EDUCATION SERVICE DELIVERY ECONOMICS OF THE SRI LANKAN STATE UNIVERSITY SYSTEM: COST COMPETITIVENESS, CONCERNS AND STRATEGIC OPPORTUNITIES

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ABSTRACT

Given the national objective of developing Sri Lanka into a knowledge hub in the South-Asian region, the Sri Lankan State University system would be expected to play a pivotal role in developing the country's human resource. Even though the national universities, through free education, have realized many achievements towards this direction, bureaucratic governance and budgetary constraints have limited the further development of the State-run national university system to cater to growing demands. This has forced candidate students to opt for alternatives offered by local and foreign private universities. There is also the perception that the present State university structure is cost-ineffective and thus is a burden on national coffers. This question of cost-competitiveness of the Sri Lankan higher education sector was subjected to examination in the present study. The results indicated that the State university system is significantly cost effective in producing graduates of internationally acceptable quality. An in-depth analysis on the discipline of Medical Sciences confirmed that the Sri Lankan State university system is capable of, cost-wise, competing with international universities in producing medical graduates. Letting the State university system suffocate within bureaucratic governance and budgetary constraints is thereby proven unwarranted as the system appears capable; not only of cost-effectively meeting the local demand for higher education but also of being internationally marketable, potentially becoming a true knowledge-hub, paving the way to earn foreign exchange to the national economy.

Keywords: State Universities, Cost Effectiveness, Foreign Exchange Effect, International Competitiveness, Free Education Endowment Mechanism

1. Introduction

Sri Lanka has set itself an ambitious goal of becoming a regional knowledge and economic hub; the realization of which would call for strategic focus on development of knowledge and skills of her future citizens. The State university system, which has played a pivotal role in human resource development while benefitting from the free-

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education policy over the past 70 years, holds prime importance in launching such an endeavor, and much would be expected from it towards this end in the future as well.

However, the bureaucratic governance and budgetary constraints have set obstacles to the further development of the State-run national university system to cater for the expanding demand. This has, since of late, compelled candidate students to look for alternatives offered by local private universities and also by foreign universities leading to an outward drainage of hard-earned foreign exchange (Abayratne and Lekamge 2012). There also is the perception that the present State university structure is cost-ineffective (Samaranayake, 2010; Arunatilake 2010)[2]. This would imply that it is a burden on national coffers. The relative stagnation of the State sector in higher education and the expansion of the private sector's presence could not be considered un-welcome developments under such a political-economic perception and also the increase in out-bound migration for education purposes could also be an unavoidable consequence (Chandrasiri 2003). However, under the hypothesis of a different reality, the relatively shrinking trend of the State university system would neither be justifiable, nor healthy.

This question of cost-competitiveness of the Sri Lankan higher education sector was subjected to examination in the present study in order to understand the comparative strengths; such as the possibility of internationalization of the State university system (Samarasinghe and Marshall 2012) and weaknesses of the current State university system, in order to evolve possible policy interventions to develop the accessibility to higher education in Sri Lanka.

2. Materials and Methods

In recent literature, many have dealt with the subject of higher education in Sri Lanka; but mainly on the "political" and "structural" aspects of it. The views by Wijesinghe (2016) on the way the society perceives free education, the placement of Sri Lanka's higher education structure within the Asian setting by Gamage (2016), the examination into the decline of the university system by Wanigasekera (2016), the discussion on internationalisation of State university system by Samarasinge et al (2012), and the critical appraisal brought in by Wijewardena (2013) on inclusivity of university education and its "freakishness" in response to Lakshman (2003) on the same subject, are among such contributions. Analysis on financing of higher education in Sri Lanka or its cost characteristics are rare to find in literature, even though Abeyratne et al (2012) and Chandrasiri (2003), and to some extent Wijewardena (2013), have addressed the economic aspects of it. The present study aimed at addressing this research gap, and focused the analysis on the costing aspects

[2] "…..State Universities will have to focus on increasing efficiency, effectiveness and accountability ….. Sri Lanka's strategy is to piggy-back on internationally renowned universities so that the process is cost effective and mutually beneficial…." Convocation Address at Eastern University of Sri Lanka on April 20, 2013 (Samaranayake 2010)

"….. private management can improve efficiency and effectiveness as they are autonomous entities that are more accountable to parents and students. They produce education services in a more cost-efficient manner and are effective than their public sector counterparts…" (Arunatilake 2010).

of higher education delivery in view of comparatively appraising the cost competitiveness of Sri Lanka's State university system and its different academic streams, in order to gauge the system's ability to compete with local and international institutions.

