

Savings and Investment Estimates in Bangladesh: Some Issues and Perspectives in the Context of an Open Economy

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Abstract

This paper examines the conceptual issues surrounding the estimation of savings and investment in Bangladesh and explains why there exist perceptible differences between the estimates of savings and investment given the relevant theory and the adopted practice. The study also draws some implications of the divergences and provides recommendations for improving the situation. The paper apprehends that the current practice of estimating investment leads to its substantial underestimation especially due to the differences in measurement between gross domestic product and gross domestic expenditure which is termed as statistical discrepancy. In addition, the underestimation seems to be gaining more severity in recent years which calls for improvements and adjustments in the methodology of measuring savings and investment in the country. As Bangladesh economy becomes more open, the share of income produced outside its boundaries would rise. This would increase the difference between gross domestic savings and gross national savings; and gross national savings would emerge as the more relevant concept of savings based on disposable income.

Key words: gross domestic and national savings, gross investment, capital formation, national accounts statistics

JEL Code(s): E21, E22, F36, O47

1. INTRODUCTION

In an economy, savings and investment provide the most important economic link between the past, the present, and the future. These aggregates also play a critical role in the growth process. An adequate rate of national savings is essential to achieving higher investment and consequently higher economic growth. Economic history shows that countries that succeeded in accumulating high levels of domestic investment largely financed by domestic savings, achieved faster rates of economic growth and development. From the analytical perspective, there seems to exist a contrasting view on the role of savings and investment in economic growth. While the Harrod-Domar Model identifies investment as the prime contributory factor, the Solow Model emphasizes on savings. The central idea of Arthur

Lewis's traditional development theory is that increasing savings would accelerate growth. In this context, one study of 32 countries by Kriekhaus (2002) notes that a higher level of national savings leads to higher investment and consequently, results in higher economic growth. Besides macroeconomic stability, factors like inflation, public investment, exchange rate policy, income and wealth play a vital role in the determination of savings and investment.

At the empirical level, the links amongst savings, investment and growth are complex, divergent and country specific. The relationship between the savings rate and growth is reported to be bi-directional and positive for South-East and South Asia (Chaturvedi et. al. 2008). The process of economic growth depends critically on the generation of greater savings and its channelization into productive investment. In a growing economy like Bangladesh, a host of such channels may operate leading to a virtuous cycle of savings, investment and growth. Firstly, savings may affect growth positively in Bangladesh as the country's economy operates below the technological frontier with growth resulting from innovations that would allow the domestic sectors to catch up with the frontier technology. Secondly, lagged savings is significantly associated with productivity growth for countries like Bangladesh operating entirely through the total factor productivity (TFP) growth rather than capital accumulation. Thirdly, savings is significantly associated with higher levels of FDI inflows and equipment imports and the effect that these have on growth is significantly larger for the poor countries than the rich ones (Philippe et al 2006).

In view of the critical importance of these two macroeconomic aggregates, it is important to have reliable and timely estimates of savings and investment of an economy. These aggregates assume a greater significance in Bangladesh in view of the economy's urgent need to move to a higher growth path and the national target of reaching a GDP growth rate of 8 percent in FY 2015 as stipulated in the Sixth Five Year Plan (2011-2015) from an average of around 6.5 percent at present. Such acceleration in growth performance presupposes robust savings and investment rates. The macroeconomic framework underlying the Sixth Plan anticipates that the country's gross domestic investment will

increase to 32.5 percent of GDP in FY 2015 from 24.4 percent in FY 2010 while the national savings rate will rise from 30.0 percent to 32.1 percent of GDP over the same period (PC 2011).

Being the country's national statistical organization with the mandate to compute national accounts and other statistics, the Bangladesh Bureau of Statistics (BBS) provides the estimates of savings and investment of Bangladesh on a yearly basis. It needs to be mentioned here that the statistical system of Bangladesh, especially relating to the country's national accounts, has undergone significant improvements since Independence through various efforts to reduce the complexities created by the lack of data and the unorganized nature of the economy. Despite these improvements, it is widely alleged that approximations are particularly marked especially in the estimation of the country's savings and investment which remains a major cause of concern for the policy makers and the researchers alike.

It needs also to be emphasized that both savings and investment in Bangladesh, in the context of the country's open economy, are significantly influenced by external factors. The household sector, the private sector, and the public sector are the major drivers of savings in the economy. Similarly, the private sector, the household sector, and the public sector are the major drivers of investment activities probably following the same order in terms of their importance. Given the complexities and intricacies involved in each of these sectors, the estimation issues are complex and involve a wide range of structural changes affecting the savings and investment behaviours of the respective agents.

The objective of the present paper is somewhat limited. It intends to clarify the conceptual issues surrounding the estimation of savings and investment in the Bangladesh economy and explain why there exist perceptible differences between the estimates of savings and investment given the relevant theory and the adopted practice. The study also draws some implications of the divergences and provides recommendations for improving the situation.

2. CONCEPTUAL FRAMEWORK: BASIC IDENTITIES OF SAVINGS AND INVESTMENT

Among the various components of national accounts statistics (NAS), the estimates of savings and investment are subject to greater controversy in the developing countries especially due to interpretational difficulties in explaining the observed macroeconomic outcomes. In this respect, Bangladesh is not an exception. For instance, over the past eleven years (FY2001-FY2012), gross national savings increased by 7 percentage points of GDP (from 22.4 percent to 29.4 percent) while investment rose by only 2.3 percentage points (from 23.1 percent to 25.4 percent) although GDP grew by an average of 6.5 percent per year in real terms during the period. In particular, there are large discrepancies in the estimates of national savings and investment, with national savings being far in excess of investment.

One significant feature of the trends in savings and investment rates in Bangladesh is that the country's economic growth has been financed predominantly by domestic savings. The dependence on foreign savings (equivalently, on current account deficit) has been rather modest. The share of domestic savings in gross national savings, however, shows a declining trend which decreased from 45 percent in FY 2001 to 40 percent in FY 2012.

Savings and Investment: Basic Identities in an Open Economy

The basic national accounting identity (ignoring the government for simplicity) from the expenditure side gives

$$\text{GDP} = \text{C} + \text{I} + \text{NX} \quad \dots\dots\dots (1)$$

where GDP = gross domestic product, C = consumption, I = gross investment, and NX = net exports (exports minus imports).¹

¹ See Krugman and Obstfeld 2003, IMF 2007, UN 2009.

In Bangladesh which is an open economy, gross national income (GNI) can be very different from GDP as Bangladesh nationals hold assets abroad and foreigners hold assets in Bangladesh. Hence, net income paid abroad has to be deducted from GDP produced within Bangladesh and net transfers received from abroad have to be added to get the country's GNI. Therefore, assuming NI as net income from abroad and NCT as net current transfers, we can write

$$\text{GNI} = \text{GDP} + \text{NI} + \text{NCT} \dots\dots\dots (2)$$

It is natural to derive savings from income earned. Both NI and NCT add to household disposable income, and are therefore a part of household national savings.

Hence, gross national savings (GNS) is the difference between GNI and C:

$$\text{GNS} = \text{GNI} - \text{C} \dots\dots\dots(3)$$

In the balance of payments (BOP), the current account balance (CAB) is defined as the sum of net exports (exports minus imports of goods and services, NX), net income from abroad (NI), and net current transfers (NCT).

$$\text{CAB} = \text{NX} + \text{NI} + \text{NCT} \dots\dots\dots (4)$$

The BOP convention gives net receipt from foreigners a positive sign (surplus in the current account). If CAB is negative (that is, there is a deficit in the current account), then it records net payments made to foreigners.

Now substituting for GDP in Eqn. (1) from Eqn. (2) and using the definition of GNS from (3), we can write

$$GNS - I = NX + NI + NCT \dots\dots\dots (5)$$

In other words,

$$I = GNS - CAB \dots\dots\dots (6)$$

Eqn. (6) shows that if $CAB = 0$, then GNS and I will be equal. However, if there is a surplus in the current account, then I will be less than GNS. On the other hand, if there is a deficit in the current account then I will be greater than GNS since net positive payments made abroad allow imports that add to domestic resources for investment.

