Volume 21
Number 1
Year 2019
ISSN 1529-0905

Journal of BANGLADESH STUDIES

BDI
Bangladesh Development Initiative

CONTENTS

From the Editor vi
Syed Saad Andaleeb

From the Special Editors viii
Farida Khan and Rahim Quazi

Estimating Potential Growth for Bangladesh: The Performance Gap and Policy Implications 1
Biru Paksha Paul and Rizwana Islam

Bangladesh's Economic Geography: Some Patterns and Implications 17
Ahmad Ahsan

Why is the Relative Preference for Government Jobs on the Rise in Bangladesh?
Evidence from Labor Force Surveys 34
Mustafizur Rahman and Md. Al-Hasan

The Changing Face of Political Islam in Bangladesh: From Compromise to Confrontation? (1991-2016) 45
Helal Mohammed Khan

Digital Media and Violent Extremism in Bangladesh: Profiles and Narratives 60
Saimum Parvez

Bangladesh's Economic Geography: Some Patterns and Implications

Ahmad Ahsan

Policy Research Institute of Bangladesh
Email: *aa42@caa.columbia.edu*

Abstract

Although largely unrecognized, economic geography – the location of economic activity – has become a critical issue for Bangladesh's development. This paper makes three points: extreme poverty in Bangladesh is highly concentrated in a few districts spread throughout the country, suggesting that spatial development needs attention; excessive concentration of economic activity in Dhaka is impeding overall urban development and manufacturing jobs with adverse implications for long term growth; and the location and dispersion of economic activity have direct consequences for household-level income and welfare at the district level. In making these points, this paper breaks new ground in the limited literature on Bangladesh's regional development literature by introducing concepts such as the role of the primate city, urban development, and economic density; making extensive use of District level economic data that is available; and combining the 2016 household consumption and 2013 labor force survey data after testing for the validity of this data. The conclusion discusses some policy implications and extensions of this work.

1 Objectives, Context, and Contribution

Forty nine years after independence in the aftermath of a devastating war, Bangladesh now stands as an example for many developing countries. Extreme poverty – defined as living below Purchasing Power Parity Rate Dollar 1.90 a day - declined from 44 percent of the people in 1992 to 14 percent of the people at present. In some key indicators such as life expectancy, infant mortality, or maternal mortality, Bangladesh performs more like an average Middle- Income country where per capita income is almost three times higher than lower-middle-income Bangladesh.

While not as well known, Bangladesh's economic growth performance has also been impressive. The economy's growth rate has steadily accelerated over the decades from 4 percent p.a. in the 1980s to 6.6 percent p.a. in the 2010s. In the last three years, gross domestic product (GDP) growth rates have comfortably exceeded 7 percent p.a. and touched 8 percent in fiscal year 2017-18 and 2018-19. This performance puts Bangladesh among the top ten fastest-growing countries globally. Accelerating economic growth combined with a halving of the population growth rate has tripled real per capita incomes since independence. According to the World Bank's estimates, in 2018, per capita income measured by the international comparable Purchasing Power Parity Dollars stood at PPP$ 4,364 while in nominal dollars per capita income was US$1,736 or nine times what it was at independence in 1971. Bangladesh has been a lower middle income country under World Bank classification since 2015.

However, shown in Figure 1 below, Bangladesh is still in the early stages of development and the country still has a long way to grow. The critical challenge for Bangladesh will be to sustain the current high growth, and even accelerate it to 10 percent per annum, if it is to reach its objective of becoming a developed country by 2041. However, even sustaining the 7 to 8 percent rates of growth will be quite a remarkable performance that will require diversifying the economy in terms of its products, services, trading partners, while continuing to diversify agricultural produce into higher value-added crops. Achieving all this will require strong institutions and urban centers that can host manufacturing and service activities and it will require paying attention to the location of economic activity, i.e., economic geography issues.

This paper first makes the case as to why economic geography issues have become critical for Bangladesh. In doing so, it makes three points about patterns in economic geography, the location of economic activity, in Bangladesh and the implications raised by these patterns. First, poverty is highly concentrated in a few districts suggesting that regionally focused economic development strategy has become necessary. Second, the economy of Bangladesh is excessively centralized in one city, and this excessive centralization is adversely affecting urban development in Bangladesh and, thereby, overall growth prospects. Third, economic geography patterns measured by the density of industries and commercial firms - affects the poverty and income of districts through the employment patterns such activity generates.

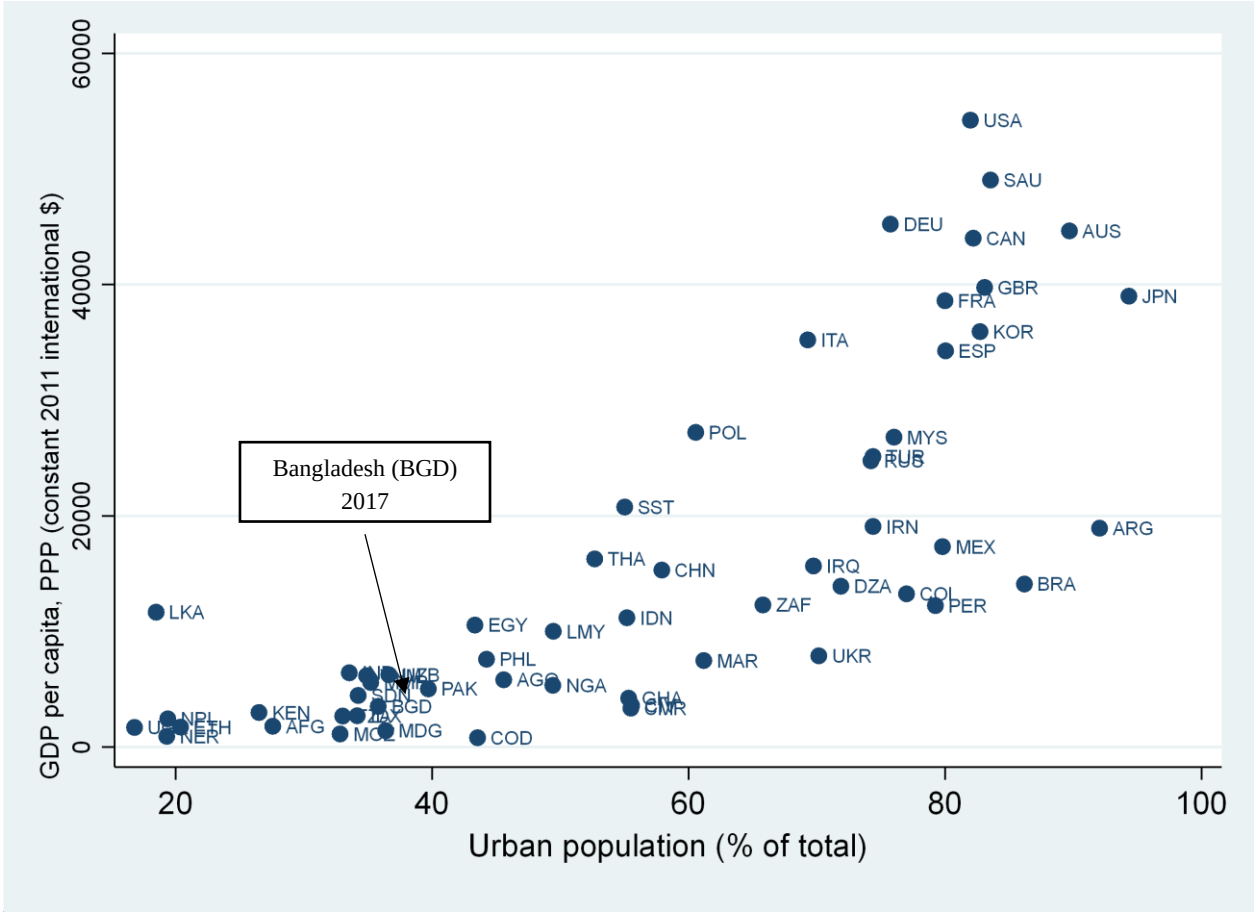


Figure 1: Bangladesh is still in the early stages of Growth and Development: Per Capita Income and Urban Population 2017.

Source: World Development Indicators (WDI) Countries with population of more than 20 million.

This paper's contribution to the literature on regional economic development in Bangladesh is three-fold. First, substantively, it addresses and makes completely new points in analyzing how excessive concentration in Dhaka is adversely affecting overall urban development and its quality. In doing so, it uses the concept of the "Primate City" or the largest city (Henderson et al., 2001 and Henderson 2003). Second, it introduces a measure of economic density measured by non-agricultural firms and shows how these are significant co-variates of patterns of employment, higher consumption and poverty reduction across districts. Third, methodologically, it breaks new ground using the District level data published by BBS in their 64 volume District Statistics series combined with Household Consumption and Labor force survey data at the district level after first testing the validity of such data at the district level. Finally, the analysis also draws on international cross-country data to make the case for Dhaka's overgrowth.

The rest of this paper is organized in the following way: section two discusses the motivation for this paper and some methodological issues. In doing so, it also touches on some of the relevant literature. Section three looks at the evidence for excessive centralization in Dhaka and some of its implications. Section four presents patterns in the economic geography of Bangladesh by looking at economic density variables and shows how they correspond to household welfare indicators through their impact on employment patterns. Section five concludes by summarizing the findings, discussing some implications and extensions of this paper.

2 Economic Geography - Motivation, Literature and Methodological Notes

Economic geography is already a critical issue for Bangladesh for at least four reasons. First, most observers will agree – and we will provide evidence below – that Bangladesh's economy is exceptionally concentrated in one city – Dhaka. The concentration of economic activity is often the result of efficient market forces, returns to

scale, and agglomeration economies. Firms are drawn to large markets, transportation hubs, locations where labor, technology, and other intermediate inputs – and not least, industry knowledge – are available. Both returns to scale and agglomeration economies (externalities) come into play to create further concentration and increase the size of the market in a cyclical way (Krugman, 1991). These economic forces lead to the growth of cities and towns that host the bulk of economic activity in modern economies. Thus, given Bangladesh's compact geography and Dhaka's central position, a high degree of concentration of economic activity is to be expected.