Focusing on undergraduate education delivery, the research attempted a cross-study stream analysis of capital and recurrent expenditures, to assess their relative cost intensities and to compare against charges levied by local and international competitors. The average stream-based recurrent costs were added to the estimated university-specific capital costs to work out the total costs per student per year pertaining to each academic stream in 2011, which becomes necessary in appraising the "competitiveness" of the Sri Lankan State university system against the local and foreign private universities. This method was adopted in the absence of any better alternative under the given circumstances, namely (a) no previous comparative cost analysis could be found in literature pertaining to the Sri Lankan higher education sector, (b) study stream-wise cost bench-marks being unavailable to compare against, (c) cost details of private higher education establishments, at least in their institution-wise aggregates, are not made public, and (d) zero-based costing of higher education service delivery requiring itemized cost data, gathering of which from primary sources being beyond the scope and resources of this research.

Data pertaining to stream-wise recurrent costs were obtained from the statistical reports of the University Grants Commission of Sri Lanka. As no estimates were available on stream-wise capital costs, university-wise capital costs were estimated by working out the corresponding capital stocks as at 2011, using the investment figures made available by the UGC for the years from 2004 to 2011 and also for the year 2000, assuming the near-most year values as applicable for the periods anterior, and assuming a straight line capital depreciation rate of 5% per annum.[3] Cost outliers were statistically identified and those lying outside the acceptable limits (at 95% confidence level) were removed using graphic techniques before such estimation of stream-wise national averages.[4] With regard to local and foreign private universities, tuition fees for similar degree programmes were obtained by consulting their prospectus and also through direct inquiry, as their cost data were not published. Graphical representations, outlier investigation and statistical comparison of means were adopted as means of analysis.

[3]This method was adopted in the absence of secondary data for a sufficiently long period of time to build up a depreciable capital stock as at 2011. The series of assumed and estimated investments was brought into 2011 prices using investment deflator computed using macroeconomic data published by the Central Bank of Sri Lanka. Assumed 5% level of depreciation on straight-line basis make any capital injected prior to 1991 not reflecting in the capital stock as such would be fully depreciated by 2011.

[4] Box-plot diagrams in Stata statistical software were used to identify outliers and remove those.

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3. Analysis and Results

Table 01 summarises university-wise capital and recurrent cost estimates for the six main academic streams, namely Medicine, Engineering, Science, Agriculture, Management, and Arts/Law, for the year 2011.

TABLE 01
Expenditures per Head per Year by Academic Streams and Universities

(All Costs are in Rs. 000s)

University	Capital Expenditure	Recurrent Expenditure					
		Medicine	Engineering	Science	Agriculture	Management	Arts/Law
Colombo	12.46	250.01	-	131.59	-	46.66	85.63
Peradeniya	7.96	193.97	115.91	136.51	266.33	-	99.61
Sri J'pura	8.11	316.08	-	125.69	-	49.88	77.25
Kelaniya	9.92	297.48	-	178.74	-	42.66	79.02
Moratuwa	17.57	-	110.38	-	-	-	-
Jaffna	13.22	236.87	-	283.04	209.91	-	82.12
Ruhuna	15.14	295.64	122.86	154.40	202.99	37.34	103.83
Eastern	13.74	148.49	-	146.01	297.09	46.01	50.74
South Eastern	17.51	-	-	136.48	-	58.47	52.08
Rajarata	30.16	90.36	-	108.46	175.19	46.48	49.26
Sabaragamuwa	23.22	-	-	68.83	184.93	46.69	82.41
Wayamba	21.11	-	-	86.71	160.98	45.50	-
Uva	41.37	-	-	137.07	86.69	76.86	-

Source: Authors' estimations based on data published by the University Grants Commission.

