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**Challenges for Sustainable Development:  
Rapid Urbanization, Poverty and Capabilities in Bangladesh**

**June 2008**

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Abstract:

The main purpose of this paper is to examine the causes and consequences -- in particular, the policy implications -- of the ongoing urbanization in Bangladesh. Like many other Asian developing countries, a rapidly increasing share of the population of Bangladesh migrates to urban centers in search for employment opportunities outside agriculture in industrial enterprises or the services sector. For the first time in its history, the urban population is growing faster than the rural population, At the same time, the labor force in non-agriculture is growing faster than the labor force in agriculture. But the employment opportunities in either sector are not growing adequately. This paper attempts to analyze the emerging trends and patterns of urbanization in Bangladesh within a dynamic dual-dual framework with a strong emphasis on rural-urban migration and the informal sectors. The analysis pinpoints, among other things, the need to build up productive capacities in order to create adequate employment and incomes for the rapidly growing population--- particularly in the urban areas. The development of productive capacities, which is a precondition for the creation of productive employment opportunities, is a central element of viable poverty reduction strategy for Bangladesh as well. Without significant poverty reduction it is impossible to think of viable urbanization on the basis of sustainable development criteria in this poor country. Both for independent ecological reasons and for the implications of ecological damage for rising inequality and poverty, such a strategy must also be ecologically sustainable in the long run. The donors, especially the OECD/ DAC countries, should provide the necessary financial backing for such a sustainable and equitable development strategy for Bangladesh. It is necessary to reverse the trends in aid, and to provide a much larger share of aid for productive sector development, including the development of rural and urban areas, and the development of agricultural and non-agricultural sectors in line with the perspective of the dual-dual model. Although urban centers mostly host non-agricultural industries, sustainable urbanization also strongly depends on what happens in the agricultural sectors. Productive employment opportunities in rural areas are important in order to combat an unsustainable migration from rural areas to urban centers, and productive employment opportunities in urban centers are essential to absorb the rapidly increasing labor force in the non-agricultural sector.

**Keywords:** Urbanization, Bangladesh, Dual-Dual Model, Informal Sector, Poverty, Employment, Capabilities.

## **1. Introduction**

According to some estimates, in 22 years, i.e., by 2030 the proportion of people living in cities globally will reach 61%, with almost 80% of urban dwellers living in less developed countries. It also appears that most of the world population growth will be absorbed by cities of the south over the next fifty years. Asian cities will play a major role in this "urban transition" (Roberts and Kanaely (2006)). Bangladesh which is a densely populated low income economy in Asia will not be an exception. Rather, countries like Bangladesh will face exceptional challenges with regards to growth, infrastructure, employment, poverty reduction and well-being in terms of capabilities and functionings of the population both in urban and rural areas.

As Thorbecke (2007) points out in his magisterial survey of more than fifty years of thinking in development economics, after many twists the current thinking is based on both important progress in technical areas and also a clearer realization that human development is the ultimate goal of economic development. Taking into consideration the reality of globalization, this means that studying the consequences of rapid urbanization requires both a technical approach and an emphasis on human development as rigorously expressed via the capabilities approach to development. In this paper, I develop a theoretical approach based on earlier work which can organize the various disparate trends of urbanization and explore their implications for devising appropriate development strategies and policies from the capabilities perspective. As alluded to before, I also look at one particular South Asian country---Bangladesh---in order to explore the implications of urbanization for growth, employment, distribution and human well-being. Although the rate may be relatively slower than in Indonesia, Malaysia and other NIEs in Asia, the urban transition in Bangladesh by 2040 is not in doubt.

Like many other Asian developing countries, a rapidly increasing share of the population of Bangladesh migrates to urban centers in search for employment

opportunities outside agriculture in industrial enterprises or the services sector. Herrmann (2006) points out that this decade 2000—2010 is a historical population and employment transition for low income countries like Bangladesh. For the first time in its history, the urban population in this group of countries is also growing faster than the rural population, At the same time, the labor force in non-agriculture is growing faster than the labor force in agriculture. But the employment opportunities in either sector are not growing adequately.

The main purpose of this paper is to examine the causes and consequences -- in particular, the policy implications -- of this ongoing urbanization in Bangladesh. After briefly presenting the basic theoretical framework in section 2 below, I will discuss the driving forces behind rapid urbanization in Bangladesh in section 3, effects of rapid urbanization on employment and poverty in section 4, and implications for development strategy and policies in section 5. Section 6 offers some final conclusions.

## **2. The Theoretical Framework:**

### **A Dual-Dual Approach with Endogenous Migration**

As the basic theoretical framework in this paper, I will use what can be called a “dual-dual” model (Svejnar and Thorbecke 1980, 1982; Khan 1982a,b, 1985, 1994, 1997, 2004a,b, 2006; Khan and Thorbecke 1988, 1989; Thorbecke, 1992,1994; Thorbecke and Santiago 1984; Thorbecke and Morrisson 1989)<sup>1</sup>. This corresponds to the characteristics of a developing economy with not only the traditional and modern sectors but also a kind of dualism within each of these sectors in terms of formal/informal dichotomy. More specifically, the process of development for economies moving from the lower income status to a higher level of development may modify the traditional sector further in the direction of a more market-based modern sector while the formal/informal dichotomy is accentuated within both the sectors. This is the most important move theoretically which is consistent with the stylized facts to be explained in this paper. Consequently, this approach reveals that for countries like Bangladesh which are at a lower level of income the theoretical possibility of uneven development of the formal and informal sectors both in the

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<sup>1</sup> Such a framework is also useful for general equilibrium modeling which is not pursued here. But it looms as a future research task.

urban and the rural areas can indeed be empirically confirmed as well.

Thus, in this theoretical framework, the coexistence and distribution of modern and informal type of activities in both rural and urban areas are to be taken as basic structural features of the economy in question. The dual-dual approach integrates poverty analysis with rural-urban movements in an economy wide setting by endogenizing both migration<sup>2</sup> and intra-group income distributions and the nominal poverty line. Following this line of work leads to our ultimately being able to assess policy repercussions on both poverty specific to particular socioeconomic groups and on overall national poverty.

The starting point is the dual economy models of Lewis (1954) and Fei and Ranis (1964)<sup>3</sup>. These pioneering efforts, however, could not or did not take into account the co-presence of dualism within each sector of the two sector models of the dual economy. Erik Thorbecke first raised this issue in 1979 during the course of a National Science Foundation interdisciplinary project on technology and development and Svejnar and Thorbecke (1980, 1982) was the first published work on a prototype of dual-dual technology classification scheme. Khan (1982a,b) and Khan (1985) were applications of this scheme to the energy and textiles sectors in South Korea. Khan (1983) raised the issue of linking technological dualism to poverty theoretically, following an early observation of Pyatt and Thorbecke (1976). Khan and Thorbecke (1988, 1989) were further applications of technological dualism to Indonesia. Khan (1999) explores the connections between rural-urban dualism and migration and poverty in South Africa. Khan (2006) explores both rural-urban and reverse migration in a dual-dual model for South Asia.

In the current formulation, a rural/urban dichotomy is combined with traditional/modern technological dualism, leading to a fourfold classificatory scheme.<sup>4</sup> A further extension of the early dual-economy models is that the rural economic sector does not only include agricultural activities, but also non-agricultural activities including various off-farm industries and services:

1. *Rural traditional* is closely associated with informal activities, traditional

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<sup>2</sup> Within an overall trend towards rapid urbanization there can be migration in both directions. This can have important implications for poverty reduction policies, as Khan (2006) shows for South Asia.

