SBP Staff Notes
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Quality and Effectiveness of Public Spending on Education in Pakistan

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1. Introduction

The effect of government spending on economic growth and development is an extensively discussed policy issue both theoretically and empirically. This is largely because many developing economies experience large budget deficits amid low level of economic development, there is significant government involvement in the economy, and there is less control over government expenditures and revenue instability (Morrison (1982)). Endogenous growth theories advocate the fact that fiscal policy plays an important role in economic development as it affects private sector positively by providing enhanced infrastructure and skilled human capital (Aschauer (1989), Easterly and Rebelo (1993)).

Various studies yield different results as both evidences of crowding-in and crowding-out of private investment in response to government borrowing have been found for developing countries (Atukeren (2005) and Afsono and St. Aubin (2009)). If the main purpose of deficit financing through domestic borrowing is to manage current expenditures then there could be more crowding out than crowding in. However, crowding in of private investment can be a reality if governments keep emphasizing the development of infrastructure, both physical and social, through improving development expenditures. The spillover impact of such government investment in development goes a long way. It helps in providing employment opportunities in the short run whereas in the long run it creates the favorable amalgamation of physical and human capital for higher economic returns and overall welfare. Returns from physical infrastructure can be achieved in the short run but those from the social sector require commitment and patience. While this justifies the need for sustained development spending, it is also important for the governments to keep in perspective the cumulating gains of inculcating high quality in provision of public goods and services to the people as it would ensure sustainability of crowding in over time.

In this regard, empirical studies carried out for Pakistan depict mixed results regarding the trend of private investment in relationship to fiscal spending; however, the focus on quality of the latter is almost missing. Some relevant studies include Khan and Gill (2009), Hussain A. and Muhammad S.D. (2009), Saeed and Ali (2006), Rashid (2005), Naqvi (2002), Hyder and Qayyum (2002), Looney (1995). Therefore, generalization of any result is difficult. The main purpose of this note is to seek anecdotal evidence regarding the nature and effectiveness of government development expenditure on education, particularly school education in Pakistan.

2. Public Spending and Education

Development of human resources, particularly, improvement and expenditure on the primary education system has long been an important policy objective of government in less developed countries, since it has played important role in the overall development of a nation (Meier and Rauch (2005)). So, public expenditure on education has been motivated by the aspiration to enhance human capital formation by embedding superior analytical thinking and problem solving characteristics for long term social and economic benefits.

Vietnam is the recent example that has not only focused but sustainably spent on the quality and coverage of primary education. As a result, it is at the verge of attaining the level of a middle income

country in quite a remarkable span of time given the level of destruction it faced during the war with the United States.

Economic literature confirms the positive relationship between education and economic performance, with higher returns to primary education than to secondary and post secondary education. However, many studies show that the relationship between public spending for education and measure of education realization is weak (Noss (1991), Mingat and Tan (1992 and 1998), and Flug, Spilimbergo, and Wachtenheim (1998)). Instead, other variables have been found to be important in explaining education attainment. This includes per capita income parental sensitivity to costs and benefits, and family background or parental education (Appleton, Hoddinot, and Mackinnon (1996)). As education is not of primary concern for a big number of people in less developed countries due to inability to pay for school fee (Hillman and Jenkner (2004)), government is the optimal source for providing quality education since private sector cannot contribute to this with a profit making motive.

On the other hand, government resources are being spent in marginally productive and less creative manners in developing countries that do not add to develop student performance (Meier and Rauch, 2005). There are plenty of facts that many schools in developing countries are not very efficient (Lockheed and Verspoor (1991), Ralph Harbison and Hanushek (1992),Glewwe (1999a)) due to government's own choice because such plans are least beneficial for them. There are cases where teachers and officials support their welfare over those of students, whereby education ministries in developing countries have no idea how to improve their education systems (Lockheed and Verspoor (1991)). Hence, allocation of public resources for quality service matters for long-term economic growth and development as compared to the continued expansion of low quality schools.