A few particular features, however, could be observed. First, the discipline of Medicine emerges as the most costly degree programme in general in the State University system, even if the cost per student per year (and not the full cost per longer duration, namely five years) is considered as the yardstick for comparison. It costs nearly double that of Engineering or triple that of Social Sciences or Law. This may well be owing to discipline specific intricacies, such as clinical; but, the fact that the Rajarata and Eastern Universities have managed with recurrent costs of less than 50% of the more established Universities prompt the necessity of examining the

causes. If these low relative costs were a result of those Faculties managing with less than necessary inputs, urgent intervention by the authorities is needed, because any such resource constraints could compromise quality of education service delivery. Secondly, it is curious that Agriculture figures quite a close contender to Medicine in terms of recurrent costs. In effect, it is even costlier than Medicine at the Eastern and Rajarata Universities and also at the Universities of Peradeniya. It is only at the Ruhunu and Jaffna Universities where the Agriculture Faculty reports lower annual recurrent cost per student than their respective Medical Faculty. The reasons for this need to be investigated, particularly in the light of the fact that Uva, Wayamba, Sabaragamuwa and Rajarata universities have been able to manage with much lesser student specific recurrent costs. Third, Wayamba and Sabaragamuwa universities in Science, and Eastern, South-Eastern and Rajarata Universities in Arts, appear managing at much lesser recurrent costs than their respective counterparts in other Universities. This might be owing to inherent efficiencies or under-consumption; both causes call for corrective interventions. Fourth, the recurrent cost per student per year in the Science discipline at the Jaffna University is particularly high, to the extent that it is almost double that of the science streams in other universities, more than what is incurred on their own Medical students, and nearly two and a half times that of an average Engineering undergraduate; an unexpected observation needing deeper examination to find out causes. Fifth, and possibly the most note-worthy, is the clear recurrent cost effectiveness shown by the discipline of Management in comparison to Arts and Law, and to a certain extent by the faculties of Engineering in comparison to Science. It is difficult to perceive as to how an Engineering student, for instance, would impose lesser cost per year than a Physical Science undergraduate and the question might be raised as to why Arts faculties could not be as cost effective as Management faculties. These questions become more pertinent in the prevailing higher education policy perspective which apparently is being increasingly shifted towards market orientation. Lastly, the capital cost structure indicates higher capital intensities in all four relatively new universities. The Uva-Wellassa University, for example, has nearly five times the capital cost per student per year compared to Sri Jayewardenepura University, while the Rajarata University is having nearly four-fold that of Peradeniya University. This could well be a combined effect of (a) heavy capital injections that are necessary to build the required infrastructure and facilities in the formative years of these young universities, and (b) relatively lesser number of students registered, even though the reasons for such significant differences need to be examined in detail.