<sup>3</sup> See Khan (1997) chapters 2 and 3 for a historical survey and a specific intertemporal dualistic model which is used to analyze the conflict between employment and output.

<sup>4</sup> See Svejnar-Thorbecke (1980, 1982) and Khan (1983) for early developments. See also Khan (1997, 2006) and Stifel-Thorbecke (2003).

labor-intensive technologies, family farms, food production for domestic consumption, and small-scale off-farm enterprises;

2. *Rural modern* is associated with formal activities, capital-intensive technology, large-scale farming, cash and export crops, and large-scale off-farm enterprises;
3. *Urban traditional* is associated with informal activities, including petit services such as shoe-shining and the provision of other ad-hoc services on a non-contractual basis;
4. *Urban modern* is associated with formal activities, with formal industrial enterprises, including textile factories with export-orientation, and modern services, such as banking, insurance, consultancy and telecommunications.

Poverty analysis in this dual-dual approach can be integrated with migration and various shocks that are important features of the urbanization process in Africa. The empirical sections described below illustrate this. For a formalization of the dual-dual model, the reader is referred to the appendix.<sup>5</sup>

### **3. Driving forces of rapid urbanization in Bangladesh**

With an area of 147,000 square km, Bangladesh is a small, predominantly agrarian economy. However, it is experiencing a very high rate of urbanization. As table 1 below shows, in 1974, only 8.8 per cent of the population lived in urban areas..By 2001, total urban population as a percentage of total population was 23.40.If we compare it to more recent years, the percentage of urbanization is now over 25 percent and growth rate is more than 3.5 per cent per year.

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<sup>5</sup> As will be clear from the structure of the model, an empirical application utilizing the model fully and rigorously will require the use of a Social Accounting Matrix (SAM) and relevant econometric estimates of elasticities etc. in order to calibrate the Computable General Equilibrium (CGE) model. This is part of our future work on the subject. The model presented in the appendix is a one period model with migration equilibrium. A dynamic version also exists. According to Fontana and Wobst(2001)The 1993-94 IFPRI Social Accounting Matrix (SAM) for Bangladesh"... distinguishes 10 agricultural sectors-including two different kinds of rice technology-and 19 manufacturing sectors, out of 43 sectors in total. It also differentiates between twelve socio-economic groups, allowing detailed analysis of household welfare and poverty. The SAM has ten factors of production: one type of capital, one type of land and eight different types of labor, which are disaggregated by both level of education and gender. The innovative feature of the SAM is that it separates out female and male labor value-added for each educational level and in each sector of the economy, providing a base for gender-sensitive analyses of policy changes."This SAM can be a good starting point for both static and dynamic CGE modeling of urbanization in Bangladesh in the dual-dual framework.



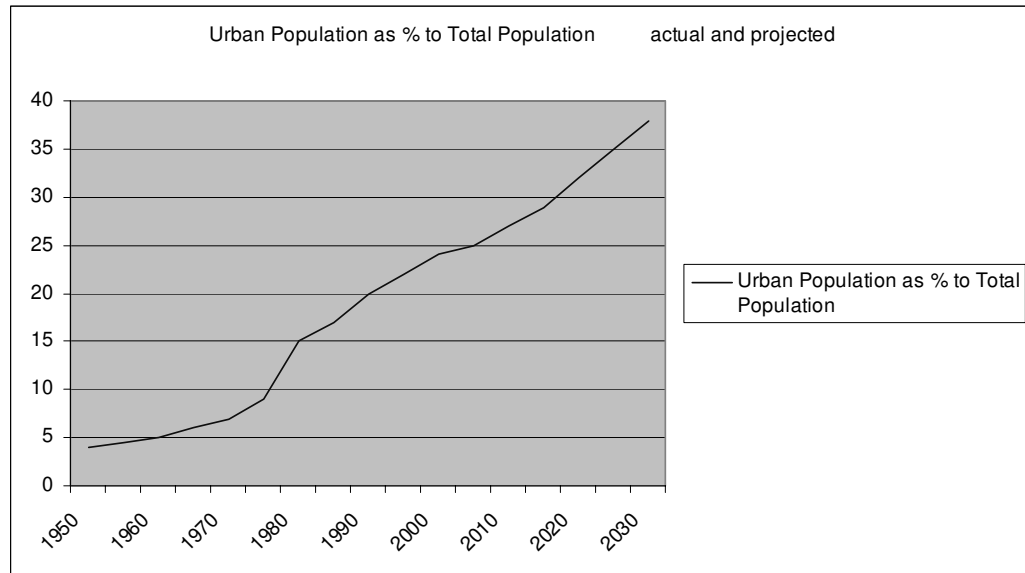
**Table 1: Growth of Urban Population in Bangladesh, 1951-2001**

Census year	Total National Population (million)	Annual Growth Rate of National Population (%)	Total Urban Population (million)	Urban Population as Percentage of Total Population (i.e. Level of Urbanization)	Decadal Increase of Urban Population (%)	Annual Exponential Growth Rate of Urban Population (%)
1951	44.17	0.50	1.83	4.34	18.38	1.58
1961	55.22	2.26	2.64	5.19	45.11	3.72
1974	76.37	2.48	6.00	8.87	137.57	6.62
1981	89.91	2.32	13.56	15.54	110.68	10.03
1991	111.45	2.17	22.45	20.15	69.75	5.43
2001	123.10	1.47	28.81	23.40	27.38	3.25

Source: Government of Bangladesh Population Census 1981, Report on Urban Areas 1987 and Preliminary Report, Population Census 1991; and BBS 2005.

Over the past decades the share of the urban population in the total population, as well as the share of the non-agricultural labor force in the total labor has persistently increased in Bangladesh. Fig.1 shows that by 2030 the urban population will be 40 per cent of the total. Thus an urban transition is already underway. Although it is in some respects less rapid than the average transition speed, given the population density and limited urban infrastructure, the challenges posed by urbanization trends in Bangladesh are at least as severe as some countries with a higher speed of urbanization. This observation is consistent with the characterization of the urban informal sector within the dual-dual model.

Fig. 1 : Urban Population --Actual and Projected---in Bangladesh



The growth of the urban population and labor force, relative to the rural population and labor force, has two main reasons, namely differences in birth and mortality rates between rural and urban areas or an increase of migration from rural to urban areas. In addition, there has also been and continues to be a territorial extension of existing urban areas and a change in the definition of urban areas. This paper focuses on rural-urban migration and in this context it discusses both push and pull factors. In the context of the dual-dual model, these factors contribute heavily towards the informalization of the urban labor markets and stresses on infrastructure, housing, water, health care and other areas of well-being indicators.

### ***3.1. Push factors in Bangladesh***

The classical dual-economy models (e.g., Lewis 1954; Fei and Ranis 1964) explain rural-urban migration by increasing productivity in the agricultural sector which leads to a decreasing demand for agricultural workers and subsequently enables agricultural workers to migrate to non-agricultural sectors. But a weak agricultural development can also act as a push factor for rural-urban migration. If the agricultural sector fails to provide sufficient employment for a growing number of workers, and/or if the agricultural sector fails to provide sufficiently high household incomes to cope with a growing number of dependants, people can be encouraged to seek employment outside agriculture. In case of Bangladesh, the rural to urban migration

has contributed more than 40 per cent of the change in urban population. In some large cities, the figure is as high as 70 per cent (Islam 2006).