Defining "quality" and measuring it, is considered a tricky task. Therefore, definition of quality education varies as per different researches and organizations. A quality education is one that satisfies basic learning needs, and enriches the lives of learners and their overall experience of living. Facts over the past decade have shown that attempts to increase enrolment go along with efforts to improve educational quality if children are

Table 1: South and West Asia -Govt. Expenditure on Education

	Govt. Exp. on Edu. As % of GDP		Govt. Exp. on Edu As % of Gov. Exp.	
	2012	2014	2012	2014
Pakistan	2.1	2.4	11.0	11.3
Bangladesh	2.1	2.0	14.7	n.a
Bhutan	4.9	5.9	11.3	17.8
India	3.8	n.a	14.1	n.a
Iran	3.3	3.1	17.0	19.7
Maldives	5.1	n.a	15.3	n.a
Nepal	4.7	4.7	22.7	22.0
Sri Lanka	1.7	n.a	8.8	n.a
Viet Nam	6.3	n.a	21.4	n.a

Source: Haver Analytics

Table 2: Government Expenditure per Primary Student (US$)

	2011	2012	2013	2014
Pakistan	n.a	n.a	100.9	103.1
Bhutan	210.6	na	201.2	325.3
Nepal	na	na	na	104.4
Iran	820.2	844	617.2	543.8
Indonesia	397.1	424.3	432.2	428.2
China	4792.3	4986.6	5403.4	5728.5
Argentina	1810.6	2011.8	2057.9	na
Norway	19719.2	19554.5	na	na
South Africa	1008.6	1290.2	1522.2	1218.0
Viet Nam	338.0	417.4	na	na
UK	9357.3	96421.1	na	9639.7

Source: UIS Database

fascinated by school, stay there and attain significant learning outcomes (UNICEF (2000)). Quality indicators as per UNESCO are: healthy, well-nourished and motivated students; well-trained teachers and active learning techniques; adequate facilities and learning materials; a relevant curriculum that can be taught and learned in a local language and builds upon the knowledge and experience of the teachers and learners; an environment that not only encourages learning but is welcoming, gender-sensitive, healthy and safe. As per the European Commission, a comprehensive list of 16 "quality indicators", i.e. education and training of teachers, participation in pre-primary education, number of students per computer and educational expenditure per student, will bring about improved quality of education and hence shall augment development.

Table 3: South and West Asia -Literacy Profile

	Adult Literacy Rate (15 & above)-in percent			Youth Literacy Rate (15-24)-in percent		
	1995-2004	2005-2012	Projected 2015	1995-2004	2005-2012	Projected 2015
Pakistan	**43.0**	**55.0**	**58.0**	**55.0**	**71.0**	**75.0**
Bangladesh	47.0	59.0	62.0	64.0	80.0	83.0
Bhutan	n.a	53.0	65.0	n.a	74.0	89.0
India	61.0	63.0	71.0	76.0	81.0	90.0
Iran	77.0	84.0	87.0	93.0	98.0	98.0
Maldives	96.0	98.0	99.0	98.0	99.0	100.0
Nepal	49.0	57.0	64.0	70.0	82.0	87.0
Sri Lanka	91.0	91.0	93.0	96.0	98.0	99.0
Viet Nam	90.0	94.0	95.0	95.0	97.0	98.0

Source: Education for All Global Monitoring Report-2015

3. State of Education in Pakistan

Education sector of Pakistan is faced with various hurdles including underinvestment (**Table 1 and 2**), capacity deficient public sector together with costly and unregulated private sector, low literacy rate and unclear literacy definition[3] (**Table 3** and **A1** in Annexure), deficient physical infrastructure and lack of rationale in national level education policy (Akram and Khan, 2007). As per Human Development Report (2015), Pakistan still falls in Low Human Development category in education achievement based on the criteria defined for levels of literacy, enrollment and education quality. It states, since independence, Pakistan has increased the number of primary schools eighteen-fold and multiplied enrolment sixteen times. However, these achievements have been overcome by rising population and lack of quality education (HDR (1998)) (**Table 4**).

