1. INTRODUCTION:

According to Bangladesh Labour Force Survey 2015-2016 (BBS, 2017), a population of 27.4 million was within the age group 15-24 years (total population was 161.3 million) who are eligible for tertiary level education in Bangladesh. By 2018, a total of 3,537,146 students was enrolled in tertiary colleges for degree pass, honour and master’s degree program and a total of 1,028,314 students was enrolled for honours and master’s program in public and private universities. That is, a total of 4,565,460 students was enrolled for higher education in National University affiliated colleges and universities in 2018. The share of students enrolled in National University affiliated general colleges was 77.47% of the total students enrolled for tertiary education in colleges and universities. In other words, in 2018 access to higher education (enrollment in higher education) was 16.66% (or approximately 17%) of the total population within the age group 15-24. In this regard, the Government of Bangladesh has set up a enrollment target of 20% (of the eligible population) by the year 2020.
2. AN OVERVIEW OF INVESTMENT IN HIGHER EDUCATION:

There are two major sources for education expenditure - public (also known as government) and private. And government expenditure for education has two dimensions - operating expenditure and development expenditure, on the other hand, private education expenditure has single dimension known as Out-of-Pocket Expenditure (OOPE). The OOPE covers various hidden education costs at a household level associated with sending a child to schooling.

According to Bangladesh Economic Review (2018), in the fiscal year 2018-2019, gross domestic product (GDP) at constant price was Tk. 1100.1 billion and GDP per capita was Tk. 153,197. In the given fiscal year, national budget for Secondary and Higher Education Division (SHED) was 248.96 (Tk. 188.82 billion for operating expenditure). In the given year, allocation for the public university was 39.22 billion, allocation for the government college was 14.35 billion, and allocation for private colleges was 29.61 billion. The share of SHED was 1.71% of GDP (only operation budget) and 2.25% of GDP (while both operation and development budget are concerned). In other words, in 2018/2019, total allocation for public universities was 0.35% of the GDP (at constant price), allocation for government college was 0.13% of the GDP (at constant price), and 0.27% of the GDP (at constant price). Total allocation for education under SHED was 0.75% of the GDP (at constant price).

GOVERNMENT INVESTMENT IN NU-AFFILIATED COLLEGES:

By management types, there are two types of college under NU: government colleges and non-government (or private) colleges. Although government and non-government colleges are engaged in tertiary level education being affiliated with National University, these colleges do not receive any fund for investment from the National University. Government disburses investment for education in NU-affiliated government colleges fully; but disburse partially for education in NU-affiliated non-government colleges. In both cases, investments are channeled through the Directorate of Secondary and Higher Education (DSHE) Bangladesh to the respective colleges directly without any involvement of the NU.

Based on data supplied by the Finance and Procurement Wing of the DSHE in 2019, Government budgetary investment allocation to the government and non-government colleges is represent in Table 1. The Table shows, although government operating expenditure for colleges was increasing in absolute value, the growth pattern was very irregular. In 2013/2014 there was a surge in investment which dipped in the next year; but again increased tremendously in 2015/2016. After 2016/17 and onward, the growth rate remained decreasing. Overall the growth pattern was very irregular despite the fact growth rate of demand for tertiary higher education in government colleges increased to 52% in 2018 from 1.67% in 20171. On the other hand, growth rate of demand for tertiary higher education in non-government colleges decreased to 14.45% in 2018 from 3.46% increase in 20172.

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1 Growth rate is calculated based on the previous year.
Table 1: Allocation for tertiary education in colleges (in Taka)