However, economic theory also suggests there are limits to concentration. There are optimum sizes for cities, beyond which the costs of diseconomies of scale and negative externalities – such as the costs of congestion and pollution-outweigh the benefits of scale and agglomeration. The rising costs of immobile factors of production, such as land or other factors whose supply is inelastic, raise costs prohibitively, limiting city size. Finally, there are natural geographic limits. All these factors work to limit city size. Ultimately when the costs of these diseconomies and supply problems overcome economies of scale and agglomeration, the city should stop growing.

It is found, on the other hand, that, because of market failures and due to political and economic interventions, cities often continue to grow beyond their optimal limits (Henderson et al., 2001). Widespread market failures may arise from lumpy investments, fixed costs and externalities, network effects and circular cumulative caused distortions. While theory suggests that equilibrium or stable city sizes are either efficient or too big, empirical research, however, shows that many cities are too large, and social marginal costs (congestion, commuting, environmental) exceed marginal social benefits (Henderson et al., 2001). Policy corrections to address these market failures thus becomes crucial.

There are signs that Dhaka's size is now crossing these optimal limits of concentration. Traffic congestion in Dhaka, alone, was estimated to cost about 2.9 percent of annual income (GDP) of Bangladesh in 2011 (Khan and Islam, 2013). Add to that the health costs of dangerous levels of fine particulate matter (PM2.5) air pollution that reached 97.1 micrograms per cubic meter in 2018, making Dhaka the second most polluted capital in the world after New Delhi. Further add the strain on groundwater and rivers, utility constraints, and other congestion costs. It seems intuitive that given these trends, i.e. the current growth in Dhaka is not sustainable. There is also previous research that suggests that the urban development in the more densely populated Eastern region is now providing declining returns to household consumption growth (Sen et al., 2014). This paper will also confirm this finding later. More broadly, this paper provides evidence that excessive concentration in Dhaka is causing overall urban development to be stymied, and reducing the quality of development, thus inadequately supporting growth and poverty reduction. That issue is taken up in detail in section three. It is worth stressing that these results do not imply that investments in Dhaka should stop. Dhaka will continue to grow for a while at least because of sheer momentum, and thus its efficient development will be critical. In this respect, the Purbachal/East Dhaka development project is an important initiative. However, Dhaka's growth needs to slow down, and growth in other cities and towns promoted.

The second reason economic geography needs attention is that extreme poverty (those living below the lower poverty level, which corresponds to PPP$ 1.90 a day) is significantly concentrated in poorer districts. Nearly half of the extremely poor or about 10 million people in the 2016 household survey, lived in the bottom quartile of districts ranked by the lower poverty level that corresponds to PPP$ 1.90 consumption per day (Figures 2a and 2b). These 16 most poor districts are spread across the country: four are in Rangpur and one in Rajshahi in the northwest, four are in the southwest in Khulna and Barisal, but seven are in the eastern region in the northern border districts of Mymensingh and Sylhet and the Chittagong region. If we take the bottom half of districts where poverty rates are higher than the national average (see Figure 2b), we find that nearly three-fourths of the extreme poor, some 14 million people live in these areas. Most of these districts are in the north-east and northern border of the country, along with a few in the Chittagong Hill Tracts (Figure 2a). What accounts for this concentration? This paper confirms previous findings that the relative lack of industrial and manufacturing jobs in these areas is the main reason for the concentration of poverty, and this matter is examined in more depth in Section four below.

The migration of the working-age population from these districts will likely be part of the response to this concentration of poverty. However, for several reasons, there will be limits to the opportunities that migration can provide. First, Bangladesh is already one of the most densely populated countries in the world. So, there will be constraints to the amount of interregional migration that can happen. As it happens, Dhaka, the destination of most migrants who originate from Barisal and Rangpur areas (Zohir 2011), currently had a population density of nearly 9000 persons per square kilometer, or eight times the national average. Second, Bangladesh will face significant migration pressures from the southern districts as they become increasingly affected by climate change and rising sea levels. Some 15 million climate affected refugees are expected to migrate (Faruk, 2015) over this century. Finally, even if there is a significant migration of

working-age population, there will be a need to provide health, education, and social services for the family members and population left behind in the poorest districts.

Bangladesh is not alone in facing the challenge of a geographical concentration of the poor and lagging regions. Several large, populous countries such as Brazil, China, India, and Thailand – and the European Union in a regional context - have all faced this challenge of developing lagging regions to varying degrees. There is considerable experience in these countries of addressing these challenges through developing inter-regional transport and communications infrastructure. Bangladesh's own experience with the Jamuna bridge also provides valuable lessons in regional development where research (Zohir and Khondkar, 2003) showed significant returns to increases in wages and earnings in the northwest after the completion of this bridge.

The third reason economic geography research has become essential for Bangladesh is that it will be crucial for long term growth and social stability. Economic geography, the location of economic activity, and economic growth and development are intrinsically related. Decisions about where investments – public and private – take place, and jobs are created, will be centrally important for shaping both economic development and economic geography due to lock-in effects. Once major investment location decisions take place, these can draw in other investments due to scale and agglomeration economies.

Fourth, and finally, political economy plays a role in creating excessively large cities and lagging regions and, in turn, can breed economic and policy instability. The geographical location of the political elite can often bias economic decisions about the location of economic activity. These elites can then take recourse to economic geography arguments to rationalize their decisions. Such an approach leads to social and economic instability. We do not have to look too far back to see examples of this. Bangladesh was born partly because the Pakistan based elite had naive or deliberate misjudgments about economic geography under which they argued that Bangladesh was supposedly not the growth pole. More recently, Thailand is another example where a highly skewed economic geography in favor of the capital city, Bangkok, has led to the political and economic instability that has disrupted growth.

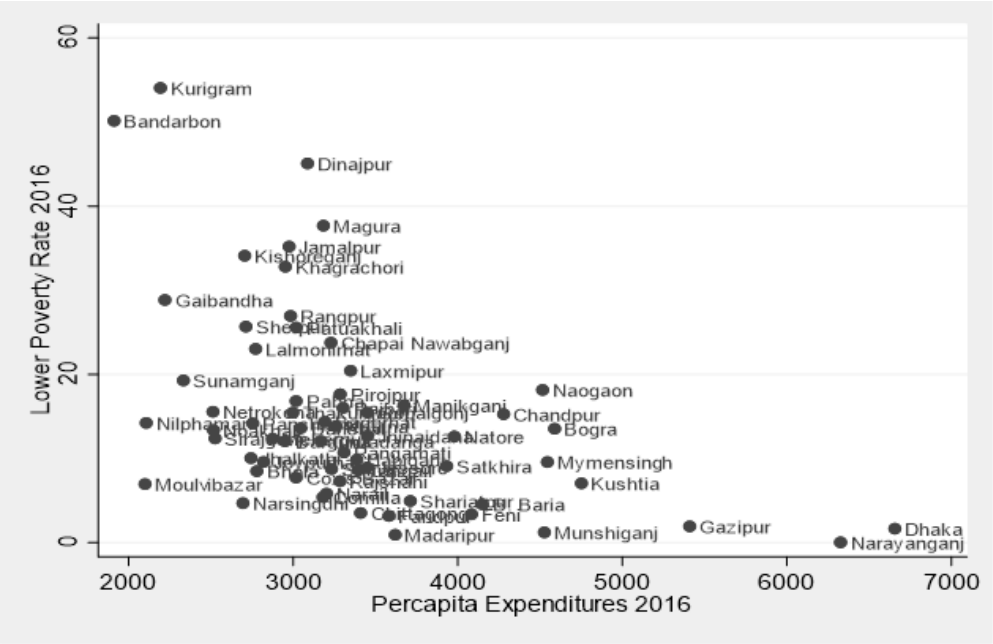
2.1 Literature Review

Rashid's book on economic geography (Rashid, 2005) discusses physical geography – topography, water, land, natural resources – and its relationship with the economy. Thereby it falls outside the economics definition of economic geography, where the focus is on the location of economic activity. Other than this book, the literature on Bangladesh's economic geography and regional development exists mainly as background papers and mimeos written for donor agency reports, and there is no academically published research. There are, however, several informative working papers as well as a discussion of regional development in the World Bank report (2007) and the Seventh Five Year Plan (Government of Bangladesh 2015). The discussions of these papers have centred on the following themes.

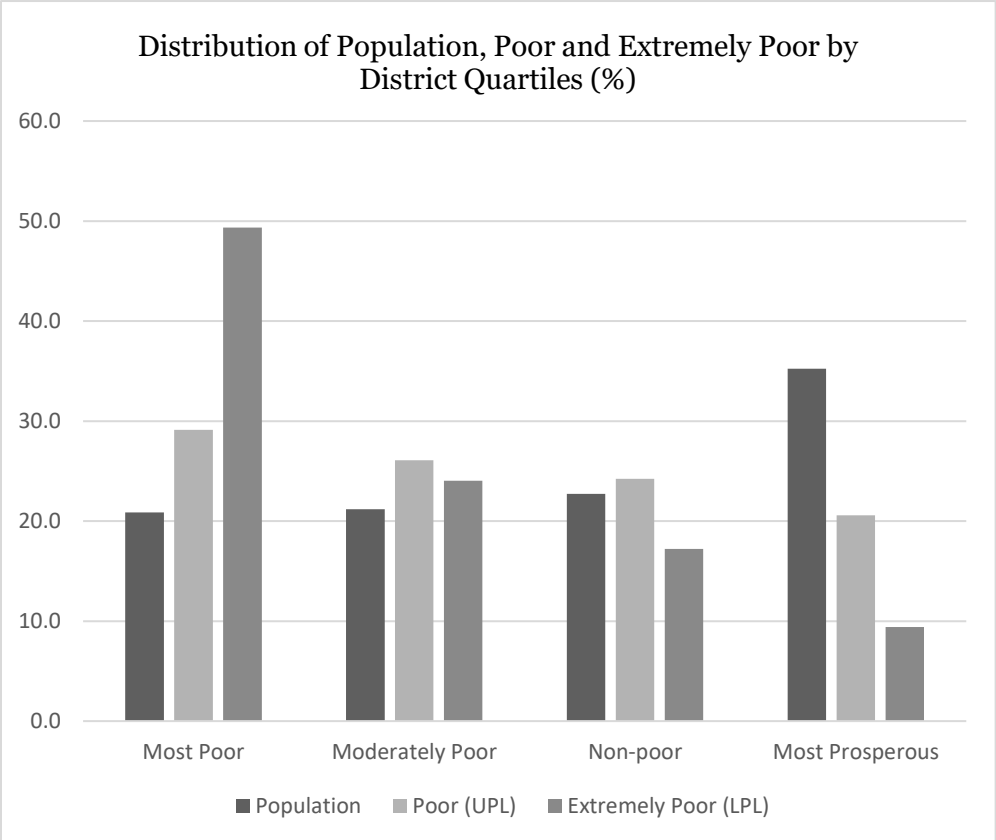
Poverty and Its Determinants: From its beginning, most of the discussion on regional and spatial development in Bangladesh focused on locating poverty-stricken areas with the motivation to target poverty alleviation and social protection programs. The analysis of household consumption expenditures uses the Household Income Expenditure Survey (HIES) from 1995-96 onwards (Bangladesh Bureau of Statistics, HIES 2000, 2005, 2010), and uses further disaggregated 'small area' poverty mapping work. In the earlier stages, the focus was on poverty pockets in Western Bangladesh caused by river erosion of lands and the "Monga" (food shortage) areas of the Rangpur region in the northwest. The poverty of coastal regions in Barisal and Khulna division also came into the picture.

