantly outpacing average labor productivity growth. The cost competitiveness of Uzbekistan’s products may have been undermined as a result (Figure 2.11).³⁷ However, real wages grew broadly in line with labor productivity growth in 2015–16. More detailed analysis will be required to determine whether changes in output per worker directly affected wages, and to estimate the extent to which rising wages have benefitted the poor. To prevent a loss of competitiveness, Uzbekistan’s policy makers could attempt to reinforce the link between wages and labor productivity and explore ways to make less-skilled workers more productive. For example, they could expand access to higher education; enrollment rates in Uzbekistan are among the world’s lowest (the higher education enrollment rate has fallen from 17 percent in the pre-independence period to 9 percent in recent years, well below other CIS countries).³⁸

Figure 2.11. Wages/GDP Ratio, Growth in Labor Productivity, Real Wages, and Employment, 2005–16



Source: World Bank staff calculations based on official data

Table 2.3. Growth in Labor Productivity, Real Wages and Employment, 2004–16

	2004–08	2009–11	2012–16
Labor productivity growth	5.3	5.6	5.7
Real wage growth (IMF-estimated CPI)	33.0	16.8	5.2
Real wage growth (official CPI)	38.8	21.6	8.7
Employment growth	2.7	2.6	2.2

Source: World Bank staff calculations based on official data.

2.21 The share of wages in value added (GDP) in Uzbekistan increased between 2004 and 2011 but declined between 2012 and 2016, reflecting different government policies in these periods. Recent research points toward a steady decline in labor’s share of income around the world,¹

³⁷ In theory, the (unobserved) marginal product of labor and not the (observed) average product of labor determines wages. Only in the case of simple Cobb-Douglas technology is the average product proportional to the marginal product. If increases in productivity make countries and firms more competitive, and widen their markets, labor demand and wages are likely to increase. However, if firms or countries face a fixed demand, increases in productivity mean that fewer workers are needed to produce the same amount of output, and labor demand and wages may decrease.

³⁸ World Bank 2014, p.22.

suggesting that the proportion of economic growth attributed to wages has been falling (labor productivity has increased faster than wages).³⁹ This could be due to the decrease in the relative price of investment goods, often attributed to advances in information and other technologies, which have induced firms to shift away from labor and toward capital. The lower price of investment goods explains roughly half of the observed decline in labor's share of income, even when allowing for other mechanisms influencing factor shares (such as increasing profits, capital-augmenting technology growth, and the changing skill composition of the labor force). Various factors drove this decline, including the adoption of labor-saving technology, the globalization of trade, pressure from financial markets to increase dividends, a reduction in workers' bargaining power, and a weakening of labor market institutions. Uzbekistan, however, experienced the opposite of this global trend between 2004–11—real wages in Uzbekistan grew much faster than labor productivity due to government policies of raising minimum wages and salaries across all sectors of the economy. As a result, the proportion of economic growth attributed to wages grew between 2004 and 2011 (Figure 2.11). However, since 2012 the trend in Uzbekistan has changed: as fiscal surpluses were significantly depleted, minimum wage increases moderated and real wages grew broadly in line with labor productivity growth in real terms. As a result, the share of wages in value added (GDP) gradually declined between 2012 and 2016.

2.22 The very rapid increase in real average wages between 2004 and 2011 drove up production costs which, under constant productivity growth, may have undermined the competitiveness of many subsectors at that time. While labor productivity growth was stable between 2004 and 2016 (at an average of about 5.5 percent per year), real wages grew much faster than labor productivity—on average by 33 percent per year in 2004–08, 16.8 percent per year in 2009–11, and 5.2 percent per year in 2012–16 (Figures 2.12 to 2.23). Real wage growth only became aligned with labor productivity growth in 2014–16 (this was not intentional, but rather because the fiscal surplus turned to a deficit). While light industry suffered a decline in labor productivity in 2008, labor productivity growth in this subsector was high in 2012–16 and in double digits in 2014, underscoring the subsector's strong potential for productivity growth.

2.23 This very rapid increase in average real wages may also have undermined employment growth, including in labor-intensive subsectors. Many industries experienced slower employment growth—or even a reduction in employment between 2007 and 2011 (Figures 2.12 to 2.23). One example of this is labor-intensive manufacturing (Figures 2.17 to 2.19), where employment growth gradually declined, from 2.7-2.9 percent per year in 2004–12, to 2.3 percent per year in 2013–14, and further to 1.8 percent per year in 2015–16. Private producers were reducing their wage bills in an attempt to reduce the cost of doing business and maintain high profits as long as the government was rapidly increasing the mandatory minimum wage between 2004 and 2014. Net job creation in the industry sector was slower than the total economy average between 2009 and 2014 (and was negative in 2012), but higher in 2015 and 2016. Real wages grew much faster than labor productivity in 2004–11, then broadly in line with it in 2012–14, and in 2015–16 real wage growth slowed compared to productivity. In 2008, light industry experienced a decline in labor productivity, and in 2009 it suffered a drop in employment. Net job creation in light industry has been declining since

³⁹ Karabarounis and Neiman 2014; ILO 2012.

2010, but it was negative in several years (2007, 2009, 2012, 2014, and 2015). The food processing industry experienced double-digit labor productivity growth in 2007, 2008, and 2015, underscoring the high potential of this industry. However, net job creation in the food processing industry was limited overall between 2007 and 2016, and it declined in 2007, 2008, 2013, and 2014.

Figure 2.12. Power Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007–16

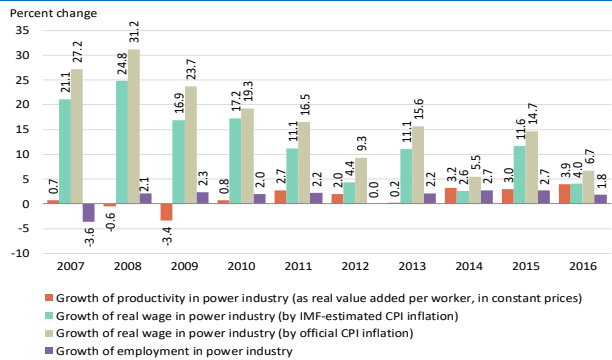


Figure 2.13. Fuel Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007–16

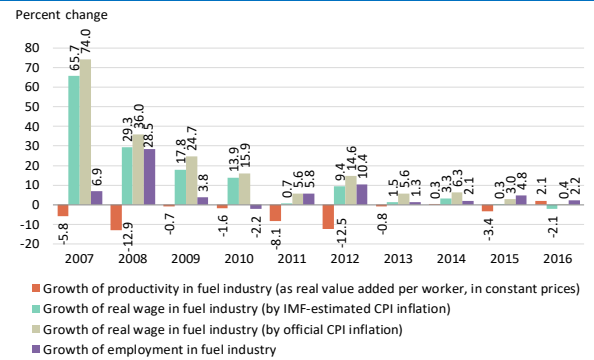


Figure 2.14. Machinery Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

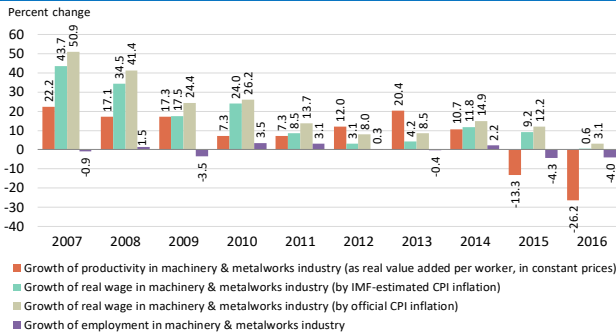


Figure 2.15. Metallurgy Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

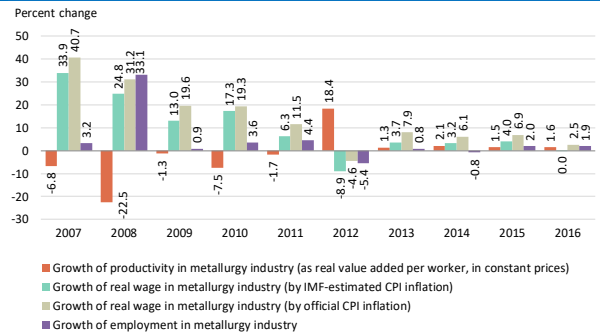


Figure 2.16. Chemical & Petrochemical Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

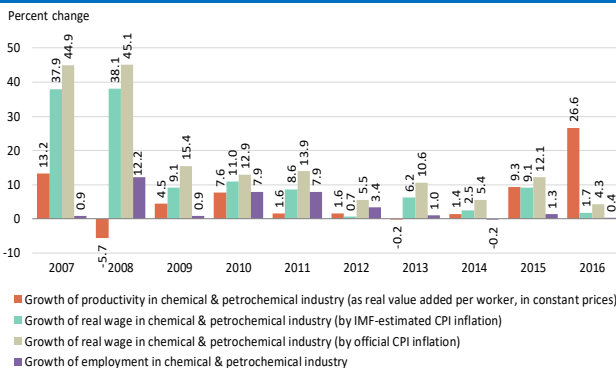


Figure 2.17. Light Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

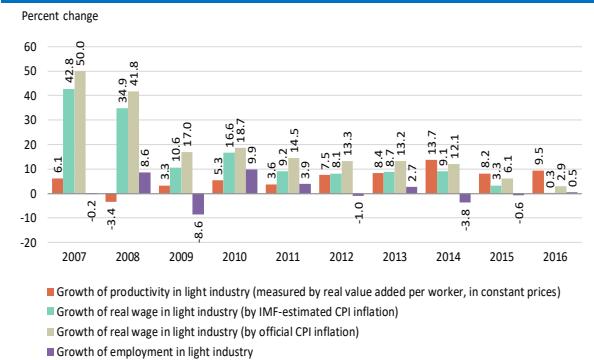


Figure 2.18. Food processing Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

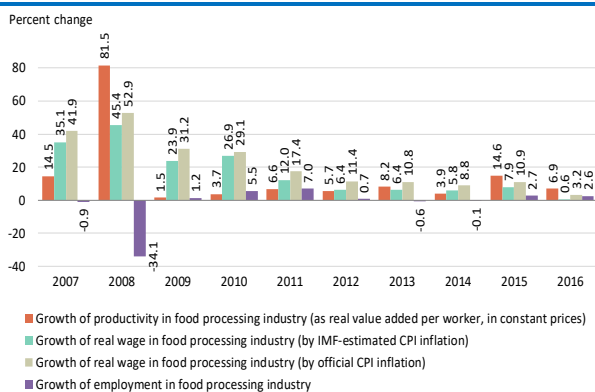


Figure 2.19. Construction Materials Industry - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

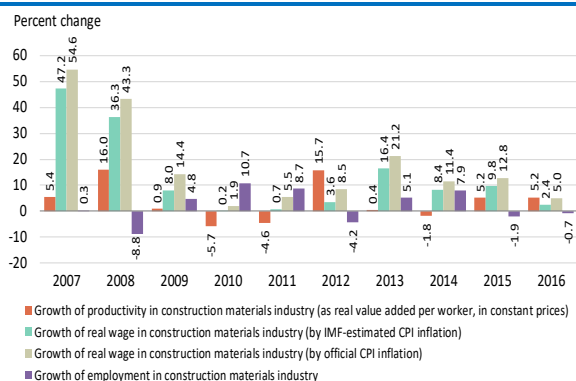


Figure 2.20. Construction - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

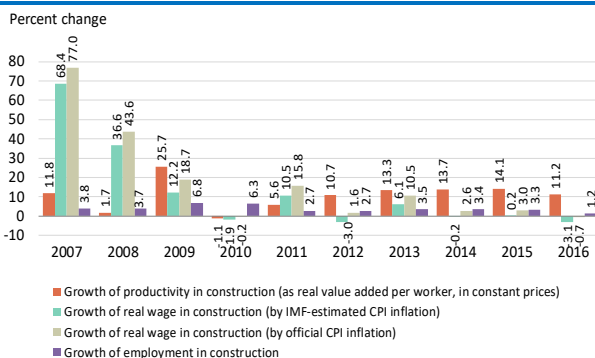


Figure 2.21. Agriculture - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

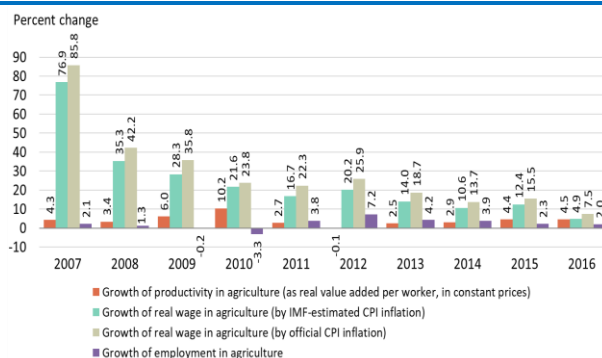


Figure 2.22. Trade and Catering Services - Growth in Labor Productivity, Real Wages, and Employment, 2007-16

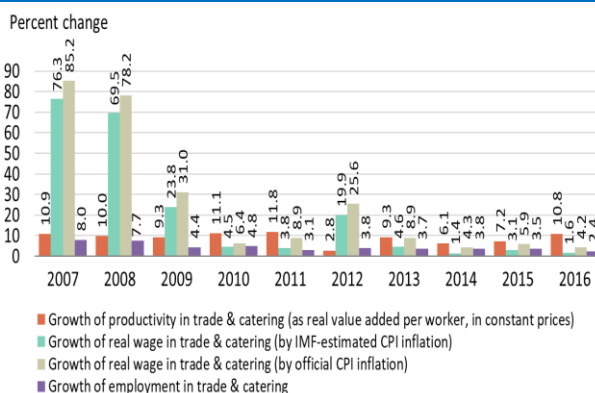
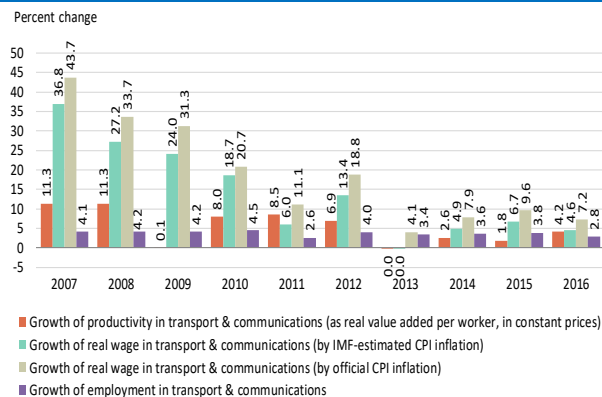


Figure 2.23. Transport and Communications Services - Growth in Labor Productivity, Real Wages, and Employment, 2007-16



Source: World Bank staff calculations based on official data.