Data of the Food and Agricultural Organization (FAO) of the United Nations shows that the population is already living on and off fragile land in low lying coastal areas. This situation has not significantly changed in recent years as indicated by (i) small and decreasing farm size per capita, (ii) low and often decreasing productivity of agricultural workers, and (iii) low and often decreasing yields per hectare. Therefore, the push factor is even more critical today.

Data from the Bangladesh Bureau of Statistics show that between 1975 and 2004 agricultural land per agricultural worker has remained fairly constant. Over the same period, labor productivity of agricultural workers has not increased very much. Land augmenting technical progress has also yet to take place on a large scale.

Household surveys, which provide a more disaggregated picture, show considerable differences in the distribution of land between income groups although less so than some more heavily concentrated areas in neighboring India and Pakistan. The income surveys show differences in output per hectare between income groups, demonstrating the importance of land as the main productive asset in the rural areas. These surveys reveal a consistent picture in the sense that lower income groups have smaller plots of land and lower yields than higher income groups. A Social Accounting Matrix for Bangladesh needs to be built in order to show the relations between land holdings, income generation and consumption patterns of different types of household for future applications of the dual-dual model for general equilibrium modeling of the rural sector in relation to the urban sector.

The low level of agricultural land and labor productivity in Bangladesh is closely associated with the unfinished business of the Green Revolution. Bangladesh has very low levels of fertilizer consumption, in comparison not only with more advanced developing countries but also with its Asian neighbors. Although showing a positive trend, the rates of adoption in Bangladesh on a year-to-year basis are much lower than in India or Pakistan. Moreover, with budget retrenchments in recent years, Bangladesh has decelerated or even reduced the spending on agricultural extension services, research and development even though public investment in agricultural activities was found to have relatively high social returns and poverty-reduction effects generally (Fan et al. 2004 and 2005).

The relationship between changes in the agricultural labor force and the changes in agricultural labor productivity can work in both directions. While it is plausible that an increase of agricultural labor productivity allows for a decrease of the agricultural labor force, it is equally plausible that an increase of the agricultural labor force results in a decrease of agricultural labor productivity, if the increase of the labor force is not matched by an increase of land, machinery, finance, seeds or fertilizers. Whereas the former line of causality may reflect the situation in more advanced countries, the latter may have been important in the least developed countries, where the size of agricultural land per agriculturalist is small and declining, and the use of agricultural machinery is very small as well. Indeed, the almost unlimited supply of cheap agricultural laborers itself may have discouraged increasing investment in agricultural machinery. The substitution of labor for capital however faces limits, especially if agricultural land is limited and agricultural inputs are not accessible or affordable. Furthermore, as Patnaik(2008) has shown policies affecting the small peasant holders adversely have retarded land augmenting technical change in this dominant subsector of agriculture.

Unlike early formulations of dual economy models, which focused on a positive agricultural development as a precondition for rural-urban migration, this analysis of countries like Bangladesh suggests that periodic negative agricultural shocks can be an equally powerful push-factor for rural-urban migration. This finding however requires further qualifications. Whether people migrate from rural to urban areas depends not *per se* on whether the agricultural sector is characterized by a positive tendency towards development, but it depends more specifically on whether the rural sector generates sufficient and sufficiently lucrative employment opportunities. While in practice rural economic activities are often synonymous with agricultural activities, for analytical purposes it is important to recognize that rural economic activities also include non-agricultural activities. Furthermore, agricultural- and non-agricultural activities can reinforce each other. In a virtuous reinforcement as in Taiwan (Khan2004), rural industrialization can be a great absorber of local labor. Thus a weak development of the agricultural sector can reinforce and can be reinforced by a weak development of rural industries, a strong development of the agricultural sector can be associated with a strong development of rural industries, which provide inputs and services for agricultural producers, or engaged in the processing of agricultural produce. The question here is of providing sufficient and

strong backward and forward linkages. Thus a loss of employment due to growing productivity in agricultural may be offset by the creation of new employment opportunities in expanding industries in the rural areas. Because of such a favorable structural change in rural areas, strong agricultural development may actually be a weaker push factor for rural-urban migration than a bad agricultural development.<sup>6</sup>

In conclusion, a model with explanatory power beyond a specific context needs to realize that it is employment opportunities in the rural areas that ultimately determines migration to urban centers, and that the employment in rural areas depends as much on the development of the farm sectors as it depends on the development of the off-farm sector. Furthermore, failure of the different rural sectors to generate sufficient and sufficiently lucrative employment can be due to a positive development, which is associated with increasing agricultural productivity, or a negative development, which is associated with limited agricultural production. Although it is important to realize the complex interactions between push factors for rural-urban migration, it remains a relatively straight forward exercise to identify the principal push factors in the least developed countries. In Bangladesh, given that the rural economic activities are largely determined by agricultural activities, it is essentially the periodic weak agricultural development and lack of rural industrialization that encourages rural-urban migration.

### ***3.2. Pull factors.***

In line with earlier Harris-Todaro type models it can be argued that rural-urban migration is also motivated by wage differentials. But it is important to specify that the wage differentials between rural and urban areas can be perceived as well as real, and that the higher wage levels in urban areas are often unattainable in practice. Herrmann (2006) and Herrmann and Khan(2008) show the differences in potential earnings between the agricultural sector/ rural areas and the non-agricultural sector/ urban areas by differences in labor productivity. Data from Bangladesh also conform to the pattern of an increasing divergence of labor productivity between different groups of countries since the early 1980s with Agriculture falling behind. These differences in labor productivity and the associated differences in potential earnings

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<sup>6</sup> This finding also sheds new light on dual-economy models, which view a positive agricultural development as the main driving force for rural-urban migration.

also help to explain not only the rural-urban migration within Bangladesh but also the increase of international migration from poor countries like Bangladesh to more advanced countries. Similarly, the differences in agricultural and non-agricultural labor productivity within the LDCs help to explain the increase of migration from rural to urban areas in the LDCs.

The difference in earning potential between agriculture and non-agricultural sectors is the principle pull factor for an increasing migration from rural to urban areas. But many people who migrate to urban areas will not be able to find a well paying job in the non-agricultural sector (Khan 1983, 1985, 2004, 2006; Stifel and Thorbecke 2003). Because of the shortage of formal-sector jobs – be it industry or services – the majority of urban populations will be more likely to end up working as shoes shiners at a street corner rather than a regular employee of a textile enterprise, for example.

#### **4. Rapid urbanization, employment crisis, capabilities and poverty in Bangladesh**

As Khan(1994,2004a,b) and Davis(2007) among others have pointed out, urban poverty has been on the increase in Bangladesh. Nationwide, Bangladesh has achieved some success in reducing rural poverty. However, urban poverty has remained a major policy challenge. In particular, enclaves of poverty in slum areas raise serious questions of capabilities deprivation and of identifying and implementing the right set of capabilities-enhancing policies for poverty reduction in Bangladesh. Even basic functionings in areas such as such as life expectancy, nutrition and food intake, literacy etc. fall short of the requirements for a decent human life in the urban areas(Khan 1994, 2004a and b,2006 Davis 2007).