Table 4: Findings from selected baseline early grade reading assessments

Country	Programme	Year	Languages	Grade	Sample Size	% of children who cannot read a single word in a simple paragraph
Afghanistan	USAID/PACE-A	2007	Dari and Pashtu	End of Grade 2	309	21
Nepal	EGRA	2009	Nepali	Mid-year Grade 2	212	79
Pakistan	Save the Children	2009	Urdu	End of Grade 2	234	66
Manila, Philippines	Save the Children	2009	Filipino, English	Mid-year Grade 3	160,160	1,2
Mindanao, Philippines	Save the Children	2009	Filipino ,English	Mid-year Grade 3	541,541	24,30

Source: Stannard, 2008; Schuh-Moore et al, 2010; Dowd et al, 2010;and Cao, 2010

[3] See Table A1 in Annexure for literacy definitions by different countries.

In Pakistan, a survey conducted in 38 rural districts in 2010 revealed that only 44 per cent of class 3 students were capable of reading sentences (level 1 text) in Urdu or their own language, while in arithmetic 39 per cent of class 4 students could only identify simple numbers (level 1 standard) (South Asian Forum for Education Development (2010)) whereas 66 per cent of tested students in Urdu could not read a single word by the end of grade 2 (Asia-Pacific EFA Goal 6-Quality Education, UNESCO and UNICEF (2012)). Similarly, Early Childhood Development (ECD)[4] has remained least focused area for the government as well. Testing upon the parameters[5] of ECD, only 25.1 percent children were considered developing on track in Sind province (Multiple Indicator Cluster Survey MICS (2014-15)). Moreover, as per Medium Term Development Framework (MTDF) 2014-17, school education department is primarily focused on providing brick-motor i.e. raising the adequate physical infrastructure of schools.

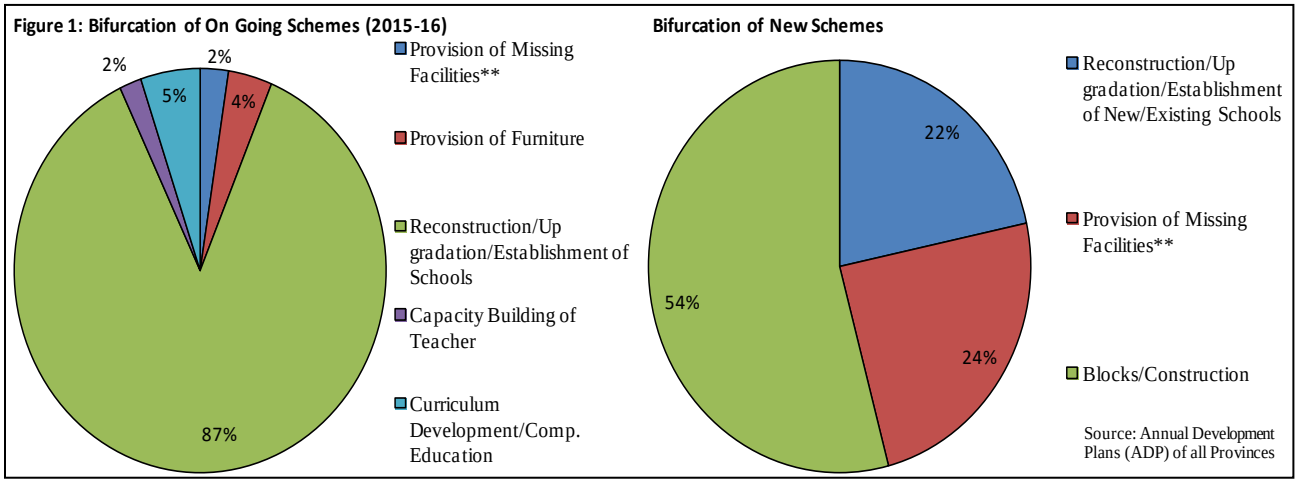
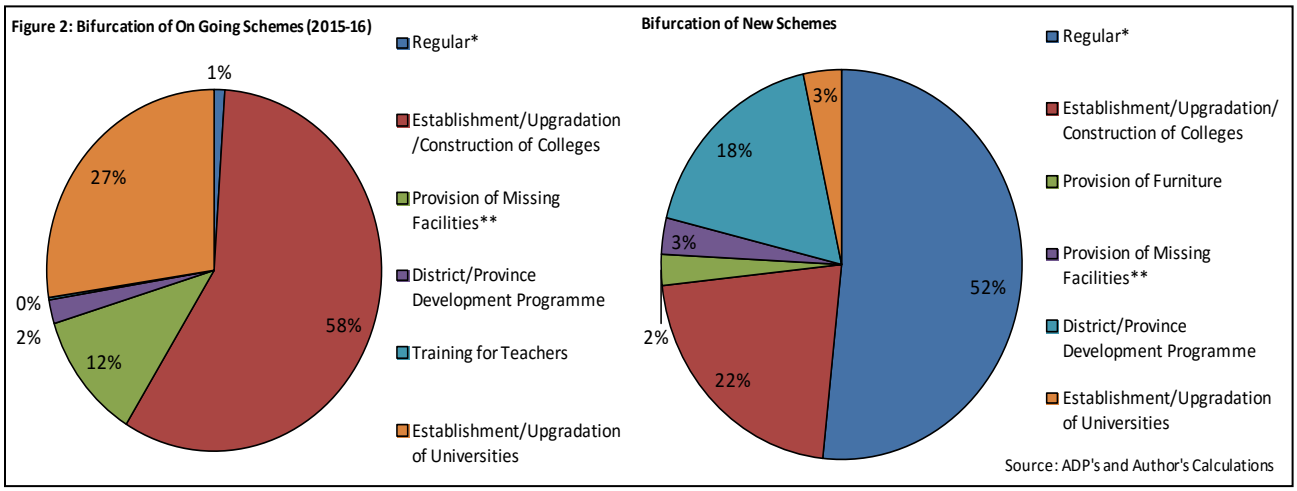