In the national accounts, gross domestic savings (GDS) is defined as

$$GDS = GDP - C$$

which after substituting for GDP from Eqn. (2) and Eqn. (3) gives

$$GDS = GNS - NI - NCT \dots\dots\dots(7)$$

Substituting Eqn. (7) in Eqn. (6) and rearranging terms, we get

$$GDS - I = NX \dots\dots\dots(8)$$

Thus the difference between GDS and I is equal to NX, the excess of exports over imports of goods and services. In other words, one can say that GDS plus net imports (NM, that is, excess of imports over exports of goods and services) finance I:

$$I = GDS + NM \dots\dots\dots(9)$$

Eqn. (9) shows that I is equal to GDS plus NM.

In practice, for calculating the savings and investment accounts in Bangladesh, BBS uses the following methodology. The CAB is taken as

$$\text{CAB} = \text{GNS} - \text{I} - \text{SD} \dots\dots\dots (10)$$

where SD is the statistical discrepancy between GDP and gross domestic expenditure (GDE, which is taken as equal to the sum of C, I, and NX). Similarly, BBS uses the following identities:

$$\text{GNI} = \text{GDP} + \text{NI} + \text{NCT} \dots\dots\dots(11)$$

$$\text{GDS} = \text{GDP} - \text{C} \dots\dots\dots (12)$$

$$\text{GNS} = \text{GDS} + \text{NI} + \text{NCT} \dots\dots\dots (13)$$

$$\text{I} = \text{GDS} + \text{NM} - \text{SD} \dots\dots\dots(14)$$

The above shows that, under the BBS methodology, SD (in addition to I) is subtracted from GNI to get the CAB. Similarly, SD also contaminates I. Since SD has been large and positive in recent years, this procedure reduces the estimate of I. The estimates of savings and investment, as per the BBS methodology, for the FY 2011 are given in Table 1.

It is worthwhile to clarify here the relationship between relevant national accounts and the BOP concepts. Since both savings and investment are flow concepts, foreign savings and inflows that fill the domestic savings-investment gap should be components of the current account of the BOP. The capital account of BOP, which records changes in stocks of assets through purchase or sale of financial assets, are not included in the macroeconomic flows of the economy. The changes in capital accounts contribute to the equilibrium of the BOP. For instance, a surplus capital account of the BOP will contribute to financing the current

account deficit through making foreign exchange available. The equilibrating variable for the BOP is the exchange rate or the Bangladesh Bank intervention.²

Table 1: Estimates of Savings and Investment in Bangladesh, FY 2011

	Amount in current prices (Tk. in billion)
1. Gross domestic product (GDP)	7,967.0
2. Gross domestic expenditure (GDE)	7,740.1
3. Net income from abroad (NI)	725.1
4. Net current transfers (NCT)	31.0
5. Statistical Discrepancy (SD= GDP-GNE))	226.9
6. Gross national income (GNI= GDE+NI+SD)	8,692.1
7. Gross disposable national income (GDNI=GNI+NCT)	8,723.1
8. Consumption (C)	6,430.2
9. Gross domestic savings (GDS=GDP-C)	1,536.8
10. Gross national savings (GNS=GDS+NI+NCT)	2,293.0
11. Net imports (NM)	693.9
12. Investment (I=GDS+NM-SD)	2,003.8
13. Current account balance (CAB=GNS-I-SD)	62.3

Source: BBS 2012

In the NAS, CAB is taken as the measure of net capital inflow (NCI) and from Eqn. (4) we can write,

$$NCI = -(CAB) = -(NX + NI + NCT) = NM - NI - NCT \dots\dots\dots(15)$$

The current account balance (CAB) can be negative or positive as it records the net payments made to the foreigners. If net payments are positive, it implies the nation is

² In addition, because of the principle of double entry book keeping, each transaction must generate a debit and a credit entry in the BOP. A payment to foreigners is a debit entry with a negative sign and a receipt from foreigners is a credit entry with a positive sign. Import of a good which is a current account purchase (debit) will normally generate a credit in the capital account as the foreigner purchases a local asset with the payment received for the imported good. A pure asset transaction will, however, generate both credit and debit entry in the capital account. See Krugman and Obstfeld 2003.

running a deficit on the current account and vice versa. As defined earlier, NM is net imports of goods and services (M-X). In the balance of payments prepared by the Bangladesh Bank, aggregate NI and NCT as parts of net invisibles. Also, Eqn. (8) above gives net exports as the difference between GDS and I. Thus the correct concept of NCI to use with GDS is NM that is the excess of imports over exports of goods and services since GDS plus NM finance I. Rewriting (8), we get

$$I = GDS + NM \dots\dots\dots(16)$$

From Eqn. (16) one may argue that NI and NCT should not influence the estimation of I when it is derived from GDS which should also be true from NCI. It is seen earlier that NI and NCT add to GNS (see Eqn. 13), but these are netted out when GNS and CAD are used to estimate I (Eqn. 6). While estimating I, BBS rightly adds NM to GDS but SD contaminates the estimate and reduces the estimate of I as SD has been relatively large and positive in recent years.

Savings and Investment Estimates: Some Empirical Issues

Amongst the different components of national accounts statistics (NAS), the estimation of savings and investment has probably drawn most criticisms in Bangladesh on the grounds of both reliability and interpretational difficulties. A number of questions have been raised in regard to both the estimates themselves and their interpretation, particularly since there has been evidently no correspondence between growth and savings or investment estimates during different periods. Indeed there has been large discrepancy in the estimates of saving and investment, with saving being far in excess of investment. This has raised questions about the quality of the estimates, and the methodology adopted for collecting the data. There also seems to exist apparent inconsistencies between the investment rates and the incremental capital output ratio (ICOR) underlying the growth dynamics of the economy.

It is usually argued that the investment rate in an economy like Bangladesh should be higher than the savings rate essentially to ensure that savings of a poor country is not exported. One of the aspects of the estimates of savings and investment in Bangladesh is the discrepancy in the estimates of savings and investment in most of the years.³ It is believed that investment estimates in particular are subject to errors in several respects, and the methodologies need to be improved. For example, savings in the form of physical assets of the household sector being a part of the estimate of capital formation of the economy would reflect such errors, which creep in the estimates of total investment in the economy. As physical assets of the household sector are common and critical to both savings and investment, one may like to have independent estimates of such components.

It is well known that a number of ratios and norms are used in estimating savings and investment for the economy. Often these parameters are based on data of remote past and their use may not be appropriate in the light of the structural changes that have taken place in the economy. If these ratios are updated regularly, the estimates of the aggregates would considerably improve in qualitative terms and the size of errors and omissions would probably come down significantly.

As we have seen earlier, the current procedure of estimating savings and investment is conceptually sound. However, despite the conceptual strength of the practice, the present method is subject to weaknesses mainly emanating from data quality and related problems. For correct interpretation and a clear understanding of the available estimates, it is essential to keep in view various data sources used in the estimation and identify potential areas where errors in estimation could arise. From a macro-economic perspective, this would help to assess the possibility of under or over estimation of savings and investment and identify problems with regard to measurement, data base, method of estimation and reliability. Similarly, the available investment estimates point out several inadequacies that could be summarized as follows:

³ The relevant numbers are discussed in more details in the following section.

- The turnaround in savings in recent years has not reflected corresponding improvement in investment levels. In this context, the public sector investment estimates might be underestimated particularly with reference to defense capital expenditures, local bodies and autonomous government institutions.
- One of the aspects of savings and investment is the discrepancy in the estimates between the two aggregates. While adjustments are made in terms of statistical discrepancy, investment estimates are subject to errors in several respects, and methodologies need improvement. As we have mentioned earlier, savings in the form of physical assets of the household sector being a part of the estimate of capital formation of the economy, would reflect the errors which creep in the estimates of total capital formation in the economy.
- There are significant deficiencies in the availability of current and reliable data on output of capital goods in respect of unregistered manufacturing sector, which is essential in the estimation of capital formation for the entire economy through the commodity-flow approach.
- There exists a serious lack of annual enterprise surveys and reliable data from benchmark enterprise surveys in respect of expenditures made by various industries on acquiring capital goods, as also on inventories, which are essential for sector-wise estimates of capital formation.
- While estimating the fixed capital formation by the 'commodity flow method', a number of rates and ratios are used in the absence of direct data. Some of these rates and ratios are based on old surveys or studies, while some of them are updated using the data available from the input output tables or other sources especially at the time of revising the base year of national accounts series. The whole process however remains ad hoc which requires the adoption of an institutional approach to information updating on a regular basis.
- The estimates in respect of local authorities are not based on actual annual expenditure data. The estimates relating to quasi-government bodies are usually prepared using the workforce estimates and the estimated value added per worker

obtained from the annual reports of the research and scientific institutions. There is a need to improve the quality of estimates of the public sector with regard to local authorities and quasi-government bodies, as also the public private partnerships (PPPs) and other joint ventures/special programs.