In the next stage, studies turned to determinants and co-variates of poverty. The size of landholdings, lower inequality and gender disparity, urbanization, and access to electricity were all seen as significant co-variates of consumption expenditure growth and lower poverty. A strand of this literature also suggested a mild, but slow degree of convergence in consumption growth across districts. However, district level data was considered unrepresentative and there was some limitation of the data and analysis in that it did not focus on economic activity, but instead focused on poverty and human development aspects. In hindsight, the neglect seems a bit strange considering that the Bangladesh Bureau of statistics published in 2002 a provisional GDP data series for the years 1996 to 2000 for 15 sectors for all 64 districts. Unfortunately, this series was discontinued after the first volume came out.

Regional Analysis and The East-West Divide: Constrained by these data limitations, the initial discussion (World Bank, 2007) on spatial development in Bangladesh took place at the broader regional level, with the country divided into two regions east and west of the Jamuna-Meghna river systems. The Eastern region of Dhaka, Chittagong, Mymensingh, and Sylhet divisions were identified as more developed, mainly thanks to their being integrated into the growth poles of Dhaka and Chittagong (Shilpi, 2007). The Western side of the river system, comprising of Rajshahi, Rangpur, Khulna, and Barisal divisions, were lagging, isolated from growth centers, home to most of the poor.



(a) Lower Poverty Rate of PPP$ 1.90 daily pc.



(b) Share of Poor by District Quintiles.

Figure 2: Where the Poor Live: (a) Lower Poverty Rate of PPP$ 1.90 daily pc., and (b) Share of Poor by District Quintiles.

Source: Estimated from Household Income and Expenditure (HIES) 2016 data.

Deepening the Regional Analysis: However, when the literature later turned to a more in-depth discussion of regional development issues, this broad categorization broke down. As Zohir (2011) pointed out, there were significant poor pockets in the Eastern region in the border areas of the north, the Haor regions in the northeast, the "Chars" of Noakhali, and the Chittagong Hill Tract regions. On the other hand, there were pockets of dynamism in the Western region, such as Rajshahi and Khulna. Zohir's paper then identified the location of strategic factors such as natural gas, access to clean water, emphasis on road-based connectivity, and integration with urban centers to explain the divergence between leading and lagging regions. Zohir's paper made significant breakthroughs by stressing the importance of developing alternate modes of transport such as railways and waterways, in addition to roads, as a means of reducing disparity. The paper also highlighted the impact of spatial planning and development of growth poles on factor prices, particularly pointing to the gains to immobile factors, such as land, in high growth areas. He argued that such gains should be taxed and reinvested in building assets and alleviating poverty in lagging regions. While Zohir's paper made critical advances, the lack of disaggregation behind broader "regional" areas limited its contribution to spatial development policies.

The next significant contribution in this literature came from a BIDS research report of 2014 (Sen, Ahmed, Ali, and Yunus, 2014) that provided a more quantitative and dynamic look at the East-West regional divide. Using the household income and expenditure surveys of 2000, 2005, and 2010, the authors identified trends in the East-West gap in Bangladesh and provided explanations for these trends. This report also delved deeper into determinants of regional inequality by trying to attribute the relative contribution of endowments vs. returns to endowments and measuring the impact of neighborhoods.

Using household consumption expenditures as the principal measure, the authors noted that inequality between the two regions had moderately decreased over this period.

They attributed high growth in agricultural production, the catch-up effects of slightly higher human development in the Western region, the greater spread of microfinance, faster urbanization and improvements in connectivity - especially in the road infrastructure, in the Western region – as having led to a marked increase in small and medium-sized business helping to the narrow the gap development gap between the two regions. One of their intriguing findings was that while at the beginning of the 2000-2010 period, the greater urbanization of the Eastern region significantly explained the greater prosperity of the region, the contribution of urbanization had declined significantly in the Eastern region by the end of the period.

Importantly, both these findings will be validated in our paper using an alternative methodology, as we shall see in Section 3.

From Regions to Divisions: In 2008, the General Economics Division of the Bangladesh Planning Commission made a crucial contribution by bringing out a report on the lagging regions. This report went deeper than the East-West divide by bringing administrative division level development explicitly into view. Bangladesh's eight divisions, with an average population of more than 20 million, are large by international standards. Still, this division level disaggregation, motivated by an interest in understanding the markedly higher rates of poverty in Barisal, Khulna, and Rajshahi divisions, was an important step forward. This report provided a useful set of insights: namely the poor regions were too agriculture dependent and under industrialized. These regions had been underfunded and markedly lagged in infrastructures such as power, gas, transport, and communications, which are critical for industrial and urban development.

The role of urban development in driving regional inequality was also highlighted in another division and, selectively, district-level research by Khondker et al (2010). This background paper for the Sixth Five Year plan focusing on urban management and regional disparity confirmed that the contribution of agricultural production in a division or even districts was inversely related to the incidence of poverty. Conversely, urban development, human capital, access to finance, transport and connectivity, and migration helped to reduce poverty.

From Divisions to Districts: As noted earlier, the analysis of district-level economic development had always been constrained by the lack of economic data. The BBS had stopped publishing the district GDP series after 2000. Thus, it is not surprising that a district-level analysis of economic activity in the early years has centered around those years. One of the first study (Mahmood, 2005) used the BBS data to look at the manufacturing firms' location. It found industry to be highly concentrated in two areas: the three districts of greater Dhaka (Dhaka, Gazipur, and Narayanganj), accounting for about 50 percent of national manufacturing GDP, and Chittagong, contributing another 15 percent. The bottom 50 of the 64 districts contributed only 17 percent of manufacturing GDP. The author argues that the existing regional disparity in industrialization is far more significant than what would follow from the comparative advantages of various regions, and that Bangladesh's poverty reduction is being constrained by such regional imbalances. Access to infrastructure, services and markets, and the concentration of regulatory powers in Dhaka explained this highly skewed location according to this paper. The key locations of manufacturing had, for instance, three

times the infrastructure endowment of the least developed 50 districts. The paper then used access to markets, agricultural performance, infrastructure availability to identify five different regions where different sectors of manufacturing could be promoted.

The most comprehensive research on explicitly district level development has been done by Khondker and Mahzab (2015) as a background paper for the Seventh Five Year Plan 2016-2020. This paper analyzed disparity in development among Bangladesh's 64 districts in several dimensions, using both economic and noneconomic indicators to come up with an integrated index of development and ranking of districts. These indicators included poverty rates, household income, consumption, and savings, education and health status, agricultural productivity, access to roads, electricity, and finance. It used these indicators to analyze the factors behind the inequality of district development and examined whether there was convergence or divergence among districts. It finally went on to recommend policy measures to accelerate development in the lagging districts.

While breaking new grounds by explicitly studying district level development, the findings of the paper were consistent with previous results obtained from the earlier divisional and regional level analysis. It confirmed that the majority of the 15 most deprived districts were in the northwest and southwest of the country, but also included districts in the north or northeast regions as well as in the Chittagong Hill Tracts region. It identified access to physical infrastructure, nonagricultural jobs, financial services, and urban development to be the main factors driving district development. Looking at the issue of convergence, it confirmed previous Beta convergence analysis that suggested that the districts were converging at a slow pace. However, using other methodologies such as unit root tests of trends in income and consumption, it concluded that development outcomes in the advanced and the lagging districts displayed nonstationary, i.e., divergent behavior.

2.2 Contribution of This Paper

This paper presents some findings that are consistent with the literature discussed above but updated by more recent data. These include the importance of access to infrastructure and nonagricultural jobs in explaining household consumption growth in districts. The paper advances the previous literature by its focus and findings on two key themes and the introduction of new concepts. First, it focuses on the adverse impact of excessive concentration of economic activity in greater Dhaka on overall urban development and its quality. Second, it introduces a concept of economic density measured by electricity using non-agricultural firms and shows how these measures of density significantly co-vary with patterns of employment and higher consumption growth across districts. Third, methodologically, it follows previous literature in combining the recent 2016 Household Consumption and 2013 Labor force survey data at the district level with other district-level data.

The paper uses the concept of the role of the "Primate City" (Henderson et al., 2001 and Henderson, 2003) and presents evidence about the poor quality of urban development by showing that wages from urban jobs no longer have any significant premium over rural wages, thereby weakening the Lewis and Harris-Todaro processes of migration and development. The relative lack of decline in urban poverty is also consistent with this paper's thesis of poor quality of urban development in Bangladesh. It contributes methodologically by testing and confirming the validity of data at the district level before using the household survey data at the district level. Finally, the analysis draws on international experience and cross-country data from the WDI to make a case for Dhaka's overgrowth.