<table>
<thead>
<tr>
<th></th>
<th>Total education budget</th>
<th>Allocation for govt. colleges</th>
<th>Allocation for non-govt. colleges</th>
<th>Total expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010/2011</td>
<td>17555388</td>
<td>4821924</td>
<td>12333871</td>
<td>17155795</td>
</tr>
<tr>
<td>2011/2012</td>
<td>17919685</td>
<td>4891507</td>
<td>12552721</td>
<td>17444228</td>
</tr>
<tr>
<td>2012/2013</td>
<td>19160947</td>
<td>5312689</td>
<td>13673324</td>
<td>18986013</td>
</tr>
<tr>
<td>2013/2014</td>
<td>23228762</td>
<td>6245321</td>
<td>16819891</td>
<td>23065212</td>
</tr>
<tr>
<td>2014/2015</td>
<td>23312697</td>
<td>6698412</td>
<td>16498404</td>
<td>23196816</td>
</tr>
<tr>
<td>2015/2016</td>
<td>36837791</td>
<td>9489426</td>
<td>26202641</td>
<td>35692067</td>
</tr>
<tr>
<td>2016/2017</td>
<td>40373094</td>
<td>12572154</td>
<td>27368523</td>
<td>39940677</td>
</tr>
<tr>
<td>2017/2018</td>
<td>41387396</td>
<td>13260823</td>
<td>27376142</td>
<td>40636965</td>
</tr>
<tr>
<td>2018/2019</td>
<td>44097765</td>
<td>14218791</td>
<td>29451328</td>
<td>43670119</td>
</tr>
</tbody>
</table>

Source: Finance and Procurement Wing, DSI IE, 2019

Figure 1: Growth rate of government education expenditure in colleges

Source: Table 1 data

4. HOW MUCH IS SPENT PER STUDENT

Methodologically, per student recurring expenditure is a measure globally acceptable to get an insight about education financing at the micro level. The analysis further sheds light on equity in the distribution of public funds among beneficiaries. The Fig 1 shows that, in 2018-2019, government invested on average Tk. 10,214.68 for a student attending a government college, whereas, government invested on average Tk. 15,367.00 for a student attending a non-government (MPO enlisted) college and Tk. 123,368.00 for a student attending a public university. Based on findings in Fig 2, we come to know that, public expenditure for a student in public university was 80%; for a student in government college was 6.66%; and for a student in Non-government College was 10.03% of the per capita GDP. On average public expenditure for a student in higher education was 32.23% of the per capita GDP in 2018-2019.

The calculated figures presented above presents a dismal picture of financing higher education in tertiary colleges affiliated with the National University. The reason for very low per student expenditure in public colleges is due to high number of students enrolled in
government colleges. For instance, from a college level survey, it is found that, average size of a government college was 6436 and average size of a government college was 3572. Moreover, students studying at the public universities are in advantageous position whereas students studying at government colleges are in disadvantageous position. The distribution of government fund among the government college does not follow any formula.

Figure 2: Analysis of government budgetary expenditure for tertiary education

![Figure 2: Analysis of government budgetary expenditure for tertiary education](image)

Source: Author’s calculation based on Ministry of Finance budgetary framework 2018-2019
5. EFFECTS OF INVESTMENT

In order to audit both human and non-human resources devoted to higher education in government colleges directly and indirectly we carried out questionnaire survey in May-June, 2019 among the government and non-government colleges eligible for Institutional Development Grants (IDG) under College Education Development (CEDP) in 2019.

In 2018, per student government weighted mean expenditure was Tk. 12385 and median expenditure was Tk. 9234. But the allocation of fund among the colleges is very contrasting. Among the colleges the majority colleges (around 65%) receive fund which is less than average. Around 14% colleges receive fund which is above the average.

There was a contrast in educational efficiency within NU-affiliated government colleges between small colleges located in periphery and large colleges located in district town ones.

Majority of the college (62%) has a size of less than 5000 students at the undergraduate and graduate level. In contrast, some colleges (6%) has very big size of over 16000 students. Consequently, in some colleges, resources are used very intensively that resulted in efficiency in resource utilization whereas in others it is not.

6. WAY FORWARD

6.1. PREDICTION FOR GOVERNMENT INVESTMENT

Based on data supplied by the Finance and Procurement Wind of DSHE in 2019, a prediction of government operational expenditure for higher education in government colleges, public universities and SHED is made for the next 5-years till 2023-2025 (See Fig 4).
The predicted trend of government operational expenditure for government colleges is almost flat although overall trend in SHED budget shows an increasing pattern. The prediction shows that despite rising demand for higher education, government’s allocation for higher education in colleges is unlikely to keep rising.