2.24 Labor-intensive subsectors of industry reduced employment more often than labor productivity in 2007–16. The main reasons for limited job creation in labor-intensive manufacturing in Uzbekistan include (i) **labor demand constraints**, such as government policies favoring capital-intensive heavy industries by providing them with better access to capital via concessional loans and to foreign exchange at an official exchange rate, as well as tax regulations favoring capital over labor; limited access to finance by non-heavy industry (labor-intensive) subsectors; a generally poor investment climate (despite some improvements); and limited exports (or a decline in exports) due to the slow speed of modern technology absorption and innovation; (ii) **labor supply constraints**, such as limited worker incentives due to high personal income taxes (minimum and maximum tax rates on personal incomes were 13 percent and 25 percent respectively in 2008); de-facto constraints on the participation of women in the labor force; high monopolization and low firm entry in some industrial subsectors; low availability of necessary skills; low participation; and limited labor mobility; and (iii) **labor market matching problems**, with workers having limited information on available jobs, complicating matching of skills to jobs.

2.25 Labor productivity increases need to result in higher output (rather than reduce unit costs or increase profits) to boost employment. There is a simple relationship between productivity and employment: since $\text{Labor Productivity} = \text{Output}/\text{Employment}$, it follows that $\text{Employment} = \text{Output}/\text{Labor Productivity}$. This identity holds whether the output and employment in question relate to a single firm, to a whole sector, or the national economy. When productivity changes, the effect of the productivity change on employment depends on what happens to the level of output. This, in turn, depends on the characteristics of the market demand for the final output, and the incentives of the firm's owner. If an improvement in the firm's technology or organization allows the firm to increase its productivity by 10 percent without purchasing new equipment, will the firm employ more or fewer workers? If the firm can take advantage of lower costs to reduce its selling price (with the aim of increasing sales—and output), and if this price reduction allows the firm to increase its sales (and output) by more than 10 percent, then the firm will need to hire more workers, that is, increase employment. If, however, the nature of the market (or the firm's owner) is such that the selling price does not fall—or the owner prefers a more immediate profit increase by maintaining the same price (the firm does not use the technological advance to lower the price and increase sales and output)—then such a firm will not increase employment. Also, in this case, if sales increase by less than 10 percent or not at all, the firm will lay off some workers. This logic could explain low employment growth in Uzbekistan in recent years. To create more jobs, Uzbek firms need to increase labor productivity in a way that leads not just to a cost saving per unit of output and an increase in profits, but that primarily leads to higher output growth, for which the firms will need to hire more workers. In other words, to create more jobs, Uzbekistan needs 'output-enhancing productivity measures' rather than 'cost-saving productivity measures.'

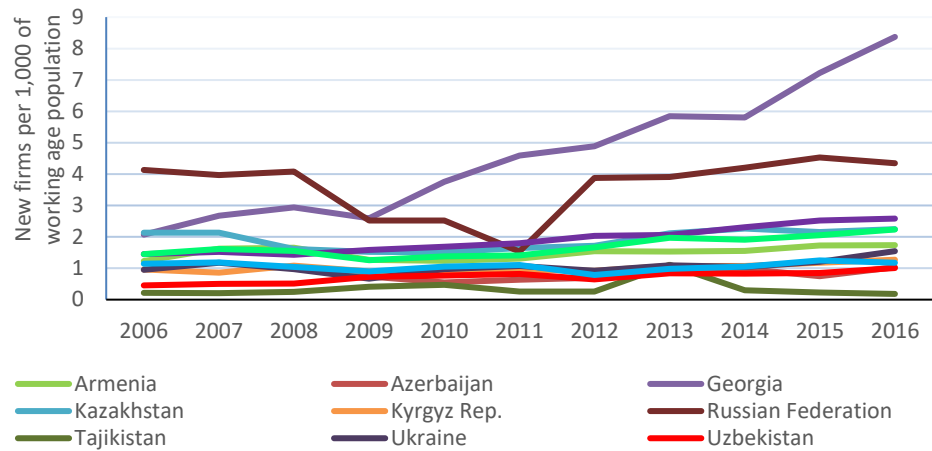
2.26 In addition to labor productivity growth within sectors—the main driver of growth in value added per capita between 1996 and 2016—three other important factors affected the growth of GDP per capita during the period. First, slow inter-sectoral shifts occurred through which workers moved from lower-productivity sectors and subsectors like agriculture to higher-

productivity non-agricultural subsectors, which generated a window of opportunity to raise per capita income and reduce poverty. For this to continue, agricultural productivity must continue to rise; this will generate further inter-sectoral shifts of labor, material, and financial resources to non-agricultural subsectors such as manufacturing and services. Uzbekistan’s potential is high in this area as its agricultural productivity is significantly lower than in most upper-middle-income developing countries. To rapidly increase agricultural productivity, Uzbekistan should implement deep, market-oriented structural reforms in the areas of land ownership, land tenure and land tax, property rights over cotton output, prices, among others. **Second**, the growth of GDP per capita has been driven by significant demographic changes. One of the main risks to Uzbekistan’s progress is its relatively low participation rate—its large economically inactive population (about 25 percent of the working-age population in 2016) outside of those studying at educational institutions, including discouraged youth. Another risk is its high ratio of minors and the elderly to the working-age population (about 64 percent in 2016). This ratio, which has a negative effect on value added per capita, has been rising in recent years. Higher consumption also reduces savings and investment. Reproductive health measures to curb excessive population growth remain important to Uzbekistan’s development. **Third**, employment creation has been too slow relative to the growth in the working-age population. Although some structural transformation away from agriculture to services and construction is underway, job creation in manufacturing subsectors remains challenging, particularly in labor-intensive manufacturing (food processing, light industry, and apparel). The industrial sector (mining and manufacturing, excluding construction and utilities) in Uzbekistan is still the smallest employer, accounting for just 13 percent of total employment in the economy (unchanged throughout the 21-year study period). Manufacturing holds significant untapped potential for employment generation.

Faster job creation requires the establishment of more new firms and more firms surviving longer.

2.27 Uzbekistan has an acute problem of firm survival and jobs sustainability over time, as underscored by its low ratio of net to gross job creation (just 29 percent on average between 2010 and 2016). The nature of structural transformation is such that, while new firms are created, some old firms will cease to exist and exit the market. As a result, net job creation fluctuates every year. According to the government of Uzbekistan’s annual job creation program, about 970,000 jobs were created on average each year between 2010 and 2016, on a gross basis. This number includes seasonal, part-time, home-based, and other work. At the same time, official employment statistics suggest that the number of employed people in the economy (which reflects the number of jobs created, on a net basis, by the end of each year) increased by only 281,000 per year on average over the same period.

Figure 2.24. New Firm Creation in Uzbekistan and Other Countries, 2006–16



Source: World Bank Entrepreneurship Survey and database

(<http://www.doingbusiness.org/data/exploretopics/entrepreneurship>); World Development Indicators, Table 5.1.) (<http://wdi.worldbank.org/table/5.1#>).

Note: ‘New business’ density is defined as the number of newly-registered, limited liability, private, formal sector corporations, regardless of size per 1,000 working-age people (ages 15–64).

2.28 Uzbekistan has had a shortage of both new firms, which has curtailed job creation, and firms surviving over several years, which has hindered job sustainability. The economic literature shows that, in most economies, young firms are a more important source of net job creation than existing (incumbent) firms.⁴⁰ The average number of newly-registered firms per 1,000 of the working-age population over the 2006–16 period (Figure 2.24) indicates that Uzbekistan (with 0.72 new firms) has the second lowest business density among all CIS countries (higher only than Tajikistan with 0.35 new firms), and less than half the average business density of the CIS countries (1.67 new firms). Uzbekistan’s business density is also lower than the average for the lower-middle-income group of countries to which Uzbekistan belongs (1.99 new firms per 1,000 of the working-age population), and below the Europe and Central Asia average (4.63 new firms) in 2014.⁴¹ The good news is that this indicator for Uzbekistan is improving over time: the number of new firms created each year in proportion to the working-age population has more than doubled (from 0.45 in 2006 to 1.01 in 2016) as the business regulatory environment has improved. Our surveys indicate that few of the many newly-registered Uzbek manufacturing firms survive for several years. This report’s hypothesis is that this does not indicate a lower entrepreneurial spirit in Uzbekistan, but instead reflects the country’s significant constraints to doing business and to technology transfer. We analyze these constraints in the next chapter.

⁴⁰ World Bank 2012.

⁴¹ A caveat of this indicator is that it includes only businesses registered as legal entities, even though in 2016 about 210,000 individual entrepreneurs were operating in Uzbekistan without registering as legal entities and, thus, were not captured by the indicator.

3. ANALYSIS OF ENTERPRISE SURVEY RESULTS - BINDING CONSTRAINTS TO LABOR PRODUCTIVITY AND EMPLOYMENT GROWTH IN UZBEKISTAN'S MANUFACTURING SECTOR

3.1 This report relies on firm-level data for Uzbekistan's manufacturing sector that provide important information for evidence-based policy making. Firm-level analysis of productivity and employment constraints provides new evidence on the sources of productivity and can improve the targeting of economic policies in Uzbekistan, especially those aimed at improving allocative efficiency, fostering firm productivity and employment growth, and facilitating access to international markets. It also increases the effectiveness of economic policies and complements the aggregate economic analyses conducted in Chapters 1 and 2. The theory and evidence presented in Chapter 1 show that there are two components— “within” and “between”—that determine aggregate productivity growth at the sectoral level. The “within” component was dominant in Uzbekistan during the 21-year study period and is related to individual firms becoming more productive (increasing output with a constant amount of inputs as the firm upgrades internal capabilities such as managerial skills, workforce skills, and technology absorption capacity). The “between” component (“allocative efficiency”) is associated with the reallocation of factors of production and economic activity toward more efficient firms; the surveys show many constraints on reallocating resources in this way. The author of this report conducted three surveys in five subsectors of manufacturing in Uzbekistan (machinery building, chemicals and petrochemicals, light industry, food processing, and construction materials) in six provinces of the country. The same questionnaire was used to conduct surveys of 122 large firms in 2013, 111 large firms in 2017, and 478 small firms in 2017. Annex 2 presents the methodology of these surveys. This chapter and Annex 3 provide a summary of the survey results. Figures 3.1 and 3.2 present selected results on the costs and constraints faced by firms, as well as how firms measure productivity and finance research and development or innovation.

Figure 3.1. Uzbekistan: Selected Results of the Surveys on Productivity and Innovation of Large and Small Manufacturing Firms, 2017

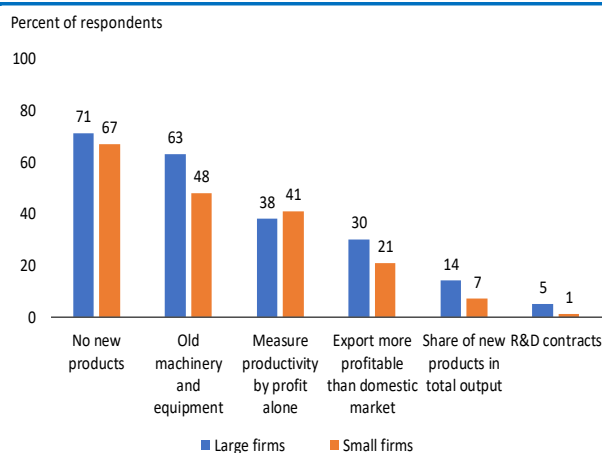
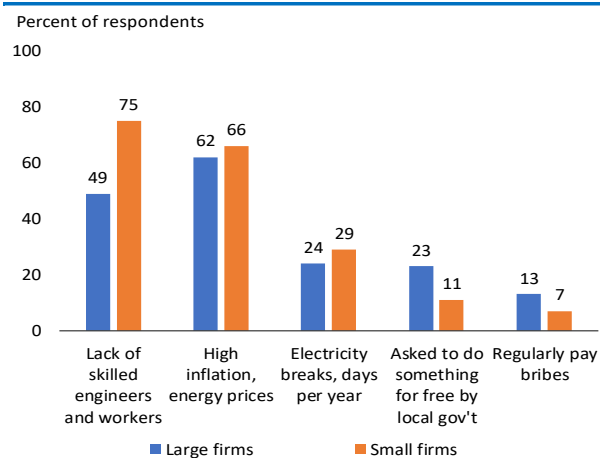


Figure 3.2. Uzbekistan: Selected Results of Surveys on the Costs and Constraints Faced by Large and Small Manufacturing Firms, 2017



Source: World Bank staff calculations based on surveys data.

3.2 While all manufacturing firms face numerous obstacles to raising productivity and employment, large and small firms encounter varying degrees of the same constraints and, as a result, experience different incentives and levels of performance. The surveys show that large firms find meeting their obligations to government authorities more burdensome than small firms. Large firms pay higher taxes (21 percent of total revenue in 2016) than small firms (13 percent), although large firms more often enjoy tax exemptions. They are also more likely to be subject to state orders or output plans by sectoral associations or former line ministries (62 percent of large firms compared to 46 percent of small firms). Furthermore, large firms are more often asked by the local authorities to do something for free or pay bribes, and are more often distracted by agricultural and other public works (61 percent of large firms compared to 33 percent of small firms). Large firms have relatively older machinery and equipment than small firms (the average accounting age of the fixed capital in large firms was 16 years in 2016 compared to 9.5 years in small firms). Sectoral associations sometimes force their members (both large and small firms, though more for large firms) to purchase expensive machinery and equipment. However, small firms struggle more than large firms with infrastructure and getting inputs. Large firms have better access to bank loans than small firms and can more easily contract more research and development (5 percent of large firms have such contracts in 2016 compared to only 1 percent of small firms). Small firms experienced, on average, more days per year of electricity blackouts and natural gas supply interruptions than large firms in 2016 (and suffered greater revenue losses as a result). Obtaining construction permits or additional land is more difficult for small firms (identified by 42 percent of small firms as a constraint compared to 26 percent of large firms), and many more small firms (75 percent) lack skilled workers and engineers compared to large firms (49 percent). Large and small firms (62 percent and 66 percent of the total, respectively) had equally high sensitivity to accelerating inflation in 2016 as a constraint on investment. Approximately half of large and small firms had “high sensitivity” to increases in energy prices, and 13 percent of large firms and 19 percent of small firms had “extremely high sensitivity (bankruptcy)” to drastic increases in energy prices. Most firms’ managers highlighted the threat of accelerated inflation (and lower investment) due to rapid increases in energy prices and foreign exchange devaluation as significant risks for late-2017 and 2018. Experience with recent reforms (in particular, the introduction of convertibility) confirmed the validity of these concerns.

