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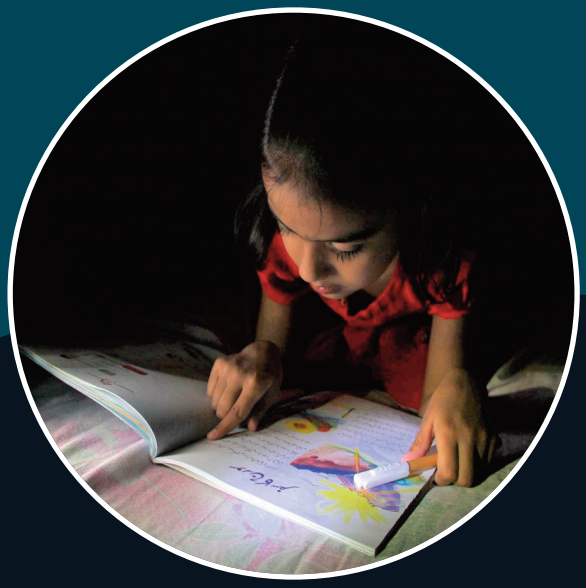
Research Report

Educational Status of Pakistan: Pre- and Post-18th Amendment Scenario



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Research Report

Educational Status of Pakistan: Pre- and Post-18th Amendment Scenario

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Abstract

The 18th Constitutional Amendment 2010 introduced significant changes with regard to the devolution of powers to sub-national governments, having a direct bearing on the education sector. In this context, an attempt is made in this research to analyze the performance of provincial governments in terms of five core indicators of educational achievement before and after the Amendment. The household data of Pakistan Social and Living-Standard Measurement surveys are used to compute indicators related to education.

To summarize the status and growth in the indicators of educational achievement, non-compensatory composite indices are developed. The methodology of these indices ensures that all indicators have the same importance, and a full compensation among them is not allowed.

The results of this exercise broadly indicate comparatively low growth in the composite values of indicators of educational performance during the post-18h Amendment period, especially in Sindh province.

JEL Classification: I21, I28

Keywords: Education, Non-compensatory Composite Indices, 18th Amendment to the Constitution, Pakistan

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Acronyms

AEPAM	Academy of Educational Planning and Management
AMPI	Adjusted Mazziotta-Pareto Index
ASER	Annual Status of Education Report
GDP	Gross Domestic Product
KPK	Khyber Pakhtunkhwa
NFC	National Finance Commission
PPS	Probability to Size
PSLM	Pakistan Social and Living-Standards Measurement
PSU	Primary Sampling Unit
SDGs	Sustainable Development Goals
SDSN	Sustainable Development Solution Network
SSU	Secondary Sampling Unit

1 Introduction

As far as decentralization and devolution of power to the provinces in Pakistan is concerned, the 18th Amendment to the Constitution of Pakistan, introduced in 2010, reconfigured the federal and provincial relationship by abolishing the Concurrent Legislative List, thus providing the provinces with strong legislative and financial autonomy in education, health, and other social sectors. In the same year, prior to the Amendment, the 7th National Finance Commission (NFC) Award brought some profound changes in the inter-governmental fiscal transfers. As per the new formula of revenue distribution, the aggregate share of provinces in the divisible pool of taxes was increased from 46.25 percent to 56 percent in 2010-11 and then to 57.5 percent, for the rest of the award period. Another major development on the devolution front was constitutional recognition of the third tier of the government – local government. The Amendment requires each province to 'establish a local government system and devolve political, administrative and financial responsibility and authority to the elected representatives of the local governments.' Ironically, the local government system introduced in 2001 (which had expanded the role of local governments in the delivery of social services) was largely abandoned by the provincial governments in 2010, and the administrative authority was transferred to provincial bureaucracy. Subsequently, provincial governments enacted new local government legislations by 2013, while the local government elections were held in 2015 (except for Balochistan in 2013). However, with the exception of Khyber Pakhtunkhwa, the role of local governments was substantially reduced under the new legislation. Particularly, the provision of basic services like health and education was transferred back to the provinces. Therefore, 2010 becomes an important cutoff year for evaluating the performance of governments in delivering social services, particularly education which is the focus of this paper.

The Amendment also has some major implications for the education system of the country.[1] A new Article 25A was introduced in the chapter dealing with the fundamental rights in the Constitution. It states: "Right to education – The State shall provide free and compulsory education to all children of the age of 5-16 years in such manner as may be determined by law". Through this Amendment, education has become an enforceable right. The caveat, however, remains in the phrase, 'as may be determined by law'. Unfortunately, the subordinate legislation is yet to be enacted by the respective provincial legislatures.