Figure 1 gives the detailed information for spending on School Education as per Medium Term Development Framework (MTDF) and Annual Development Plans (ADPs) of all provinces (**Table A2 and A3 in Annexure** for details). As per notes provided for *regular* and *provision of missing facilities (PMF)* and percentage share of each component, it's evident that most of the expenditure is being made for just providing basic infrastructure i.e. construction of schools, classrooms, blocks and hostels, revamping of schools, reconstruction of dangerous buildings and provision of furniture. Moreover, no clear distinction is provided for Regular and PMF, given significant chunk of pie is being allocated for provision of missing facilities[6].

These empirics show that higher allocations of funds are being made for creating new structures, and less focus has been given to provide funds to enhance quality of human capital, rather, creating a cycle of building- overlooking-eroding/damaging- rebuilding of physical infrastructure. Similar findings have been observed for government development spending for Higher Education as well which includes both colleges and universities (**Figure 2**). High portion of the education budget is being spent on providing

[4] It is defined as path in which a child learns to handle complicated level of thinking as per Shonkoff J, and Phillips D (2000), Definition. Literacy and Numeracy skills are one of the important elements of ECD.
[5] To identify 10 letters of alphabets, read 4 simple words, recognize all numbers from 1-10 by the age of 3-5 years.
[6] Expenditure and Quantity of Service Delivery Survey (EQSDS) in Primary School has also pointed out about "Budget Leakages" in Provision of Missing Facilities (PMF). Resources are being misused or not being utilized for the intended purposes. About 22.6 percent of leakages were observed by the survey teams in Punjab.

basic infrastructure in contrast to the inadequate amount spent on quality improvements, such as teacher's training, curriculum development etc. Apart from primary and higher education, state of technical and vocational education also provides strong basis for analyzing human capital. On provincial level, not much focus has been given to this category so it could be a part of some already existing bifurcation depicting the same nature of expenditure on basic infrastructure.[7] However, federal government allocated budget of Rs. 774.8 million in 2015-16 for National Vocational and Technical Training Commission which is in itself a meager amount given the extent of country's population.