3.3 Small manufacturing firms in Uzbekistan are generally more productive than large firms. Average nominal output per employee (labor productivity) in five of the country’s manufacturing subsectors was more than twice as high in small firms (\$75,000 per employee) as large firms (\$34,000 per employee) in 2014 and 2016 (Table 3.1). Large firms have much lower labor productivity than small firms, and this correlation between firm size and firm productivity suggests low allocative efficiency or a misallocation of production factors. However, in two subsectors (food processing and construction materials) trends were mixed in 2014–16 and additional analysis is needed. There are several reasons for the better productivity of small firms in Uzbekistan’s manufacturing sector. First, large firms had lower capacity utilization ratios than small firms (65 percent for large firms, compared to 70 percent for small)—that is, compared to small firms, large firms have slightly underutilized their capacity and produced output below their potential. Second, large firms, typically with state shares, have fewer competitors on average than small firms (15 to 18 compared to 46). With fewer competitors (especially foreign ones), large firms tend to be less innovative than small firms. Small firms, however, tend to be more responsive to market

demands and clients' tastes: the share of small firms that improved the quality of output in the three years to 2016 was 35 percent, compared to 13 percent of large firms. Small firms also export more than large firms, and 81 percent of small firms in 2014 and 74 percent in 2016 had exported their products, compared to only 53 percent of large firms in 2014 and 56 percent in 2016. As a result of these factors, the average profitability (measured as the ratio of net profits to total cost) of small firms (about 8 percent) was higher than that of large firms (about 5 percent) in the 2014–16 period. It appears that for small firms in Uzbekistan, similar to other developing countries, “more flexibility in decision making and responsiveness to market signals have compensated for their lack of human and financial resources.”⁴² In addition, many large firms appear to have dominant state shares and may be insolvent, at least on the official books. However, because the authorities continue to support inefficient SOEs, these firms cannot exit the market and thus contribute to capital misallocation to less productive firms. The surveys of large firms show that the average profitability of large manufacturing firms has fallen sharply (from 15 percent in 2012 to 5 percent in 2014–16). The deteriorating profitability of large SOEs may have a contributing factor to the government's decision to start liberalization reforms in 2017.

3.4 Small firms have fewer employees per unit of capital but tend to attract more skilled workers. The average number of employees per unit of capital in 2016 was lower in small manufacturing firms (12 jobs per million U.S. dollars of capital) than in large firms (35 jobs per million U.S. dollars of capital). However, small firms tend to attract more skilled workers per unit of capital (66 percent of workers in small firms are “skilled,” compared with 50 percent in large firms). This is especially the case in light industry and food processing, where small firms have a much higher percentage of skilled workers than large firms (see Annex 3). At the same time, a larger proportion of small manufacturing firms (75 percent) lack skilled engineers and workers than large firms (49 percent). In general, in 2014–16 more large firms cut employees and wages (70 percent) than small firms (57 percent). However, more large manufacturing firms than small firms conduct on-the-job training (63 percent of large firms in 2016, compared to 33 percent of small firms). In a market economy, in the long run, firms with higher productivity can pay higher wages and should attract more employees. However, until 2018 Uzbekistan experienced the opposite. The reason may be the high inertia in Uzbekistan's manufacturing sector until 2018 created by slow wage information flows between large and small firms, and by a lack of market forces in the economy⁴³ that resulted in weak reallocation processes. Labor (and capital) is also misallocated within large SOEs in Uzbekistan's manufacturing sector. Labor will have to be reallocated from large firms to more productive small firms. While productive small firms will need additional skilled workers and engineers to increase output and jobs, many of Uzbekistan's skilled engineers and workers are still attached to large firms for various personal reasons (for example, a long-standing career in a large SOE, proximity to pension age, or a reluctance to change job). According to the World Bank's 2019 Doing Business Index, Uzbekistan ranks 91 of 190 economies on the indicators for resolving insolvency. Reforms to Uzbekistan's insolvency regime—including steps to reduce the barriers to restructuring large SOEs and reduce the cost to shutter such firms—will reduce the share of capital frozen in inefficient SOEs and spur a movement of capital toward more efficient firms.

⁴² Li and Rama 2015, p. 8.

⁴³ Stronger market forces were put in place at end-2017 with the introduction of the convertibility of the national currency, a reduction in import tariffs, and the launch of trading in 27 key raw materials on the commodity exchange.

Table 3.1. Uzbekistan: Differences in Labor Productivity and Employment between Large and Small Manufacturing Firms

Indicators	Large Firms				Small Firms	
	2010	2012	2014	2016	2014	2016
Average age of firms, years	n.d.	n.d.	n.d.	22	n.d.	11
Average number of competitors	n.d.	16	n.d.	18	n.d.	46
Average output in US\$ million	10.5	11.8	25.1	23.2	2.7	4.4
Average employment per firm	349	352	719	678	44	59
Average output per employee (labor productivity), in US\$ '000	30.1	33.5	34.8	34.1	61.8	75.0
Average capital stock per firm (in US\$ million)	n.d.	5.6	n.d.	19.6	n.d.	5.1
Employment per unit of capital (average number of jobs created per million US\$ of capital)	n.d.	63.3	n.d.	34.5	n.d.	11.7

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for Growth and Job Creation in Uzbekistan'.
Note: The official exchange rates were used for calculating average output and average capital stock in US dollars; "n.d." denotes 'no data' received from firms.

Constraints on Employment Growth in the Manufacturing Sector

3.5 In addition to a lack of access to foreign exchange (an obstacle that was removed in September 2017), both large and small firms highlighted the following five top constraints to job creation in Uzbekistan: (i) lack of affordably-priced raw materials; (ii) shortage of skilled personnel; (iii) high taxes (especially payroll taxes); (iv) low demand for output; and (v) poor access to credit (Table 3.2). In effect, a lack of inputs (raw materials, skilled personnel, and finance) constrains hiring by Uzbek firms. The authorities reduced all tax rates for large and small firms in June 2018, effective from January 2019.⁴⁴ They also partly addressed the lack of access to raw materials by adopting a resolution to sell more key raw materials on the commodity exchanges.⁴⁵ However, the lack of skilled personnel and low demand for output have not been adequately addressed to date.

3.6 Firms in Uzbekistan struggle to retain skilled workers. The share of skilled workers in large manufacturing firms fell from 66 percent in 2012 to 50 percent in 2016. The main reason for this decline was that large firms could not retain skilled workers with output falling in the 2014–16 period as Russia faced Western sanctions and the demand conditions within CIS countries deteriorated. According to the surveys conducted for this study, only 63 percent of large firms and 33 percent of small firms provide on-the-job training for workers. In 2016 about 71 percent of large firms and 57 percent of small firms implemented cost-saving measures on wages (by either cutting wages or laying off workers); large firms engaged in this practice more in 2016 than in 2014. By doing so, such firms reduced workers' incentives. Other firms cut jobs to reduce total costs. A recent regional skills study⁴⁶ concluded that Uzbekistan is experiencing a

⁴⁴ Uzbekistan, Presidential decree of June 29, 2018: "On the concept of improving tax policy in Uzbekistan."

⁴⁵ Uzbekistan, Presidential resolution #3386 of November 14, 2017: "On measures to improve competition, prevent stealing of fuel and other high-liquid raw materials."; Uzbekistan, Cabinet of Ministers' resolution #249 of March 30, 2018: "On measures to further improve anti-monopoly regulation on commodity markets."

⁴⁶ Sondergaard and others 2012. By comparison, the 2008 averages for the ECA region were 67 and 31 percent, respectively, for skills being an obstacle or a "major"/"very severe" obstacle to doing business (versus 73 and 36 percent in Uzbekistan).

substantial shortage of university graduates. At the same time, the country has a surplus of workers who possess only basic skills (having completed general secondary education or less). A survey of Uzbek employers in 2008 revealed that 73 percent of the firms surveyed (up from 60 percent in 2005) considered inadequate skills and education of the country's workers to be an obstacle to doing business in Uzbekistan. Overall, these firms rated the "skills and education of workers" as the second-biggest obstacle to doing business in 2008, with more than one-third (35 percent) indicating that employee skills posed a "major" or "very severe" obstacle to growth. More specifically, in surveys conducted for this report between 2013 and 2017, employers in manufacturing enterprises reported low levels of satisfaction with the skills of university graduates.

3.7 Although the legal conditions for businesses in Uzbekistan improved in 2017, many firms have experienced the negative effects of less favorable conditions for investment, exporting, and importing that the Doing Business indicators do not measure. The improvement in Uzbekistan's ranking in the World Bank's Doing Business 2018 reflected various improvements in the legal environment for businesses in 2017. However, firms still faced challenges related to the external environment, which were exacerbated in 2014–16 and the first half of 2017. Large firms have a higher share of exports than small firms, but exports of both large and small firms were lower on average in 2016 than in 2014. Costs and delays at customs for imports are much higher than for exports. The lack of foreign exchange convertibility was recognized as a barrier to growth by 70 percent of large firms and 54 percent of small firms in 2016 and the first half of 2017. More than 70 percent of firms considered the banking sector's terms for providing credit to be unaffordable. High inflation was identified as a constraint on investment by 62 percent of large firms and 66 percent of small firms. Obtaining permits and licenses is costlier for small firms than large; obtaining construction permits is particularly difficult for small firms. About 45 percent of large firms and 36 percent of small firms experienced a shortage of raw materials on the domestic market and also faced challenges importing raw materials. Non-payments and delays in payments for output were identified as a constraint for 43–44 percent of both large and small firms. Slow banking services mean that about one-third of firms experience wage payment delays. In 2016 about 20 percent of large manufacturing firms and 16 percent of small firms recognized that in 2016 their machinery and equipment were not competitive. About two-thirds of large and small firms cited high taxes as a top constraint to business expansion. In the presence of these constraints, large firms' profitability (measured as a ratio of net profit to total cost) declined from 16 percent in 2010 to 15 percent in 2012—and further to about 5 percent in 2014 and 2016— while small firms' average profitability increased slightly, from 7.8 percent in 2014 to 8.4 percent in 2016.

Table 3.2. Uzbekistan: Ranking of Barriers to Increasing Employment in Large and Small Manufacturing Firms

#	Main barriers to job creation, as perceived by managers of firms	Ranking by Firms	
		Large Firms	Small Firms
1	Lack of access to foreign exchange: cannot import modern machinery, which limits output and employment	1	2
2	Lack of access to raw materials on the domestic market: cannot increase output and employment	3	1
3	Lack of access to skilled personnel due to poor quality of education and training on domestic market	2	4
4	Excessive payroll taxes (social payments) and personal income taxes: no incentive to hire more workers officially	5	3
5	Demand limitations: due to low demand for our output, cannot expand production, and so do not increase employment	4	6
6	Lack of access to bank credit: no limits on output demand, but cannot increase bank credit, so do not increase employment	6	5
7	Difficult to find good HR manager that will ensure HR work as demanded	7	9
8	We need more staff, but do not want to exceed the number of staff for 'small firms' in order to remain in unified taxation system	10	7
9	Firm offers low wages and no social package (medical insurance, transportation, work conditions): cannot attract/retain skilled staff	8	10
10	Lack of worker mobility: we cannot find skilled personnel as our city is not attractive (e.g., mandatory residence registration that residents of other provinces cannot get, lack of affordable housing, lack of kindergartens or schools)	12	8
11	We reduce employment or move to partial employment or part-time workers	9	13
12	Difficult procedures for hiring foreign personnel	11	11
13	We increase employment when necessary, but do it unofficially	13	12

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for Growth and Job Creation in Uzbekistan.'

Note: Large firms were surveyed in the spring of 2017 and small firms were surveyed between July and September 2017.

3.8 Manufacturing firms are generally Uzbek-owned and focused on the domestic market.⁴⁷

Large firms have, on average, 15-18 competitors, while small firms have 46 competitors. Foreign ownership is limited: less than 1 percent of large firms and less than 5 percent of small firms were majority foreign-owned. About 74 percent of small firms and 56 percent of large firms did not export in 2016 and produced only for the domestic market. About 40 percent of large and small firms said that they do not have foreign competitors on the domestic market.

3.9 Before the convertibility reform in September 2017, most managers of manufacturing firms in Uzbekistan recognized that the government would have to liberalize the foreign exchange market to improve access to foreign exchange. However, they were concerned that, in the short term, this

⁴⁷ Most of the manufacturing firms surveyed in Uzbekistan (before currency devaluation in late-2017) viewed the domestic market as more attractive than export markets. This preference was mainly due to the large devaluations of the som over the previous two decades that were intended to control real overvaluation (due to high inflation) through a gradual nominal devaluation of the domestic currency each year. These devaluations had an "expenditure-switching effect"—that is, they acted as a high non-tariff barrier for imports and promoted the import-substitution model by shifting domestic demand from imports to domestically-produced goods.

would mean a devaluation of the official exchange rate which would lead to higher inflation and higher prices for energy and raw materials. These were among the most significant threats perceived by both large and small manufacturing firms in 2016–17 (Table 3.3); after the convertibility reform, all of these perceived threats materialized.

Table 3.3. Uzbekistan: Ranking of Threats Perceived by Management of Large and Small Manufacturing Firms

#	Most concerning short-term threats	Ranking by Firms		
		Large Firms		Small Firms
		2013	2017	2017
1	Drastic price increase for electricity, fuel, raw materials	1	3	2
2	Drastic increase in inflation	3	2	1
3	Large and drastic devaluation of local currency to U.S. dollar	5	1	4
4	Key skilled personnel may leave the firm	2	4	6
5	Market demand for output may fall drastically	4	5	5
6	Local authorities may request significant firm resources without compensation	7	7	10
7	Licensing, environmental, or other authorities may demand illegal payments	9	10	9
8	A new government resolution may drastically worsen the firm's financial situation	10	6	8
9	Tax or other authorities may request significant, unlawful payments	8	12	12
10	Authorities may open an unjustified criminal case against the firm management	12	11	13
11	Drastic increase in street crime or racket	11	13	3
12	The firm, a building, or territory could be unlawfully taken or firm may be forcefully closed	13	9	11
13	Contracts violation by suppliers or buyers on firms' output	6	8	7
	Which of the above are the top three most concerning issues for your firm's management?	1, 2, 3	1, 2, 3	1, 2, 3

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for Growth and Job Creation in Uzbekistan'.
Note: Sum of managers' answers as "always," "usually," and "frequently."

Constraints on Labor Productivity Growth in the Manufacturing Sector

3.10 A large amount of potential manufacturing output is lost each year due to interruptions in physical infrastructure. Small firms suffer more than large firms from interruptions of electricity, gas, and water supply, and from a lack of territory or high lease rates on land for expanding **output** production (Table 3.4). By improving physical infrastructure services, the authorities can increase both output per worker and employment in firms.