- Overall, there seems to exist under-coverage of capital formation in the public and private corporate sectors.
- Besides, out-dated ratios and norms used in estimating capital formation, the estimates of capital formation by type of assets suffer from limitations. The estimates of gross fixed capital formation by industry of use are prepared mainly following expenditure approach. The approach suffers from shortcomings especially for the private sector as the estimates are mainly based on benchmark estimates or analysis of balance sheets of selected companies in the corporate sector. The estimates need to be derived from more satisfactory information sources and current data in order to improve their reliability.

3. INVESTMENT ESTIMATES: 2008 SNA AND THE BBS METHODOLOGY

The 2008 System of National Accounts (2008 SNA) has been designed by the United Nations and other international organizations as the international statistical standard for national accounts for adoption by all countries. The complete adoption of 2008 SNA is, however, a timely process for a country like Bangladesh and needs to be attempted in phases.

Gross Capital Formation: 2008 SNA

According to 2008 SNA, gross capital formation is measured by the total value of the gross fixed capital formation, changes in inventories, and acquisitions less disposals of valuables. The gross fixed capital formation is measured by “the total value of a producer’s acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets”. The asset boundary for fixed assets consists of goods and services that are used in production for

more than one year.⁴ The gross fixed capital formation by type of assets, as per SNA 2008, includes:

1. Dwellings

2. Other buildings and structures

- Buildings other than dwellings
- Other structures
- Land improvements

3. Machinery and equipment

- Transport equipment
- ICT equipment
- Other machinery and equipment

4. Weapons systems

5. Cultivated biological resources

- Animal resources yielding repeat products
- Tree crop, and plant resources yielding repeat products

6. Costs of ownership transfer on non-produced assets

7. Intellectual property products

- Research and development
- Mineral exploration and evaluation
- Computer software and databases
- Entertainment, literary or artistic originals
- Other intellectual property products

In addition, changes in inventories (measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period) and acquisitions less disposals of valuables are included in gross capital formation.

⁴ Two exclusions from the asset boundary may be noted. First, consumer durables are not treated as fixed assets. Second, small tools such as saws, spades, knives, axes, hammers, and screwdrivers are treated as materials or supplies used for intermediate consumption rather than components of fixed assets.

Estimating Gross Capital Formation: BBS Methodology

In Bangladesh, BBS defines gross capital formation (or gross investment, I) as the sum of gross fixed capital formation and change in stocks. Gross fixed capital formation comprises (i) gross value of investment in land and land improvement, (ii) buildings and construction, (iii) plant and machinery, and (iv) transport equipment. The change in stocks is the value of physical change in the stock of raw materials and other goods held by manufacturers and traders. However, in practice no change in stocks is taken into account due to non-availability of data; such that gross capital formation is the same as the gross fixed capital formation. Furthermore, the coverage of items under gross capital formation is limited as compared with the standard set in 2008 SNA (Table 2). In addition, the estimates are made for 'gross' rather than 'net' capital formation and hence does not reflect the loss of productive capacity due to the depreciation of existing capital stock.

Under the BBS methodology, investment estimates are made for public and private sectors separately. Public sector investment includes (i) construction, (ii) machinery and equipment, (iii) land improvement, plantation and orchard development. These are calculated using data from revenue expenditure, annual development program (ADP), public enterprises, and local governments covering union parishads, upazila parishads, zila parishads, and municipalities. On the other hand, private investment is estimated through flow of investment commodities, e. g. construction materials (cement), machinery and equipment, and transport equipment. Investment commodities like capital goods and material for capital goods, both imported and domestically produced, and adjusted for taxes, trade and transport margins. Capital assets are valued at producers' prices which represent the actual cost by investors in acquiring these assets. Consumer durables are not included in capital assets.

In addition, certain non-monetized investment carried out with little purchased inputs and based on imputed values of home-produced materials is included in investment activities under the category of private land development and rural dwellings.

Table 2: Estimation of Gross Capital Formation: A Comparison of Recommended 2008 SNA Transaction Items and BBS Coverage

2008 SNA Transaction items	Included in BBS method: Yes (Y)/No (N)
A. Gross fixed capital formation	
1. Dwellings	Y
2. Other buildings and structures	Y
Buildings other than dwellings	Y
Other structures	Y
Land improvements	Y
3. Machinery and equipment	Y
Transport equipment	Y
ICT equipment	Y
Other machinery and equipment	Y
4. Weapons systems	N
5. Cultivated biological resources	Y (partly)
Animal resources yielding repeat products	Y (partly)
Tree, crop and plant resources yielding repeat products	Y (partly)
6. Costs of ownership transfer on non-produced assets	N
7. Intellectual property products	N
Research and development	N
Mineral exploration and evaluation	N
Computer software and databases	N
Entertainment, literary or artistic originals	N
Other intellectual property products	N
B. Changes in inventories	N
C. Acquisition less disposals of valuables	N
D. Capital transfers, receivable/payable	N

Source: UN 2009 and BBS

Of the three major components of gross capital formation as per SNA 2008, the existing BBS methodology includes only one component--the total value of gross fixed capital formation—while several other components (e.g. changes in inventories, acquisition less disposal of valuables, and capital transfers) are not included in the estimation of gross

investment. Moreover, within the gross fixed capital formation category, only three components (dwellings, other buildings and structures, and machinery and equipment) are included while the remaining four components (weapons systems, cultivated biological resources, costs of ownership transfer on non-produced assets, and intellectual property products) are excluded or only partly included.

Highlights of Current Methodology

A summary of the BBS methodology for calculating gross fixed capital formation is given below in terms of the two major components, e.g. construction (which includes dwellings and other buildings and structures) and machinery and equipment (including transport equipment).

Construction

Total construction investment is composed of both public and private construction components. Public construction investment consists of government (both residential and non-residential) buildings as well as construction other than buildings and land improvement. The residential and non-residential investment is estimated by summing up the value of pucca and semi-pucca construction. The value of pucca construction is estimated from the total value of cement, iron, steel and other inputs used in these construction activities whereas the value of semi-pucca construction is estimated from the total value of cement and M.S. rod used in semi-pucca construction.

The private construction investment consists of total expenditure in kutcha house construction, private residential and non-residential buildings, private agricultural construction, and installation cost of irrigation equipment. The broad methodology is as follows:

- Investment in new kutchha structures = (number of new structures x cost per structure)
- Investment in private residential and non residential buildings = (total number of residential and non residential buildings constructed - public residential and non residential buildings constructed) x cost per structure
- Investment in irrigated and cultivated land = (area of irrigated and cultivated land x cost per acre of drain/canal/development of irrigated and other cultivated land)
- Investment in tube well/pump installation (separately for deep tube well, shallow tube well and low lift pump) = (number of tube wells/pumps sunk x per unit cost)

Coverage of Gross Investment

As indicated earlier, the BBS methodology of estimating gross investment mostly refers to the aggregate of gross additions to fixed assets (gross fixed capital formation). For the purpose, two types of fixed assets are differentiated: (i) construction; and (ii) machinery and equipment.

In principle, the construction activity covers all new constructions and major alterations and repairs of buildings, highways, streets, bridges, culverts, railroad beds, railroads, subways, airports, parking areas, dams, drainages, wells and other irrigation sources, water and power projects, communication systems such as telephone and telegraph lines, land reclamations, bunding and other land improvements, planting and cultivating new orchards (tea, coffee, rubber, mango, and other plantations), afforestation projects, installation of solar and wind energy systems and the like. However, not all activities are adequately covered in practice due to non-availability of data and other constraints. The total expenditure on construction is taken as the aggregate of the values of both material

inputs and factor payments. However, only new construction is considered in most cases in order to obtain the estimates of gross fixed capital formation.