2.3 Data and Methodological Notes

The paper's theoretical framework follows the work of Henderson (2003) and Henderson et al. (2001), using the critical role of the primate city in determining the impact of urban development on economic growth. Further, it uses the insight that on the one hand, economies of scale and agglomeration externalities create urban concentration and cities; on the other hand, lumpy investments and network effects can also cause cities to overgrow and exceed optimal limits. The framework also uses a central concept of economic geography: economic density. Typically, density is defined by the gross domestic product in standard area units. Here in the absence of GDP data at the district level, it uses district data on the number of firms in an area as defined just below.

As just noted, the results of this paper have been derived from three sets of data: District Statistics of 2013 Series (2011 data), the Household Income and Expenditure Surveys (HIES) of 2010, and 2016 and Labor Force surveys (LFS) of 2010 and 2016. International data has been sourced from the World Bank's World Development Indicators (WDI), unless noted otherwise. District and Upazila data were downloaded from 64 District Reports of the 2013 District Reports of the BBS. This data was "noisy" and required a fair amount of cleaning. This data has been used to estimate two measures of economic density: (i) the number of electricity-using small and medium industries in 10

square kilometer units; (ii) the number of electricity-using commercial firms also in 10 square kilometers.

We have used HIES and LFS data to construct panels of the variables at the district level. Officially, HIES and LFS data are not representative at the district level. However, we have checked the validity of using disaggregated HIES and LFS District data by reconciling district- level data with National data, which are representative. As shown below in Figures 3 and 4, we find that our estimated disaggregated estimates of both urban and rural poverty rates (Figure 3) at the district level, employment by major sectors and even wages at the district level (Figure 4) to be remarkably close to national estimates when aggregated. We consider this to be an indicator that these data are representative at the district level. We have not used Upazila level disaggregation because that could not be validated in the case of the Labor Force Survey.

3 Excessive Centralization in Dhaka Leading to Slower Urban Development

In the last ten years, the increase in traffic congestion in Dhaka has decreased the average traffic speed in Dhaka from 21 km/hour to less than 6.4 km/hour (World Bank, 2017). This traffic congestion in Dhaka eats up 3.2 million working hours per day and, as noted earlier, costs an estimated 2.9 percent of GDP per annum. In some ways, movement around the city has become so prohibitively time consuming that Dhaka is not entirely functional as a city of dense, inter-connected people working together. Add to this the air pollution eight times higher than World Health Organization safety guidelines and sanitation-related health costs, the negative externalities of Dhaka city's growth are at least close to overcoming the returns from growth and agglomeration if they have not done so already. According to a recent report, about 60 percent of residents live in slums without adequate access to clean water and sanitation and thus are prey to water-borne diseases. Waste disposal is a problem that is reaching crisis proportions with some 1.1m cubic meters of sewage pumped into Dhaka's rivers every day (Economist, September 2019). Further, the unplanned expansion of the city into the wetlands have severely damaged natural wetland systems and made the city more prone to floods.

In this paper, we are, however, do not focus on the direct, internal returns and costs of Dhaka's city. Instead, we use evidence to show why Dhaka's excessive growth is associated with an adverse impact on overall national growth and urban development. We use the concept of a primate city and its relationship with overall urban development and economic growth. And, we draw on both Household income and expenditure and the labor force surveys to show how urban and rural income, poverty, and wage differentials have narrowed significantly in the past decade.

3.1 Dhaka's Adverse Impact as an Overgrown Primate City

One of the most robust associations in economic growth is between urban development and per capita income levels. That is shown in Figure 1, presented earlier, which presents the case for medium-large countries, i.e., the 93 countries with populations of more than 20 million people. If we take the panel data available for these countries between 1990 and 2007 and control for country fixed effects, the relationship suggests that for each one percentage point increase in the share of the urban population, per capita income (measured by purchasing power parity dollars) is 2.5 percent higher (Ahsan, 2019).

However, while overall urban development is associated with high levels of income, this is not the case with excessive growth and concentration in the primate city. Such excessive concentration can be very costly in terms of productivity growth (Henderson, 2001). A casual look Figure 5 suggests that if the share of the primate city is more than, e.g., between 15 to 20 percent of the urban population, per capita income levels are adversely affected. Interestingly, this appears to happen because an excessive growth of the primate city lowers overall urban development. Figures 5 and 6 show that this may be the case in Bangladesh. Figure 5 clearly shows that countries, where the size of the primate city becomes excessively large, have lower per-capita income levels on average. The most extreme example of this is Egypt, and a prominent exception here is Japan, where despite the large size of Tokyo, per capita income levels are very high. Bangladesh, however, falls clearly on the curve with a primate city population share of around 32 percent of the urban population.

Figure 6 shows the possible channel through which the size of the primate city size affects per capita income levels. The graph suggests that the excessive growth of the primate city lowers overall urban development. This happens because the primate city draws public and private resources away from other cities, creating a misallocation of resources and a lowering of productivity. Once again, Bangladesh, with a primate city having a 32 percent size, ends up with a lower share of overall urban population because of this concentration in Dhaka, which in turn leads to lower per capita income levels.

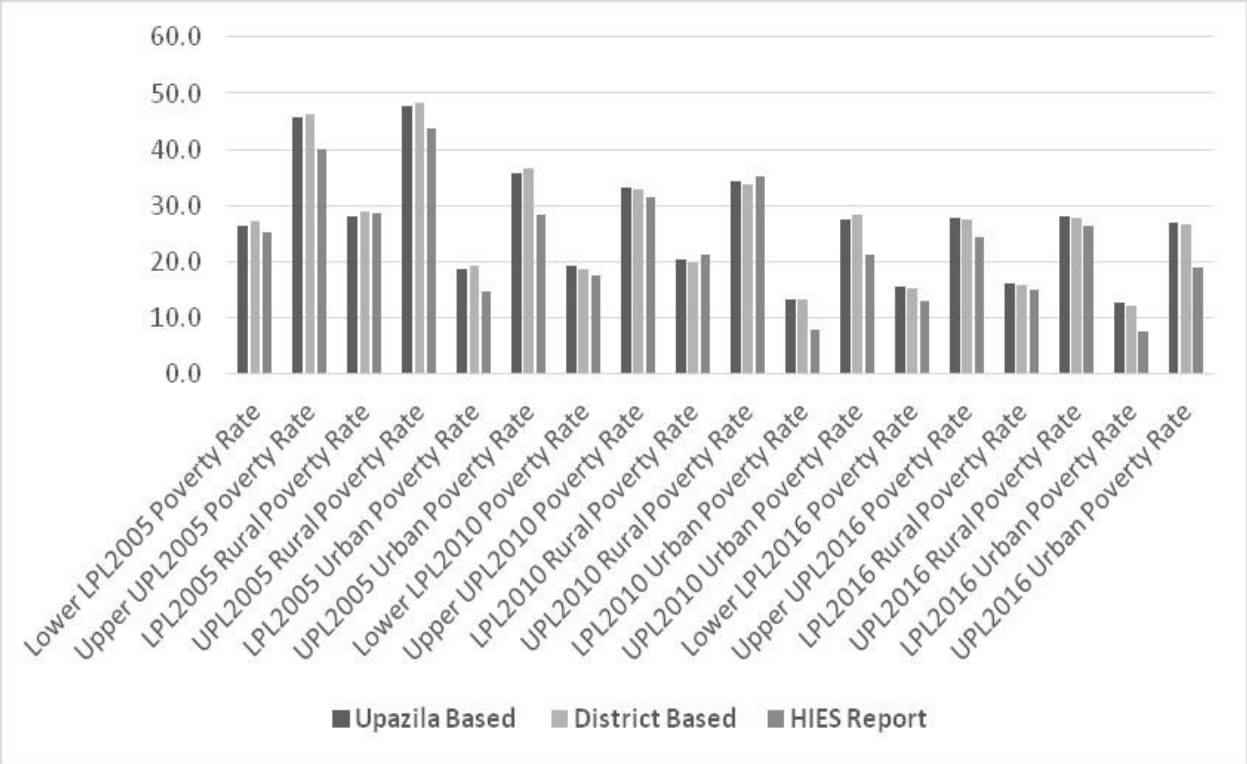


Figure 3: District and Upazila Poverty Rates Track National Estimates.

Source: Derived from HIES 2016.

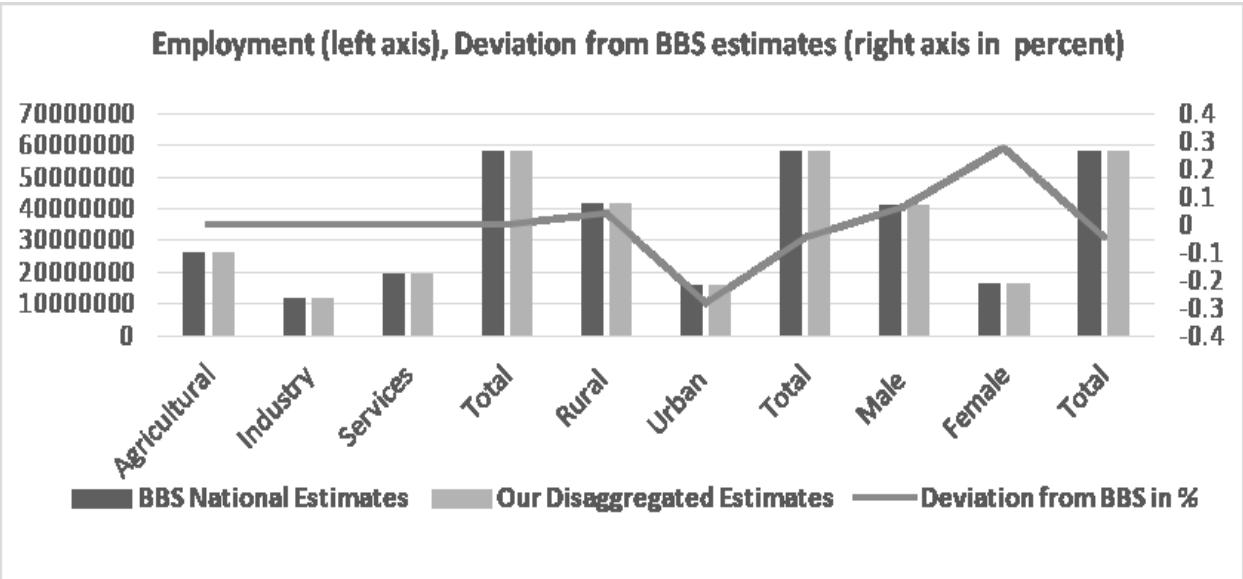


Figure 4: District-based Employment and Wages Estimates Track Official National Estimates.