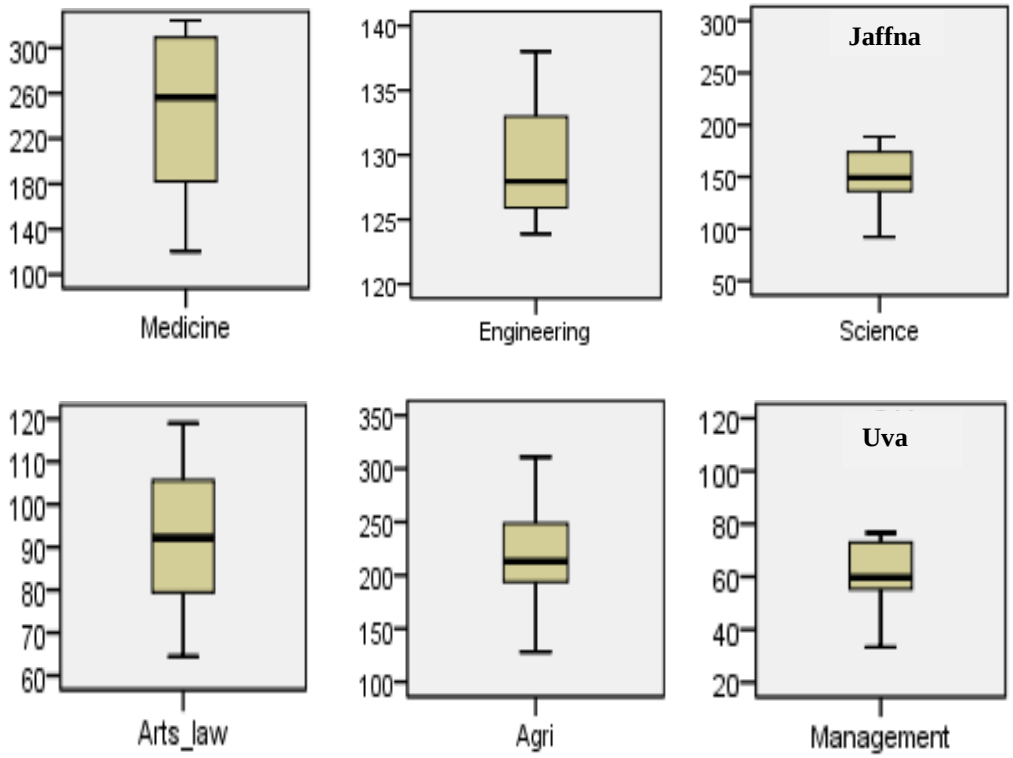
3.1. Comparative Cost Competitiveness

Average stream-wise recurrent costs were added to the estimated university-specific capital costs to work out the total costs per student per year pertaining to each academic stream in 2011, which becomes necessary in appraising the "competitiveness" of the Sri Lankan State university system against local and foreign private universities.

The cost outliers were statistically identified (at 5% significance level) and removed prior to estimating stream-wise national averages. The Uva-Wellassa University for the Management stream, and the Jaffna University for the Science

stream were thus removed; the former appears to be a direct result of high capital intensity and low student enrolment levels, possibly owing to it being a recently established member of the State university family, while the latter seems to have been caused by the extremely high recurrent cost intensity in 2011. National cost averages for each main study stream were thus estimated, the results are depicted in the Box-Plots in Figure 01.

FIGURE 01
Mean Cost per Student per Year for Main Academic Streams



Note: The estimated per head total cost for the year 2011 is represented by the Y axis.

The estimated average costs pertaining to the Sri Lankan State universities were then compared against the charges levied by a selected group of competing local and international universities offering similar academic streams, as summarised in Table 02.

Results indicate that the costs (including capital costs) incurred by the Sri Lanka's State university system to produce a graduate of an internationally acceptable quality are significantly less than the fees charged by competing alternative systems, except in the Arts stream. The difference appears to be significant even after a substantial profit margin is allowed, indicating either (a) the comparative cost efficiency of the State universities in providing higher education, or (b) the excessive profit margins earned by the competing alternative operators of higher education

institutes, or (c) both. High costs paid in foreign exchange to study abroad in particular, can therefore amount to an unnecessary erosion of economic resources caused due to inadequate expansion of the State-run higher education system.