Similarly, machinery and equipment comprises all types of machinery such as agricultural machinery, power generating machinery, manufacturing, transport equipment, furniture and furnishings. The estimates include all relevant items of new capital goods, which are produced domestically (exclusive of exports) and new and second-hand imported capital goods. The estimation follows the domestic concept, such that only additions made to stocks of fixed assets and inventories within Bangladesh are taken into account.

The estimates of gross capital formation are prepared separately for the public and private sectors, the total of which provides the gross investment of the country as a whole.

Empirical Method and Procedures

The method of estimation of gross capital formation covering construction, machinery and equipment, changes in inventories, and acquisitions less disposals of valuables is described below.

Construction

Dwellings and Structures

The construction of dwellings and structures broadly comprises two components: kutcha construction and pucca construction. In each category, new construction constitutes gross fixed capital formation in dwellings and structures.

The investment in kutcha (houses which do not use bricks and cement) construction (including shops, educational institutions, mosques, and other religious and other dwellings) in both rural and urban areas is estimated in an indirect manner by expenditure approach using data from sample surveys and benchmark estimates. This is based on

estimated increase in the stock of kutcha dwellings and the cost of construction of an 'average' dwelling structure.

The value of pucca (built entirely or partly with bricks and cement) construction is determined by commodity flow method. The method envisages estimation of production of commodities (cement) used in the construction of pucca dwellings and structures (for both residential and non-residential purposes in both rural and urban areas) after adjustment for inputs in other activities, changes in stocks, and net imports so as to obtain net availability for construction purposes. Investment in pucca construction is estimated using availability of cement for such construction purposes and the average cost of construction per ton of cement used.

The government investment in residential and non-residential buildings is estimated by BBS under the government gross fixed capital formation estimates.

Public Investment in Other Construction (except dwellings and structures)

The investment covers all non-building construction activities undertaken by the public sector such as irrigation and flood control; construction of road, bridges, culverts, gas and power distribution lines, railroads, land reclamation, and similar activities. The total of such investments is taken from the BBS estimate of government gross fixed capital formation derived through analysis of the Annual Development Program (ADP) and through data collected by detailed questionnaire surveys from relevant government agencies. The data also cover land improvement, plantation and orchard development, breeding stock, drought animals, dairy cattle, and the like in the public sector.

Private Investment in Agricultural Construction

Private investment in agricultural construction includes both monetized and non-monetized investments in land improvement and construction of farm-sheds. The investment figures are based on investment per hectare of cultivated land obtained from farm surveys.

Installation of Irrigation Equipment

The investment for installation of irrigation equipment includes the cost of pump house construction and sinking of tube wells (including the cost of pipes and other accessories but excluding pump machines and engines which are treated as machinery). The investment is calculated separately for low lift pumps (LLPs), deep tube wells (DTWs), shallow tube wells (STWs), and hand tube wells (HTWs).

Machinery and Equipment

The estimates of capital goods, such as machinery, implements, and transport equipment are arrived at by the commodity flow approach and are valued at purchasers' prices. The availability is estimated from domestic production and net imports. For the purpose, relevant items of capital goods from domestic production and imports are identified and appropriately valued.

For estimating the value of additions to livestock taken to form part of fixed assets, all livestock (excepting bulls and bullocks over three years not in use for breeding or work, cows over three years not in use for work or breeding purposes, young male and female stock, goats under one year, female goats of one year and above and not in milk, and poultry) are taken into account. As the annual data on livestock population are not available, these are extrapolated using geometric rates of growth obtained from the data of recent livestock censuses.

Excluded Components of Gross Capital Formation under BBS Methodology

Under the present BBS methodology, several items (proposed under the 2008 SNA) are either not included or poorly covered. These include: weapons systems, costs of ownership transfer on non-produced assets, and intellectual property products under the gross fixed capital formation category as well as the categories of changes in inventories, acquisitions

less disposal of valuables, acquisitions less disposal of non-produced assets, and capital transfers, receivable/payable.

One of the important categories which is not included in the estimates of gross capital formation is changes in inventories. This exclusion seriously underestimates the value of gross investment in Bangladesh.⁵ The estimates should be compiled for each industry category through expenditure method. Wherever necessary, measures are needed to generate the estimates on the basis of studies on sample industry units.

In accordance with the 2008 SNA, the data on expenditure made on net acquisition of valuables (precious items like gold, gems, ornaments and precious stones, etc.) are included under gross capital formation as a separate category of produced fixed assets. This category of assets does not contribute to the production process and are acquired as a store of value, and these are not consumed in the production process as intermediate consumption.

The coverage of valuables is restricted to precious articles like gold, silver, gold and silver ornaments, diamonds, and other gems and stones keeping in view the availability of data. The total production of valuables and net imports are to be taken into account for compiling the estimates of valuables. Since these valuables also have industrial use, norms of 95 percent for gold and 10 percent for silver are used to arrive at the estimates on acquisition of these items as a store of value in India.⁶

The composition of gross investment in Bangladesh is given in Table 3. It can be seen that the dominant mode of investment in the country is construction activities having a share of

⁵ In India, change in stocks accounts for between 7-8 percent of the gross capital formation in a year. See CSO 2010.

⁶ In India, the share of valuables in gross capital formation is about 4 percent. See CSO 2010.

more than three-quarters of the total. On the other hand, the share of plant and machinery is about 16 percent and that of transport equipment is 7 percent.

In the present macroeconomic context, it is believed that investment estimates are subject to errors in several respects indicating the urgent need to improve the methodologies. As indicated earlier, a number of ratios and norms are used in preparing the estimates of investment. These ratios are based on data of somewhat remote past and their use is unwarranted in the light of the structural changes taking place in the economy. If these ratios are updated, the estimation of investment would considerably improve in qualitative terms and the relative size of statistical discrepancy (that is, the gap between the estimates of GDP and GNE) would probably be reduced.⁷

Table 3: Composition of Gross Investment in Bangladesh

Year	Total I		Public I		Private I		Composition of total I (percent)			
	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Construction	Plant and machinery	Transport equipment	Others
1999-00	545.9	23.0	175.7	7.4	370.1	15.6	74.5	14.2	11.0	0.3
2000-01	585.4	23.1	183.8	7.2	401.5	15.8	76.5	15.3	7.9	0.3
2001-02	632.3	23.2	174.0	6.4	458.4	16.8	77.7	14.7	7.4	0.2
2002-03	703.5	23.4	186.3	6.2	517.2	17.2	76.1	15.4	8.3	0.2
2003-04	799.9	24.0	206.2	6.2	593.6	17.8	74.1	18.1	7.6	0.2
2004-05	909.2	24.5	230.1	6.2	679.1	18.3	74.8	17.6	7.4	0.2
2005-06	1,039.1	24.7	249.3	6.0	775.4	18.7	75.6	17.0	7.3	0.2
2006-07	1,155.9	24.5	257.3	5.5	898.6	19.0	76.2	16.8	6.8	0.2
2007-08	1,321.3	24.2	270.4	5.0	1,050.9	19.3	78.0	15.6	6.3	0.2
2008-09	1,498.4	24.4	288.9	4.7	1,209.4	19.7	78.7	15.0	6.1	0.2
2009-10	1,695.1	24.4	348.2	5.0	1,346.9	19.4	77.3	15.2	7.3	0.2
2010-11	2,003.8	25.2	449.3	5.6	1,554.4	19.5	75.3	16.9	7.6	0.2
2011-12	2,327.8	25.4	576.7	6.3	1,751.0	19.1	76.6	16.0	7.2	0.3