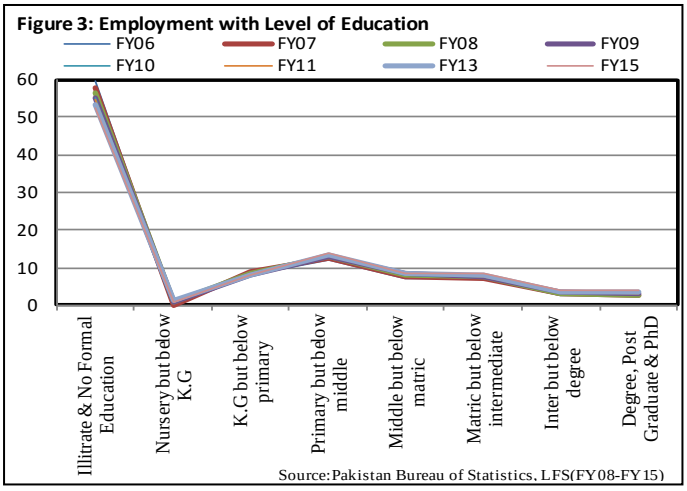
In presence of previously mentioned facts, it seems that Pakistan is faced with lack of policy direction and the situation may get out of control if the human capital stagnates at its current level and population keeps on growing with geometric progression. Even looking at the provision of infrastructure alone, financial leakages are rampant. The Dakar Framework stated, 'Corruption is a major drain on the effective use of resources for education and should be drastically curbed.' Moreover, 'Ghosts' are another issue: schools and teachers exits only in papers and not in reality. There were about 6,480 ghost schools in Sind province and 5,000 in Baluchistan (Global Corruption Report (2013)). Let alone the quality issue, teacher shortages and inadequately trained staff remain a serious concern as well.

4. Policy Implication

In order to understand the trend in government spending on education in Pakistan, all labor force surveys (by Pakistan Bureau of Statistics) have been used to construct the education levels of the employed labor force in Pakistan (**Figure 3**). It can easily be seen that in the last ten years the distribution has experienced only marginal changes. Even keeping aside the major portion of illiterate and not formally instructed workers, the distribution is skewed towards those with low levels of education. Using some of the raw data from these labor force surveys, we can confirm that there are positive gains from education as well as relevant technical trainings. Just to quote some of them, average wage/income gets higher by around 20 percent as one move from a lower education level to the next higher mentioned level in the distribution.

[7] Baluchistan allocated Rs. 93.6 million for Technical Education in 2015-16 whereas no such bifurcation is available for other provinces.

These gains are lower at lower end of the distribution and are at their highest at attaining the intermediate level and the level of technical graduation. Secondly, attainment of relevant trainings adds about 15-20 percent to the wages/incomes. These results are encouraging as they point towards reassessment of national level policies for their focus on quality and coverage of education at all levels. The skewness of the education distribution of workers also points out that the scope of capacity enhancement in the country is phenomenal if catered to prudently.