[1] A summary of key changes in education sector introduced by the 18th Constitutional Amendment is provided in the Appendix-B.

Over the years, various governments have formulated an assortment of policies and plans to fulfil the constitutional commitment of providing education and removing inequalities. Success has been limited, though, with the outcome that the current state of education in Pakistan is deplorable. The education sector in Pakistan has suffered from myriad issues as reflected by various educational indicators, including low levels of public spending, high dropout rates from the schooling system, and, more importantly, acute gender and regional inequalities. In terms of quality of education, issues and challenges of the education system include widespread teacher absenteeism, weak management and supervision structure, shortage of trained and qualified teachers, especially female teachers, and lack of physical facilities. These characteristics are more pertinent in public schools where about 56 percent of the country's children are enrolled.[2]

Pakistan does not have an official education monitoring report at the national or provincial levels. The Academy of Educational Planning and Management (AEPAM), a body working under the Federal Ministry of Education, releases an annual report called Pakistan Education Statistics to log the condition of education in the country. However, this report does not include an inclusive education monitoring framework. At the civil society level, the Annual Status of Education Report (ASER) Pakistan has been monitoring the status of education with a citizen-led household-level survey and assessment of children in the age group of 5-16 years from across the country. The report captures learning outcomes, enrollment status and provision of school facilities in all districts (almost all rural) of the country.

Given this backdrop, this study provides an applicable education monitoring framework, using the household level data of Pakistan Social and Living-Standards Measurement (PSLM) surveys, which are collected by the Pakistan Bureau of Statistics. With the release of the new wave of PSLM, the recommended indicators and composite indices of this study may be easily followed and updated to monitor the changes in educational achievement. Nonetheless, the prime objective of this research is to empirically assess the educational outcomes during the pre- and post-18th Amendment period. To achieve this objective, the educational performance in terms of five core educational indicators has been analyzed. These indicators cover not only access to educational opportunities but also include gender and regional parity indices.

The paper is organized into four sections. After describing a brief methodology in the next section, major findings at the provincial level are summarized in Section 3. Section 4 presents the discussion and conclusion, while the district-wise estimated indices and district ranking are collated in exhibits furnished in Appendix-A.

[2] Pakistan Education Statistics 2017-18, Ministry of Federal Education and Professional Training Government of Pakistan.

2 Methodology and Data

Indicators Selected for Assessing Educational Performance

Pakistan is a signatory to the UN 17 Sustainable Development Goals (SDGs) that need to be met by 2030. The SDG 4 aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". This goal covers wide-ranging aspects of education and learning, including quality of teachers, technical and vocational training, facilities available in schools and, more importantly, literacy assessment and evaluation of childhood development. The SDG document proposes seven main targets and 11 indicators to monitor the progress for this goal. Nonetheless, the necessary data required for measuring the majority of UN-suggested indicators are not available in the context of Pakistan. The data gap analysis reveals that only 2 out of 11 indicators of SDG 4 may be estimated with the readily available data (Pakistan, 2017). Consequently, the SDG framework could not be applied to measure the status of education in Pakistan for this research.

After considering the educational priorities and availability of nationally representative data, five indicators are considered to measure the status of education in Pakistan at national and sub-national levels. In terms of access to schooling, two indicators are used: pre-primary enrollment and out-of-school children in the age cohort 5-16 years. For educational achievement, literacy rates (10+ years and 15-24 years) and proportion of population with tertiary education are included.

One of the key principles of the global SDG agenda is to address the notion; "leaving no one behind". Thus, to realize the commitment to inclusive development, data disaggregation with respect to vulnerable and left-behind population is essential. Given the importance of disaggregated data, the SDSN (2015) recommends that relevant SDG indicators are disaggregated according to the following broad dimensions: gender, age, income quintiles/deciles, disability, ethnicity, indigenous status, economic activity, location or spatial disaggregation and migrant status. However, besides gender and, to some extent, spatial disaggregation, data are not available to estimate the proposed indicators at the suggested level of disaggregation. Thus, gender and locational (rural-urban) parity indices are developed to evaluate the inequality in access to education.