Source: BBS

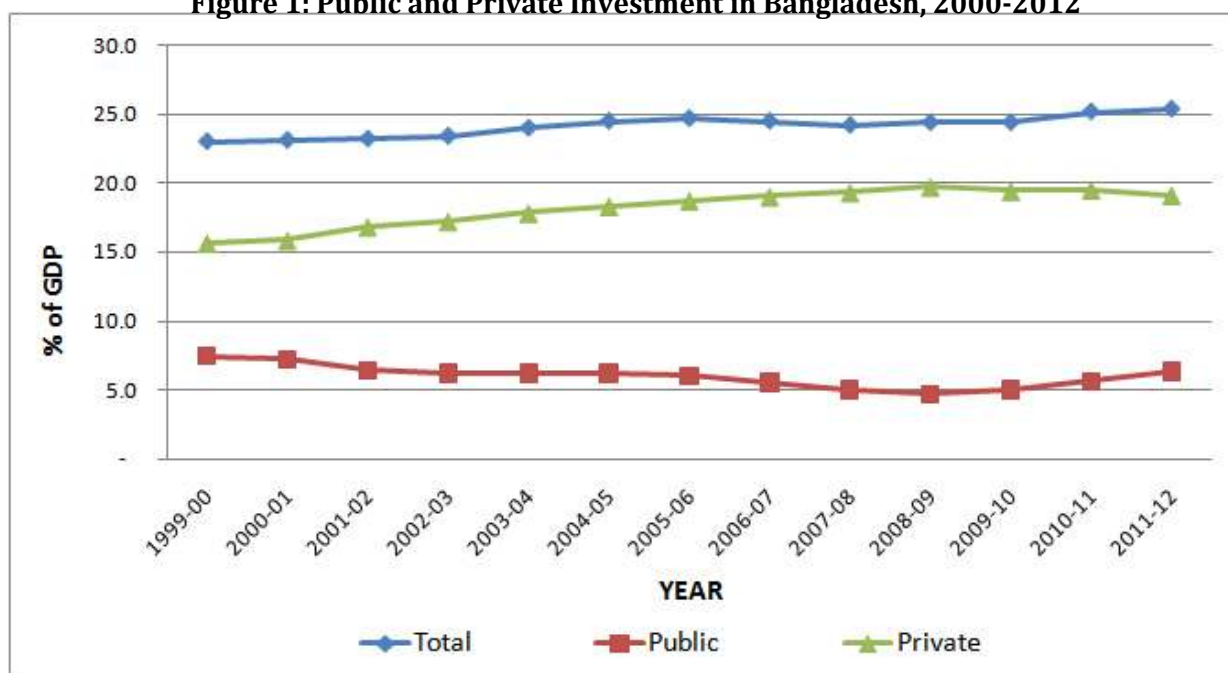
4. ESTIMATES OF SAVINGS AND INVESTMENT: AN APPRAISAL

In Bangladesh, the production approach to measuring GDP compiles the total value added from production of all goods and services sectors of the economy. The estimates have a number of weaknesses since, among others, the coverage of economic activities is not

⁷ The difference between GDP and GNE reached Tk. 246.4 billion (4.5 percent of GDP) in 2007-08, Tk. 174.7 billion (2.8 percent of GDP) in 2008-09, and Tk. 159.4 billion (2.3 percent of GDP) in 2009-10.

complete and extrapolations are used which are based on dated surveys/studies and weak assumptions. The weaknesses of expenditure-based GDP estimates are, however, more severe and subject to limitations of methodologies used in estimating the components. In most cases, the basis of extrapolation of the aggregates (like consumption and investment) is fragile.⁸ As a result, there arises significant discrepancy between the production based GDP and the expenditure based GDP which is conventionally termed as the statistical discrepancy (SD).

Figure 1: Public and Private Investment in Bangladesh, 2000-2012



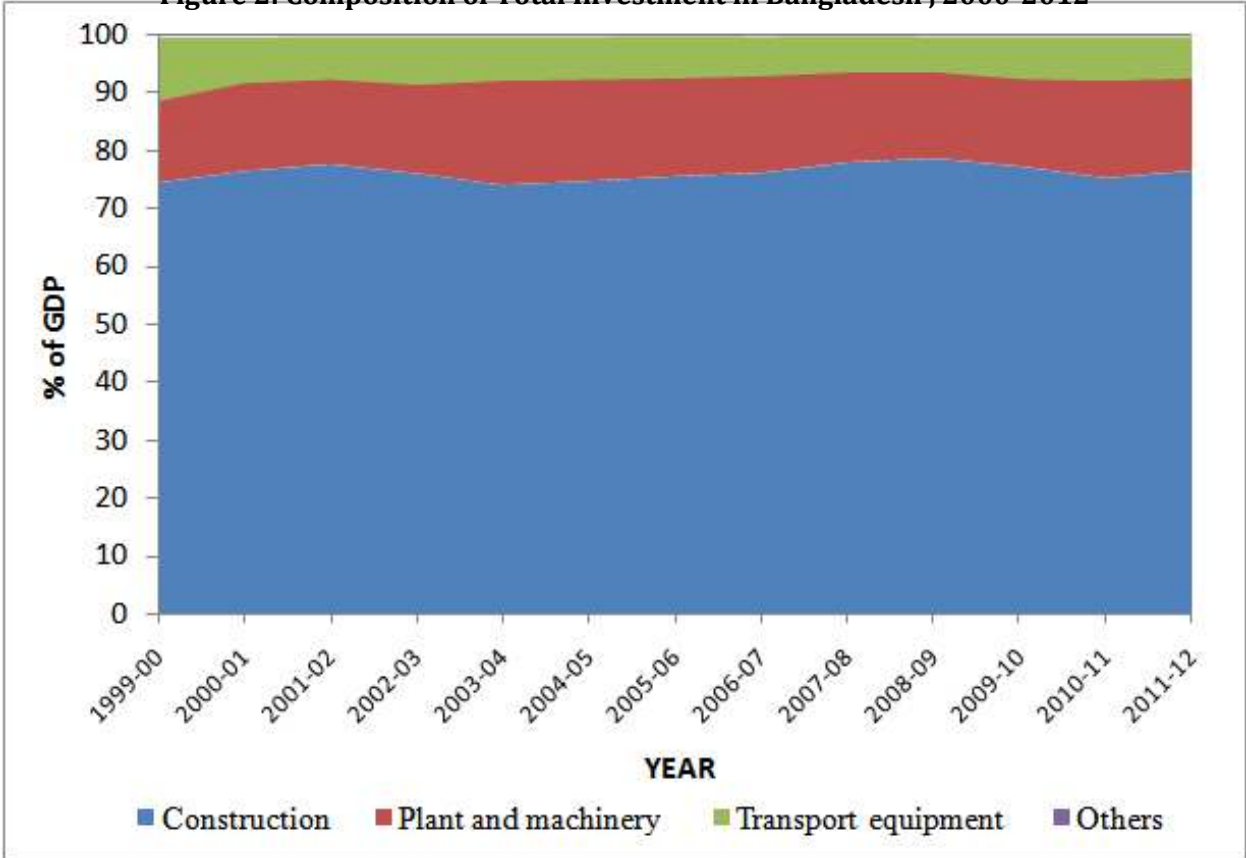
Source: BBS

As noted earlier, the BBS methodology takes gross capital formation (or gross investment, I) as equal to gross fixed capital formation. Gross fixed capital formation comprises gross value of investment in land and land improvement, buildings and construction, plant and machinery, and transport equipment. The estimate of investment is derived entirely on the basis of commodity flow approach, that is, by estimating the availability of capital goods from domestic production and import.

⁸ For example, no account is taken of overall stock changes owing to data limitations. Similarly, consumption of nonprofit institutions serving households (NPISH) and acquisition less disposals of valuables are assumed to have been included in private consumption.

The BBS calculates national and domestic savings by the indirect method. Gross domestic savings is taken as the difference between GDP at market prices and total consumption expenditure. Gross national savings, on the other hand, is the sum of gross domestic savings, net income from abroad, and net current transfers.

Figure 2: Composition of Total Investment in Bangladesh , 2000-2012



Source: BBS

The gap between savings and investment and estimates of some related components, as measured by BBS, are given in Table 4. The national savings-investment gap is relatively low reflecting modest reliance on foreign savings although the gap is rising in recent years. Moreover, the gap is positive. it is imperative however that the investment rate in the economy be higher than the savings rate essentially to ensure that saving of a less developed country like Bangladesh is not exported. The gap between domestic savings and investment has, however, always been negative.

It is widely believed that current investment estimates are subject to errors in several respects indicating the urgent need to improve the methodologies. As indicated earlier, a number of ratios and norms are used in preparing the estimates of investment which are dated and need urgent revision. If these ratios are updated, the estimation of investment would considerably improve in quality and the relative size of statistical discrepancy would probably come down.

Overall, present procedure of estimation appears to be conceptually sound. But the present method is subject to weaknesses emanating mainly from data quality and related problems. For resolving the problems and getting a clear understanding of the available estimates of savings and investment, it is essential to keep in view the credibility of different data sources used and the features of the current methodology; analyze savings from a macroeconomic perspective to bring out analytical underpinnings of the estimates; ensure proper interpretation of savings estimates; and indicate the possibility of under- or over-estimation of savings in the context of measurement, database, estimation method, and reliability. A similar approach may be adopted for investment estimates as well.