**Figure 4: Prediction of government investment**

![Graph showing predicted investment](image)

### 6.2. How much is needed as a percentage of GDP

The question is how much it is required to achieve target of 20% by 2020. The methodology of this sub-section is taken from Lewin (2008),

\[ Y = \text{GER} \times x \times c \]

Where:
- \( Y \) = Public expenditure on higher education as a percentage of GDP
- \( \text{GER} \) = Gross enrollment rate at higher education
- \( x \) = The proportion of the population of higher education age 15-24 years
- \( c \) = Public expenditure on higher education per student as a percent of GDP per capita

Based on data given in Ministry of Finance budgetary framework 2018-2019 the, \( \text{GER} = 20 \)

\[ x = 0.17 \text{ (27.4 million ÷ 161.3 million)} \times c = 0.32 \]

So, \( Y = 20 \times 0.17 \times 0.32 = 1.09 \text{ per cent of GDP} \)
6.3. How much government should invest

Sustainable Development Goal 4 and National Education Policy 2010, state the need for quality education. The general wisdom is in order to main good quality education, student-teacher ratio is required to be low. We have predicted per student expenditure based on two scenarios: students-teacher ratio 16:1 and 30:1. In this sub-section, per student recurring expenditure is predicted based on reduced student to teacher ratio, holding the remaining variables unchanged.

Methodologically, for predication, econometric tool - regression analysis- is very useful. The tool is used here to get an insight about likely per student amount of recurring budget expenditure for higher education (i.e. degree level, honours and master’s level degree programs) in government colleges. In the econometric model, the dependent variable has been per-student recurring government expenditure and explanatory variables consisted of size of a college (measured by total number of students), teacher-student ratio, per-student computer (measured in number), per-student classroom space (measured in square feet). The result of Ordinary Least Square Estimates are presented in Table 2.

Table 2: Predicted per student recurring expenditure in Tk.

<table>
<thead>
<tr>
<th>Per student expenditure</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t-statistics</th>
<th>Predicted expenditure at mean</th>
<th>Predicted expenditure. (S/T ratio 16:1)</th>
<th>Predicted expenditure. (S/T ratio 30:1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>S-T ratio</td>
<td>-74.83</td>
<td>39.23</td>
<td>(1.90)</td>
<td>-6188.72</td>
<td>-1128.4278</td>
<td>-2115.8022</td>
</tr>
<tr>
<td>Per student classroom (sq.ft)</td>
<td>-4.89</td>
<td>39.21</td>
<td>(0.12)</td>
<td>-90.16</td>
<td>-90.159062</td>
<td>-90.1590616</td>
</tr>
<tr>
<td>Per student computer (number)</td>
<td>-13.33</td>
<td>6.04</td>
<td>(2.20)***</td>
<td>-3871.1685</td>
<td>-3871.1685</td>
<td>-3871.168475</td>
</tr>
<tr>
<td>Per student book (number)</td>
<td>-223.22</td>
<td>162.17</td>
<td>(1.38)</td>
<td>1608.03</td>
<td>1608.03367</td>
<td>1608.03367</td>
</tr>
<tr>
<td>Total students (numbers)</td>
<td>-1.610</td>
<td>0.54</td>
<td>(2.99)***</td>
<td>-14641.26</td>
<td>-14641.259</td>
<td>-14641.25899</td>
</tr>
<tr>
<td>Sq. root of Total students</td>
<td>0.00005</td>
<td>1.62</td>
<td>(3.11)***</td>
<td>6261.84</td>
<td>6261.84</td>
<td>6261.84</td>
</tr>
<tr>
<td>Constant</td>
<td>32362.59</td>
<td>3590.95</td>
<td>(9.01)***</td>
<td>33898.59</td>
<td>33898.59</td>
<td>33898.59</td>
</tr>
<tr>
<td>R-square</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F(6, 38)</td>
<td>6.20</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Prob&gt;F</td>
<td>0.00</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

N.B. *** means statistically significant at 5% level
Scenario 1: Student-teacher ratio 16:1
Holding the remaining explanatory variables at mean, we manipulate student teacher ratio 16:1 in place of existing mean students-teacher ratio of 81.90:1 and found per student recurring expenditure Tk. 21,300 which was 15.49% of per capita gross domestic product (at constant price) of 2017-2018. And Tk. 4,932 more than the existing amount.

Scenario 2: Student-teacher ratio 30:1
Holding the remaining explanatory variables at mean, we manipulate student teacher ratio 30:1 in place of existing mean students-teacher ratio of 81.90:1 and found per student recurring expenditure Tk. 20,225 which was 14.71% per capita gross domestic product (at constant price) of 2017-2018. And Tk. 3,857 more than the existing amount.

REFERENCES