Table 3.4. Uzbekistan: Constraints on Physical Infrastructure for Large and Small Manufacturing Firms

#	Indicator	Ranking by Firms		
		Large Firms		Small Firms
		2013	2017	2017
1	Number of days per year on which access to electricity was interrupted for at least 1 hour	23	24	29
2	Number of days per year on which access to natural gas was interrupted for at least 1 hour	29	27	46
3	Number of days per year on which access to phone or internet was interrupted for at least 1 hour	18	23	17
4	Number of days per year on which access to water was interrupted for at least 1 hour	13	18	52
5	Number of days per year on which access to fuel was interrupted for at least 1 hour	27	50	29
6	Number of days per year on which access to territory/warehouses was interrupted	4	16	53
7	Total self-estimated loss from all interruptions in physical infrastructure, % of potential output	42	24	38

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for 'Growth and Job Creation in Uzbekistan.'

3.11 Demands on managers' time and of firms' financial resources by the authorities for non-productive activities constrains firm productivity. Managers spend significant time dealing with tax, customs, sanitary, and environmental authorities; other central ministries; industrial associations (former line ministries); and local authorities (*khokimiyats*) on various bureaucratic issues. On average, about 31 percent of managers' time in large firms and 26 percent in small firms is lost to non-productive bureaucratic activities such as state inspections and customs requirements, leaving less time for more important issues such as improving their firms' labor productivity, efficiency, skills, technology, and profitability. The surveys found that 32 percent of employees in large firms and 30 percent in small firms participated in cotton picking or were directed to participate in other public works in 2016. About 23 percent of large firms and 11 percent of small firms indicated that local authorities requested "additional spending" from them without compensation. In 2016, about 13 percent of large firms and 7 percent of small firms made unofficial payments to the authorities to get things done, and 8 percent of large firms and 6 percent of small firms knew in advance how much money to reserve for illegal payments to local authorities. About 61 percent of large firms' total output and 46 percent of small firms' total output was subject to central distribution by a line ministry of industrial sectoral association in 2016, rather than being decided by firms and the free market.

3.12 Firms identified several constraints that, if removed, could improve competitiveness. Although the overall level of taxation for large firms is high, many large firms received tax exemptions, and some Uzbek manufacturing firms consider a de-facto lower share of taxes in total revenue as a source of their competitiveness. Between 2010 and 2016, the degree of tax exemptions for large manufacturing firms increased, and the share of total taxes in total output sales declined for both large and small manufacturing firms. About 40 percent of both large and small firms identified barriers to imports as a source of their competitiveness. The benefits of low domestic costs of inputs and labor were cited by about 30 percent of both large and small firms.

Some firms also highlighted wide distribution and sales networks, unique and high-quality products, on-the-job training, and the introduction of new technologies as important drivers of their competitiveness. Interruptions in electricity supply and other physical infrastructure, and overregulated access to raw materials and expensive mandatory state services (disinfection, medical checks, certificates, and so on), negatively affect firms' competitiveness. Centralized regulation (for example, keeping prices on outputs artificially low, restricting raw materials volumes) limits firms' ability to compete on the domestic market with imported outputs. As imports are not subject to price regulation, local production is only competitive against imports if the price of imported goods (once import duties are included) is higher than the regulated domestic price. Firms also mentioned the very short validity periods of quality certificates issued by Uzbek agencies and the difficulty in getting cash from their bank accounts. There is a lack of consulting institutions that provide information about new technologies and new markets, and so on. Many SOEs do not pay on time for the delivery of other firms' output to them—that is, many firms have substantial accounts payable. A significant share of firms also mentioned that a lack of territory for warehouses and workshops/repair shops constrained their ability to compete.

3.13 Many firms experience challenges with new technology absorption and innovation.

About 34 percent of small firms and 29 percent of large firms introduced some new products to the Uzbek market in 2014–16. However, at least one-third of the output of both large and small manufacturing firms in Uzbekistan potentially violates intellectual property rights (IPRs) as these "new" products were copied from competitors without payment. Only 5 percent of total innovation and technology absorption in large firms was the result of the firms' research and development (R&D) or ordered from think tanks, and none of the large firms purchased patents or licenses. About 3 percent of small firms purchased patents or licenses on products, and only 1 percent of small firms that introduced any innovations or technology absorption did their own R&D or ordered R&D from think tanks. Competition for market share is driving innovation in 65 percent of small firms and 51 percent of large firms. Reducing inputs and improving the quality of outputs, design, and packaging were the main benefits of technology absorption and innovation in both large and small firms. However, small firms paid more attention to the quality of output and to design and packaging, while large firms focused on saving energy, wages, and other inputs. Small firms were broadly in line with large firms in introducing simple organizational and managerial innovations, such as automated accounting or improved warehouse and sales management, in 2016. Small firms had a higher capacity utilization ratio (69 percent) than large firms (65 percent). Large firms more often replaced their old machinery and equipment in 2016 than small firms, as small firms generally have newer machinery. In addition, a larger share of large firms replaced old machinery in 2016 than in 2014, which is a positive trend. About three-quarters of large firms and just over half (56 percent) of small firms tried to search for (or had incentives to look for) external markets in 2016.

3.14 The main factors that limited technology absorption and innovation included (i) a lack of foreign exchange, (ii) a shortage of skilled engineers, (iii) difficulties accessing bank credit, (iv) poor quality and affordability of raw materials, and (v) a market too small to repay the cost of modern technologies. Many of the broader constraints on firms also affect their technology

absorption and innovation. Nevertheless, firms highlighted several particular constraints on these activities. In addition to the factors listed in Table 3.5, firms also mentioned: (i) difficulties in managing finances (including the government intervening in firms’ management of their foreign exchange accounts, SOEs not making timely payments for the delivery of output (high accounts payable), very high debt and non-payments by the buyers of the firms’ output, very high taxes for large firms, and difficulties getting cash); (ii) difficulties in accessing inputs (including a lack of land for warehouses and repair shops, the government reducing access to the state investment and localization program and to state-distributed raw materials, the government reducing the quotas for key raw materials every year, an excessive cost of railway transportation of raw materials from the provinces, excessive interest rates and collateral requirements to get credit, and a lack of access to preferential credit for innovation purposes); (iii) difficulties in identifying or accessing markets (including a lack of consulting institutions that provide information on new technologies and new markets, and centralized price regulation that prevents firms from competing on the domestic market with the imported output of other firms); and (iv) others, including the government forcing firms to install low-quality equipment (water meters, for example) and demanding high penalties for installation delays, very short validity periods for quality certificates issued by Uzbek agencies, firms preoccupied with the production of existing products and having little time to develop new products, and the government’s arbitrary behavior and bribery extortion.

Table 3.5. Uzbekistan: Main Factors that Limited Technology Absorption and Innovation in Manufacturing Firms

#	Factors	Ranking by Firms		
		Large Firms		Small Firms
		2013	2017	2017
1	Difficulties obtaining foreign exchange	1	1	1
2	Lack of skilled engineers and/or workers	4	2	2
3	Difficulties accessing bank credit	2	4	3
4	Lack of high-quality and cheap raw materials (at prices in line with world prices)	3	3	4
5	Market too small to pay back the cost of new technology or training	5	5	5
6	Lack of information about new technologies	6	7	7
7	Excessive bureaucratic requirements by the government	7	6	8
8	Very high cost of obtaining international quality certification	8	11	6
9	Outdated quality standards	9	8	10
10	Lack of information about new markets	11	9	9
11	Lack of technical documentation on machinery use in the local language	10	10	12
12	Ministry (association) forcing the firm to buy very expensive machinery and equipment	12	12	11

Source: World Bank’s Macroeconomics, Trade and Investment Global Practice surveys conducted for Growth and Job Creation in Uzbekistan.¹

Note: Ranking was based on the maximum percentage of firms that said these factors were “most important” and “significant” for them.

Table 3.6. Uzbekistan: Ranking of Measures to Increase Labor Productivity for Large and Small Manufacturing Firms

#	Measure	Ranking by Firms		
		Large Firms		Small Firms
		2013	2017	2017
1	Reduce (or set low) taxes and social payments from payroll	1	1	4
2	Reduce interest rate on bank credits	3	3	1
3	Improve education system (tertiary, specialized middle, and worker training)	5	2	3
4	Reduce bank collateral requirements and simplify procedures to get credit	2	4	2
5	Increase sales and output to reduce cost per unit of output	4	5	5
6	Simplify regulations and reporting requirements	6	7	6
7	Reduce import barriers for modern machinery, equipment, and raw materials	7	6	7
8	Provide state marketing information and other support for exports (such as contributing to the costs of trade fairs and helping firms get ISO quality certificates)	8	8	9
9	Create free markets for raw materials, energy, and fuel	9	10	8
10	Give export subsidies	10	9	10
11	Increase barriers for imports that compete with domestic output	11	11	11
12	Abolish state plans or state orders on production or sales	12	12	12

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for 'Growth and Job Creation in Uzbekistan.'

Note: Ranking was based on the maximum percentage of firms that said these measures were "most important" or "can help" them.

3.15 To increase labor productivity, both small and large firms need resources (inputs), but small firms in particular need better access to bank loans while large firms need lower taxes and more highly-skilled workers. To increase productivity, government policy should ensure better access to inputs by introducing a level playing field for large and small firms, regardless of ownership and size. The two productivity-enhancing measures proposed most by small firms were the reduction of bank interest rates and the reduction of collateral requirements for getting credit. The two most important measures proposed by large firms were a reduction of taxes and payroll taxes and the improvement of workers' skills (Table 3.6). Other measures proposed by firms included (i) adjusting price and other market regulations, including easing the state regulation of prices, increasing prices on outputs (such as macaroni and bread), improving price controls of services provided by state firms (energy, raw materials, and transport), eliminating the government's restrictive regulation of input and output markets, and giving firms the opportunity to buy raw materials from any source on direct contracts with suppliers at market prices; (ii) improving infrastructure and logistics, for example by helping reduce gas supply interruptions, improving logistics by building multi-modal transport facilities, and bringing railway tariffs on exports in line with domestic tariffs; (iii) facilitating trade, investment, and innovation, for example by boosting export revenue to procure modern technologies, creating the conditions to attract foreign investors, organizing exchanges of experience with foreign firms, simplifying and reducing the cost of inviting foreign specialists, and replacing old machinery and equipment; and (iv) other measures such as reducing the cost of ISO quality certificates, introducing a government labor productivity target (for subsectors) with incentives to reach this target, improving labor conditions for workers, and reducing state intervention in firm decisions.

The government is in the process of implementing some of the proposed measures, but many others will need to be addressed.

3.16 Even with the implementation of these measures, many Uzbek firms are not ready for a meaningful transition to higher labor productivity and efficiency. Only 39 percent of large firms and 41 percent of small firms use relevant indicators to analyze their productivity and efficiency. Other firms use only absolute indicators of performance (absolute profit, revenue, or amount of energy saved) and do not use ratios to measure efficiency or productivity (such as the ratio of profit or revenue to all or some inputs such as labor, capital, and costs). As such, most firms do not actually measure the productivity or efficiency of inputs in a meaningful way. Such firms are not ready for a serious transition from a ‘factor-driven economy’ (Uzbekistan's current stage of economic development) to an ‘efficiency-driven’ economy.⁴⁸ The World Bank Enterprise Surveys conducted for this report in 2017 suggest that just 48 percent of large firms and 41 percent of small firms in Uzbekistan’s manufacturing sector have a formal document analyzing the firm’s efficiency using any indicators (whether suitable or not). Of those firms that have carried out their own efficiency analysis, about 87 percent of large firms—but only 37 percent of small firms—have a strategy or formal plan that sets out measures to improve the firm’s productivity or efficiency. Thus, line ministries or sector associations should focus on helping firms (especially small firms) to develop strategies to improve productivity and efficiency in the short and medium term, instead of their current focus mainly on interfering in firms’ activities, carrying out inspections, and distributing a significant part of their output.

⁴⁸ The terms ‘factor-driven’ economy, ‘efficiency-driven’ economy, and ‘innovation-driven’ economy are used as per World Economic Forum’s (WEF) classification of all countries of the world in the WEF annual competitiveness reports.

4. IDENTIFYING PRIORITIES AND SOLUTION AREAS

4.1. Uzbekistan needs to remove distortions for market price signals, liberalize markets for inputs, redefine the role of the government in the economy, establish clearer and better protected private property rights, a better business environment, more competitive markets, and better-quality higher education and skills. Uzbekistan's credit markets do not function properly because of extensive directed lending to SOEs through state-owned banks at preferential rates. Markets for non-agricultural land only started to develop in 2019. Markets for labor are slowly opening, but the matching efficiency (that is, matching job seekers to available jobs) of the labor market is low, mainly due to a lack of skilled workers and information about posted vacancies and available workers in specific geographic locations. The government is too involved in some areas of the economy (for example in cotton, wheat, and heavy industries, and allocating raw materials and credit across these sectors) and insufficiently involved in others (regulating monopolies and providing basic infrastructure services such as electricity, gas, and water; improving higher education and preschool education; and export promotion). The government's central role in allocating resources across Uzbekistan's economic sectors is excessive and should be reconsidered. In particular, the government could be refocused to improve the country's alignment between Uzbekistan's economic endowments and its exports. Uzbekistan is not capitalizing on its surplus of labor to increase exports of labor-intensive goods and services. Instead, most production and exports are resource-intensive (requiring water, such as in the cotton industry, for example, and energy) that Uzbekistan lacks in per capita terms. As a land-locked country, Uzbekistan's accession to the WTO is critical as it will facilitate cross-border transit of goods with other WTO members and reduce cumbersome border-crossing procedures and high transportation costs (which currently constrain FDI in assembly manufacturing).