The dominant mode of investment in the country is construction activities (see Table 3). The share of construction in total gross investment shows a rising trend reaching close to four-fifths of the total. On the other hand, public sector investment as a share of GDP witnessed a secular decline over the years reaching 6 percent in FY 2012 from more than 7 percent in early 2000s.

A look at the trends in savings and investment shows that the rate of gross domestic savings (GDS) as a share of GDP has risen from about 15 percent in FY 1996 to more than 19 percent in FY2012. One may however note that the share has remained virtually stagnant over the last ten years. On the other hand, gross national savings (GNS) as a ratio of GDP has increased by more than 10 percentage points to 29.4 percent in FY 2012.

Similarly, the rate of investment has increased from 20 percent in FY 1996 to 25.4 percent of GDP in FY 2012.

Table 4: Estimates of Savings and Investment

	BBS estimates as % of GDP			CAB as % of GDP	(GDS-I) as a % of GDP	(GNS-I) as % of GDP	NM as % of GDP	(NI + NCT) as % of GDP
	GDS	GNS	I					
1995-96	14.9	20.2	20.0	2.33	-5.1	0.2	7.6	5.3
1996-97	15.9	21.6	20.7	0.35	-4.8	0.9	6.0	5.7
1997-98	17.4	21.8	21.6	0.59	-4.2	0.2	5.0	4.4
1998-99	17.7	22.3	22.2	0.86	-4.5	0.1	5.5	4.6
1999-00	17.9	23.1	23.0	-0.03	-5.1	0.1	5.3	5.2
2000-01	18.0	22.4	23.1	-1.71	-5.1	-0.7	6.1	4.4
2001-02	18.2	23.4	23.2	0.51	-5.0	0.2	4.8	5.3
2002-03	18.6	24.9	23.4	0.41	-4.8	1.5	5.8	6.2
2003-04	19.5	25.4	24.0	-0.56	-4.5	1.4	5.4	5.9
2004-05	20.0	25.8	24.5	0.64	-4.5	1.3	6.5	5.8
2005-06	20.3	27.7	24.7	1.15	-4.4	3.0	6.3	7.4
2006-07	20.4	28.7	24.5	1.39	-4.1	4.2	8.1	8.3
2007-08	20.3	30.2	24.2	1.49	-3.9	6.0	6.7	9.9
2008-09	20.0	32.4	24.2	2.70	-4.2	8.2	5.3	12.4
2009-10	20.1	30.0	24.4	3.31	-4.3	5.6	5.1	9.9
2010-11	19.3	28.8	25.2	1.03	-5.9	3.6	6.5	9.5
2011-12	19.4	29.4	25.4	1.71	-6.0	4.0	4.8	10.1

Source: BBS

Some of the salient features of savings and investment trends in Bangladesh can be summarized as follows:

- While the difference between gross national savings and gross investment is about 4 percent of GDP, the investment rate is around 6 percentage points higher than the gross domestic savings rate. As a result, the savings-investment gap has remained relatively in a narrow range reflecting a modest reliance on foreign savings.
- The gross domestic savings rate has stagnated at around 20 percent since the mid-2000s and recently has shown declining trends; while the gross national savings rate consistently rose to more than 32 percent in 2008-09 but since then it has declined to around 29 percent in 2011-12.

- The country's investment rate increased at a rather slow pace to around 25 percent in recent years from 20 percent in the mid-1990s indicating a 5 percentage point rise in more than 15 years.

For arriving at more robust estimates of gross investment, a fresh look needs to be given to various 'rates and ratios' that are used for the commodity flow approach. In this context, several inadequacies in investment estimates may be highlighted:

- Probable underestimation of public sector investment particularly in relation to defense capital expenditures, local bodies, and autonomous government institutions.
- Non availability of current and reliable data on output of capital goods especially from unregistered manufacturing establishments.
- Lack of annual enterprise surveys and reliable data from benchmark surveys on expenditures made by various industries on acquiring capital goods, and also on inventories.
- The estimation of fixed capital formation by commodity flow method is extremely sensitive to a number of rates and ratios in the absence of direct data. At present, most of these rates and ratios are based on old surveys or studies although some of these are periodically updated using occasionally available data e.g. from input output tables.

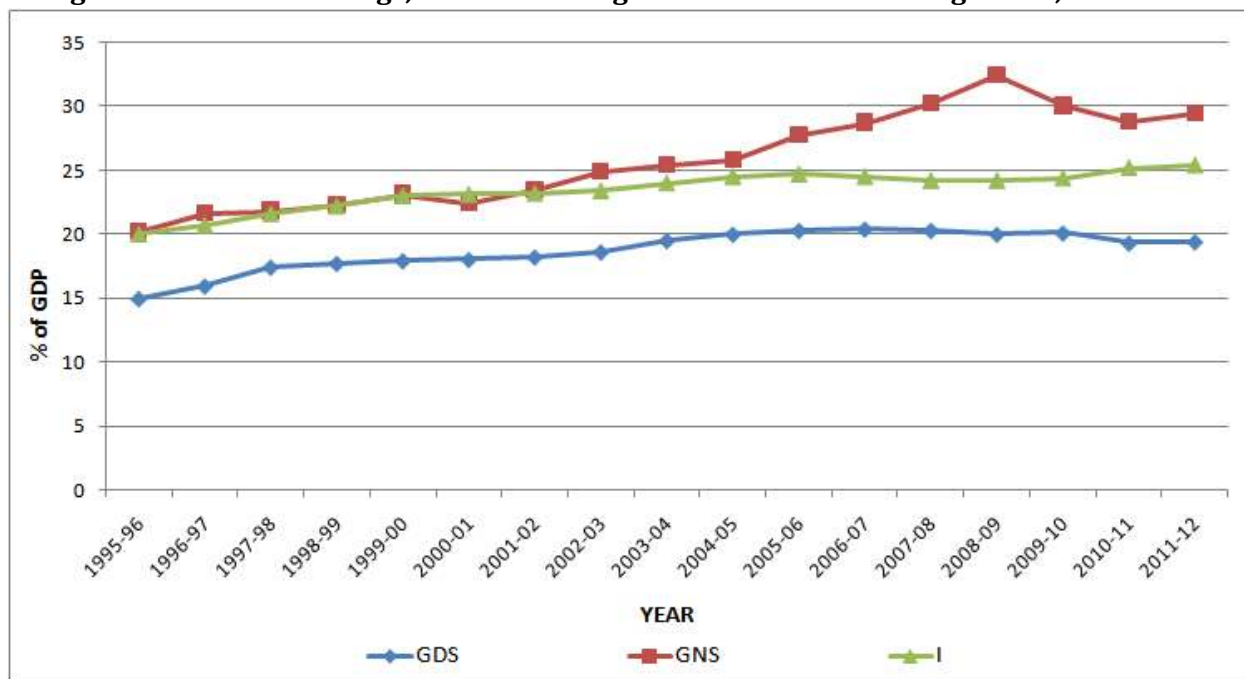
Despite the fact that the NAS provides a consistent set of national accounts data, often interpretational problems arise while analyzing the data. In particular, the following may be highlighted with respect to the estimation of savings and investment:

- There are institutional limitations in the estimation procedures, especially due to the predominance of the unorganized sector. Even for the organized sector, there are data gaps and questions regarding quality and reliability of available data.
- A look at the time series of 'statistical discrepancy' (SD) relative to GDP shows that the magnitude of this item is not narrowing over time (Table 5). The SD was less

than 1 percent of GDP in the late 1990s but has crossed 4 percent in 2011-12. This shows serious gaps in the reliability and consistency of the available data.⁹

- The present rate of output growth does not reveal any visible downward movement in the incremental capital output ratio (ICOR) of the economy. One would, however, have expected observable reduction in aggregate ICOR as the relative contribution of the services sector to GDP has consistently increased and production in the services sector is less capital intensive in nature relative to other sectors (e.g. agriculture and industry) in Bangladesh. It may be added here that the ICOR at the aggregate level has remained unchanged at around 4 over the last decade in Bangladesh. This also contrasts sharply with the declining share of inputs in the gross value added of the economy as revealed in the country's input-output tables over the last two decades indicating rising efficiency.