In Dhaka city alone from 1974 to 2005 slum population has jumped from 250,000 to 2,840,000 during the span of little over 3 decades. During these decades, the number of slums also increased from 500 to 4,300. While slum population has increased by more than 11 times the number of slums has increased 8.6 times during this period.

The causes for the increase of slum population are certainly complex. However, the

major aspect is again related to the lack of well paying jobs in urban areas. There are also cases of downward mobility in urban areas of urban dwellers themselves. Although Bangladesh has been able to reduce urban poverty to some extent, there are pockets of chronic poverty in slums that seem very hard to overcome.

In contrast with rural poverty, most urban dwellers depend on market more extensively for food and other goods as there is no subsistence farming and transfers between households. Therefore, in a city regular money income is necessary for everyone including the poor. Urbanization generally weakens the corporate feeling of belonging in a neighborhood. To this must be added the relatively higher price level for both food and non-food items.

Furthermore, the urban poor experience a much higher level of exposure to different types of pollution. According to Khan(1997), accounting for this aspect of urban situation increases poverty by at least ten percent. These poor come largely from among those who work in the urban informal sector. A CGE application of the dual-dual model by Khan(2004a,b;2006) shows for a model including all of South Asia that urban informal sector households are the worst affected by any negative shocks to the economy. With the projections discussed in section 2, urban poverty will indeed be the most serious form of poverty in Bangladesh by the year 2030 and beyond.

During adverse shocks there are also reverse incentives for migration. People who migrate from rural of urban areas, but are unable to find a formal sector job in non-agriculture, or lose their formal sector jobs, may have an incentive to migrate back to the rural areas and assume a job in the agricultural sector. However, as Stifel and Thorbecke(2002) and Khan(2004a,b; and 2006) show, such reverse migration is more likely to result in a job in the rural informal sector or even involuntary unemployment. Employment in the informal sector, moreover, is not only associated with lower productivity and wages, it is often also associated with less stable employment and more dangerous employment conditions.

In sum, Bangladesh will be increasingly affected by rapid urbanization, and rapid urbanization will probably lead to massive un- and underemployment, associated with low household incomes and widespread poverty. While extreme poverty – measured by \$1 per person and day adjusted for purchasing power parities (PPP) – remains higher in rural areas than in urban areas, the lack of significant

increase in labor productivity in the non-agricultural sector suggests that poverty is now also increasing in the urban areas as well. Thus some of the predictions of the dual-dual model are empirically confirmed by the evolving situation in Bangladesh.

## **5. Strategic policy implications of rapid urbanization**

Dijk (2006) describes urbanization – the agglomeration of households in confined space – in terms of a U-shaped curve. Initially rapid urbanization is associated with considerable challenges and costs, but if managed successfully these costs can be turned into opportunities and benefits. However, as the theoretical discussion of the dual-dual model of urbanization shows the persistence of informal sectors can pose some serious problems with regards to development strategy and policy. The empirical evidence provided for Bangladesh in this paper demonstrates that this will be a long run strategic issue here in addition to the short and medium run employment creation and poverty reduction challenges. The turn-around in the U-shaped curve which is associated with economies of scale and an increase of economic and ecological efficiency, among others – is not going to be an automatic process (UN-HABITAT 2007). This proposition seems plausible for Bangladesh as well. The move towards a turn around of the U-shaped curve will require a sound public management of urban agglomerations and, all else equal, this will depend on a vibrant economy in and around urban centers. A growing urban economy must ensure sufficient revenues for urban authorities, and it must create sufficient jobs for the urban population. Otherwise, urban centers will be confronted by a spread of poverty and slums, social exclusion and crime (UN-HABITAT 2007), and the urban authorities will lack revenues to finance necessary interventions and investment, including investment in housing, water, sanitation, electricity, waste management, transport, schools and health care facilities, as well as spending on welfare programmes, and law and order.

The data for Bangladesh examined in this paper show that urban centers have already witnessed a large influx of people, with consequent stress on infrastructure, employment opportunities and an increase in urban poverty. In fact, urban centers are characterized by a rapid increase of un- and underemployment, and associated with this a rapid increase of poverty and slums. To use the picture of the u-shaped curve of urban development, many cities are at the downward segment and the challenge is to



encourage a transition to the upward segment. Although this transition requires a better management of urban centers, the policy perspective must go well beyond a narrow focus on the urban centers alone. It is important that the anti-urban bias, which has characterized development efforts in recent years, is not replaced by an anti-rural bias in the years to come.<sup>7</sup> Indeed, it can be argued that successful urban development is closely linked to and cannot be separated from successful rural development. This is where the general equilibrium dual-dual approach can also be helpful.

In line with this dual-dual dynamic general equilibrium argument it seems reasonable to encourage development policies to focus on the strengthening of the linkages between informal and formal enterprises in the urban areas, linkages between small-scale farms and large commercial farms in the rural areas, and finally linkages between farms and firms across geographic locations. The strengthening of these linkages is a complex challenge that cannot be adequately addressed in this paper. It is possible however to outline the necessary directions and changes of current development policies.

The principal objective of development policies, as well as related efforts to sustainably reduce poverty, should be to increase the absorption of the labor force by creating more and more productive employment opportunities, which generate sufficiently high household incomes (UNCTAD 2006; Hope 1999). The creation of employment opportunities in the rural areas of Bangladesh is necessary to decrease migration to urban centers, and the creation of employment opportunities in the urban centers is necessary to address the challenges of rapid urbanization for Bangladesh outlined here.

The creation of more and more productive employment opportunities requires the development of productive capacities across sectors and industries. According to UNCTAD (2006) the development of productive capacities requires a strengthening of production linkages (between enterprises and sectors), a strengthening of productive resources (factors of production), and a strengthening of entrepreneurial capabilities (managerial, technical and technological skills). Entrepreneurial capabilities can be thought of as the necessary capabilities to effectively use the

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<sup>7</sup> Lipton (1977) argued that development policies should focus on the rural rather than the urban areas, as the rural areas constitute the backbone of developing economies and home to the majority of the poor. In recent years, development and poverty reduction efforts have therefore underlined the importance of rural and especially agricultural development.

factors of production in order to convert raw inputs into competitive outputs (see also Gore and Herrmann 2008a).

The development of productive investment in Bangladesh will require public and private investment in physical and social infrastructure, as well as a strengthening of institutions. While Bangladesh and its development partners are placing increasing focus on strengthening public institutions – as reflected, for example, by a considerable increase of aid for governance-related purposes – it is equally necessary to think of possibilities to strengthen private-sector support institutions. These include private financial intermediaries, agencies for investment and trade promotion, chambers of industry and commerce, and producer associations, but they also include public development banks, investment and marketing facilitation capabilities. The latter have been weakened or closed during structural adjustment programmes. While it is important to recognize that many of these institutions suffered from corruption and inefficiencies, it is equally important to recognize that these institutions governed properly can serve important functions during the urban transition period in particular. The institutional void that resulted from the dismantling or weakening of such institutions has not been, contrary to the expectations of the reformers, filled by private sector initiatives. It is necessary to rebuild such institutions, while taking account of past experiences. Enterprises in Bangladesh in particular will require public or quasi- public-private institutions that support innovations, and provide help with respect to adaptation and adoption of new technologies and diversification, storage and shipment, finance and insurance, as well as market intelligence and marketing.