Source: Labor Force Survey Estimate 2013.

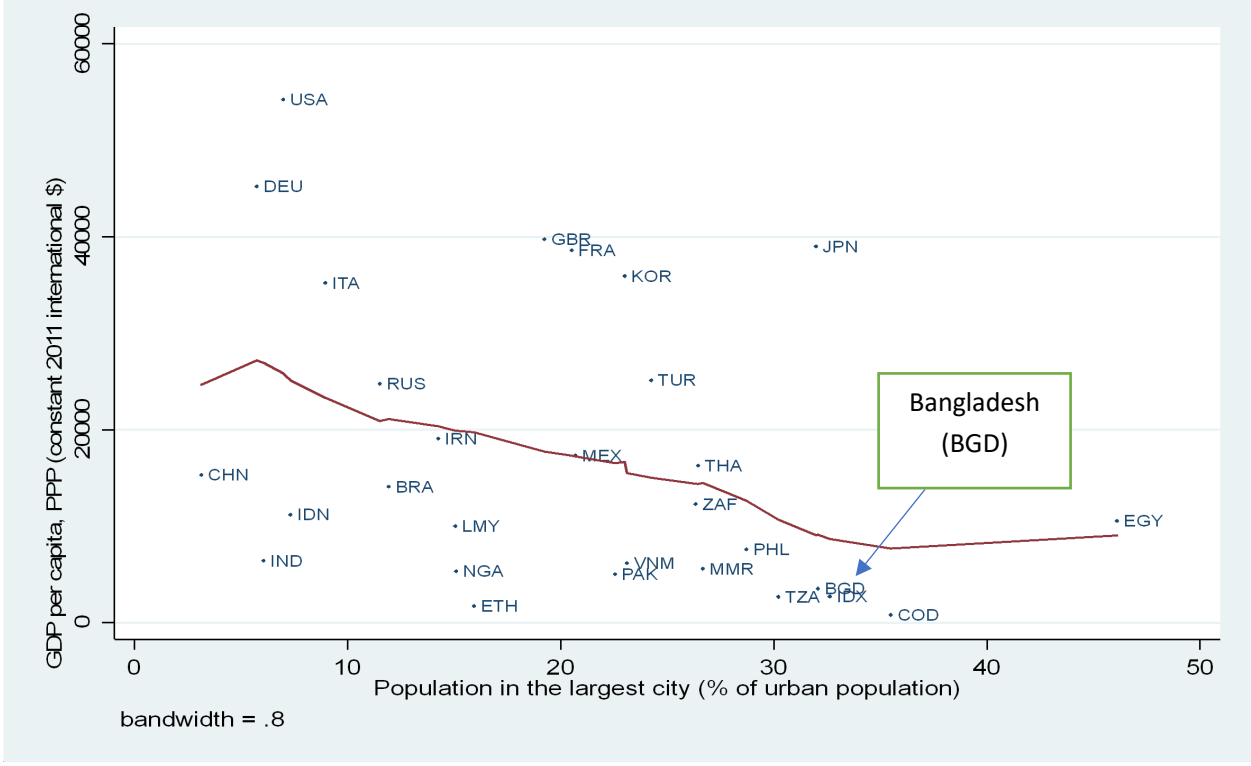


Figure 5: Per-capita Income Level and Size of Primate City (Share of Urban Population).

Source: Drawn from World Developing Indicators Data base for large countries with a population of more than 50 million, 2017, to reduce clutter. This relationship also robust holds with populations greater than 20 million.

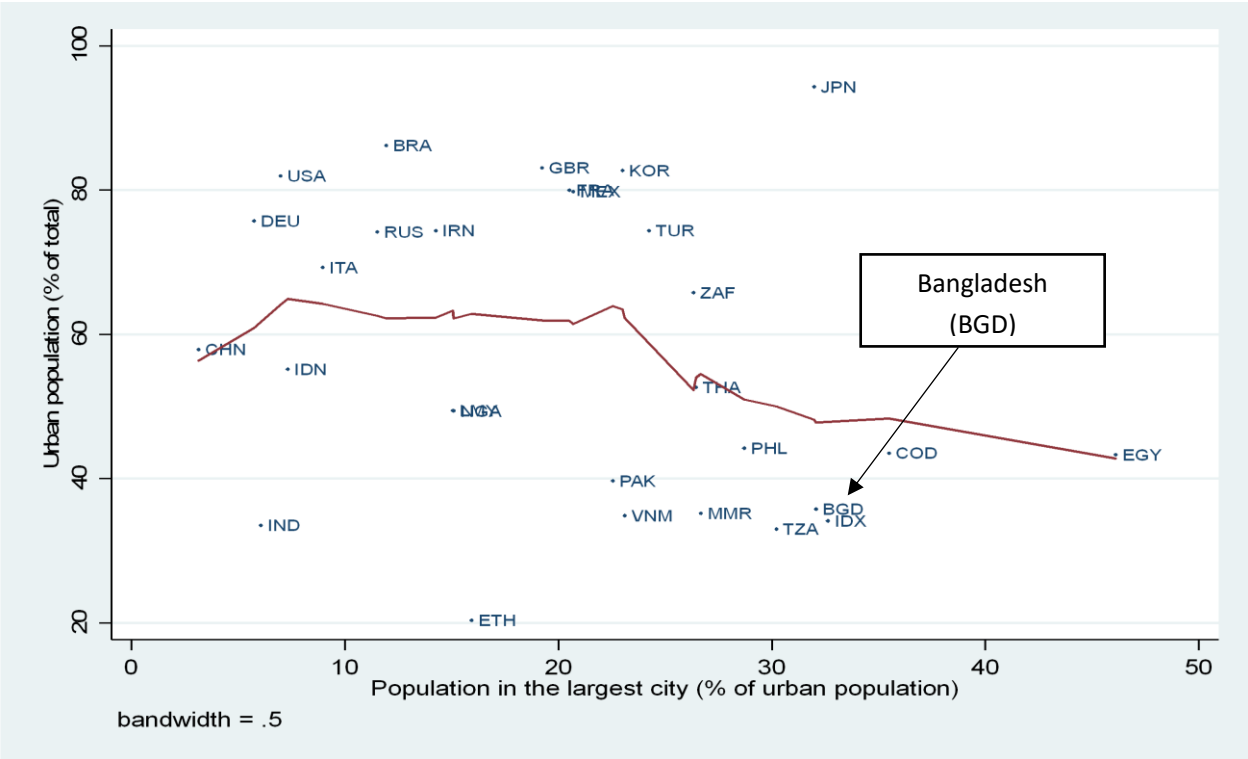


Figure 6: The share of Urban Population and Size of Primate City are Inversely Related.

Source: Drawn from World Developing Indicators Data base for large countries, 2017

The inverse relationship between the size of the primate city and overall urban development is confirmed by statistical testing. Controlling for country fixed effects and time fixed effects for 93 countries with population of more than 20 million, the inverse relationship between the primate city and urban development is found to be significant and tight. If per capita income or labor productivity are controlled, a one percentage point increase in the primate city's share of urban population is associated with a 1.1 percent decline in the share of urban population with a R-square of more than 0.60 (Ahsan, 2019).

It is possible to use these insights about the relationships between per capita income, urban development, the size of the primate city in terms of share of urban population, and the overall share of urban population overall to make heuristic estimates of the excessive growth of greater Dhaka and its costs in terms of adverse impact on urban development. In a previous study (Ahsan, 2019) I take two approaches to measure the excessive growth of Dhaka. First, I estimate the elasticities of these relationships based on panel data for 25 years for 93 middle to large-sized countries with population over 29 million, controlling for country and year fixed effects, time trends, and, where appropriate, labor productivity to proxy for other variables. Using these estimated parameters, greater Dhaka's population is found to have been overgrown by 60 percent compared to what would be predicted from international data. The adverse impact of this overgrowth on urban development is estimated to lower GDP by about 10 percent each year. Second, I use national income accounts and labor force surveys to measure national labor productivity in the three major sectors (agriculture, industry, and services) and district level employment in these sectors to construct estimates of Dhaka's share of Bangladesh's GDP. The estimate comes out with at 28 to 31 percent[3]. Such a share places Bangladesh among the ten most economically geographically concentrated large countries in the world.

In closing, Table 1 below provides an illustrative but telling indication of the excessive growth of Bangladesh's primate city and its adverse impact on overall urban development and growth of other cities. The table suggests that while Bangladesh has the largest primate city share of the urban population in this group, this has been accompanied by relatively less urban development outside this primate city. Thus, there are only three cities in Bangladesh (Greater Dhaka, Chittagong, and Khulna) with a population of more than 1 million people compared to 10 such cities in Pakistan, 14 in Indonesia, 54 in India, and 102 in China. Similarly, the population living in more than a million plus size cities different from the primate city is relatively far less in Bangladesh.

3.2 Narrowing Urban and Rural Income, Consumption and Wages

The second piece of evidence supporting the picture of a stymied urban development comes from looking at income and wage trends from household surveys and national wage trends estimated by the BBS (Figures 7 and 8). Economic development is usually driven by structural change under which workers and resources move out of less productive agriculture and the rural economy to more productive manufacturing and service jobs that are in urban areas. This process is well known and characterized by Lewis as workers moving from subsistence wages to better paying urban jobs, and Harris-Todaro as workers moving to urban areas in search of higher net expected earnings. In sum, higher incomes and higher wages in urban areas draw workers out of rural areas to work in more productive urban and manufacturing jobs. In a robust development process, such a structural transformation mechanism will work for a long time as the country climbs into the upper-middle-income status. At such a point, enough workers will have moved into urban areas, the rural areas will have also become developed, and productive and urban-rural wages in real terms should converge.