Figure 3: Domestic Savings, National Savings and Investment in Bangladesh, 1996-2012



Source: BBS

⁹ It may be noted that errors and omissions in calculating gross domestic capital formation usually remains less than 1 percent of GDP in India. During 2000 to 2007, the average error and omission was 0.2 percent of GDP.

Under the presently practiced BBS methodology, GDS and CAB are used as controlling variables to adjust investment estimates since financial estimates are regarded as more robust. The CAB estimates used in the national accounts system (NAS) are taken from the BOP. In view of the adjustment introduced for SD, it is likely that the current BBS practice underestimates savings and investment. Table 4 gives the BBS calculated savings and investment values as percentage of GDP at market prices. It shows that GNS has always exceeded GDS. However, if gross investment (I) is calculated using the standard methodology (Eq. 9 above) which equals GDS plus net imports of goods and services, the estimates would have been higher than the gross investment defined by BBS (Table 6). As can be seen from Table 6, the percentage of underestimation of the investment ratio between the BBS method and the standard method is rising over the years.

The gap between savings and investment measures the contribution of foreign savings to gross investment. The BBS measure underestimates the contribution of foreign inflows to I, when considered in conjunction with GDS.¹⁰ The estimates could be much larger as can be seen in Table 6.

The above issues are important for Bangladesh since although the error in estimation of I was smaller in earlier years, the size of the error has been rising since the early 2000s. Figure 4 shows a sharp rise in SD in recent years. Starting at 2.5 percent in FY 1996, SD exceeded 4 percent of GDP in FY 2012. As indicated earlier, SD refers to the difference between GDP and GNE (which is the sum of consumption, investment, and net exports).

If the components of GNE are considered, then one may assert that the above difference (SD) is the result of underestimation of either C or I or NX or all three of them. Although there is no firm evidence regarding the estimation bias in these components, the estimation of NX is likely to be more robust compared with the other two components. If the

¹⁰ It may be seen that, from eqns. (13) and (14), the difference between I and GNS ratios equals the difference between NM and (NI + NCT +SD). However, as eqn. (6) shows, the difference between GNS and I is equal to CAB. On the other hand, eqn. (9) gives the difference between I and GDS as equal to NM.

estimation methods of BBS for C and I are compared, it may be concluded that the basis of estimating I is much weaker.

Table 5: Statistical Discrepancy and Its Components

	Difference between GDP and GNE (SD) Million Tk.	SD as % of GDP	As % of GDP				Net exports (NX)
			Consumption (C)	Investment (I)			
				Total	Public	Private	
1995-96	41,857	2.52	85.1	20.0	6.4	13.6	-7.6
1996-97	21,786	1.21	84.1	20.7	7.0	13.7	-6.0
1997-98	14,566	0.73	82.6	21.6	6.4	15.3	-5.0
1998-99	21,508	0.98	82.3	22.2	6.7	15.5	-5.5
1999-00	2,482	0.11	82.1	23.0	7.4	15.6	-5.3
2000-01	26,055	1.03	82.0	23.1	7.3	15.8	-6.1
2001-02	-5,993	-0.22	81.8	23.2	6.4	16.8	-4.8
2002-03	31,569	1.05	81.4	23.4	6.2	17.2	-5.8
2003-04	28,645	0.86	80.5	24.0	6.2	17.8	-5.4
2004-05	72,351	1.95	80.0	24.5	6.2	18.3	-6.5
2005-06	77,664	1.87	79.8	24.7	6.0	18.7	-6.3
2006-07	132,919	2.81	79.6	24.5	5.5	19.0	-6.9
2007-08	246,327	4.51	79.7	24.2	5.0	19.2	-8.4
2008-09	174,219	2.84	80.0	24.2	4.6	19.6	-9.5
2009-10	159,379	2.30	79.9	24.4	5.0	19.4	-6.1
2010-11	226,939	2.85	80.7	25.2	5.6	19.5	-8.7
2011-12	388,408	4.25	80.6	25.4	6.3	19.1	-10.3

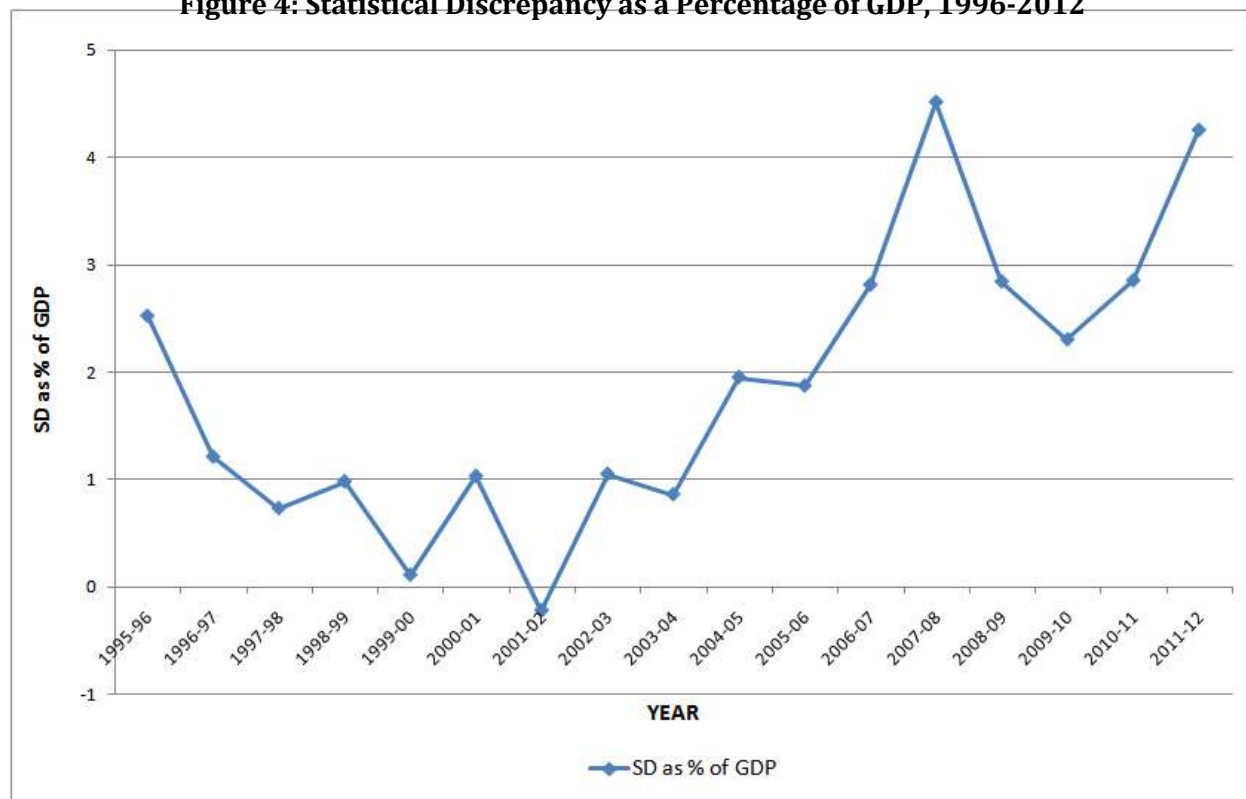
Source: BBS

If we look at aggregate consumption (C), it is seen that C as a share of GDP has been declining as expected in a growing economy (over the last 15 years, aggregate consumption as a share of GDP has declined by around 5 percentage points). On the other hand, the investment-GDP ratio, as estimated by BBS, has remained nearly unchanged over the last ten years when the Bangladesh economy experienced highest GDP growth rates in the country's history. The above indicates that the large part of the statistical discrepancy (SD) is more likely to have been caused by underestimation of investment under the current method used by BBS.

It is therefore extremely important for Bangladesh to assess the logical consistency of the interpretation of savings and investment over time and develop alternative databases for

the constituent elements of savings and investment so that the NAS estimates can be cross validated with alternative databases, methodologies, and surveys (see Rath 2007).

Figure 4: Statistical Discrepancy as a Percentage of GDP, 1996-2012



Source: BBS

4. CONCLUDING REMARKS: IMPLICATIONS AND POLICY RESPONSES

No doubt it is possible to remove the immediate biases in the estimates of savings and investment by appropriate adjustments as indicated above, but the longer term solution requires improved estimation of savings and investment in the country and of the different types of inflows recorded in the NAS and BOP.