Methodology for Computing Composite Indices

While the portfolio or dashboard of individual indicators is informative and necessary, there is also a need for a summary measure that combines indicators into a single number which can quickly be grasped. However, one of the issues in the construction of composite indices is the substitutability among component indicators. For instance, high achievement in primary education may be fully compensated or counterweighted by a low level of tertiary

education. This situation is not suitable in most cases where a minimum of all components is required for a combined index. Therefore, a non-compensatory composite index is developed, which assumes non-substitutability of the individual indicators. This approach gives the same importance to all indicators, and a full compensation among them is not allowed. In a non-compensatory approach, all the dimensions of the phenomenon must be balanced, and an aggregation function that takes unbalance into account, in terms of penalization, is used.

This study follows the methodology developed by Mazziotta and Pareto (2016) to compute a non-compensatory composite index for spatial comparisons as well as its variant for spatial-temporal comparisons. The Adjusted Mazziotta-Pareto Index (AMPI) is a non-compensatory (or partially compensatory) composite index that allows comparability of the data across units and over time. It is a variant of the Mazziotta–Pareto Index (MPI) and is based on a non-linear function which, starting from the arithmetic mean, introduces a penalty for the units with unbalanced values of the indicators. Individual indicators are normalized by a re-scaling according to two 'goalposts', i.e., a minimum and a maximum value which represent the possible range of each variable for all time periods and for all units. Such a type of normalization allows performing absolute comparisons over time. Following steps for calculating AMPI are reproduced from Mazziotta and Pareto (2018).

Given the matrix x_{ij}, following normalized matrix r_{ij} is calculated,

$$r_{ij} = \left[\left(\frac{(x_{ij} - Min_{xj})}{(Max_{xj} - Min_{xj})}\right) * 60 + 70\right] \qquad (1)$$

where Min_{xj} and Max_{xj} are the 'goalposts' for the indicator j. The 'goalposts' can be fixed so that 100 represents a reference value. They used a simple procedure for setting the goalposts. Let Inf_{xj} and Sup_{xj} be the overall minimum and maximum of the indicator j across all units and all time periods considered. Denoting with Ref_{xj} the reference value for the indicator j, the 'goalposts' are defined as:

$$\begin{Bmatrix} Min_{xj} = Ref_{xj} - \Delta \\ Max_{xj} = Ref_{xj} + \Delta \end{Bmatrix}$$

where $\Delta = (Sup_{xj} - Inf_{xj})/2$. The normalized values will fall approximately in the range (70:130), where 100 represents the reference value.

Now denoting with M_{ri} and, S_{ri} respectively, the mean and standard deviation of the normalized values of the unit *i*, the generalized form of AMPI is given by,

$$AMPI_i^{+/-} = M_{ri} \pm S_{ri} cv_i \qquad (2)$$

where $cv_i = S_{ri} / M_{ri}$ is the coefficient of variation of the unit *i*.

If the composite index is 'positive', i.e., increasing values of the index correspond to positive variations of the phenomenon (e.g., socio-economic development), then $AMPI_i^-$ is used. On the contrary, if the composite index is 'negative', i.e., increasing values of the index correspond to negative variations of the phenomenon (e.g., poverty, disparity etc.), then $AMPI_i^+$ is used. In any cases, an unbalance among indicators will have a negative effect on the value of the index. The AMPI decomposes the score of each unit in two parts: mean level M_{ri} and penalty ($S_{ri}cv_i$). The penalty is a function of the indicators' variability in relation to the mean value ('horizontal variability') and it is used to penalize the units. The aim is to reward the units that, mean being equal, have a greater balance among the indicators' values.

Data Sources

Household data from PSLM surveys for the years 2004-05, 2008-09, 2010-11 and 2014-15 are used for this study. These surveys were conducted by the Pakistan Bureau of Statistics. The PSLM provides a set of district-level representative, population-based estimates of social indicators.

PSLM surveys cover all urban and rural areas of the four provinces and the capital territory (Islamabad) of Pakistan. They, however, exclude some parts of northern areas, protected areas of Khyber Pakhtunkhwa (KPK) and restricted military areas. Separate sampling frames are used for urban and rural areas. For urban areas, PBS has developed a sample frame using quick count listing methods for households in major cities and town. Each area is subdivided into enumeration blocks based on 200 to 250 households. For rural areas, the list of village/mouzas/dehs published in the population and housing census of 1998 was used as a sampling frame[3].

Figure 1: Number of Observations in PSLM Datasets

PSLM – Survey Years	Overall	Urban	Rural
2004-05	73,570	26,425	47,145
2008-09	75,773	26,975	48,798
2010-11	76,546	26,801	49,745
2014-15	78,635	13,965	64,670

Source: Household level data of PSLM 2004-05, 2008-09, 2010-11, 2014-15.