TABLE 02
Average Cost per Student per Year by Academic Stream, 2011

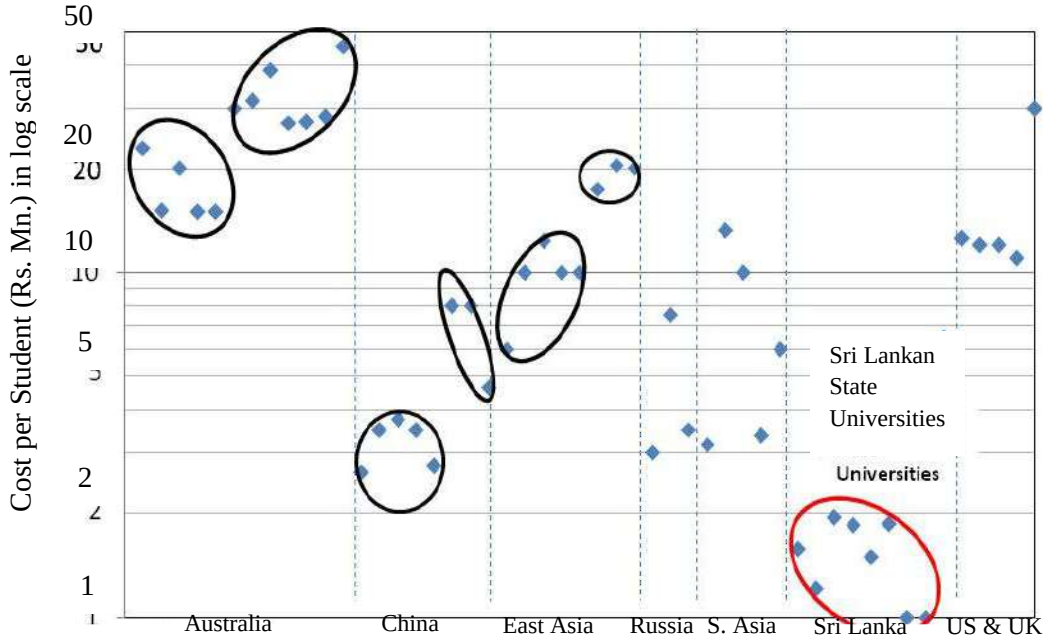
University	Medicine	Engineering	IT	Science	Management	Arts/Law	Agriculture
Colombo	262,471	N/A	75,735	144,054	59,119	98,089	N/A
Peradeniya	201,936	123,876	N/A	144,473	N/A	107,576	274,290
Sri J'pura	324,197	N/A	N/A	133,800	57,991	85,360	N/A
Kelaniya	307,401	N/A	N/A	188,656	5,281	88,938	N/A
Moratuwa	N/A	127,954	N/A	N/A	33,409	N/A	N/A
Jaffna	250,089	N/A	N/A	296,263	N/A	95,339	223,130
Ruhuna	310,775	137,999	N/A	169,535	52,476	118,966	218,123
Eastern	162,230	N/A	N/A	159,749	59,744	64,479	310,822
South Eastern	N/A	N/A	N/A	153,992	75,976	69,592	N/A
Rajarata	120,526	N/A	N/A	138,627	76,641	79,419	205,357
Sabaragamuwa	N/A	N/A	N/A	92,049	69,914	105,629	208,153
Wayamba	N/A	N/A	N/A	107,827	66,618	N/A	182,092
Uva Wellassa	N/A	N/A	N/A	178,439	118,226	N/A	128,063
Average (Sri Lankan State Universities)	**256,000**	**128,000**	**75,735**	**149,000**	**59,500**	**92,100**	**212,000**
Local Private Inst.	#	#	240,667	207,500	207,944	#	#
Foreigm Affiliated (L)	#	#	348,750	246,806	282,000	83,333	#
Foreigm Affiliated (H)	1,333,000	#	424,167	422,917	475,833	456,807	#
Foreign (L)	545,350	682,500	325,000	#	#	154,000	#
Foreign (H)	15,376,725	1,980,000	1,500,000	#	#	#	#

Note: N/A – Non availability of the particular stream; # - No information.

3.2. International Competitiveness: The Case of the Medicine Stream

The case of Medical education was further examined to fathom the magnitude of apparent cost advantage among alternatives. Severe competition in Sri Lanka to enter into a Faculty of Medicine, the absence of a recognised local alternative, and the high tendency for students to migrate for medicinal education resulting in heavy foreign exchange cost burden on the national economy were the factors behind this choice of the academic discipline for detailed analysis. Regional cost clusters[5] against that of the Sri Lankan State university system are graphically represented in the Figure 02.

FIGURE 02
Per-Student Cost Clusters of Degree Programmes in Medicine



Source: Authors' estimations.