One implication of the possible underestimation is that actual investment in the country might have exceeded recorded investment by as much as 3 to 4 percentage points of GDP in recent years. This implies that the actual productive capacity created in the economy has

been substantially higher than the recorded capacity. This may partly explain as to why the country's growth rate in recent times has hit higher levels without much inflationary pressure in the backdrop of slow growth in recorded investments.

Table 6: Alternative Estimates of Savings and Investment

	Estimates using standard equation as % of GDP			% difference of GNS(S) over GNS(BBS)	% difference of I(S) over I(BBS)
	GDS	GNS(S)	I(S)		
1995-96	14.9	24.8	22.5	22.8	12.5
1996-97	15.9	22.3	21.9	3.2	5.8
1997-98	17.4	23.0	22.4	5.5	3.7
1998-99	17.7	24.1	23.2	8.1	4.5
1999-00	17.9	23.2	23.2	0.4	0.9
2000-01	18.0	22.4	24.1	0.0	4.3
2001-02	18.2	23.5	23.0	0.4	-0.9
2002-03	18.6	24.8	24.4	-0.4	4.3
2003-04	19.5	24.3	24.9	-0.4	3.6
2004-05	20.0	27.1	26.5	5.0	8.0
2005-06	20.3	27.8	26.6	0.4	7.6
2006-07	20.4	28.7	27.3	0.0	11.5
2007-08	20.3	30.2	28.7	0.0	18.6
2008-09	20.1	32.3	27.2	0.0	11.7
2009-10	20.1	30.0	26.7	0.0	9.4
2010-11	19.3	28.8	28.0	-0.02	11.3
2011-12	19.4	29.4	29.7	0.0	16.7

Note: I(S) is calculated using Eqn. (9) while GNS (S) is calculated using Eqn. (6) given in the text. GNS (BBS) and I(BBS) are estimates of gross national savings and gross investment respectively by BBS. The alternative estimates assume that GDP and GNE are the same so that SD is zero.

Source: BBS

As mentioned earlier, the current estimates of gross investment, based on commodity flow/expenditure approach, are based on numerous rates and ratios and using various *ad hoc* sources. An important prerequisite for generating more reliable investment estimates under the present approach would be to institutionalize regular updating of the rates and ratios used in the estimation of various types of capital goods, especially in the construction sector, through undertaking regular, focused and small studies. For estimation of capital formation by expenditure approach, BBS should conduct regular annual enterprise surveys.

The country's Sixth Five Year Plan (2011-2015) posits a growth scenario under which GDP growth rate would reach 8 percent in FY 2015 which requires an investment-GDP ratio of 32.5 percent in the terminal year of the Plan. If the underestimation of current investment estimates is taken into account, it may appear that the country's current high growth rate has robust foundations in respect of investment along with a steadily rising GDS and GNS.

Under the current methodology, savings form an important component of the controlling total for estimating investment, since estimates of savings are considered as more robust than those of physical capital. But the estimation of savings itself is not satisfactory. Savings is usually measured as a difference in flow items (income less consumption). However, not much effort is given to stocks in the balance sheet as a change in the earned net worth. This is the difference between changes in assets and liabilities, adjusted for transfers, capital gains and losses, and revaluation of assets. The flow-of-funds method is not applied to estimate financial savings and the entire method suffers from a number of approximations due to incomplete data.

It is certainly time to attempt the estimation of savings using a more robust income-expenditure method and align conceptual definitions more closely to global concepts. The household income and expenditure surveys (HIES) should be more effectively used to cross check and plug existing data gaps. More reliable estimates are possible now in view of the widespread computerization of government and citizen records for tax and other purposes.

There are various other reasons as to why both savings and investment may be underestimated. Since the measurement of the total savings is done residually, underestimation is likely. Bringing the estimation procedure more in line with conceptual definitions of savings will give a better picture of financial deepening and intermediation.

In view of the critical role that savings and investment play in the growth process, it is important to have reliable and timely estimates of these aggregates. More importantly, the

issues relating to the estimation of savings and investment have assumed immense significance in recent times when the Bangladesh economy is poised to embark on a high growth path. The Sixth Plan has set high growth targets, which pre-supposes robust savings and investment rates.

The methodology adopted for estimating savings and investment in Bangladesh has evolved over the years following international guidelines and in consistent with improvements in the national statistical system. Despite these improvements, there is a need to critically review the available estimates of savings and investment with respect to data base, estimating methodology, reliability and interpretation of the estimates. The present estimates mostly employ indirect methods, and many of the important components are derived in a residual manner. Although the present practice may be considered as conceptually sound, it has significant weaknesses emanating mainly from data quality, data gaps and estimation problems.

There is a widespread belief that, although rapid financial deepening is taking place in the Bangladesh economy, these are not fully captured in the estimates of household financial saving. The financial innovations, especially targeted to reaching the rural households and small and medium enterprises have significantly relaxed the borrowing constraints for households and informal enterprises by giving better access to credit, enhancing the size of credit, and reducing the cost of credit. It is important therefore to ensure that the benefits of the ongoing financial sector liberalization are adequately captured by the data across various financial instruments.

With rapid financial deepening, the issues of estimation and correct interpretation of aggregates like savings and investment become more critical. As savings and investment estimates can be made using direct or indirect or a hybrid of both methods, and savings estimates can be survey-based or flow-of-funds based, the appropriate design of a robust methodology is important. In this context, it needs to be recognized that the problems related to estimating savings or investment are not specific to Bangladesh alone. Such

issues do emerge in all countries including the developed countries as well (e.g. the issue of inclusion of capital gains in the savings estimates). What is important, therefore, is to have estimates of savings and investment which are reasonably robust and which are cross-validated with estimates from different data bases and methodologies such that these can be used as credible policy inputs.

As Bangladesh economy becomes more open, the share of income produced outside its boundaries (e.g. NI and NCT) would rise. This would increase the difference between GDS and GNS; and GNS would emerge as the more relevant concept of savings based on disposable income. This note apprehends that the current practice of estimating investment leads to its substantial underestimation especially due to the differences in measurement between GDP and GDE which is termed as SD. In addition, the underestimation seems to be gaining more severity in recent years which calls for improvements and adjustments in the methodology of measuring savings and investment in the country. In addition, to ensure robustness of the savings and investment estimates, cross-validation of the estimates across alternative data bases and methodologies is necessary for which more attention is needed to generate new data bases and methodologies.

In order to move forward, a High Level Committee may be formed to review the existing methodology and initiate an exercise to improve the methodology of savings and investment estimation by BBS. These issues are no doubt critical and existing methodologies used to estimate savings and investment aggregates need appropriate measures for improvement on an urgent basis.

References

BBS 2012, *National Accounts Statistics (Provisional Estimates of GDP 2011-12 and Final Estimates of GDP 2010-11)*, National Accounting Wing, Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.

Chaturvedi, V., R.H. Dholakia and B. Kumar 2008, *Inter-Relationship between Economic Growth, Savings and Inflation in Asia*, Available at SSRN: <http://dx.doi.org/10.2139/ssrn.1212096>

CSO 2010, *New Series of National Accounts Statistics (Base Year 2004-05)*, Central Statistical Organization, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

IMF 2007, *The System of Macroeconomic Accounts Statistics: An Overview*, IMF Pamphlet Series, International Monetary Fund, Washington D.C.

Kriekhaus, J. 2002, "Reconceptualizing the Developmental State: Public Savings and Economic Growth", *World Development*, 30(10):1697-1712.

Krugman, P.R. and M. Obstfeld 2003, *International Economics: Theory and Policy*, 6th Edition, India: Pearson Education.

PC 2011, *6th Five Year Plan FY2011-FY2015: Accelerating Growth and Reducing Poverty*, General Economics Division, Planning Commission, Government of the People's Republic of Bangladesh, Dhaka.

Philippe, A., D. Comin and P. Howitt 2006, *When Does Domestic Savings Matter for Economic Growth?*, www.econ.brown.edu.

Rath, D.P. 2007, 'Direct Estimation of Savings – An Overview of Issues', *Journal of Income and Wealth*, 2(29): July-December.

UN 2009, *System of National Accounts 2008*, European Commission, International Monetary Fund, Organization for Economic Cooperation and Development, United Nations, World Bank, New York.