Despite the need for productive sector development, productive sector development has not received adequate attention. In recent years, official development assistance (ODA) committed to Bangladesh has been characterized by two important shifts. The first is a shift in overall aid from development-oriented aid to emergency assistance; the second is a shift in development-oriented aid from economic-sector development to social-sector development. Although it is necessary to have these expenditures, if resources are drained from developmental expenditures, these trends can negatively affect the economic development of countries like Bangladesh and lead to even more “fire-fighting” type aid to be necessary in the future.(Khan 1995,1997,2003; Gang and Khan1999). Between 1998--2000 and 2003—2005 aid commitments for social infrastructure and governance increased from

about 8% to more than 12% of total aid commitments – mostly due to an increase of aid for government and civil society – whereas aid commitments for economic infrastructure and production decreased from 6% to about 4% of total aid commitments (UNCTAD 2007). Although some social sector aid can be used to enhance capabilities and hence future productivity, it requires careful planning and development of institutions. What is crucial is to provide adequate development-oriented aid to properly motivated recipient policy makers (Khan 2002, 2003, 2004c; Gang and Khan 1999).

The agricultural sector is particularly hard hit by the decline of aid in the productive sector more generally. Between 1998-2000 and 2003-2005 aid for agricultural research, extension and education decreased from about 1% to less than 0.5% of total aid commitments. The aid committed to agriculture is little in absolute terms, but it is even smaller, if compared against the fact that agricultural sector continues to account for the larger part of Bangladesh's GDP, and that the rural areas still continue to host more than 70% of the population.. Furthermore, the decline of aid for agricultural development rests uneasily with the finding that agricultural investment in LDCs – particularly investment in agricultural research and development, and investment in rural infrastructure, including feeder roads – is characterized by relatively higher social rates of return (Fan et al. 2004 and 2005). The decline of aid for agricultural development is paralleled by a slight increase of aid for industrial research and development. But measured as a share of total aid commitments, the aid commitments for industrial research and development have also remained low (UNCTAD 2007).<sup>8</sup>

## **6. Conclusions:**

In this paper I have attempted to analyze the emerging trends and patterns of urbanization in Bangladesh within a dynamic dual-dual framework with a strong emphasis on rural-urban migration and the informal sectors. The analysis pinpoints, among other things, the need to build up productive capacities in order to create adequate employment and incomes for the rapidly growing population---particularly

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<sup>8</sup> UNCTAD (2007), as well as Gore and Herrmann (2008b) show that contrary to what the common believe may be, investment in science, technology and innovation is important even in LDC-type economies. These economies however do not require foundation research that pushes the global technology and knowledge frontier, they require rather applied research and development which helps in very concrete ways to improve production processes and products. Looking at Bangladesh data confirms these broad trends and implications.

in the urban areas. The development of productive capacities, which is a precondition for the creation of productive employment opportunities, is a central element of viable poverty reduction strategy for Bangladesh as well.

Without significant poverty reduction as part of a sustainable development strategy, it is impossible to think of viable urbanization in this poor country. Bangladesh should develop a corresponding focus in its development strategy. Both for independent ecological reasons and for the implications of ecological damage for rising inequality and poverty, such a strategy will have to be ecologically sustainable in the long run. The donors, especially the OECD/ DAC countries, should provide the necessary financial backing for such a sustainable and equitable development strategy for Bangladesh.

It is necessary to reverse the trends in aid, and to provide a much larger share of aid for productive sector development, including the development of rural and urban areas, and the development of agricultural and non-agricultural sectors in line with the perspective of the dual-dual model. Although urban centers mostly host non-agricultural industries, sustainable urbanization also strongly depends on what happens in the agricultural sectors. Productive employment opportunities in rural areas are important in order to combat an unsustainable migration from rural areas to urban centers, and productive employment opportunities in urban centers are essential to absorb the rapidly increasing labor force in the non-agricultural sector.

Only if the rapidly rising urban populations in the urban agglomerations in Bangladesh find productive employment will they benefit from urbanization and development with rising household incomes. Only then will they be able to move out of slums, afford better access to water and sanitation, better access to health care and schools and live in a safe environment free from crime in the urban centers. In Sen's terminology, the capabilities enhancement for the urban poor in LDCs are intimately connected with both the means and the ends of development in the suggested strategy of development for Bangladesh in light of the facts and trends of rapid urbanization.

## **Appendix:**

### **Formal Representation of Dual-Dual Model**

For the interested reader, the formal representation of the dual-dual model with Constant Elasticity of Substitution (CES) Production Functions is given below.

The readers interested in following the equations in detail are referred to section 4 “Notation and symbol explanation” below, which describes the model in greater depth.

*Production and Labor Market*

$$X_{fc} = A_{fc} \left[ \beta_K^{fc} \bar{K}_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} + \beta_{LS}^{fc} LS_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} \beta_{LU}^{fc} LU_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} \right]^{\frac{\mu_{fc}}{\mu_{fc}-1}} \dots\dots\dots(1) - (2)$$

$$X_{ic} = A_{ic} \left[ \beta_K^{ic} \bar{K}_{ic}^{\frac{\mu_{ic}-1}{\mu_{ic}}} + \beta_{LU}^{ic} LU_{ic}^{\frac{\mu_{ic}-1}{\mu_{ic}}} \right]^{\frac{\mu_{ic}}{\mu_{ic}-1}} \dots\dots\dots(3) - (4)$$

$$i_{ic} = \frac{P_{ic} X_{ic}}{LU_{ic}} \dots\dots\dots(5) - (6)$$

$$wu_{ex} = \frac{P_{ex} \beta_{LU}^{ex} X_{ex}}{LU_{ex}} \dots\dots\dots(7)$$

$$wu_{ex} = i_{food} (1 + \delta) \dots\dots\dots(8)$$

$$i_{srvc} = \frac{P_{im} \beta_{LU}^{im} X_{im}}{LU_{im}} \dots\dots\dots(9)$$

$$w_{im} = i_{srvc} + \gamma \frac{\Pi}{LU_{im}} \dots\dots\dots(10)$$

$$\Pi = P_{im} X_{im} - i_{srvc} LU_{im} - ws_{im} LS_{im} \dots\dots\dots(11)$$

$$wu_{ex} = \left(1 - \frac{hLU_{im}}{LU_{srvc} + LU_{im}}\right)wu_{srvc} + \left(\frac{hLU_{im}}{LU_{srvc} + LU_{im}}\right)wu_{im} \dots\dots\dots(12)$$

$$ws_{fc} = \frac{P_{fc} \beta_{LS}^{fc} X_{fc}}{LS_{fc}} \dots\dots\dots(13) - (14)$$

$$ws_{im} = \left[ \frac{1 - \beta_{LU}^{im}}{(1 - \theta)\beta_{LU}^{im} + \theta(1 - \beta_{LU}^{im})} \right]^{\frac{1}{1-\theta}} ws_{ex} \dots\dots\dots(15)$$

