Education & Human Resource Development

Where is the Caribbean in Relation to Other Countries?

Presenter: Daren A. Conrad, Ph.D.
October 11th, 2013
Total Public Spending on Education

Averages for 1999 – 2004:

◆ Caribbean Countries – 6.5% of GDP

◆ Three East Asian Countries – 4.1% of GDP

◆ Developed Countries – 4.6% of GDP

Used as an indicator of the importance attached to education (Kendall, 2007)
Total Public Spending on Education (2)

Averages for 1999 – 2004:

- Caribbean Countries – 16.3% of Gov’t Expenditure
- Three East Asian Countries – 18.5% of Gov’t Expenditure
- Developed Countries – 12.9% of Gov’t Expenditure

Used as an indicator of the priority that governments attach to education (Kendall, 2007)
<table>
<thead>
<tr>
<th></th>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean</td>
<td>17</td>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>Asian Tigers</td>
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<td>19</td>
<td>36</td>
</tr>
<tr>
<td>Developed Countries</td>
<td>19</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: World Bank, WDI
## School Enrollment (% of Gross)

<table>
<thead>
<tr>
<th>Region</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean</td>
<td>89</td>
<td>10</td>
</tr>
<tr>
<td>Asian Tigers</td>
<td>88</td>
<td>55</td>
</tr>
<tr>
<td>Developed Countries</td>
<td>116</td>
<td>62</td>
</tr>
</tbody>
</table>

Source: World Bank, WDI
# Labour Force Composition

<table>
<thead>
<tr>
<th></th>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean</td>
<td>56</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Asian Tigers</td>
<td>20</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td>Developed Countries</td>
<td>20</td>
<td>48</td>
<td>27</td>
</tr>
</tbody>
</table>

Source: World Bank, WDI
What emerges?

Two challenges:

◆ The need for higher enrollment and throughput at secondary and tertiary levels.

◆ Delivery of increased output without increased spending.

(Kendall, 2007)
What questions do we first need to ask?

◆ Do we really understand our human resource needs?

◆ Are we allowing the labour market demand to inform our allocation decisions at different levels where education is concerned?

◆ Are we producing the desired human resource output?
Here’s something to consider...

Our approach to education and human resource development needs to be level-specific based on our economies
Dig deeper!

- What are the impacts of government spending at differential levels of education on human capital accumulation?

- What are the level specific effects of human capital accumulation on output in the manufacturing and service sectors?

- What are the level-specific effects of human capital on aggregate output?

If we can answer these, then we can begin to make better decisions.
A Model Worth Exploring

The Production Function

\[ Y_t = K_t^\alpha (\gamma H)^{1-\alpha} \]

Human Capital at the Basic Level

\[ h_{t,b,i} = B^1(h_{t-1}^i)^{\delta} \left( \frac{G_t}{L} \right)^{\phi} \]

Human Capital at the Advanced Level

\[ h_{t,a,i} = A n_t^i (h_{t,b,i} - \hat{h})^{\delta} \left( \frac{g_t}{N_t} \right)^{\phi} \]

Where

- \( h_{t,b,i} \) = human capital accumulation at the basic level
- \( h_{t,a,i} \) = human capital accumulation at the advanced level
- \( h_{t-1}^i \) = initial qualification
- \( h_{t,b,i} \) = human capital output from secondary education
- \( g_t \) = government spending per capita on education at the secondary level
- \( N_t \) = per pupil expenditure at the advanced level
- \( \phi \) = depreciation of human capital stock
Estimation Equations

\[
\ln bh_t = \gamma_0 + \gamma_1 \ln H_{t-1} + \gamma_2 \ln G_t + \gamma_3 \ln \phi + \nu_t
\]

\[
\ln ah_t = \theta_0 + \theta_1 \ln bh_{t-1} + \theta_2 \ln N_t + \theta_3 \ln \phi + \omega_t
\]

- \( bh_t \): human capital accumulation at the basic level
- \( H_{t-1} \): initial qualification
- \( G_t \): government spending on education at the secondary level
- \( ah_t \): human capital accumulation at the advanced level
- \( N_t \): per pupil expenditure at the advanced level
- \( \phi \): depreciation of human capital

with error terms \( \nu_t \) and \( \omega_t \).
Estimation Equations

\[
\ln Y_m = \alpha_0 + \alpha_1 \ln bh_t + \alpha_2 \ln ah_t + \alpha_3 \ln K + \text{controls} + \varepsilon_t
\]

\[
\ln Y_s = \beta_0 + \beta_1 \ln bh_t + \beta_2 \ln ah_t + \beta_3 \ln K + \text{controls} + \mu_t
\]

\[
\ln Y = \delta_0 + \delta_1 \ln bh_t + \delta_2 \ln ah_t + \delta_3 \ln K + \text{controls} + \omega_t
\]

\( Y_m \) = output in the manufacturing sector
\( Y_s \) = output in the service sector
\( Y \) = aggregate output
\( bh_t \) = human capital output at the basic level
\( ah_t \) = human capital output at the advanced level
\( K \) = physical capital

with error terms \( \varepsilon_t, \mu_t \) and \( \omega_t \).
Findings

- Human capital at the basic level had a negative impact on output in all sectors of the economy and on aggregate output in Trinidad and Barbados.

- Human capital at the basic level had a positive impact on output in all sectors of the economy and on aggregate output in Guyana and Jamaica.

- Human capital at the advanced level had a positive impact on output in all sectors of the economy and on aggregate output in Trinidad and Barbados.

- Human capital at the advanced level had a negative impact on output in all sectors of the economy and on aggregate output in Guyana and Jamaica (Group B).
Concluding Remarks

- Not all countries require the same mix of human capital i.e. Some countries need more secondary level educated individuals than tertiary level.

- Improper allocation of resources in the production of human capital can have a negative effect on output in all sectors and consequently on aggregate output.

- HRD Targets should keep pace with economic demand rather than take place in a vacuum.