It is mirrored in the individual cost observations that the Sri Lankan State university system outperforms, in terms of its cost advantage, all regional and international institutions offering MBBS degree programmes that are competitively offered to local candidates. The closest cost competitors to Sri Lankan State university system appear to be those institutions in China and Russia, which also are positioned significantly above the cost levels of the Sri Lankan State university

[5] These individual observations represents the foreign institutes frequently selected by local students as their higher education destination for medicine, and are prescribed by the local education consultants.

system.[6] The magnitude of this cost advantage is reflected in the statistical analysis of programme costs and the significance of their differences, as summarised in the Table 03.

TABLE 03
Comparison of Average Regional Costs per Degree Programmes in Medicine

Region/ Country	Average Cost for the Degree Programme	Std. Deviation	Δ Avarage Cost	Calculated t Value	Minimum Cost (Rs. Mn.)	Excess Compared to SL Average as a Percentage
Sri Lanka	1.53	0.3	-	-	-	-
Australia - Low	17.7	3.7	16.1	9.618***	15	80%
Australia - High	30.5	4.2	28.8	16.63***	27.3	1684%
China -Low	3.2	0.5	1.6	6.46***	2.64	73%
China -High	6.9	2	5.3	4.76**	4.62	202%
Russia	4.6	2.4	3	2.24**	3	96%
South Asia	8.7	5.1	7.1	2.14**	3.17	107%
East Asia - Low	10.6	1.2	9	15.29***	6	292%
East Asia - High	19.4	1.6	17.8	18.65***	17.5	1044%
UK - USA	19.4	9.4	17.8	5.01***	11.03	621%

Notes: Δ Ave. Cost = Average Cost Difference as against the Cost of Sri Lankan State University System.
The t-values indicate the significance of the differences of costs (*** at 1%, and ** at 5%).

These results indicate that the cost of producing an MBBS graduate in the Sri Lankan State university system is significantly less than what is charged by the competing systems. The differences between the Sri Lankan cost and the average cost in each region/country, as indicated in the column (4) of the Table 3 would hold significant even if a substantial profit margin is charged on the total costs, possibly owing to the excessive profit margins earned by the competitors. Going by these

[6] The quality of medical degrees awarded by Sri Lankan State universities is internationally recognised. However, given the fast evolving nature of medical education, keeping pace with the international evolution of knowledge is vital. In this respect, the adoption of the new international scoring system by the Colombo and Peradeniya universities is a step forward, which other universities should follow.

analytical evidence, it could be fathomed that the country is globally competitive in offering higher studies in Medicine, and that it could exploit this comparative advantage, not only to arrest the current exodus of foreign exchange spent abroad to study medicine, but also to earn foreign exchange by attracting foreign students to study Medicine in the Sri Lankan State university system.

In that light, the high costs in foreign exchange incurred by the national economy to educate its citizens abroad amounts to an unnecessary erosion of saveable resources. For instance, Rs, 1.6Bn per year of foreign exchange would be saved during the next 6 years if the country could provide facilities to produce 1500 more doctors per year which would enable her to achieve, by 2020, the current doctor per population ratio of Singapore, which is 18:10000, compared to the cost the nation would incur to educate the same number of Sri Lankan students to study for the MBBS degree in China. The scale of potential saving would reflect much more if the comparison is made against the cost of medical study programmes in the West or in Australia. The results for foreign exchange earning potential, on the other hand, when providing higher education in Medicine to foreign students would be approximately Rs. 2000Mn. per year for a batch of 1000 students, if the MBBS degree programme could be marketed at Rs. 2Mn with a mark-up percentage of 32.6% (surplus of Rs. 0.5Mn) per student, where the Sri Lankan State university system would still be nearly 37% more cost attractive than the minimum cost competitor in South Asia or 24% less costly than that of the lowest cost Chinese university.