*Disposable income and savings*

$$I_{rih} = i_{food} LU_{food} \dots \dots \dots (16)$$

$$I_{ruh} = wu_{ex} LU_{ex} \dots \dots \dots (17)$$

$$I_{rsh} = ws_{ex} LS_{ex} \dots \dots \dots (18)$$

$$I_{rih} = P_{ex} X_{ex} - ws_{ex} LS_{ex} - wu_{ex} LU_{ex} - S_{ex} \dots \dots \dots (19)$$

$$I_{uih} = i_{srvc} LU_{srvc} \dots \dots \dots (20)$$

$$I_{uuh} = ws_{im} LU_{im} \dots \dots \dots (21)$$

$$I_{ush} = ws_{im} LS_{im} \dots \dots \dots (22)$$

$$I_{ukh} = P_{im} X_{im} - ws_{im} LS_{im} - wu_{im} LU_{im} - S_{im} \dots \dots \dots (23)$$

$$I_{bch} = tM \dots \dots \dots (24)$$

$$S_{fc} = \lambda_{fc} [P_{fc} X_{fc} - ws_{fc} LS_{fc} - wu_{fc} LU_{fc}] \dots \dots \dots (25) - (26)$$

*Demand*

$$C_c^h = \frac{\alpha_c^h I_h}{P_c} \dots \dots \dots (27) - (49)$$

*Foreign Trade*

$$M = \sum_h C_{im}^h + \frac{S_{im}}{P_{im}} - X_{im} \dots \dots \dots (50)$$

$$EX = X_{ex} - \frac{S_{ex}}{P_{ex}} \dots \dots \dots (51)$$

*Equilibrium Conditions*

$$\sum_c LU_c = LU \dots \dots \dots (52)$$

$$\sum_{fc} LS_{fc} = LS \dots \dots \dots (53)$$

$$X_{ic} = \sum_h C_{ic}^h \dots \dots \dots (54) - (55)$$

$$P_{im} \equiv 1 + t \dots \dots \dots (56)$$

$$P_{ex} \equiv 1 \dots \dots \dots (57)$$

The production sectors are specified as CES with the choice of nonunitary<sup>9</sup> elasticities of substitution for the two formal sector commodities in equations 1 and 2. The informal sector commodities also have CES specifications. All commodities are produced under capital constraints. Thus, capital,  $K$ , in each sector has an upper bound denoted by a bar above  $K$ . The assumption that capital stock is fixed in each sector may be relaxed, but it is in fact, a fairly standard assumption for developing economies.

In the informal sectors each worker receives her average revenue product. Rural small holders may work on common land and these rural farming households may share the total income equally among all the family members. Urban informal workers supply all their labor at the prevailing wage rate. Thus leisure is not an argument in their objective function. This may be defended as an extreme assumption when people are at the margins of subsistence. Equations 5 and 6 show the informal sectors' income determination.

The total income per unit includes logically the returns also to non-labor assets for those who own land or capital. Hence, the relevant measure of income is total income per unit from all sources.

The profit maximizing rural large landholders ensure that under competitive conditions wages for unskilled workers in the export sector are equal to the marginal revenue product of the unskilled labor they have to hire. Equation 7 reflects this condition. Equation 8 shows the equilibrium allocation of unskilled labor in the rural informal sector. In equilibrium, the rural sector wage rate is below the wage rate in the formal sector by a fixed factor. This reflects the assumption that there are transactions costs in working in the rural formal sector that is captured by this mark up.<sup>10</sup>

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<sup>9</sup> The Stifel-Thorbecke paper uses Cobb-Douglas production functions with elasticities of substitution restricted to a value of 1.

<sup>10</sup> Alternatively, one could also postulate that there is an 'insider' market wage equilibrium in the formal sector, and those unskilled workers lucky enough (or more likely, because they know someone already working in the formal sector) to get a job in the formal sector can enjoy this wage premium. This is not a hypothesis the authors consider, but the data will be consistent with this hypothesis as

Turning now to the import sector, for unskilled workers in the urban area the assumption here is that they get the income per unit of labor in the urban services sector (shown in equation 9) plus a share of the profits as given in equation 10. The profit determination itself is shown in equation 11.

The Harris-Todaro model features regarding rural-urban migration are captured in equation 12. Here, in equilibrium, rural wage must equal the expected wage in the urban sector. In equation 12, the probability of getting a job in the import sector is given by the share of the urban uneducated labor force in that particular sector multiplied by a scale parameter,  $h$ .

Skilled workers are employed only in the formal sectors. Their wages are determined in equations 13 and 14 by their marginal revenue products. We now turn to the determination of incomes for the households.

### ***1. Household Income Determination***

There are nine types of households. Two in the rural area are landowning households--- large and small. There are also urban capitalists and bureaucrats. The other five are households where the main source of income is from labor.

The rural informal households which are really rural small holders receive their total revenue from production as shown in equation 16. Rural unskilled and skilled households receive their wage incomes as shown in equations 17 and 18 respectively. Equation 19 gives the incomes of the rural large land holders.

Equations 20- 24 show the incomes of the urban households. The working class households receive wage income and the capitalists the profit incomes, in general. The bureaucratic households capture part of the rents from imports by colluding with the rent seekers.<sup>11</sup> The formal sector employers (rural large land owners and urban capitalists) are the only savers in the model. They each save a constant fraction of their nominal incomes.

Household demand functions are captured by maximization of Cobb-Douglas utility functions subject to their income constraints. There are 23 such equations (equations 27-49) because the four rural household groups have access to only food

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well.

<sup>11</sup> Salaries are excluded in equation 24. The reasoning is that these are invariant to exogenous shocks.



and importables. This gives us eight equations. Each of the urban groups has access to three commodities--- food, importables and urban services. This gives another 15 equations. The prices for the three commodities can be used to define an overall deflator.

## ***2. Foreign Trade***

Imports in this model are the difference between domestic demand and production of import competing sector. Exports can be supplied at the prevailing price up to any quantity under the small country assumption. Thus exports are equal to total output less the savings in the form of exportables of the rural large landholders. Equations 50 and 51 show the import and export demand functions respectively.

## ***3. Equilibrium conditions for the model as a whole and Causal Depth***

There are two sets of equilibrium conditions in the model. First, the labor market equilibrium conditions are given by equations 52 and 53. There is disguised unemployment, as discussed before, but no formal involuntary unemployment. The second set of equilibrium conditions given by equations 50 and 51 is that the domestic demand for the informal sector goods and services is matched by domestic supply. Prices in the formal sectors are set by the world market prices. The export price is normalized to one. The import price is equal to  $1+t$ , where  $t$  is the tariff rate. Exchange rate is held fixed during the particular modelling period. It is clear that the current account balance must be exogenous. This balance is equal to foreign savings which are assumed to be zero here. Hence current account balance is assumed to be zero.<sup>12</sup> This completes the description of the formal model. It is clear that this model has greater causal depth than the standard neoclassical optimizing model since the households and firms can optimize here but within a deeper socio-economic structure. In addition to the standard *explananda* common to the concerns of the two rival models, these structural features allow the social scientist to explain other phenomena such as poverty, migration and their interactions among other things.

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<sup>12</sup> Implicitly, this amounts to claiming for a reforming economy(see section 5 above) that the stabilization policies indeed succeed in restoring the external balance.