Table 1: Size of Primate City and Urban Development.

	Population (millions)	Urban Population Share of Largest/ Primate City (Primacy) in percentage	Share of Biggest City in Population	Share of Population in other cities with more than 1 million people	Number of Cities with more than a million people
Bangladesh	163.0	31.9	11.2	3.5	3–5
China	1378.7	3.1	1.8	23.4	102
India	1324.2	6.0	2.0	12.9	54
Indonesia	261.1	7.4	4.0	6.6	14
Pakistan	193.2	22.6	8.9	13.2	10
Vietnam	94.5	23.2	7.9	6.6	6

Source: Authors calculation; data source: Data in first four columns from World Development Indicators data, 2016 and derived from there.

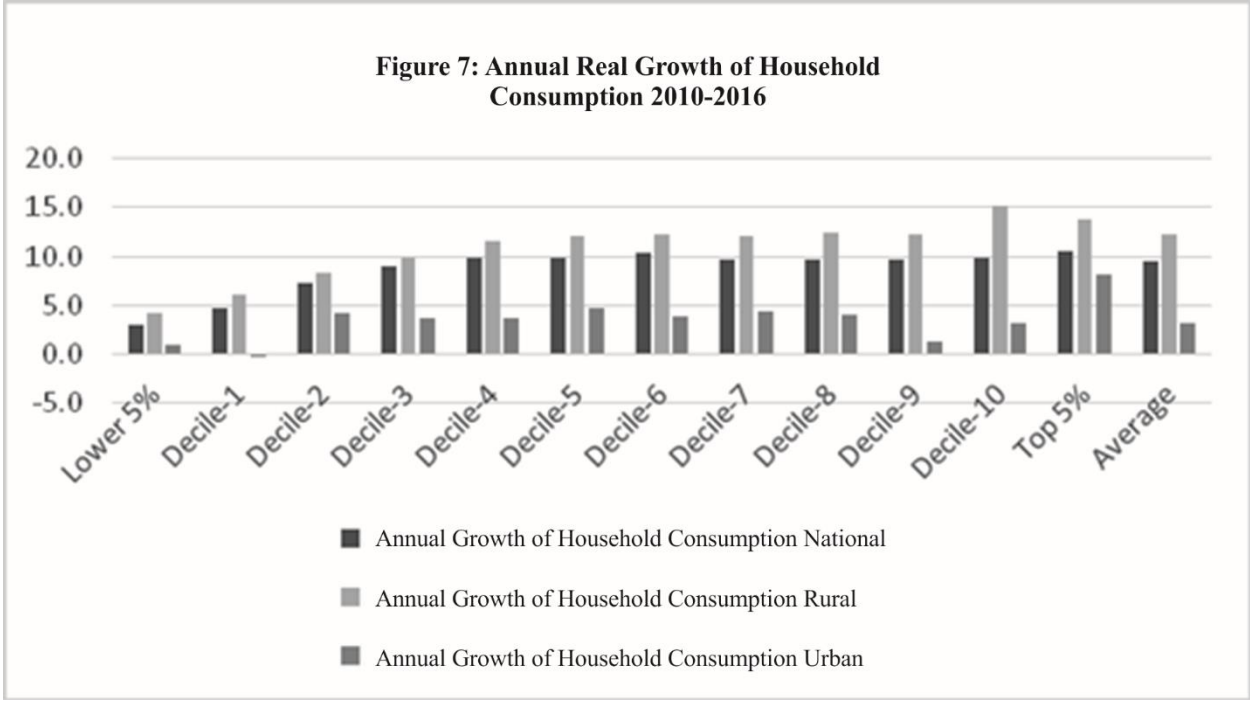
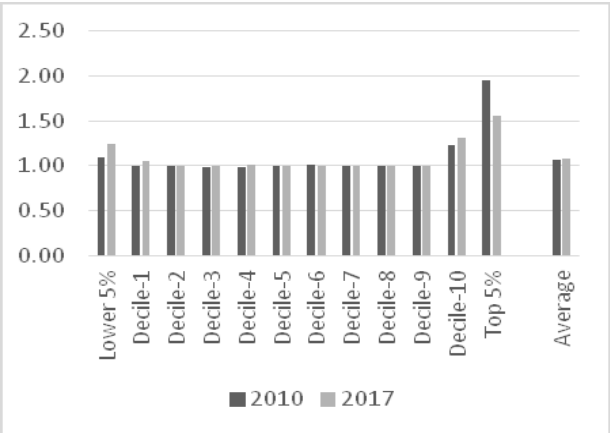
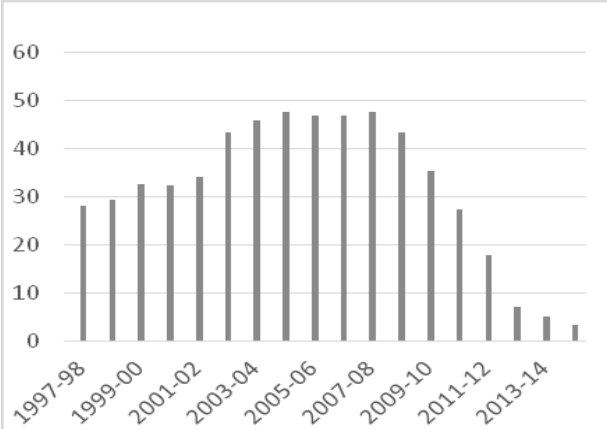


Figure 7: Annual Real Growth of Household Consumption 2010-2016.

Source: HIES 2010 and 2016



(a) Urban-Rural Wage Income Ratio



(b) Manufacturing-Agricultural Wage Ratios

Figure 8: Falling Urban and Manufacturing Relative Income and Wages. (a) Urban-Rural Wage Income Ratio. (b) Manufacturing-Agricultural Wage Ratios.

Source: (a) Estimated from Labor Force Surveys. (b) Estimated from BBS Statistical Yearbook 2016, Table 10.17

In Bangladesh in the last decade, this transformation process appears to have been significantly weakened (Figures 7 and 8). We see this below in the difference between robust increases in rural household consumption and the comparatively more moderate increase in urban consumption. Thus, contrary to expectations, the rural economy seems to show more dynamism. Looking at income and wages in Figures 8a also confirms this trend: urban-rural wage differentials have narrowed from 12 percent urban premia in 2010 to 8 percent premia in 2017 on average. Internationally, the average nominal wage premia in urban areas in 110 countries were found to be

38 percent (Artza et al., 2016). On the assumption that most manufacturing jobs are in urban areas while agricultural jobs are, by definition, located in the rural areas, the relative manufacturing agricultural wage premia provide a check on the labor force survey data shown in Figures 8a. Here too, in Figures 8b, the evidence of collapsing manufacturing and urban wage premium is striking.

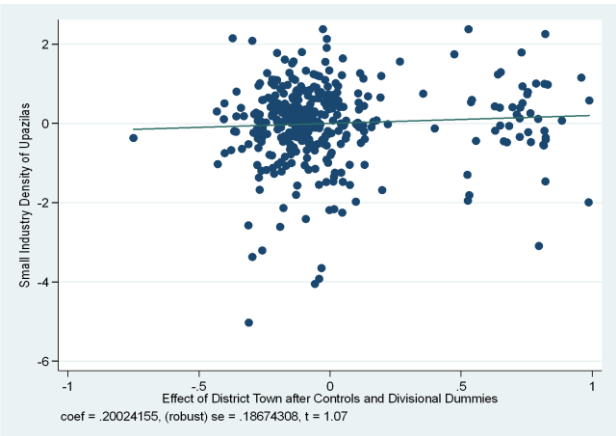
Could it be the case that the narrowing urban wage differential represents rural economic dynamism overtaking an also dynamic urban economy? Unfortunately, two related pieces of evidence do not support a picture of a dynamic urban economy. Figure 7 above has shown at urban consumption growth has been relatively anemic. A look at poverty complements this finding. Consistent with the trends that we have seen in consumption and wage growth, we find that while poverty rates in rural areas declined dramatically, poverty rates in urban areas have declined far less in recent years. While extreme poverty rates in rural areas declined from 21.1 percent in 2010 to 14.9 percent in 2016, extreme urban poverty rates stood at virtually the same point, 7.6 percent in 2016 compared to 7.7 percent in 2010 (BBS 2017a). Thus, 90 percent of extreme poverty reduction between 2010 and 2016 took place in rural areas.

A final point on the poor quality of urban development comes when we look at economic density measured by the presence of non-agricultural firms per 10 square kilometers. The next section discusses this concept more fully. Figure 9 shows conditional regression plots where district headquarters (measured in the horizontal scale by a dummy between zero and one) have no statistically significant effect on either small scale industrial or commercial firm density. These regressions are controlled for roads, electricity, storage, debt, literacy and regional dummies to isolate the effects of the more urbanized district headquarters

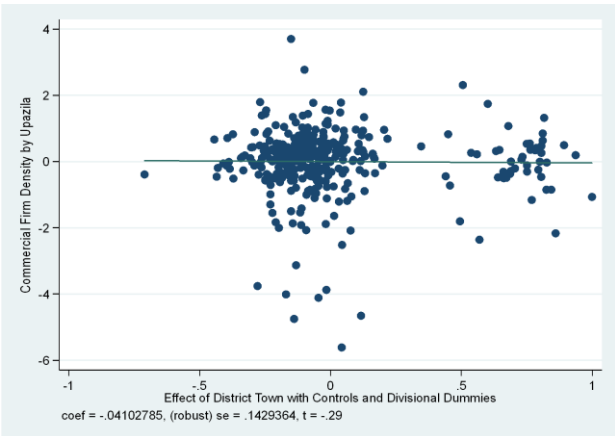
4 Economic Geography Patterns and Their Consequences

In this section, we ask the broader question about what we can say about the pattern of economic geography in Bangladesh and its consequences? The measure we use to study economic geography patterns here is economic density. Economic density is measured by using the number of electricity-using small or medium scale industries or the number of electricity using commercial firms in every 10 square kilometers. We have estimated these two variables for the divisional, district, and subdistrict (upazila) levels. Using upazila level measures of small or medium scale industry density, and commercial firm density and controlling for other significant co-variates such as overall access to electricity and road density, we find that upazilas that house district headquarter towns have no statistically significant effect on either industrial or commercial firm density in comparison to other upazilas.