Medicine, in contrast to many other academic disciplines, is taught through practical exposure, and the conventional lecture room-based teaching content is relatively less. Therefore, the limiting factor for a quality medical degree programme would be “patients” who become study material for medical students. In this respect, Colombo University has a comparative advantage compared to other State universities offering MBBS degree programmes. If the hospital facilities in and around Colombo are taken into consideration, the scope for expansion of medical education by the University of Colombo and other universities in and around Colombo would be substantial. If appropriate policy reforms and strategic interventions are made, it would be possible to harness this potential, coupled with highly competitive cost structures of the State medical degree provision revealed through this study, to make Colombo a regional education hub in the discipline of medicine.

It must be noted however that the State university system in Sri Lanka today is not geared for such an “outward-looking” orientation; for no fault of the individual universities. The funds are currently voted to universities to educate local undergraduates qualifying for admission from national schools, and no “horizon expansion” instinct for undergraduate education is enabled in such a setting. For an outward-looking orientation, while upholding and fostering free-education privileges, which is of supreme importance, an innovative reform in higher education policy and strategies becomes imperative. It might be opportune to explore such possibilities in the current context where the Government, on the one hand, looks forward to developing the country in to a regional economic hub (which would significantly increase demand for graduates in many disciplines), and, on the other hand, intends to substitute for off-shore employment of Sri Lankan unskilled labour (such as

housemaids in the Middle-East) by securing foreign employment opportunities for Sri Lankan "professionals".

4. Conclusions

The higher education delivery structure in Sri Lanka needs expansion to cater to the growing needs of human resources for the country to realise her knowledge hub dream. This study shows that the State university system in Sri Lanka, quite contrary to the widely held perception of its inefficacies, is "cost efficient", and could be a good candidate for such service delivery capacity expansion to cater for both local and international demand. In fact, in many a discipline, the Sri Lankan system appears cost-wise highly competitive. This illegitimatises many of the apparent "down-plays" of the system, including those of Wijewardena (2003) and Wanigasekera (2016), and puts in question the rationale of the currently observed trend of inadequate expansion of, and the resultant constraints to increase, the intake to Sri Lankan State universities in such competitive disciplines as Medicine, Engineering or Management which push the local students to migrate for education at a much higher foreign exchange cost and also at the risk of 'brain drain'.

There appears no reason to "protect" the State higher education system as it appears internationally cost competitive, and the system could be allowed to grow in the emerging global education market. However, this calls for granting it the necessary autonomy and independence, and thus, appropriate policy reforms. If the "free-education" right of the Sri Lankan students, who get selected to the national universities based on their z-scores at GCE Advanced Level examination, could be ensured by administering a mechanism which would make the State endowments, on account of free education, available to the student rather than to the higher education institution (say, a "higher education voucher scheme"), it may be possible to open the system to operate in the market, in which it is likely to grow with no additional burden on the public coffers. The national universities so liberated would then be able to compete effectively and attract students with the quality of education they offer, while earning incomes through paid seats offered to those who do not qualify for the free education benefit. This could possibly be one of the keys towards sustainably developing Sri Lanka as a knowledge hub through gaining international popularity while preserving the spirit of "free-education" by providing equal opportunity and affordability in higher education in the long run.

An auxiliary benefit of such a strategy would be letting the students choose their intended education programme, subject to having entry qualifications for such programmes, by appropriately tendering their State endowment voucher to that choice. By this way, the students would be granted greater opportunity to decide not only their own study combination, faculty and university, but also their future, rather than being forced to follow a degree programme at a university and a faculty largely determined on their behalf by the authorities, and to join a job(less) queue.

The results of the study, in the meantime, highlight the importance of further examining the causes for the apparently excessively costly national university degree programmes such as Arts and Science. It is not generally expected that unit recurrent costs of such streams could be higher than that of Management and Engineering streams, respectively. Similarly, the costs of Arts degree programmes being higher

than the fees charged by foreign affiliated universities could not be considered rational, particularly when almost all other academic streams appear internationally highly cost competitive. Appropriate policy interventions, developed based on an in-depth examination of inter-relationships, are thereby warranted to rectify this apparent anomaly.

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