In all PSLM surveys, a two-stage stratified random sample design is adopted to select the households. At the first stage, primary sampling units (PSUs) are selected in the urban and rural areas. Enumeration blocks in the urban areas and mouzas/dehs/village in the rural areas are PSUs. The sample PSUs are selected by probability to size (PPS) based on the number of households in the PSU. The households within PSU are taken as secondary sampling units (SSUs) and are chosen using a systematic sampling scheme with a random start. Sixteen and twelve households are selected from rural and urban areas, respectively, from each PSU. Figure 1 furnishes the sample households enumerated PSLM surveys.

[3] PBS has now updated its sample frame by using data of new Census conducted in 2017.

3 Major Findings

The educational status of Pakistan and its provinces in terms of indicators selected for this analysis is presented in Figure 2. The values are derived from the latest available district-representative PSLM survey data for 2014-15. The highest and lowest values of almost all indicators of access to education and gender parity are observed in Punjab and Balochistan, respectively. The performance of KPK is better than Sindh in primary enrolment rates and all indicators of regional parity, while Sindh is ahead of KPK in gender parity. Gender disparities are significantly high in KPK and Balochistan compared with Punjab and Sindh, especially in tertiary education and literacy.

Figure 2: Indicators of Educational Status, 2015

	Pakistan	Punjab	Sindh	KPK	Balochistan
Indicators for Access to Education					
Pre-Primary Enrollment Rate (3-5 Years)	29.2	36.4	20.4	25.5	14.7
Enrollment (5-16 Years)	69.9	74.6	61.2	72.9	56.6
Population with Tertiary Education (24 plus)	9.3	8.8	11.7	8.0	5.0
Literacy Rate - (10 Years and Older)	59.8	62.8	59.7	52.8	44.4
Youth Literacy Rate - (15-24 Years)	71.9	75.6	69.2	67.0	54.2
Parity Indices – Gender (female to male ratio)					
Pre-Primary Enrollment Rate - (3-5 Years)	87.0	93.3	70.8	78.8	83.5
Enrollment - (5-16 Years)	76.6	87.4	70.9	60.0	51.0
Population with Tertiary Education - (24 plus)	67.5	92.4	51.8	35.7	22.2
Literacy Rate - (10 Years and Older)	70.2	77.0	69.8	49.1	40.3
Youth Literacy Rate - (15-24 Years)	81.9	89.1	80.9	58.3	51.9
Parity Indices – Regional (rural to urban ratio)					
Pre-Primary Enrollment Rate - (3-5 Years)	65.8	70.7	42.6	74.1	62.5
Enrollment - (5-16 Years)	77.7	80.9	61.0	83.2	67.7
Population with Tertiary Education - (24 plus)	27.9	28.2	22.9	36.8	31.2
Literacy Rate - (10 Years and Older)	66.9	71.2	53.0	74.9	61.9
Youth Literacy Rate - (15-24 Years)	74.5	79.3	57.6	82.4	63.4

Sources: Pakistan Social and Living-Standard Measurement Survey (PSLM) 2014-15

Figures 3 presents inter-temporal national absolute values of educational indicators of access, gender parity, and regional parity, along with average annual growth rates for each category.

Among all indicators of access to education, the highest average annual growth rate of close to 5 percent is observed during 2005-2015 in the pre-primary enrollment rates. In contrast,

very low growth of one percent is evident in youth literacy (Figure 3). Overall, combined growth, as estimated through the geometric mean of all five indicators, is 2 percent during the same period. The growth in geometric mean during pre-18th Amendment (2005-2009) and post-18th Amendment (2011-2015) is 2 and 3 percent, respectively.

Gender parity indices of access to education have not improved much except tertiary education, which increased from 49 percent in 2005 to 68 percent in 2015 – with an average growth rate of 3.7 percent. All other gender parity indices show an average annual growth rate of close to or less than one percent. The growth in the geometric mean of indices remained 1.3 percent during 2005-2015, while a relatively higher growth of 1.5 percent is observed during 2005-09.