**4. Notation and symbol explanation**

*Production and Labor Market*

$$X_{fc} = A_{fc} \left[ \beta_K^{fc} \overline{K}_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} + \beta_{LS}^{fc} LS_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} \beta_{LU}^{fc} LU_{fc}^{\frac{\mu_{fc}-1}{\mu_{fc}}} \right]^{\frac{\mu_{fc}}{\mu_{fc}-1}} \dots\dots\dots(1) - (2)$$

Eqn 1-2: output of formal sector [superscript/subscript; fc=formal sector commodities]

X=output in formal sector; A=Technology coefficient; K=Fixed capital; β=share of input in output; LS= skilled labor; LU=unskilled labor; μ=elasticity of substitution;

$$X_{ic} = A_{ic} \left[ \beta_K^{ic} \overline{K}_{ic}^{\frac{\mu_{ic}-1}{\mu_{ic}}} + \beta_{LU}^{ic} LU_{ic}^{\frac{\mu_{ic}-1}{\mu_{ic}}} \right]^{\frac{\mu_{ic}}{\mu_{ic}-1}} \dots\dots\dots(3) - (4)$$

Eqn 3-4: output in informal sector [superscript/subscript; ic=informal sector commodities]

X=output in formal sector; A=Technology coefficient; K=Fixed capital; β=share of input in output; LS= skilled labor; LU=unskilled labor; μ=elasticity of substitution;

$$i_{ic} = \frac{P_{ic} X_{ic}}{LU_{ic}} \dots\dots\dots(5) - (6)$$

i<sub>ic</sub>=income in informal sector (wage in informal sector is determined)

$$wu_{ex} = \frac{P_{ex} \beta_{LU}^{ex} X_{ex}}{LU_{ex}} \dots\dots\dots(7)$$

wu<sub>ex</sub>= unskilled labor wage in export sector [subscript ex is used for export sector representation]; β=share of input in output

$$wu_{ex} = i_{food} (1 + \delta) \dots\dots\dots(8)$$

δ= Transaction costs of work in rural formal sector (export) instead of working in food sector (for unskilled labor) ; i<sub>food</sub>=income in food sector

$$i_{srvc} = \frac{P_{im} \beta_{LU}^{im} X_{im}}{LU_{im}} \dots\dots\dots(9)$$

$i_{srvc}$ =income in service sector of unskilled workers

$$w_{im} = i_{srvc} + \gamma \frac{\Pi}{LU_{im}} \dots\dots\dots(10)$$

$w_{im}$ = wages in import competing industry;  $\gamma$ =profit share ratio for unskilled labor in import competing sector;  $\Pi$ =profits;

$$\Pi = P_{im} X_{im} - i_{srvc} LU_{im} - w_{s_{im}} LS_{im} \dots\dots\dots(11)$$

$\Pi$ =profits of capitalists;  $w_{s_{im}}$ =skilled labor wage;

$$wu_{ex} = (1 - \frac{hLU_{im}}{LU_{srvc} + LU_{im}})wu_{srvc} + (\frac{hLU_{im}}{LU_{srvc} + LU_{im}})wu_{im} \dots\dots\dots(12)$$

$h$ = scale parameter

$$ws_{fc} = \frac{P_{fc} \beta_{LS}^{fc} X_{fc}}{LS_{fc}} \dots\dots\dots(13) - (14)$$

$ws_{fc}$ = skilled wage in formal sector

$$ws_{im} = \left[ \frac{1 - \beta_{LU}^{im}}{(1 - \theta)\beta_{LU}^{im} + \theta(1 - \beta_{LU}^{im})} \right]^{\frac{1}{1-\theta}} ws_{ex} \dots\dots\dots(15)$$

$ws_{im}$ = skilled wage in import competing sector;  $\theta$ = relative risk aversion of skilled workers

*Disposable income and savings*

$$I_{rih} = i_{food} LU_{food} \dots\dots\dots(16)$$

$I_{rih}$ = disposable income of rural informal household

$$I_{ruh} = wu_{ex} LU_{ex} \dots\dots\dots(17)$$

$I_{ruh}$ = disposable income of rural unskilled household

$$I_{rsh} = ws_{ex} LS_{ex} \dots\dots\dots(18)$$

$I_{rsh}$ = disposable income of rural skilled household

$$I_{rlh} = P_{ex} X_{ex} - w s_{ex} L S_{ex} - w u_{ex} L U_{ex} - S_{ex} \dots \dots \dots (19)$$

$I_{rlh}$ = disposable income of rural large landholders household

$$I_{uilh} = i_{srvc} L U_{srvc} \dots \dots \dots (20)$$

$I_{uih}$ = disposable income of urban informal household

$$I_{uuh} = w s_{im} L U_{im} \dots \dots \dots (21)$$

$I_{uuh}$ = disposable income of rural unskilled household

$$I_{ush} = w s_{im} L S_{im} \dots \dots \dots (22)$$

$I_{ush}$ = disposable income of urban unskilled household

$$I_{ukh} = P_{im} X_{im} - w s_{im} L S_{im} - w u_{im} L U_{im} - S_{im} \dots \dots \dots (23)$$

$I_{ukh}$ = disposable income of urban capitalist household

$$I_{bch} = tM \dots \dots \dots (24)$$

$I_{bch}$ = disposable income of bureaucrat household

$$S_{fc} = \lambda_{fc} [P_{fc} X_{fc} - w s_{fc} L S_{fc} - w u_{fc} L U_{fc}] \dots \dots \dots (25) - (26)$$

$S$ =savings of formal sector employers (urban capitalists and rural large landholders)

*Demand*

$$C_c^h = \frac{\alpha_c^h I_h}{P_c} \dots \dots \dots (27) - (49)$$

$\alpha$ =budget share of commodities;  $I$ =household income;  $C$ =consumption of commodities by households;  $P$ =price of commodities;

*Foreign Trade*

$$M = \sum_h C_{im}^h + \frac{S_{im}}{P_{im}} - X_{im} \dots \dots \dots (50)$$

M=import; C= demand for imported commodities; S=savings of capitalists; P=price of imported commodities; X=output in import competing sector;

$$EX = X_{ex} - \frac{S}{P_{ex}} \dots\dots\dots(51)$$

EX=export; X=output in export sector; S=savings of rural capitalists (large landholders); P=price of export commodities;

*Equilibrium Conditions*

$$\sum_c LU_c = LU \dots\dots\dots(52)$$

$$\sum_{fc} LS_{fc} = LS \dots\dots\dots(53)$$

$$X_{ic} = \sum_h C_{ic}^h \dots\dots\dots(54) - (55)$$

$$P_{im} \equiv 1 + t \dots\dots\dots(56)$$

P=price of imports; t= tariff rate

$$P_{ex} \equiv 1 \dots\dots\dots(57)$$

P=price of exports

**References:**

Charmes, J. (2002). “Estimation and survey methods for the informal sector”, University of Versailles, Versailles, France.

Davis, Peter(2007). "Discussions among the Poor: exploring poverty dynamics with focus groups in Bangladesh", Chronic Poverty Research Centre, University of Manchester, Paper no.84.

Deaton, A. (2001). Counting the World’s Poor: Problems and Possible Solutions, *The World Bank Research Observer*, 16 (2): 125-147.

Dijk, M.P. van (2006). *Managing Cities in Developing Countries: The Theory and Practice of Urban Management*, Cheltenham, Edward Elgar.