The variation in these two measures of economic density is considerable, as seen in Figures 10 (a and b) and 11. The first figure, Figure 10, presents these measures of economic density by geographical regions that correspond to administrative divisions in Bangladesh. It is evident from Figure 10 that economic density is significantly higher in regions such as Dhaka in the case of industry, and Dhaka and Chittagong in the case of commercial firms. Northern regions such as Sylhet and Mymensingh, and southern regions such as Barisal and Khulna are laggards where small-scale industry density is concerned. When we turn to commercial firms' density in Figure 10b, Dhaka and Chittagong starkly dominate. Otherwise, commercial firms appear to be more evenly distributed, even though northern Mymensingh is a laggard.



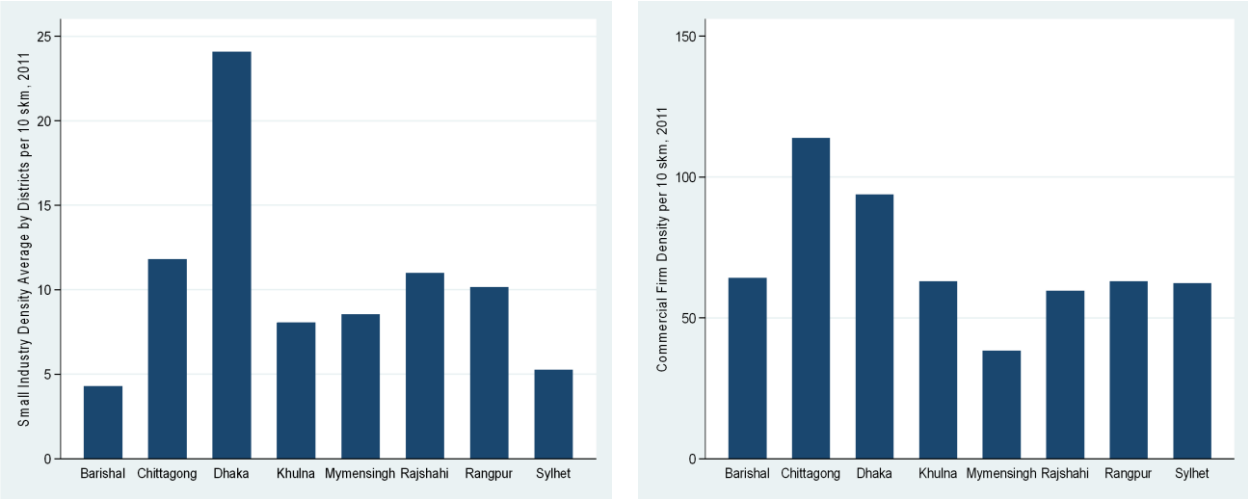
(a) Log of Small Industry Density



(b) Log of Commercial Firm Density

Figure 9: District Headquarters Have No Effect on Firm Density: (a) Log of Small Industry Density, (b) Log of Commercial Firm Density.

Source: Estimated from BBS District Statistics Series.



(a) Small Scale Industry (b) Commercial Firms

Figure 10: Distribution of Economic Density by Division – Number of units per 10 square km. (a) Small Scale Industry, (b) Commercial Firms.

Source: Estimated from BBS District Data Series.

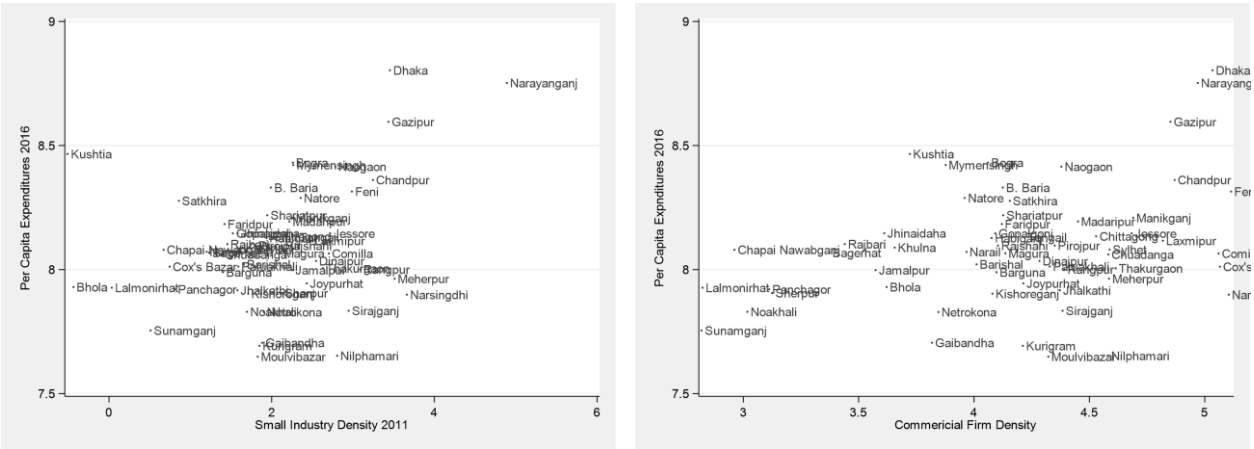


Figure 11: District Wise Firm Density (2011) and Per Capita Household Expenditures (2016) (Log values).

Source: Derived from BBS 2013 District Data series and HIES 2016.

The dispersal of economic density also becomes clear when one looks at district wise density data against household per-capita expenditures (Figure 11 (a and b)). Both small-scale industry density and commercial firms' density can vary by a factor of five from low-density to high- density areas. However, beyond showing the dispersion of density, Figure 11 also points out the correspondence between economic density and household welfare measured by household consumption expenditures.

The correspondence between the economic density of region and household consumption takes place through employment. Specifically, it turns out that economic density is associated with more nonfarm industrial and service sector employment. That, in turn, leads to higher per capita expenditure levels in a district. To prove this point, we go through a two-step process. In the first step, Figure 12 shows the significant correlation between the structure of employment and household per capita expenditures at the district level. All the correlations

shown in Figure 12 are statistically significant at the 1 percent level. Agricultural jobs are associated with a significant drop in per capita expenditure levels. On the other hand, nonagricultural and primarily industrial jobs increase with a significant rise in per capita consumption expenditure levels.

Now we go to the next step in Figure 13 to confirm that economic density measures of 2010-11 are a statistically significant covariate of nonagricultural and industrial jobs of 2016-17. This should follow from our definition of density. However, jobs are also affected by other factors than only the presence of firms. Given the small number of observations, we account for time-invariant variables here by taking regional dummies for Bangladesh's eight divisions. These conditional regression plots on economic density across districts show unambiguous, statistically significant positive effects, as shown in the above diagrams. The R squares are quite respectably high (0.52 and 0.4) and these specifications, even though restricted by the small number of observations, robustly pass Ramsey omitted variable tests It is worth noting here that reverse causality between these two variables are ruled out by the large time lag between the two variables: It is unlikely that employment patterns of 2017 caused firm density in 2011.

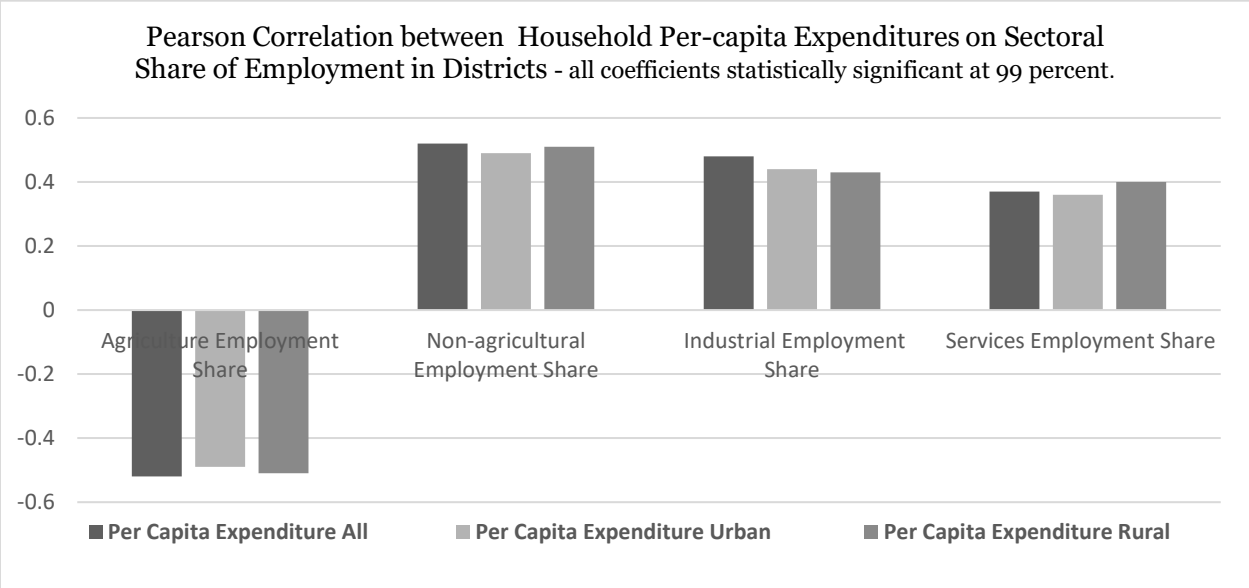
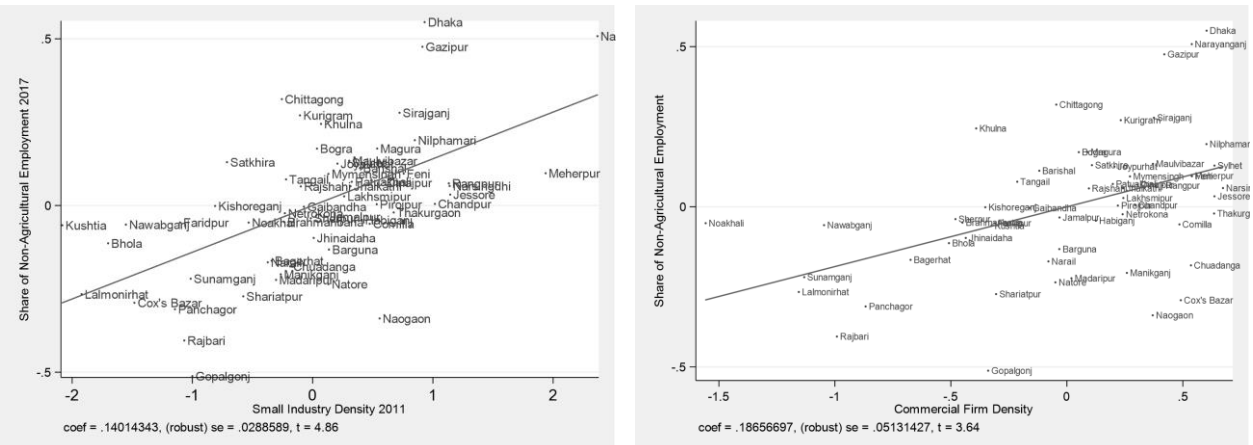


Figure 12: Nonagricultural jobs in 2017 lead to higher per capita expenditures

Source: Estimated from HIES 2016 and LFS 2017 data.