4.2. Policies to improve productivity should target the quantity and quality of human capital and physical capital, and the quality of institutions at the country and firm levels (markets, role and effectiveness of the state, legal framework, and the organizational capital of firms). Investment in physical capital was the dominant driving force behind the rapid growth in labor productivity in Uzbekistan in 1996–2016, while investment in human capital (via tertiary education and preschool education) and in the quality of institutions (facilitating free markets and improving governance) lagged. The quantity and quality dimensions of these factors will need to be addressed. Human capital, for example, may have increased in quantity but declined in quality; Uzbekistan's higher education system is characterized by low access and concerns over the quality and relevance of the skills of graduates. The gross tertiary enrollment rate to higher education institutions has fallen from 17 percent before independence to 15.2 percent in 1991 and 8.9 percent in 2012 even though demand for tertiary education is high (there are more than six applicants for each university place). The share of the population with tertiary education in Uzbekistan is low by regional and international standards and contrasts with nearly universal

enrolment at the primary and secondary levels.⁴⁹ The tertiary enrolment rates of Uzbekistan's neighbors and peers are between 40 and 50 percent, while in Russia and the OECD high-income economies tertiary enrolment is closer to 75 percent.⁵⁰ Vocational qualifications, which have gained popularity in recent years, do not provide workers with the higher-order skills demanded by employers in many of the growing industries. As Uzbekistan's economy moves up the value chain of production, it will become more reliant on workers with specialized training, including those possessing higher education degrees. In terms of capital, gross fixed capital formation in Uzbekistan averaged 24.3 percent of GDP in 2013–17, similar to the average in low-income countries. However, this level was below the lower-middle-income-country average (25.5 percent of GDP) and well below the average of upper-middle-income countries (31.2 percent of GDP). In terms of the quality of market institutions and governance, between 2007 and 2017 Uzbekistan consistently ranked below average among its peers in the same per capita income group on all of the World Bank's Governance Indicators (government effectiveness, rule of law, control of corruption, regulatory quality, political stability, and voice and accountability). A more detailed assessment of the quality of institutions in Uzbekistan is difficult as the country has not participated in the Global Competitiveness Index ranking by the World Economic Forum, which uses more sophisticated indicators of market institutions.

4.3. Uzbekistan's industrial policies have achieved limited results in select products, but have been costly to implement and have failed to generate large numbers of jobs, high incomes for the population, or exports aligned with the country's endowments. Such interventions may provide value in the case of monopolies, missing markets, or externalities that need to be overcome. Uzbekistan has not opted to pursue an industrial policy that emphasizes more and better-quality higher education. International experience suggests that governments in developing economies often do not possess the knowledge and capabilities to effectively target specific industries in an open economy, while the effects of government failures due to intervention (generating misallocation of resources and the capture of government agencies) may be greater than the market failures they are seeking to resolve.⁵¹ This study shows that Uzbekistan's current comparative advantages include labor-intensive horticulture, food processing, textiles and apparel, and the services subsectors. However, between 1996 and 2016 government policy was focused on other subsectors (heavy industries, in particular); the government has only recently started paying more attention to the economy's the labor-intensive subsectors. The previous policies did achieve some successes in export markets (for example in fertilizers, petrochemicals, and machinery products). However, this success was also supported by Uzbekistan's natural resource endowment, high commodity prices in the 2000s, and a favorable international environment. Commodity-intensive industries were supported by low domestic commodity prices at the expense of new investment in exploration and maintenance of export commodities, with negative consequences. Nevertheless, the growth in value added of many heavy industry subsectors that were supported by large government

⁴⁹ World Bank 2014, p.9.

⁵⁰ According to the World Bank EdStats database, the higher education systems in Malaysia, Kazakhstan, and Turkey currently enroll 40, 41, and 46 percent of the university-age populations of these countries, respectively. The average gross enrolment rate across the ECA region is 56 percent. World Bank 2014, p. 23.

⁵¹ Krueger 1990.

subsidies and protectionism⁵² was much slower than growth in subsectors that currently have a competitive advantage in the absence of state subsidies. In addition, the heavy industry subsectors that were prioritized are capital intensive and, as such, did not drive job creation. The overall effect of inter-sectoral labor reallocation on the growth of GDP per capita for the entire 1996–2016 period was negative (-3 percent). Thus, some potential benefits of the industrialization policy conducted in that period did not materialize.

4.4. Government interference (through excessive administrative controls) in the allocation of resources has exacerbated distortions, hampered reforms, and limited TFP growth.

Government fiscal support to the economy in 2009–16⁵³ boosted domestic demand but failed to accelerate the low growth of both TFP and employment. Before 2016 Uzbekistan’s growth model relied primarily on a combination of cheap energy and other inputs, a policy of import substitution and self-sufficiency, and external borrowing; TFP growth slowed between 2009 and 2016.⁵⁴ Return on capital has been flat or declining, and capital has been flowing primarily to industries and infrastructure sectors dominated by SOEs with low and declining returns to investment (as demonstrated by higher-than-average ICORs in the industry and transport sectors). Mandatory output targets—economy-wide GDP growth broken into sectoral, regional, and firm-specific targets—implied that the focus of SOEs was to maximize physical output (not profits or value added) and minimize imports, regardless of the cost. The low incentive to make profits was weakened further by the transfer of profits to various ‘development funds’ at the national and sectoral levels that, together with the cross-subsidization and occasional mergers of poorly-performing SOEs with well-performing ones, penalized strong companies while benefiting weaker companies. Cross-subsidization, the inflexible labor market, and government-controlled investment distorted factor and resource allocation, while SOEs and large farmers operating under a soft budget constraint were not required to improve the efficiency of their energy, water, land, credit, and other resources use. The banking sector—which is dominated by SOEs—has no incentive to ease access to finance and administrative price regulation has effectively muted market signals.

4.5. Policies to facilitate more and better jobs should address factors that affect the demand and supply of workers, and inclusiveness. These should include macroeconomic policies that promote investment and employment, and policies to improve the investment climate, institutions, and infrastructure. Considering Uzbekistan’s main challenges—namely ‘jobless growth’ (need more jobs), ‘jobs created are mostly low productivity’ (need better jobs), and

⁵² Sizeable government subsidies and protectionism took the form of high import duties, preferential access to foreign exchange, cheap bank loans and raw materials, and high subsidies for SOEs in the form of low energy prices, tax rates, and customs tariffs.

⁵³ Large fiscal resources channeled to government programs in industry, agriculture, and services absorbed significant resources, but their selection was not transparent or market-based. Total fiscal support to the economy, including various subsidies, was not calculated, but it may exceed 10 percent of GDP each year. Such support is usually in the form of tax benefits; subsidies; reduced interest rates; subsidized prices for gas, electricity, and other inputs; debt guarantees and write-offs; regular recapitalizations of SOEs and banks; and exemptions from tax and import tariffs payments. The eligibility criteria for selecting firms and sectors for government support are not well defined and not transparent.

⁵⁴ World Bank 2016.

women and youth not getting good jobs’ (need inclusive jobs)—Table 4.1 presents possible general solution areas.

Table 4.1. Employment Challenges and Possible Solution Areas

Challenge	Possible Solution Areas
Jobless growth (need more jobs) Sectors include: machinery building, construction materials industry, light industry, food processing industry, other manufacturing	Ensure macroeconomic stability (low inflation, balanced state budget)
	Introduce counter-cyclical monetary and fiscal policies to (i) maintain demand during periods of external shocks, (ii) avoid accumulation of high-risk public and private debt during boom periods, and (iii) maintain a competitive exchange rate (avoiding cyclical overvaluations due to volatile global commodity prices) to prevent diversion of investment from the manufacturing sector and to ensure broader export diversification (of products and destinations)
	Improve investment climate, reduce cost of entry to firms
	Facilitate diversification through trade and investment liberalization
	Examine relative tax treatment of capital over labor (reduce taxes on labor: reduce payroll tax to stimulate hiring, and reduce income tax to stimulate work)
Jobs created are low productivity (need better jobs) Sectors include: electricity industry, fuel industry, metallurgical industry, agriculture	Improve labor productivity (both within sectors, through diversification, and by reallocation from low-productivity to high-productivity subsectors). For example, accelerate the shift of land under cotton and wheat to horticulture and other high-value crops (to create more jobs with higher productivity within agriculture and produce more raw materials for the food processing industry)
	Expand access to markets
	Expand competition in low-productivity subsectors
	Facilitate formalization (by reducing taxes on wage fund, labor, and profit)
	Facilitate urbanization
	Improve employability through education and training, especially higher education in technical fields
	Remove agricultural distortions, for example the state order system for cotton and wheat (to increase average agricultural productivity and provide higher-quality raw materials for the textile and flour industry). Increase expenditure on public programs in the agriculture sector that are critical to productivity growth, such as research and development, extension and advisory services, and sanitary and phytosanitary measures (to increase average agricultural productivity and incomes). Support productive partnerships between small-holder (dehqan) farms and agribusinesses to expand the production of high-quality raw materials to create more jobs in the food processing industry
Women and youth not getting good jobs (need inclusive jobs)	Improve school-to-work transition
	Improve employability of excluded groups through training
	Regulate equal opportunities and discrimination

Source: Adapted from Hallward-Driemeier (2015), with additions.

Policies to Address Shortcomings

4.6. Uzbekistan’s labor force is insufficiently skilled to take advantage of globalization and technological change (which favor highly-skilled workers). Much of the country’s labor force has no higher education and a significant segment of the working-age population is either low-skilled or lacks the skills demanded by the market. Uzbekistan is not well-positioned to adjust to contemporary globalization trends. On average, the Uzbek economy creates about 280,000 new jobs per year, well below the annual demand for 600,000 new jobs. The number of jobs created each year needs to double to meet current demand. While existing firms will need to create some jobs, most new jobs will have to be created through the establishment of new firms. Several other structural weaknesses in Uzbekistan’s labor market will also need to be addressed if the country is to adjust to globalization and technological change. These include limited labor mobility, work disincentives, skills gaps and a limited supply of training for technical skills, high youth unemployment and economic inactivity, and long-term unemployment.

4.7. The government’s demand-side and supply-side policies need to work in tandem to raise employment in Uzbekistan. International experience suggests that a distinction can be made between demand-side and supply-side policies to resolve the weaknesses and challenges mentioned above. Boosting demand alone—if the root cause of insufficient job creation is structural—is an ineffective way to tackle the problem. If demand is over-stimulated, inflationary pressures can rise. Supply-side policies for jobs focus on expanding the supply of people willing and able to work. By nature, supply-side policies are anti-inflationary and can be divided into ‘free-market’ and ‘interventionist’ supply-side policies. As demand-side and supply-side policies need to work in tandem to increase employment, we do not make a permanent distinction between them and, instead, list them jointly in Box 4.1.

Box 4.1. Demand-side and Supply-side Policies to Encourage Employment as Suggested by International Experience

- 1. Encourage firm entry.** Facilitate the creation of new firms, the implementation of new projects by existing firms, and entrepreneurship by improving the business climate, stimulating private investment (including FDI), and improving the efficiency of public infrastructure (including transport, to reduce the cost of inputs and outputs for firms and the cost of travel for labor, to link labor with jobs); create competitive markets, through deregulating markets and opening sectors to competition, abandoning price controls, reducing monopolization of subsectors by SOEs and private companies, and investigating and prosecuting anti-competitive practices.
- 2. Embrace free trade and competition.** Reduce import tariffs, excise taxes on imported goods, and non-tariff barriers to foreign trade, recognizing that the free market creates new job opportunities despite occasional short-term disruptions, and facilitates the shifts from old to new industries.
- 3. Rationalize public employment and wages.** With their inherent inefficiencies, low wage levels and high public employment lead to a high wage bill (more than one-third of state budget expenditures), crowding out other government expenditures essential for economic growth and job creation (such as spending on infrastructure, education, and health).

4. **Increase competition in banking and the non-banking financial sector, and simplify and reduce collateral requirements** to lower interest rates and borrowing costs for firms, expand demand for bank loans for capital investment and technology absorption, and make savings more attractive.
5. **Improve education and training** to strengthen human capital and technical skills, make people more flexible in the workplace, and increase their employability. Doing so would increase both labor productivity (by raising workers' capacity) and employment (by making the labor force more employable). Shifting labor from subsectors that need mostly manual skills to subsectors that need mostly mental skills requires the retraining of those workers coming from manual jobs. More and better training for those who lose jobs in an old industry should improve the occupational mobility of workers. Launching technical courses for high school graduates with a special focus on engineering or other technical specialties and skills will increase their employability and match skills to available jobs.
6. **Improve work incentives** to increase worker willingness to seek and accept a job. For example, reduce overall tax rates on labor income by 5 percentage points—especially on lower incomes (on lower bands of wages or incomes)—so that currently inactive, less-skilled labor can become interested in work that increases labor force participation and labor supply in Uzbekistan's labor-intensive industries. This policy is also partly demand-boosting as people will spend more of their disposable income or increase demand for goods and services in the economy. For example, India applies a higher tax exemption for women to stimulate female labor force participation.
7. **Encourage expansion of short-term labor contracts** such as part-time, temporary, and seasonal jobs, and contracts that set variable hours. This measure (except for contracts with variable hours) has already been implemented in Uzbekistan by amendments to the Labor Code that were sent to Parliament in April 2018 and have been enacted.
8. **Encourage product and process innovation** (both by firms and by the state in research and development institutes and universities) through tax deductions or tax credits for research and development, reduce constraints on product innovations so that firms can expand outputs and generate employment opportunities, and increase public research and development spending on product innovation.
9. **Increase the occupational and geographical mobility of labor**, for example by providing employment subsidies or geographical subsidies to firms. Employment subsidies would be linked to the hiring of particular groups of people (youth, women, and the long-term unemployed). The government could introduce subsidies (in the form of tax deductions, for example) to firms in the amount of up to the average wage, or \$200 per month per person for hiring youth aged 18-25, women, and the long-term unemployed (those who have been unemployed for more than six months). Geographical subsidies are not given directly to firms, but instead to the regions where firms are located. They may include providing more affordable housing in cities where employment is rising or allocating more land in certain locations to private home builders. A worker living outside of Tashkent with the required skills for an advertised job in Tashkent or Tashkent Province (where many jobs are available) may be unable to move there because of mandatory residence registration requirements. High housing prices also make it difficult for workers to change their location to get a new job. While Tashkent needs a lot of investment in housing, workers' geographical mobility can be easily improved without any investment by eliminating or easing mandatory residence registration in Tashkent or Tashkent Province. Encouragingly, this action was taken by Presidential Resolution #up-5308 of January 22, 2018, which removed mandatory residence registration in Tashkent city (*'propiska'*) from the list of required documents for employment in Tashkent and Tashkent Province.
10. **Expand access to basic healthcare to reduce working hours lost to illness**, especially for disadvantaged groups, for example through government subsidies to private clinics that reduce user charges for low-income households, especially on diagnostics and preventive health visits, or in less-developed regions (such as the environmental crisis zone near the Aral Sea).
11. **Incentivize training and life-long learning**. Introduce incentives for firms to provide on-the-job training courses (certified by the government for quality) and employ more workers than average; and train the unemployed (for example, to improve the presentation of their CVs and their performance in job interviews).

12. Limit the duration of the work week. Experience in high-income economies suggests that the maximum working hours per week for workers in certain occupations (such as those that often involve excessive hours) could be reduced. This reduction will create demand by firms for additional workers; firms would need to employ more workers to produce the same output. However, firms cannot always easily substitute existing high-skilled employees with new workers to do complex jobs.