- Fan, S., X. Zhang and N. Rao (2004). Public expenditure, growth and poverty reduction in rural Uganda, DSGD Discussion Paper No. 4, International Food Policy Research Institute, Washington, DC.
- D. Nyange and N. Rao (2005). Public investment and poverty reduction in Tanzania: Evidence from household survey data. DSGD Discussion Paper No. 18, International Food Policy Research Institute, Washington, DC.
- Fei, J. and G. Ranis (1964). *Development of the Labor Surplus Economy*, Homewood, IL.: Irwin.
- Gang, I. and H.A.Khan (1999) "Aid Under Different Policy Regimes: Does the Policy Maker Make a Difference?" September, Empirical Economics
- Gore, C.G. and M. Herrmann (2008a). "Trade and Investment in LDCs" in UNDP (ed.): *"Making Globalization Work for Least Developed Countries"*, New York.
- (2008b): "Technology and Innovation in LDCs" in UNDP (ed.): *"Making Globalization Work for Least Developed Countries"*, New York.
- Herrmann, M. (2007) "Agricultural Support Measures of Advanced Countries and Food Insecurity in Developed Countries: Economic Linkages and Policy Responses", in Guha-Khasnobis, B., S.S. Acharya and B. Davis (eds.): *Food Security: Indicators, Measurement, and the Impact of Trade Openness*, Oxford University Press, Oxford.
- (2006). "Structural change in labor-surplus economies: Evidence from least developed countries" Background Report for *The Least Developed Countries Report 2006*, UNCTAD, Geneva.
- and Haider A. Khan(2008). "Rapid Urbanization, Employment Crisis and Poverty in African LDCs:A New Development Strategy and Aid Policy", Paper submitted for the WIDER conference in Cape Town, South Africa.

- Fontana, Marzia and Peter Wobst(2001)," A Gendered 1993-94 Social Accounting Matrix for Bangladesh" Washington DC: IFPRI
- Islam, Nazrul(2006), "Bangladesh" in Roberts, Brian and Trevor Kanaley eds.(2006). *Urbanization and Sustainability in Asia*, Manila: Asian Development Bank.pp. 43-70.
- Karshenas, M. (2001). Measurement and Nature of Absolute Poverty in Least Developed Countries, Background Report for *The Least Developed Countries Report 2002*, UNCTAD, Geneva.
- Khan, H. A.(2006). "Poverty Analysis in a Dual-Dual Model" in J. Weiss and H.A. Khan (eds.) *Poverty Strategies in Asia*, Edward Elgar.
- (2004a). "Using Macroeconomic CGE Models for Analyzing the Poverty Reduction Impact of Structural Adjustment Policies", Asian Development Bank Institute Discussion Paper No. 12, Tokyo.
- (2004b). "Globalization: Challenges and Opportunities", *Review of International Business Research*, Vol. 15: 276-91.
- (2004c) "Local community investments, Sen's capabilities approach and regional development: a conceptual approach based on a social accounting matrix", *IJEB*, April, 2004
- (2003) "What can the African countries learn from the macroeconomics of foreign aid in Southeast Asia ?", Aryeetey, E., Court, J., Nissanke, M. and Weder, B., 2003, *Asia and Africa in the Global Economy*, Tokyo, UNU Press.
- (2002) "Innovation and Growth in a Schumpeterian Model", Oxford Development Studies, Vol. 30, no. 3, 2002: 289-306.
- (1999). "Sectoral Growth and Poverty: a multiplier decomposition analysis for South Africa, *World Development*, March.
- (1997). *Technology, Energy and Development: The South Korean Transition*, Cheltenham, UK: Edward Elgar

- (1994). "Poverty in Bangladesh: What Have We Learned?" in Salim Rashid ed., *Bangladesh Economy*, The University Press, Dhaka
- (1985). "Technology Choice in the Energy and Textile Sectors in the Republic of Korea," in A.S. Bhalla (ed.) *Technology and Employment in Industry*, 3rd edition
- (1983). "Choice of Technology, Energy and Income Distribution: A Macroeconomic Framework", unpublished dissertation, Cornell University
- (1982a). "Energy, Technology and Income Distribution: A Social Accounting Matrix for Energy Modelling," *Applied Simulation and Modelling*, Calgary, Canada, ACTA
- (1982b). "Choice of Technology in the Energy and Textiles Sectors in Korea", World Employment Programme Working Paper, Geneva: ILO
- and E. Thorbecke(1988) *Macroeconomic Effects and Diffusion of Alternative Technologies within a Social Accounting Matrix Framework: the Case of Indonesia*, Gower Publication, Co., Aldershot, U.K.
- (1989). "Macroeconomic Effects of Technology Choice: Multiplier and Structural Path Analysis," *Journal of Policy Modelling*, Vol. 11, No. 1
- Lewis, W. Arthur (1954). "Economic Development with Unlimited Supplies of Labor", The Manchester School.
- Lipton, M. (1977). *Why Poor People Stay Poor: The Urban Bias in Public Policy*, Cambridge, MA, Harvard University Press.
- Pardey, P.G. and N.M. Beintema (2001). *Slow Magic: Agricultural R&D a Century after Mendel*. Agricultural Science and Technology Indicators Initiative, International Food Policy Research Institute, Washington DC.
- Pyatt, Graham and E. Thorbecke (1976). *Planning Techniques for a Better Future*, Geneva: ILO



- Ravallion, M., S. Chen and P. Sangraula (2007). The Urbanization of Global Poverty, Background Paper to *The World Development Report 2008*, World Bank, Washington, DC.
- Roberts, Brian and Trevor Kanaley eds.(2006). *Urbanization and Sustainability in Asia*, Manila: Asian Development Bank.
- Sen, Amartya (1999). *Development as Freedom*, Knopf, N.Y.
- Stifel, David and E. Thorbecke (2003). "A dual-dual CGE Model for a Stylized Archetype African Economy", *Journal of Policy Modelling*, Vol. 25: 207-235.
- Svejnar J. and E. Thorbecke (1980). Determinants and Effects of Technology Choice. Paper presented at the annual meeting of the American Association for the Advancement of Science, San Francisco.
- (1982). The Determinants and Effects of Technology Choices. In Barbara Lucas (ed.) *Internal and External Constraints on Technology Choice in Developing Countries*, London: Tooley-Bowker
- Thorbecke, E. (1992). Adjustment and equity in Indonesia, OECD Development Centre, Paris.
- (1994). "Adjustment, Growth and Income Distribution in Indonesia." In: D.B. Papadimitriou (ed.) *Aspects of Distribution of Wealth and Income*, The Jerome Levy Economics Institute Series, New York: St. Martin's Press,
- Thorbecke, E., and C. Morrisson (1989). "Institutions, Policies and Agricultural Performance." *World Development*, September.
- Thorbecke, E. and Carlos E. Santiago (1984). Regional and Technological Dualism: A Dual-Dual Development Framework Applied to Puerto Rico, *The Journal of Development Studies*, Vol. 20, No. 4, July
- UNCTAD (2002). *The Least Developed Countries Report 2002: Escaping the Poverty Trap*, Geneva and New York.

----- (2006). *The Least Developed Countries Report 2006: Developing Productive Capacities*, Geneva and New York.

----- (2007). *The Least Developed Countries Report 2007: Knowledge, Technological Learning and Innovation for Development*, Geneva and New York.

----- (2008). *The Trade and Development Report 2008*: Geneva and New York.

UN-HABITAT (2007). *State of the Worlds Cities 2006/7: The Millennium Development Goals and Urban Sustainability*, Nairobi and New York.