Figure 3: Indicators and Parity Indices of Access to Education – National Scenario

					Average Annual Growth Rates (%)		
	2005	2009	2011	2015	2005-09	2011-15	2005-15
Access Indicators *(% of relevant population)*							
Pre-Primary Enrollment	19.7	23.9	24.7	29.2	5.3	4.5	4.8
Enrollment Rate	59.8	66.6	66.9	69.9	2.8	1.1	1.7
Tertiary Education	8.2	9.4	8.4	9.3	3.4	2.4	1.2
Literacy Rate	52.7	57.3	57.7	59.8	2.1	0.9	1.3
Youth Literacy	65.4	69.6	70.6	71.9	1.6	1.9	1.0
Geometric Mean	32.0	35.9	35.6	38.2	3.0	1.9	1.9
Gender Parity Indices *(%)*							
Pre-Primary Enrollment	87.1	92.3	87.2	87.0	1.5	-0.1	0.0
Enrollment Rate	80.1	81.7	83.4	84.6	0.5	0.4	0.6
Tertiary Education	49.1	53.9	60.1	67.5	2.4	3.0	3.7
Literacy Rate	61.5	64.6	66.5	70.1	1.2	1.4	1.4
Youth Literacy	71.9	77.0	79.7	81.9	1.8	0.7	1.4
Geometric Mean	68.6	72.6	74.6	77.8	1.5	1.1	1.3
Regional Parity Indices *(%)*							
Pre-Primary Enrollment	58.0	60.9	65.2	65.8	1.2	0.2	1.3
Enrollment Rate	73.9	76.9	77.3	77.6	1.0	0.1	0.5
Tertiary Education	21.4	23.9	22.6	27.3	2.8	5.1	2.7
Literacy Rate	70.6	81.4	83.9	92.6	3.8	2.6	3.1
Youth Literacy	69.6	72.7	75.3	74.5	1.1	-0.3	0.7
Geometric Mean	53.8	58.1	59.1	62.6	2.0	1.5	1.6

Note: Population groups of all indicators are the same as in Figure 2.
Source: Estimated from PSLM Surveys, 2004-05, 2008-09, 2010-11, 2014-15.

As far as regional (urban/rural) parity indices are concerned, an average annual growth of 1.6 percent is observed during 2005-2015 in the geometric mean of indices. Again, the growth remained higher during 2005-2009. Tertiary education and pre-primary enrollment are two areas where magnitudes of regional parties are relatively low. Encouragingly, the rate of regional parity in the literacy rate is significantly high as compared with other indicators.

The above analysis is based on the absolute values of the selected indicators, while the combined or composite picture is represented by the value of the geometric mean. However, the objective of this research is to provide estimated values of AMPI, which is a non-compensatory composite index. While developing the AMPI, indicators are normalized with the minimum and maximum values to represent the possible range of each variable for all time periods and for all units. Thus, AMPI enables comparison over time as well as among cross-section units.

Figure 4 provides non-compensatory composite national, provincial, and regional indices for the educational status of Pakistan in terms of selected indicators of access and parity. These indices are developed with the national value of the year 2005 as the base value. Thus, the pertinent values of AMPI may only be compared with the values observed in the year 2005.

At the national level, the value of composite APMI for access indicators grew by 6 percent during 2005-2015 – the growth remained higher in rural areas (6.5 percent) as compared to urban areas (4.4 percent). Significant variation exists among the provinces as the index increased by 8.7 percent in KPK as opposed to 2.4 percent in Sindh. The changes observed in the composite parity indices are relatively low. Overall, gender and regional indices improved by 4 percent and 3 percent, respectively.

Aggregate AMPI for the overall educational status (all indicators of access to education and parity indices combined) grew by 4.4 percent during the same period, with a marked difference between rural (5.9 percent) and urban (3.4 percent) areas. Among the provinces, the highest change of 5.2 percent occurred in KPK as compared to the lowest increase of 3.0 percent in Sindh.

A comparison of the educational status pre-18th Amendment (2005-2009) and post-18th Amendment (2011-2015) is presented in Figure 5. The analysis reveals that the percent change in overall status of education in all the provinces was greater during 2005-2009 as compared to that during 2011-2015, with the exception of Balochistan. The least improvement is seen in Sindh where the growth in the index is less than one percent during the second period.

Barring Balochistan, relatively low values of percent change are evident in all provinces during 2011-2015 in gender and regional parity indices. A significant improvement in gender and regional disparities in Balochistan during 2011-2015 resulted in attaining higher

values for the overall educational status. It is noteworthy that gender parity has deteriorated in KPK during 2011-2015 with a negative growth of 0.3 percent.