Source: Adapted from Goodwin and others (2015), p.286.; United States Department of the Treasury 2006; United States Congressional Budget Office 2010.

4.8. Some ‘free-market supply-side policies’ could be further debated for their application to Uzbekistan. In particular:

- **Increase labor market flexibility** (make it easier to hire and fire workers). The United Kingdom has kept many workers formally employed through the use of ‘zero-hours contracts.’ Under such agreements, workers have formal job contracts—and are considered employed—but are not guaranteed a minimum number of work hours and employers are only required to pay wages when work is performed. Firms use more workers when demand is high and they need to increase their output. Zero-hours contracts, which are significantly cheaper for firms, also help firms to avoid firing workers in periods of low demand. In 2014 approximately 700,000 workers (2.3 percent of total employment) in the United Kingdom were employed on a zero-hours contract for their main job. However, such contracts can worsen job insecurity and demotivate workers, which may lead to slower labor productivity growth.
- **Reduce the power of trade unions**, as powerful trade unions may negotiate to set minimum wages above the equilibrium, resulting in higher unemployment. Although trade unions remain in place in Uzbekistan from Soviet times, their collective bargaining power in wage negotiations is relatively low. The minimum wage in Uzbekistan (equivalent to \$25 per month as of November 2018) is far below the minimum living expenses (about \$120 per person per month) and, as such, does not constrain employment growth.
- **Reduce generous unemployment benefits** to increase the incentive to get a job, notably by adjusting eligibility criteria, improving targeting, and reducing benefit duration. Generous unemployment benefits may create an unemployment trap as the employment wage after tax gives only a small increase in income to the unemployed. However, unemployment benefits in Uzbekistan are already low—reducing them further is unlikely to provide much incentive for the unemployed to seek work.

4.9. Based on the empirical findings, a recent World Bank report⁵⁵ argues that public policy for increasing productivity should focus on the “ABC” of growth in sectors of the economy—improving **Allocative efficiency, encouraging **B**usiness-to-business spillovers, and strengthening firm **C**apability.** Improving ‘allocative efficiency’ means promoting healthy firm entry, exit, and resource reallocation, and improving access to finance, flexible capital, labor, raw materials, other intermediate inputs, and land. Encouraging ‘business-to-business spillovers’

⁵⁵ World Bank 2018, p.97.

means targeting external factors such as density, agglomeration, and spatial clustering of firms. These generate positive externalities and promote greater efficiency and innovation due to the ease of communication, increased knowledge sharing and spillovers, increased scale of markets, access to human capital and other inputs and outputs, more efficient use of land and transport, and from sharing a common urban infrastructure.⁵⁶ Strengthening firms' capability means targeting something that the firm cannot readily buy in the market—managerial competence and technological (machinery upgrading) and organizational innovations. The surveys of manufacturing firms carried out for this study show that firms struggle to adopt basic administrative and organizational practices and to upgrade machinery, and undertake very little or no formal research and development. Given this, innovation policies in Uzbekistan should focus on encouraging firms to embrace existing technologies and disseminate simple organizational changes, rather than incentivize advanced research. The main obstacles to innovation in Uzbekistan include a lack of access to capital, lack of information on new technologies, lack of access to markets in high-income countries, lack of agglomeration and cooperation with other firms, and lack of advanced research capacities in local research institutes.

4.10. In the first half of 2017, the two most urgent measures identified by Uzbek manufacturing were the introduction of free currency convertibility for the import of inputs and a reduction in the excessive tax burden, both of which the government has been implementing since September 2017 as top reform priorities. However, the firms want the government to continue reforming. The free convertibility of the national currency (which topped the list of firms' proposed reform measures in the first half of 2017) was introduced in September 2017. The tax reform was discussed throughout 2018, and significant tax cuts were introduced in January 2019. Table 4.2, which outlines firms' next priorities, shows that most are preoccupied with resolving simple constraints related to firm survival, such as access to inputs (energy supply, raw materials, bank loans, and skilled workers) and markets for outputs. Resolving these constraints will improve allocative efficiency and firm capabilities. The 'business-to-business spillovers' dimension, however, is currently mostly outside Uzbek firms' scope of attention. Enhancing firm capabilities (managerial competence, technological upgrading, and organizational innovation) is now a top priority. Manufacturing firms also proposed a series of other measures, but these are not included in Table 4.2 because a smaller percentage of firms cited them.⁵⁷ These measures include (1) the government selling raw materials (including cotton fiber) for national currency on the domestic market, and ensuring that domestic raw materials prices never exceed world prices; (2) giving all firms the right to directly contract any supplier of raw materials—for example, allowing textile firms to buy cotton directly from farmers (the government introduced this measure in January 2018 as a pilot); (3) reducing inflation; (4) fixing the exchange rate on credits in foreign exchange at the time of actual withdrawal, or extending the time for repaying such credits; (5) helping women get places for their children in kindergartens and schools, and cancelling labor residence registration in Tashkent city and Tashkent province for women; (6) transferring state buildings with zero accounting value to private firms; (7) providing state support to manufacturing firms in rural areas, state support for business infrastructure (incubators, information, and so on),

⁵⁶ Duranton and Puga 2004.

⁵⁷ This list ranks proposed measures according to the number of firms that mentioned them, with the measures mentioned by more firms listed first.

and grants from the state budget to new entrepreneurs with business plans; (8) supporting the paving of rural roads; (9) helping to stop unfair competition; (10) creating a unified one-stop-shop web-based portal for firms to pay all taxes and import duties and submit their statistical reports; (11) creating a central database and web-portal for the purchase of imported raw materials; (12) providing free, unconditional access to a unified website that lists all public tenders; (13) ensuring timely debtor payments, especially indebted SOEs; (14) hiring only qualified specialists to perform state inspections; (15) fighting corruption and the arbitrariness of state officials or inspections, and punishing them more effectively; (16) permitting firms to pay at least 30 percent of wages and dividends in cash; and (17) ending the policy of requiring firms to purchase Uzbek newspapers.

Table 4.2. Uzbekistan: Ranking of State Support Measures Demanded by Manufacturing Firms in 2017

#	Policy Measures	Ranking by Firms	
		Large Firms	Small Firms
1	Introduce free convertibility for import of inputs	1	2
2	Reduce excessive tax burden, tax rates	2	1
3	Give more bank loans in local currency in demanded amounts	3	8
4	Ensure uninterrupted supplies of electricity, natural gas, fuel, and water	10	3
5	Provide additional territory to expand production capacities	9	4
6	Provide preferential prices and stop increasing prices on electricity, gas, and fuel	5	9
7	Reduce interest rates on bank loans in national currency	7	7
8	Reduce import duties (excise taxes) for import of machinery and raw materials	11	5
9	Give subsidies on capital rehabilitation, machinery and new technologies	4	12
10	Give state support (incl. state order) on sales of output on domestic and export markets	8	10
11	Give more bank loans in foreign currency (to import raw materials and machinery) in demanded amounts	6	13
12	Ensure uninterrupted supply of and equal access to raw materials during the year	13	6
13	Stop state bodies intervening in production and price setting, reduce number of inspections	12	11
14	Help firms get non-payments from debtors	14	20
15	Sell raw materials on Republican Commodity Exchange for local currency	15	37
16	Reduce number of tax payments and reporting requirements during the year	24	17
17	Increase import duties on output of foreign competitors	16	21
18	Help train skilled labor and find and hire workers	18	14
19	Abolish state-forced payments by firms for not participating in cotton picking campaign, etc.	17	30
20	Abolish de-facto trade restrictions on import of inputs	19	36
21	Reduce degree of monopolization of domestic markets by state holdings and associations	20	38
22	Reduce railway tariffs and difference between railway tariffs on domestic and export goods	21	28
23	Increase quality of Uzbek raw materials	22	19
24	Abolish restrictions on firms selling their output to anyone in domestic and foreign markets	28	18
25	Reduce payroll taxes or give preferences	31	16

#	Policy Measures	Ranking by Firms	
		Large Firms	Small Firms
26	Reduce time and simplify procedures for issuing licenses and permits, incl. construction	27	22
27	Increase length of (longer-term) bank loans	37	15
28	Abolish 100% pre-payment for communal utilities	23	29
29	Reduce time for getting foreign exchange convertibility	38	24
30	Stabilize exchange rate of UZS from devaluation	35	31
31	Reduce exchange rate of UZS to US\$	36	23
32	Reduce payment for ISO international certificates and in local currency (not in US\$)	29	26
33	Reduce collateral requirements by banks, especially on credits for new technology	26	35
34	Ensure access to foreign exchange loans of foreign banks abroad	34	25
35	Discipline banks to provide timely wages and other payments to firms	25	33
36	State must implement its own decrees and legislation in reasonable time	33	27
37	Give bank guarantees on contracts for importing of inputs	32	32
38	Give free medical services to employees of firms	30	34

Source: World Bank's Macroeconomics, Trade and Investment Global Practice surveys conducted for 'Growth and Job Creation in Uzbekistan.' This table lists all measures mentioned by at least 1 percent of firms.

4.11. The firms' reform priorities helped to formulate a prioritized agenda for policy reforms for the short and medium term that could be supported by the government and international organizations through development policy operations (DPOs), technical assistance, and other projects. This agenda is based on actions proposed by Uzbekistan's manufacturing firms (Table 4.2). We recommend the following reforms be implemented in the next 2-3 years to improve technology absorption, job creation, and productivity:

- Ensure uninterrupted supply of electricity and natural gas;
- Improve access to high-quality, affordable raw materials for all;
- Improve access to credit (lower inflation, affordable interest rates and terms, and lower collateral requirements);
- Provide additional territory (land) to allow production to expand (for example, by developing markets for land use and ownership rights in the industry and services sectors);
- Increase the availability of skilled personnel (workers, engineers, and managers);
- Improve regular provision of information to all firms in all sectors on available new technologies and equipment (to help with capital rehabilitation and technology upgrading) and support export orientation (target industries with existing comparative advantages in international trade, provide ISO quality certification and export risk mitigation, promote diversification, work toward WTO accession, organize trade finance fairs, provide regular information on the demand for products in other countries, an so on.); and
- Reduce the degree of domestic market monopolization by state-owned enterprises and banks, industrial holdings, and associations.

4.12. To realize Uzbekistan's high catch-up potential in economic growth a more integrated approach to the design of policy reforms should be used to remove the constraints on job creation and labor

productivity improvement. The above, prioritized list of seven policy measures demanded by the surveyed firms could be implemented in a broader context to the policy design as follows:

- (i) ***Remove infrastructure bottlenecks and improve logistics.*** Road connectivity and transport and logistics facilities (including airports)—together with an uninterrupted supply of electricity, natural gas, and water—are critical to the performance of small manufacturing firms within Uzbekistan's labor-intensive industries. The unreliability of the power supply can result in damaged machinery and equipment and leads to loss of raw materials and output. The firm surveys carried out for this study highlighted the reliability of electricity as a major problem for most industries. For textile producers, inadequate territory and warehouse facilities are the leading causes of concern. Inefficient transport facilities add to the costs of production. The relevant authorities could consider facilitating public-private partnerships (PPPs) and attracting foreign direct investment into basic infrastructure in the context of agglomeration and expanding the land available to growing enterprises. An increased emphasis on agglomeration or cluster development (to include R&D and educational institutions located in the production area that can serve the entire value chain) will help ensure that the required infrastructure facilities are developed strategically.
- (ii) ***Set up councils for technology adoption and export promotion.*** Technology adoption and knowledge absorption are high priorities for firms in Uzbekistan (as a lower-middle-income country). Acquiring and using existing knowledge is cheaper and less risky than creating new knowledge; productivity rewards can be substantial. Councils for technology adoption and export promotion should be set up by private firms or as PPPs to facilitate technology adoption and exports in the subsectors of agriculture, industry, and services. These councils should cater not only to large exporters, but should also help (i) small-holder horticulture farmers (*dehqans*) to adopt mini-technologies for horticulture and on-farm manufacturing, and (ii) microenterprises and small-size firms in industry and services that struggle to survive in the export market due to their low turnover. Such firms are unable to ensure their visibility to buyers and reach out to the external markets (in Russia and the CIS, the European Union, the Republic of Korea, Japan, Africa, the Middle East, Southeast Asia, the United States, and Australia). The existing industrial associations and the State Fund for Export Promotion of Small Firms cannot adequately address the scope of these problems.
- (iii) ***Allow market forces to ensure the availability of raw materials and credit.*** Small, labor-intensive manufacturing firms face significant barriers to obtaining the raw materials and financial resources to meet their fixed and working capital needs. The lack of finance limits capacity expansion and technological upgrading. Uzbek banks generally prefer collateral-based lending rather than cash-flow based lending when working with small firm borrowers. The export promotion council could also facilitate the flow of finance from the banking sector to small firms.
- (iv) ***Generate skilled workers by improving managerial capacity and training centers.*** Shortages of skilled managers (as evidenced by low productivity and inefficient firm and inter-firm value chain organization) and skilled workers have been observed in each of the manufacturing subsectors, especially in labor-intensive subsectors. The government established training centers as part of its efforts to develop vocational

- education, but these need to be improved and run primarily in rural areas through private initiatives or PPPs. Doing so would have the dual benefit of providing workers with training and ensuring that industries set up their facilities closer to the villages, thereby reducing transportation and accommodation costs for workers.
- (v) ***Foster allocative efficiency via product market competition.*** Foreign and domestic competition increases aggregate productivity—as new and more productive firms enter the market, unproductive firms exit (because they cannot compete anymore), and growing incumbent firms expand through the reallocation of labor and capital. Competition drives inter-firm and inter-sectoral shifts of labor and capital to increase aggregate productivity growth and, therefore, the country's international competitiveness. De-monopolization of exports and imports in the agriculture, manufacturing, and services sectors will greatly improve competition.
 - (vi) ***Integrate small firms into value chains.*** China sustains its competitiveness (low cost and price per unit of output) because of its large scale of production. When the scale of production becomes a significant factor in deciding the cost and prices of Uzbek products, it may be valuable to provide an opportunity to include microenterprises and small-size firms in the value chains by outsourcing from large foreign or local firms. Doing so would also help avoid the risk of such firms being pushed out of the market because of their small scale of production. The government could, therefore, identify microenterprises and small-size firms that make specific products and maintain a database of both large and small firms in relevant subsectors. This common platform could be utilized for both the domestic and export markets. The myriad small firms in each subsector requires the creation of an organized platform to allow them to contribute to the output of large firms (and fill jobs outsourced by them). Government agencies can help these small firms by providing them with machinery (through leasing, for example), training their workers, and moderating between well-organized large foreign firms and local microenterprises and small-size firms. The government could also set up industrial parks in urban areas (in provinces) in textiles, apparel, food processing, jewelry, machinery building (bicycles and motorcycles) and other industries to help exporters become hubs for labor-intensive exports. It could provide employment opportunities to workers near their homes, discouraging potential migration for employment opportunities and generating budget revenue at the district level.
 - (vii) ***Encourage female workers.*** In the apparel, textiles, sporting goods, jewelry, and related services sectors, female workers are considered to be more skillful in working with different kinds of machines for cutting, sewing, stitching, and so on. To encourage more female workers to find employment in labor-intensive industries the government should incentivize industries to outsource more work to female workers and to set up units or branches in villages. Doing so would allow more flexibility for female workers to work either full- or part-time, depending upon their domestic duties, especially if the government also helped improve the availability and affordability of childcare/kindergartens and transportation. The government should also promote equal opportunities for all jobs, and suitable training. NGOs and women's organizations could be asked to participate in campaigns to educate rural women about their employment prospects in labor-intensive manufacturing and services.