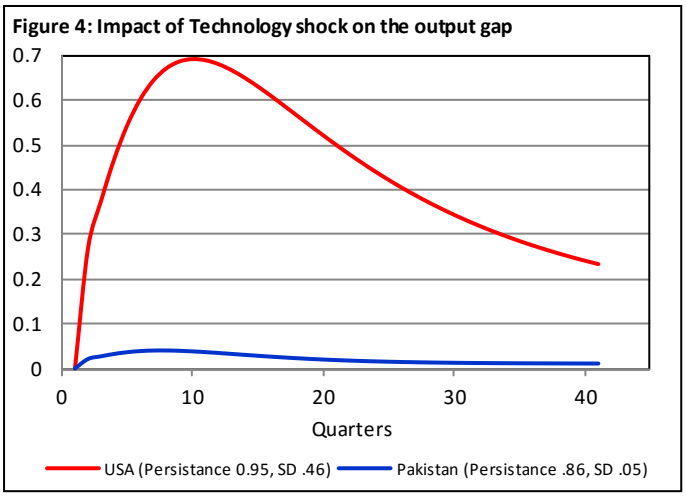


To explore the policy implication of the standard technology shock on output gap in a Dynamic Stochastic General Equilibrium Model (DSGE) [8], a simple exercise has been carried out. It is assumed that economic structure of Pakistan and USA mimics the Euro area of Smets and Wouters (2003) with the exception of price and wage rigidities[9]. The amplification in real activity in response to the technology shock shows the extent of intangible amalgamation of physical capital with human capital present in the economy, specifically called total factor productivity (TFP). For Pakistan the TFP series[10], obtained as a residual of estimating the standard production function, has persistence of 0.86 and almost no variability as compared to the persistence of 0.95 in USA with standard deviation of 0.46. For comparison purposes, a cumulative growth of TFP during 2006-14 is given in **Table 5**. Apart from Vietnam, that has been reaping benefits from large prior investments in capital other than in information, communication and technology, and Iran, that has faced economic sanctions during all these years, TFP growth in comparable countries have

Table 5: TFP Growth (Average 2006-2014)

	Cumulative TFP Growth (%)
Pakistan	-8.9
Bangladesh	-2
India	17.2
Iran	-9.6
Sri Lanka	3.7
Viet Nam	-16.7
USA	1.4

Source: The Conference Board-Total Economy Database
https://www.conference-board.org/data/economydatabase/



[8] Special thanks to Mr. Shahzad Ahmed, Research Department for providing DSGE simulation results.
[9] See SBP working Paper 47 along with its technical supplement for parameter details.
[10] For Pakistan average contribution of TFP in economic growth has remained around 5%, whereas, in the US this contribution has peaked at about almost half of the overall contribution. Only recently, after the global financial crisis, it has started coming down.

remained much better than that for Pakistan. **Figure 4** presents model-based simulation of the impact of a one standard deviation technology shock on the output gap both for Pakistan and USA. It shows that impact of this technology shock is quite high for USA, despite its saturated state of human capital. On the other hand, for

Pakistan, despite having the capacity for high marginal gains due to a large population and unexplored segments, the impact is remarkably small. The dynamics of the shock's impact show that quality of human capital as well as the presently installed physical capital does not generate marginal and intangible returns. The lack of adaption/infusion of technology in value addition plays an important role in keeping real growth suppressed. Consequently, it can easily be seen that TFP in Pakistan is much lower than USA and this is the big gap in the quality of human capital that can be filled with appropriate measures. If not addressed, poverty and income inequality are bound to rise further as the mass of population depending on provision of social services by the government keeps getting marginalized not in term of coverage but also in terms of quality. So, let alone domestic investment, even foreign investors consider such scope of manpower and national/domestic market a missed opportunity.

5. Conclusion

Pakistan's overall public (fiscal) spending on education seems to provide short term gains by providing basic infrastructure; however, the aspect of long term gain in term of augmentation of human resources with physical capital is missing. In absolute terms, the size of development expenditure on education has increased manifold, however, the outcomes are trivial as significant portion is being spent on providing basic infrastructure. Moreover, anecdotal evidences suggest that lack of transparency and accountability in funds allocation is also a serious hindrance in obtaining desirable results. As a matter of fact, the underlying concern is that even after a span of 69 years, government is lacking behind even in providing basic infrastructure. Resultantly, sub standard provision of infrastructure is not even allowing government to attain "access to education" goal effectively let alone to focus ultimately on its quality. Therefore, expenditure on education needs thorough modifications for solid outcome along with a thoughtful long term policy based on commitment for quality.