(a) Small Industry Density in 2011 (b) Commercial Density in 2011

Figure 13: Conditional Regression Plot linking Non-Agricultural Jobs in 2017 to (a) Small Industry Density in 2011, (b) Commercial Density in 2011.

Source: Derived from BBS 2011 District Data series and LFS Estimates of 2017.

5 Conclusion: Implications and Extensions

Let us first reiterate the three main points made in this paper. First, extreme poverty in Bangladesh is regionally concentrated in the bottom fourth districts in the north-west and north and then in belts in both Chittagong and the Khulna area. Encouraging out-migration to more affluent districts may be another strategy, but it will quickly face limits due to congestion in the center – where population density is more than seven times the national average - and migration from climate affected coastal regions in the south. An important associated point is that supporting economic activity in those regions through urban and infrastructure development, inter-regional connectivity, and better public services is likely to be necessary for future poverty reduction. Second, by international standards, the urban population is excessively concentrated in Dhaka. That concentration is adversely affecting overall urban development and, thereby, long term growth. Finally, economic density matters as it raises household consumption and reduces poverty by providing non-agricultural jobs. Economic density patterns show that a northern border belt of districts and Upazilas from Dinajpur in the north-west to Sunamganj in the northeast lag in both consumption expenditures and economic activity. There are also pockets of backwardness in the Chittagong Hill Tracts, Barisal islands, and an Upazila cluster in Khulna. However, there are pockets of economic density in all areas of the country.

As noted earlier, this paper is part of a larger ongoing research project where policy issues are being taken up in more detail. Let us make a few points drawing on that work. First, it is necessary to dismiss the unhelpful dichotomy sometimes made between "place-neutral" and "place-based" policies. Sound neutral policies must be the starting point: macroeconomic management, economic competitiveness, friendly investment climate, investment in national and inter-regional infrastructure; investment in human capital: health and education; investment in data and research in local development are all examples of critical neutral policies. However, for reasons discussed in this paper, at some point, place-based policies will need to be addressed.

Fortunately, research suggests that at least some place-based policy issues are tractable. For instance, connectivity and transport corridors between regions, telecommunications, and services that will attract private investment more broadly will help a more spatially balanced development to take place (e.g., Henderson et al., 2001; Lall, 2006). Our research also suggests that within Bangladesh's district and Upazilas, infrastructure development – power and roads in particular – help promote economic density. Here a pending agenda is to develop effective targeting rules to direct resources to avoid costly mistakes of place-based policies. We have made some initial approaches to targeting: focusing on places that have displayed growth in density or places where interventions will have the most impact.

A second big policy issue is the need to rehaul the urban development strategy to make it far more decentralized. "De-concentration" of government agencies to locate them out of Dhaka can be a good starting point. However, this will need to go deeper. Urban planning and management are inherently local knowledge and local ownership intensive. Given this, the focus and administration of urban development planning and management will likely need to be devolved with complementary technical support, far more than has been done now.

Thus, a considerable research agenda is pending. Bangladesh's economic geography work can be extended in several directions. The findings here can be deepened by incorporating the detailed 2013 Economic census data, integrating HIES, LFS, Economic Census, and District and Upazila series data to construct synthetic panels for the purpose of multi-level analysis. Having access to more recent data will be most useful for this purpose. In addition, a whole host of substantive issues can be addressed using these analyses. These can include trends in agricultural productivity and diversification, employment and productivity growth, economic diversification processes, and local government and municipality performance and governance issues as well as approaches to decentralizing and devolution. This will also require studying the role of social sectors, financial, and other investment climate issues. Last but not least, lies the task of identifying growth poles and discriminatory targeting rules to support such growth poles and other less well-performing regions.

Endnotes

1. The author is solely responsible for the materials and views here. He thanks participants for their comments at seminars on this paper at the Policy Research Institute in 2018, Bangladesh and at the BDI Conference at Yale University in 2019. The author can be reached at aa42@caa.columbia.edu.
2. These two models are indistinguishable from this paper's perspective.
3. This estimate falls between the recent highly conservative World Bank estimate of Dhaka's share being only 20 percent of national GDP (Bird et al., 2018) and the more widely and popularly held estimate of 35 percent (Economist, September 2019)

References

Ahsan, A. (2019).Dhaka-Centric Growth: At What Cost?. *Policy Insights,* October 2019

Artza, Georgeanne M., Mainul Hoqueb, Peter F. Orazema, Urja Shah (2016). *Urban-Rural Wage Gaps, Inefficient Labor Allocations, and GDP per Capita. Economics Working Papers:* 16006. University of Iowa.

Bangladesh Bureau of Statistics (2017a). *Household Income and Expenditure Survey 2016-2017.* Dhaka: BBS.

Bangladesh Bureau of Statistics (2017b). *Statistical Yearbook 2016.* Dhaka: BBS.

Bangladesh Bureau of Statistics (2013). *District Statistics Series 2011.* Dhaka: BBS.

Bangladesh Bureau of Statistics (2010). *Household Income Expenditure Survey 2010.* Dhaka: BBS.

Bangladesh Bureau of Statistics (2005). *Household Income and Expenditure Survey 2005.* Dhaka: BBS.

Bangladesh Bureau of Statistics (2000. *Household Income and Expenditure Survey 2000.* Dhaka: BBS.

The Economist (2019). Bangladesh Tries to Muffle the Siren Song of Dhaka. *The Economist* September 12.

Bird, Julia, Yue Li, Hossain Z. Raman, Martin Rama, Anthony J. Venables (2018). *Toward Great Dhaka: A New Urban Development Paradigm Eastwards.* World Bank.

Faruk, Abul Kalam Md. Iqbal (2015). Climate Change Induced Migration in Bangladesh. Retreived from https://www.iucn.org/content/climate- change-induce d-migration-bangladesh on October 5, 2019.

Government of Bangladesh (2015). *7th Five Year Plan FY 2016 – FY 2020: Accelerating Growth Empower-ing Citizens,* General Economic Division, the Planning Commission, Government of Bangladesh

Henderson, J. Vernon (2003). The Urbanization Process and Economic Growth: The So-What Question. *Journal of Economic Growth,* 8(1), 47-71.

Henderson, J. Vernon, Z. Shalizi, and Anthony J. Venables (2001). Geography and Development. *Journal of Economic Geography,* 1(1), 81-105.

Khan, Tanzila, Mohammad R. Islam (2013) Estimating Costs of Traffic Congestion in Dhaka City. *International Journal of Engineering Science and Innovative Technology,* 2(3), 281-289

Khondker B.H., S.N. Wadood, and S. Barua (2010). *A Study on Urbanization Management and Emerging Regional Disparity in Bangladesh: Policies and Strategies for Decentralized Economic Growth, Study No. 18, Background Studies for the Sixth Five Year Plan (2011-2015).* Dhaka: Bangladesh Institute of Development Studies.

Khondker B.H., M. M. Mahzab (2015). *Lagging Districts Development.* Background paper prepared for the Seventh Five Year Plan, Government of Bangladesh.

Krugman, Paul R. (1991). Increasing Returns and Economic Geography. *Journal of Political Economy,* 99(3), 483-499.

Lall, Somik V. (2006). Infrastructure and Regional Growth, Growth Dynamics, and Policy Relevance for India. *Annals of Regional Science,* 41,581–59.

Mahmood, Syed A. (2005). *Industrial Development in Bangladesh: Regional Differences.* Mimeo.

Rashid, Haroun er (2005). *Economic Geography of Bangladesh.* Dhaka: University Press Limited.

Sen, Binayak (2005). *Sub-National Growth Dynamics in Bangladesh: Insights from the Macro-GDP and MicroSurvey Data.* Mimeo. 12 December.

Sen, B., Ahmed, M., Ali, Z., & Yunus, M. (2014). *Regional Inequality in Bangladesh in the 2000s: Re-visiting the East-West Divide debate. BIDS-REF Study Series No. 14-01* Dhaka: Bangladesh Institute of Development Studies.

Shilpi, F. (2007). *Access to Growth Poles and Regional Inequality in Bangladesh,* Mimeo.

Zohir, S., and B.H. Khondker (2003). *A Regional SAM for the Northwest Bangladesh.* Background paper prepared for Louis Berger under an ADB contract.

World Bank (2017). *Dhaka Urban Upgrading Project.* Project Information Document/Integrated Safeguards Data Sheet.

World Bank, WFP, BBS. (2014). *District Level Poverty Map.* Dhaka: BBS.

World Bank (2007). *Bangladesh Strategy for Sustained Growth,* Bangladesh Development Series Paper No. 18

Zohir, S. (2011). *Regional Differences in Poverty Levels and Trends in Bangladesh: Are we asking the right questions?* Dhaka: Economic Research Group.