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ANNEXES

Annex 1. Methodologies Used for Uzbekistan GDP per Capita Growth Decomposition Analysis

GDP per capita was decomposed into the contributions made by (i) aggregate productivity growth and employment growth by different sectors of the economy, and (ii) demographic changes.⁵⁸ The Shapley methodology permits the linking of changes in average income per capita to labor market factors, including both the quality and quantity of jobs (as measured by labor productivity and employment rates). It differentiates these from factors that affect income per capita but are not directly related to the labor market, such as changes in the average number of dependents per worker.

The Shapley methodology involves six steps:

- **Step 1:** Decompose the growth of GDP per capita (proxied by value added per capita in the agriculture, industry, construction, and service sectors) into changes in the employment rate, output per worker, and demographic factors.⁵⁹
- **Step 2:** Decompose overall changes in employment into changes in employment by sector.
- **Step 3:** Decompose changes in output per worker into changes in output per worker within sectors and changes due to the relocation of workers between sectors.

⁵⁸ We use the World Bank's Jobs Generation and Growth (JoGG) Decomposition Tool, which uses Shapley decompositions and can be downloaded from www.worldbank.org/employmentlab. The objective of growth accounting is to show how employment and productivity growth, as well as the sectoral relocation of labor, contribute to overall growth. It is not intended to explain why such a pattern occurred. The total change in GDP per capita can be described as the sum of (i) employment-rate changes, (ii) changes in aggregate output per worker (split into [a] changes within sectors, and [b] employment reallocation between sectors), and (iii) changes in the demographic structure of the population. Due to statistical discrepancies, the sum of value added from each sector does not always add up to the total value added. Similarly, the sum of employment from each sector does not always add up to total employment. In line with the approach used in the WDI database, this discrepancy is included in the services sector, which is why the data series is named "Services, etc."

⁵⁹ The employment elasticity of growth reflects changes in the level of employment, not changes in employment rates. It reveals nothing about the actual extent of job creation, since a country that grew by 1 percent and experienced a 1 percent increase in employment would have the same employment elasticity as a country that grew by 10 percent and experienced a 10 percent increase in employment. Moreover, the employment elasticity does not account for demographic changes, even though population growth frequently offsets increases in employment. Improvements in income and progress in poverty reduction do not depend on the absolute number of employed workers, but on the share of employed workers in the working-age population or the labor force, and positive employment elasticity may be consistent with rising unemployment rates. This is especially important in developing countries, where population growth tends to play an important role in labor force growth. Finally, it should be noted that value addition does not include taxes and subsidies, while GDP does, but the difference between GDP and the sum of value added of all economic sectors is very small.

- **Step 4:** Analyze each sector's role in the aggregate effect of employment reallocation across sectors.
- **Step 5:** Examine the role of capital and TFP in aggregate changes in output per worker.
- **Step 6:** Combine the results of the previous steps to determine how each factor affects per capita growth.

Growth in aggregate output per capita can be described by growth in its components using the following identity:

$$\frac{Y}{N} = \frac{Y}{E} * \frac{E}{L} * \frac{L}{A} * \frac{A}{N} \quad \text{or} \quad y = w * e * p * a$$

where

Y = Total output

N = Population

E = Employment

L = Economically active population

A = Working-age population (ages 15+)

where

y = Output per capita

w = Output per worker

e = Employment rate

p = Participation rate

a = Working-age population/total population

Annex 2. Description of the Enterprise Surveys

World Bank staff conducted three surveys for this report: two surveys of large firms (in 2013 and 2017) and one survey of small firms in 2017. These surveys represent the enterprises' views and not the views of the World Bank. To conduct these surveys World Bank staff hired a private survey company that has a general manager, manager of field works, statistician, computer programmer, four regional supervisors with more than 10 years of field work experience, and 40 experienced interviewers that received special training before conducting each of the three surveys. On the enterprise side, the directors, deputy directors, chief financial officers and human resource managers of manufacturing enterprises from five subsectors in six administrative provinces of Uzbekistan were surveyed utilizing face-to-face interviews. All respondents were businesses that were active between 2010 and 2013 (the period covered by the first survey of large firms) and between 2014 and 2016 (the period covered by the second [panel] survey of large firms and the survey of small firms).

These surveys are not intended to be an exhaustive statement of all constraints on productivity and employment faced by all manufacturing enterprises of Uzbekistan. Instead, they offer an opportunity to reveal the most critical issues that affect the development of the subsectors of industry, as perceived by respondents. Using data obtained through these surveys, World Bank staff developed specific recommendations to help address issues raised by the enterprises.

1. Objectives of the surveys

The surveys aimed to explore Uzbek manufacturing firms' perceptions of the constraints on productivity and employment growth in their businesses and their suggestions of ways to resolve these constraints. The survey results can support the development of policy recommendations to narrow the productivity gap between manufacturing firms in Uzbekistan and upper-middle-income countries by 2030. To facilitate the government of Uzbekistan's intention to shift the focus of its industrial policy from industries based on natural resources to manufacturing, these surveys were developed and conducted to inform the design of relevant policy recommendations to promote productivity and employment growth in manufacturing. The main aim of these surveys has been identifying and evaluating the scale of major constraints to productivity and employment that should be overcome in order to achieve the objectives of economic growth in Uzbekistan put forward in the national strategy for socio-economic development.

2. Value added of the surveys

Although there have been several surveys of the business climate in Uzbekistan, including those conducted by the IFC, these surveys were the first attempt to quantify the constraints to productivity and employment growth in large manufacturing enterprises, as well as small enterprises (which have been subject to previous World Bank/IFC surveys). The survey results could provide a baseline against which the impact of future government measures to improve various constraints to productivity and employment in manufacturing enterprises (such as those related to physical and business infrastructure, the macroeconomic and regulatory environment, exports, competitiveness, and technology absorption/innovation) can be assessed. The results of these surveys are expected to

generate constructive debate across government agencies on how to boost manufacturing competitiveness, productivity, and job creation.

3. Coverage of the surveys and definitions

The first survey of large manufacturing firms covered 122 large (in fact, medium and large manufacturing firms in six administrative territories of Uzbekistan where the majority of manufacturing takes place. The surveyed firms represented the five manufacturing industries that demonstrated the highest value-added growth in recent years and was not dominated by a small number of state-controlled companies. Medium- and large-sized firms were targeted because they represent a source of potential high growth. The first survey was conducted between May 2013 and August 2013. This survey covered the time period 2010 to 2012. The targeted firms were stratified using three criteria: (i) region, (ii) industry, and (iii) size. The survey covered the following administrative territories of Uzbekistan: Tashkent city, Tashkent province, Samarkand province, Fergana province, Bukhara province, and Navoi province.

The second (panel) survey of large firms covered 111 large (in fact, medium and large) manufacturing firms in the same six administrative regions as in the first survey. It was conducted between April 2017 and June 2017.

The third survey, which focused on small firms, covered 478 small manufacturing enterprises in the same six administrative regions as the first and second surveys. It was conducted between May 2017 and September 2017.

Stratification by sector within the manufacturing industry produced five strata that were used in all three surveys: chemical and petrochemical industry, the food processing industry, light industry, machinery building industry, and construction materials industry. The sectors of economic activity in manufacturing defined by the national classifier as coded by the Cabinet of Ministers of Uzbekistan Resolution 439 of October 11, 2003, were aggregated for the purposes of the survey.

Stratification by size was based on the current definition of small enterprises of Uzbekistan according to the Decree of the President of Uzbekistan #UP-3305 of August 30, 2003, and the Resolution of the Cabinet of Ministers of Uzbekistan #439 of October 11, 2003. Note: medium and large enterprises are not clearly defined by official resolutions in Uzbekistan and de-facto incorporate all enterprises with a number of employees greater than that specified in the national legislation for small enterprises.

4. Sampling Methodology and Panel Interviews

The survey company obtained from the State Statistics Committee of Uzbekistan the national databases of enterprises and developed lists of active industrial enterprises categorized by region, sector, and size. From this listing, the company randomly selected enterprises that satisfied particular selection criteria (such as size, industry, and region). Those enterprises were then contacted, and the first 122 large enterprises in 2013 and 111 large enterprises in 2017 that agreed to participate in the survey comprised the respondents (see section 5.5. for details). The staff of the World Bank's

Enterprise Surveys Unit⁶⁰ conducted the sampling, and recommended surveying 472 small firms (478 small firms were actually surveyed) and 100 large firms (111 large firms were surveyed in 2017 and 122 large firms in 2013). The second survey of large firms in 2017 involved panel interviews of 94 percent of firms in the food processing industry, 55 percent of firms in light industry, 45 percent of firms in the chemical and petrochemical industry, 40 percent of firms in the construction materials industry, and 30 percent of firms in machinery building.

Table A2.1. Number of Firms Selected for Surveys from the Firms Listed in the National Database, by Sector and Province

Region	Machinery Building			Chemicals and Petrochemicals			Light Industry			Food Processing			Construction Materials			Total Number of Enterprises by Region		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Survey	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tashkent city	5	11	43	4	2	35	12	4	35	9	3	43	4	4	24	34	24	180
Tashkent province	1	8	28	1	2	16	4	8	10	5	3	18	5	3	21	16	24	93
Bukhara province*	1	0	3	0	1	9	6	6	7	4	2	8	1	4	10	12	13	37
Navoi province*	1	0	3	1	2	9	1	2	3	4	2	4	3	1	10	10	7	29
Samarkand province	3	2	5	2	1	12	9	7	9	5	3	14	3	1	17	22	14	57
Fergana province	3	7	9	0	1	16	8	11	18	9	3	17	8	7	22	28	29	82
Total by sector	14	28	91	8	9	97	40	38	82	36	16	104	24	20	104	122	111	478

Notes: * 1-first survey of large firms in 2013, 2-second (panel) survey of large firms in 2017, 3-first survey of small firms in 2017.
 ** The enterprises of Bukhara and Navoi provinces were unified into one research region as they represented a geographically close industrial cluster.

5. Fieldwork

5.1. Preparatory stage

The questionnaire and guide for interviewers were developed in English and translated into the Uzbek language. The questionnaire contained modules on general information, enterprise assets and asset liquidity, quantity and quality of employees, financial indicators of enterprises, energy and gas consumption and cost, competition level and competitiveness, constraints on physical infrastructure, influence/control of local authorities, innovation in enterprises, and labor productivity constraints. The questionnaire and the guide for interviewers were discussed in focus groups and tested in 20 pilot interviews with the chief executive officers of various enterprises in Tashkent city. The results of the pilot were discussed in a focus group in Tashkent in July 14, 2013, with the participation of

⁶⁰ See World Bank 2009. A 7.5 percent precision of an estimate in a 90 percent confidence interval means that we can guarantee that the population parameter is within the 7.5 percent range of the observed sample estimate, except in 10 percent of cases.

representatives from five manufacturing enterprises. Based on the results of the pilot and focus group discussion the questionnaire and guides for interviewers were adjusted to reflect the most important issues and clarify the questionnaire.

5.2. Training of interviewers and supervisors

Special attention was given to the training of interviewers and supervisors and the preparation of instructions/guides and other written materials for carrying out the fieldwork. The interviewers selected for this study have many years of experience in analysis of enterprises and a college education level.

Four training sessions were held, and World Bank staff participated in these. The content of the training included an explanation of the purpose of the study, description of the sampling methodology and sampling instructions, clarification of the terms and definitions in all sections of the questionnaire, discussion of each question in the questionnaire and Q&A, and discussion of fieldwork organizational issues.

5.3. Data collection

Data collection was conducted between July 15, 2013, and August 4, 2013. The long duration of data collection was due to: (i) inconsistencies between the phone numbers and street addresses in the enterprise database and the firms' actual locations, as well as changes in the names of streets and enterprises' phone numbers; and (ii) the need to interview several respondents per enterprise to collect answers to all questions in all specialized sections of the questionnaire (respondents may have included the general director, executive director, deputy director, deputy chairman of the board of directors, head of planning and economic analysis department, chief accountant, head of export and import department, and chief of human resource (HR) management). Face-to-face interviews were conducted by a team of 22 interviewers and four supervisors. In the course of the first study in 2013, the team conducted 122 interviews. The average duration of an interview for an enterprise was 65 minutes.

5.4. Quality control of fieldwork

Quality control of the fieldwork was implemented by a professional survey company and World Bank staff at each stage of each of the three surveys. An assigned survey coordinator from the survey company was responsible for the timely execution and accuracy of the completed interviews. At the same time, during the survey, the World Bank staff conducted quality control by independently selecting several respondents, visiting them to check the completed questionnaires, and leading face-to-face interviews. During the control field visits no violations were found. The quality control of completed questionnaires was also carried out by supervisors in the survey company's main office. The quality checks focused on confirming that no questions had been skipped unnecessarily, that the correct sequencing of transitions in certain questions (that require skipping some questions depending on the answer to the previous question) had been followed, and that the respondents' answers were consistent. Any irregularities or concerns were clarified with interviewers and, in case of remaining doubts, additional interviews and calls to enterprises were conducted. Upon completion

of fieldwork, the survey company carried out quality control by making unscheduled phone calls to about 25 percent of the respondents (selected at random). The researchers encountered some problems that complicated their efforts to carry out these checks by phone. These applied to only a small number of respondents. Some respondents had refused to provide personal phone numbers that the team could use to confirm that the original interview had been conducted. Some respondents refused to respond to the second phone call or to a visit by controllers, based on a view that they had provided enough information in previous interviews and could not provide additional information. Some respondents asked that the researchers not call or visit them after the original interview because the original interview had tired them.

After World Bank staff received all completed questionnaires, they also contacted about 30 percent (selected at random) of all firms by phone and asked two or three clarification questions on the firms' answers in response to the questionnaire.