Annexure

Table A1: Literacy Definition

Country	Year	Source	Definition
Pakistan	2012	LFS	One who can read newspaper and write simple letter in any language.
Bangladesh	2013	GALP	A person who is able to write a letter in any language has been considered as literate.
Bhutan	2005	Population Census	A person is defined as literate if he or she can, with understanding, both read and write a short, simple statement on his or her everyday life.
India	2011	Population Census	A person aged 7 years and above who can both read and write with understanding in any language is to be taken as literate.
Iran	2012	LFS	Can you read and write a simple Persian (Farsi) or other languages text?
Maldives	2006	Population Census	Literate persons are those who can simply read and write a local language.
Viet Nam	2009	Population Census	Able to read, write and fully understand Vietnamese or another foreign or ethnic minority language.
Nepal	2011	population census	Can you read and write? Are you currently attending school/college? What is your level of education?
Sri Lanka	2010	LFS	A person who can both read and write with understanding a short statement is considered as 'Literate'. A person who can read and write only his name, figures or memorized phrase should not be considered as 'Literate'.

Source: UNESCO Institute for Statistics (UIS)

Table A2: Provision of Budget: School Education-2015-16 (in Million Rs)

	Punjab	Sindh	KPK	Baluchistan	All Provinces
1. On Going Schemes	**618.0**	**692.6**	**627.8**	**912.8**	**2,851.2**
Provision of Missing Facilities**	n.a	50.0	n.a	7.9	57.9
Provision of Furniture	n.a	90.0	n.a	n.a	90.0
Reconstruction/Up gradation/Establishment of New/Existing Schools	n.a	520	627.8	904.9	2,052.7
Capacity Building of Teacher	n.a	45.0	n.a	n.a	45.0
Curriculum Development/Comp. Education	n.a	122.0	n.a	n.a	122.0
2. New Schemes	**19,052.0**	**167.5**	**530.0**	**1,027.3**	**20,776.8**
Reconstruction/Up gradation/Establishment of New/Existing Schools	2,932.8	n.a	530.0	1,014.3	4,477.1
Provision of Missing Facilities**	5,000.0	n.a	n.a	13.0	5,013.0
Blocks/Construction	11,119.1	82.5	n.a	n.a	11,201.6
Total (1+2)	**19,670.0**	**860.1**	**1,157.8**	**1,940.1**	**23,628.0**

* Total amount is addition of School Education and Teacher Education, ** This category does not give further details of missing facilities
Source: Annual Development Plans (ADP) of all Provinces (2015-16)

Table A3: Provision of Budget: Higher Education (College and University)

2015-16 (in Million Rs)	Punjab	Sindh	KPK ^	Baluchistan	All Provinces
Higher Education (Colleges and Universities)					
1. On Going Schemes	**3,056.1**	**2,202.6**	**4,374.0**	**2,232.8**	**11,865.5**
Regular*	121.9	na	na	na	121.9
Establishment/Upgradation/Construction of Colleges	1,424.1	2,132.6	2,154.6	1,144.1	6855.3
Provision of Missing Facilities**	845.7	70.0	434.0	8.3	1358.0
District/Province Development Programme	253.0	na	na	na	253.0
Training for Teachers	na	na	25.5	na	25.5
Establishment/Upgradation of Universities	411.5		1760.0	1080.9	3252.4
2. New Schemes	**8,673.9**	**174.0**	**1,685.0**	**750.0**	**11,282.9**
Regular*	5,830.0	na	na	na	5830.0
Establishment/Upgradation/Construction of Colleges	560.0	84.0	1,120.0	673.4	2437.4
Provision of Furniture	na	90.0	200.0	na	290.0
Provision of Missing Facilities**	283.9		40.0	17.0	340.9
District/Province Development Programme	2,000.0	na	na	na	2000.0
Establishment/Upgradation of Universities	na		325.0	60.0	385.0
Total (1+2)	**11,730.0**	**,2376.6**	**6,059.0**	**2,982.8**	**23,148.4**

^ Excluding "Construction of Libraries", * It includes Construction of Hostels, Renovation/Revamping/Upgradation of Colleges, Provision/Replacement of IT Labs, Re-construction of Dangerous Buildings, Provision of Furniture,** This category does not give further details of missing facilities

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