5.5. Response and non-response rates

The survey response rate, which measured the participation level of enterprises in the survey, was estimated as the ratio of completed interviews to the total number of contacts. The number of contacted enterprises (those the researchers attempted to interview) in the first survey in 2013 was 258, the number of enterprises that was not interviewed for various reasons was 136, and the number of completed interviews was 122. This meant a response rate of 47.3 percent, which is considered good for this type of survey.

The following strategy was applied to achieve the highest possible number of completed interviews: the enterprise selected for the survey was contacted by phone or personal visit up to three times at different times of the week to reach the respondent. If the enterprise, after all attempts, for some reason could still not be contacted, or refused to participate in the interview, the interviewer shifted to another enterprise with similar characteristics. Non-responses were filed in a non-response database. The contacts with selected enterprises were conducted by supervisors and interviewers in each selected region.

To account for non-responses, initial sample sizes in all three surveys were increased by the respective percentage of non-responses. Thus, the sample size was increased by 111 percent in the first survey of large firms as there were 136 non-responses in total (for all reasons of non-response). The typical reasons for non-response were as follows: (1) enterprise could not be found using the available contact details; (2) enterprise had recently closed; (iii) enterprise refused to be interviewed; and (iv) permanent absence from the enterprise of chief executive officers during the field work. The non-responses in the first survey of large firms for all reasons by sectors are presented in Table A2.2.

Table A2.2. First Survey of Large Firms in 2013: Summary by Type of Non-Response

	Light Industry		Machinery Building		Food Industry		Chemical & Petrochemical Industry		Construction Materials Industry		Total
Number of completed interviews	40		14		36		8		24		122
	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber
Enterprise does not meet selection criteria	10	25	2	14	19	53	1	13	8	33	40
Enterprise was not found	19	48	5	36	10	28	1	13	6	25	41
Enterprise closed/does not exist	9	23	3	21	7	19	1	13	7	29	27
Refusal to be interviewed	2	5	1	7	4	11	1	13	0	0	8
Absence of necessary respondents	7	17	2	14	8	22	1	13	2	8	20
Total non-responses	47	118	13	92	48	133	5	62	23	96	136

The number of contacted enterprises (those the researchers attempted to interview) in the second survey of large firms in 2017 was 203, the number of enterprises that was not interviewed for various reasons was 92, and the number of completed interviews was 122. This meant a response rate of 54.7 percent, which is considered good for this type of survey. The non-responses (for all reasons) in the second survey of large firms are presented, by subsectors, in Table A2.3.

Table A2.3. Second Survey of Large Firms in 2017: Summary by Type of Non-Response

	Light Industry		Machinery Building		Food Industry		Chemical & Petrochemical Industry		Construction Materials Industry		Total
Number of completed interviews	38		28		16		9		20		111
	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber	% of figure above	Num ber
Enterprise does not meet selection criteria	8	21	12	4	0	0	1	11	9	45	30
Enterprise was not found	4	11	0	0	0	0	0	0	0	0	4
Enterprise closed/does not exist	8	21	6	21	3	19	2	22	3	15	22
Refusal to be interviewed	3	8	13	46	0	0	3	33	2	10	21
Absence of necessary respondents	13	34	2	7	0	0	0	0	0	0	15
Total non-responses	36	94	33	118	3	19	6	67	14	70	92

The number of contacted enterprises (that is, those that researchers attempted to interview) in the survey of small firms in 2017 was 1,205, the number of enterprises not interviewed for various reasons was 727, and the number of completed interviews was 478. This meant a response rate of

39.7 percent, which is considered good for this type of survey. The main reasons for non-response by small enterprises was that many small firms produce a wide variety of outputs that relate to several subsectors and many of them do not fit into a single subsector. The non-responses (for all reasons) in the survey of small firms by subsectors are presented in Table A2.4.

Table A2.4. Survey of Small Firms in 2017: Summary by Type of Non-Response

	Light Industry		Machinery Building		Food Industry		Chemical & Petrochemical Industry		Construction Materials Industry		Total
	Number	% of figure above	Number	% of figure above	Number	% of figure above	Number	% of figure above	Number	% of figure above	Number
Number of completed interviews	82		91		104		97		104		478
Enterprise does not meet selection criteria	31	38	85	9	29	28	166	171	47	45	358
Enterprise was not found	35	43	28	31	43	41	39	40	102	98	247
Enterprise closed/does not exist	6	7	3	3	8	8	5	5	19	18	41
Refusal to be interviewed	14	17	6	7	22	21	12	12	12	12	66
Absence of necessary respondents	1	1	4	4	3	3	2	2	5	5	15
Total non-response	87	106	126	138	105	101	224	231	185	178	727

5.6. Data preparation and verification

Prior to analysis, the survey company double-entered the collected data and corrected any errors, and then World Bank staff verified the data. All variables were examined for input errors and logical inconsistencies. Any errors or unclear figures that were found were highlighted and corrected through communication with the respondents. The data were analyzed based on the main factors used for stratification—by subsector and regions. The number of observations for each subsector and for the total in respective subsectors was large enough to provide representative and valid estimates.

The preliminary results of the first survey of large firms were discussed in the second focus group discussion. This was held in Tashkent on September 13, 2013, and five large manufacturing enterprises participated. In addition, the preliminary survey results were presented and discussed at the Uzbekistan Vision 2030 intermediary workshop conducted by the World Bank and the UNDP, with the participation of representatives of the government of Uzbekistan and two economic research think tanks, on November 12-13, 2013. Selected results of the second survey of large firms and the results of the survey of small firms (both conducted in 2017) were discussed informally with a small group of businessmen and researchers of the Institute of Forecasting and Macroeconomic Research in Tashkent on January 26, 2018.

6. Limitations of the surveys

(1) Estimation of time and related cost expenses

Certain monetary indicators of enterprises are based on enterprises' own descriptions of the time and cost or value they spent on particular actions and procedures related to various sections and questions in the questionnaire. Given that some people might either forget certain tasks or overestimate the time and cost or value that they assigned to certain actions related to productivity and employment constraints, the estimates based on self-reported time and cost or value might be somewhat higher or lower than the actual time or/and cost.

(2) Inconsistencies between enterprises contact databases and actual situation

There were inconsistencies between the listed phone numbers, postal addresses, and legal addresses in the State Statistics Committee's databases and enterprises' actual phone numbers, postal, addresses, and legal addresses. Some enterprises are closed/do not exist, or changed their names, or are not active in a certain subsector—even though they are still listed in the official enterprises database as active in certain subsectors. For some enterprises, there were inconsistencies between the registered and actual number of employees and, thus, the size of enterprises. Although the research team used methods to solve these problems, these inconsistencies may be considered a potential bias because large enterprises in some regions are under-represented.

(3) Non-response rates

The overall response rate in the first survey of large firms was 47.3 percent, with only eight firms refusing to be interviewed (6 percent of total non-responses). To avoid issues with survey non-response, the screening questionnaire was designed to help filter out respondents that *a priori* did not meet the selection criteria. If the respondent met the selection criteria but for some reason could not be contacted, the interviewers and supervisors were instructed to make at least three attempts to reach the respondent. If the respondent could not be contacted or refused to participate in the survey, another randomly-selected candidate with similar characteristics substituted for the initial one. The actual sample size for the first survey of large firms was 258 enterprises, compared to a total of 122 enterprises that were ultimately interviewed. This difference was mostly due to inconsistencies between the official enterprise database and the actual situation on the ground. The actual sample size for the second survey of large firms was 203 enterprises. The overall response rate in the second survey of large firms was 54.7 percent, with 21 firms refusing to be interviewed (23 percent of total non-responses). The actual sample size for the survey of small firms was 1,205 enterprises, given that many respondents did not fit the selection criteria. The overall response rate in the survey of small firms was 39.7 percent, with only 66 firms refusing to be interviewed (9 percent of total non-responses).

7. Main policy-oriented questions and hypotheses

Focus-group discussions during the first survey of large firms in 2013 revealed that, apart from lack of access to foreign exchange, the major constraints on productivity included difficulties accessing

key inputs (banking credits, an uninterrupted supply of raw materials, natural gas, electricity, and a skilled workforce), insufficient help from the authorities for exporting output, and excessive demands by local authorities. The surveys allowed us to refine our hypotheses on what are the main constraints on productivity and employment growth for manufacturing firms in Uzbekistan:

- Electricity, natural gas, and fuel supply breaks are major sources for unstable output production;
- High inflation, high taxes, and import duties, and banks' delays in paying wages are significant constraints on better productivity;
- The current regulations and business climate provide strong incentives for import-substitution rather than export-orientation;
- Excessive bureaucratic regulations and import administration complicate imports of needed raw materials and intermediary goods; and frequent, unpredictable changes in legislation and non-transparent regulation worsen business conditions;
- Excessive uncompensated claims on firms' resources by the local authorities reduce the resources firms have for productive use;
- In the current business climate, firms have low incentives for innovation activity;
- There is a shortage of qualified workers, engineers, and managers for fast technology adoption, innovation, production of new products and productivity growth;
- There is a lack of competition, both domestic and foreign, but especially foreign;
- A significant increase in state-regulated energy prices may force a significant share of small private firms into bankruptcy;
- The above factors that limit productivity are mostly limit output growth and, therefore, potential employment growth;
- Additional factors that limit employment growth may include low wages and lack of social benefits offered by private firms, a lack of qualified human resource (HR) managers in the Uzbek labor market; low worker mobility due to mandatory residence registration requirements, and large SOEs tending to cut down on wages and staff to reduce costs.

Annex 3. Selected Results of Three Surveys of Firms in Uzbekistan's Manufacturing Subsectors

Table A3.1. Uzbekistan: Selected Indicators of Business Conditions, Constraints, and Incentives from Surveys of Large and Small Firms in the Manufacturing Subsectors in 2013 and 2017

Selected Indicators	Large Firms				Small Firms	
	2010	2012	2014	2016	2014	2016
1 Share of firms that do not export, %						
Manufacturing	67	65	53	56	81	74
Machinery building industry	57	57	57	57	88	83
Chemical & petrochemical industry	75	63	38	38	79	68
Light industry	48	43	40	45	59	49
Food processing industry	86	86	75	81	89	81
Construction materials industry	71	75	55	60	89	89
2 Average profitability (ratio of net profit to total cost), %						
Manufacturing	16.0	15.0	5.4	5.2	7.8	8.4
Machinery building industry	46.3	38.0	11.6	12.6	11.1	15.6
Chemical & petrochemical industry	8.6	11.4	0.3	3.0	6.5	9.5
Light industry	5.7	6.3	1.9	4.1	9.0	10.9
Food processing industry	3.6	5.0	3.7	2.2	7.8	3.8
Construction materials industry	18.2	12.4	9.7	4.0	4.5	2.0
3 Average accounting age of machinery, years						
Manufacturing		15.4		16		9.5
Machinery building industry		20		12.4		11
Chemical & petrochemical industry		15.3		21.8		8
Light industry		10		12.6		7.9
Food processing industry		14.6		12.9		10.6
Construction materials industry		17		20.1		10.1
4 Average days with interrupted access to electricity at least for 1 hour						
Manufacturing		23		24		29
Machinery building industry		26		17		27
Chemical & petrochemical industry		15		17		31
Light industry		17		34		27
Food processing industry		27		12		24
Construction materials industry		30		42		36
5 Share of firms that did not introduce new products in the last 3 years, %						
Manufacturing		76		71		66
Machinery building industry		57.1		50.0		49.5
Chemical & petrochemical industry		87.5		55.6		64.9
Light industry		80.0		89.5		69.5
Food processing industry		77.8		81.3		64
Construction materials industry		79.2		80		81.8
6 Share of firms that provide on-the-job training, %						
Manufacturing		54		63		33
Machinery building industry		85.7		60.7		40.7
Chemical & petrochemical industry		50.0		77.8		28.9
Light industry		37.5		57.9		40.2
Food processing industry		44.4		62.5		27.9
Construction materials industry		54.2		55.0		25.0

Selected Indicators	Large Firms				Small Firms		
	2010	2012	2014	2016	2014	2016	
7	Share of skilled workers in total number of workers, %						
	Manufacturing	62	66	47	50	63	66
	Machinery building industry	62	67	47	49	71	71
	Chemical & petrochemical industry	50	58	53	57	58	66
	Light industry	70	70	34	37	69	71
	Food processing industry	65	70	34	35	48	54
	Construction materials industry	65	67	67	71	69	68
8	Capacity utilization ratio of machinery & equipment, % of potential						
	Manufacturing		66.3		65.1		68.8
	Machinery building industry		62.0		63.3		68.8
	Chemical & petrochemical industry		58.8		65.4		68.1
	Light industry		70.6		74.6		72.4
	Food processing industry		67.3		50.8		62.0
	Construction materials industry		72.8		71.2		72.9
9	Share of firms that improved quality of output in the last 3 years, %						
	Manufacturing		4.5		12.7		34.5
	Machinery building industry		7.2		10.7		38.5
	Chemical & petrochemical industry		0		11.2		33.0
	Light industry		2.5		10.6		35.3
	Food processing industry		5.6		6.3		30.0
	Construction materials industry		8.3		25.0		35.6
10	Share of firms that implemented cost-saving measures on wages, %						
	Manufacturing		68.2		70.8		56.6
	Machinery building industry		78.6		64.3		65.9
	Chemical & petrochemical industry		50.0		88.9		56.7
	Light industry		77.5		65.7		58.5
	Food processing industry		63.9		75.0		57.7
	Construction materials industry		70.8		60.0		44.2
11	Share of output sales to ministries/associations/SOEs on state plans or state-orders, %						
	Manufacturing	64	65	61	62	46	46
	Machinery building industry	77	78	60	60	61	58
	Chemical & petrochemical industry	61	61	58	58	45	45
	Light industry	66	67	65	65	56	54
	Food processing industry	61	58	58	65	28	28
	Construction materials industry	56	60	65	65	39	48
12	Share of firms whose staff was distracted by authorities on agricultural and other works (% of firms that said this practice existed)						
	Manufacturing		58.1		60.7		33.1
	Machinery building industry		64.3		60.7		40.7
	Chemical & petrochemical industry		50.0		55.6		26.8
	Light industry		52.5		39.5		23.2
	Food processing industry		69.4		87.5		37.5
	Construction materials industry		54.2		60.0		37.5
13	Total number of competitors per firm (as perceived by firms' managers)						
	Manufacturing		16		18		46
	Machinery building industry		2		8		34
	Chemical & petrochemical industry		10		5		25
	Light industry		21		42		55
	Food processing industry		36		24		61
	Construction materials industry		8		14		56

Source: World Bank survey of large and small firms in Uzbekistan's manufacturing sector.

Growth and Job Creation in Uzbekistan: An In-depth Diagnostic