Figure 4: Values of Composite AMPIs for Measuring Educational Status
(Base Year: National Value in 2005 = 100)

	2005	2009	2011	2015	Percent Change [2005-2015]
AMPIs – Access Indicators					
National	100.0	103.7	103.8	106.1	6.1
Urban	112.1	115.5	114.8	117.0	4.4
Rural	94.2	97.8	98.4	100.3	6.5
Punjab	102.0	106.1	106.6	109.6	7.4
Sindh	100.8	103.8	103.0	103.2	2.4
Khyber Pakhtunkhwa	95.3	99.1	99.8	103.6	8.7
Balochistan	89.3	93.4	92.5	94.4	5.7
AMPIs – Gender (Female/Male) Parity Indices					
National	100.0	101.6	102.7	104.0	4.0
Urban	107.6	108.9	109.2	110.0	2.2
Rural	94.7	96.3	98.2	99.7	5.4
Punjab	103.7	105.6	107.1	108.4	4.6
Sindh	98.7	100.0	100.6	102.0	3.4
Khyber Pakhtunkhwa	91.6	93.2	95.3	95.1	3.8
Balochistan	89.4	90.1	87.4	91.9	2.8
AMPIs – Regional (Rural/Urban) Parity Indices					
National	100.0	101.7	102.2	103.0	3.0
Punjab	101.4	102.1	103.7	104.0	2.5
Sindh	96.3	99.7	98.6	99.3	3.2
Khyber Pakhtunkhwa	101.6	104.2	104.0	104.9	3.3
Balochistan	97.3	99.5	98.1	100.9	3.8
AMPIs – Overall Educational Status					
National	100.0	102.3	102.9	104.4	4.4
Urban	109.9	112.3	112.1	113.6	3.4
Rural	94.4	97.1	98.3	100.0	5.9
Punjab	102.4	104.6	105.8	107.4	4.9
Sindh	98.6	101.2	100.7	101.5	3.0
Khyber Pakhtunkhwa	96.3	99.0	99.8	101.4	5.2
Balochistan	92.1	94.5	92.9	95.9	4.1

Source: Estimated from PSLM Surveys, 2004-05, 2008-09, 2010-11, 2014-15.

In terms of core indicators of access to education, percent changes are relatively low in all provinces, including Balochistan, during 2011-2015. Nonetheless, the difference between pre- and post-18th Amendment in KPK is small (4.0 vs 3.8). In contrast, the highest difference is evident in the case of Sindh (2.9 vs 0.3).

Detailed district-wise findings on the indices of educational status are provided in Appendix-A. Figure A-1 to Figure A-4 in the appendix furnish value of composite indices of overall educational status as well as its components (access and parity indices). These indices display information for the year 2015 which are derived from the latest available PSLM 2014-15. Ranking of districts according to the magnitudes of overall educational status are also provided.

Figure A-5 to Figure A-8 provide inter-temporal district values of overall composite indices of educational status for 2005, 2009, 2011 and 2015, also highlighting the changes during 2005-2009 and 2011-2015.

Figure A-9 lists the districts which show a declining trend in the overall composite indices during the two periods of analysis. It is worth highlighting that during pre-18th Amendment period, 12 districts (3 each from Punjab and Balochistan, 2 from KPK and 4 from Sindh) experienced a negative trend in the overall composite index of educational status. In contrast, the decline is observed in 32 districts (3 from Punjab, 5 from KPK, 10 from Sindh and 14 from Balochistan) during the post-18th Amendment period.

Figure 5: Percent Change in Composite Indices Pre- and Post-18th Amendments Scenario

Accesss to Education Indicators

	Psakistan	Punjab	Sindh	KPK	Balochistan
Pre-Amendment	3.7	4.0	2.9	4.0	4.5
Post-Amendment	2.2	2.9	0.3	3.8	2.1

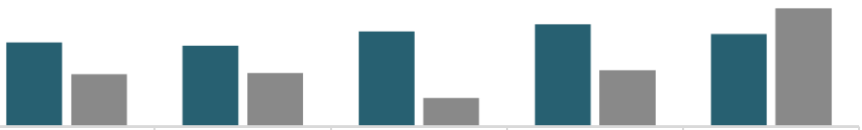
Gender Parity

	Psakistan	Punjab	Sindh	KPK	Balochistan
Pre-Amendment	1.6	1.9	1.3	1.7	0.8
Post-Amendment	1.3	1.2	1.5	-0.3	5.1

Regional Parity

	Psakistan	Punjab	Sindh	KPK	Balochistan
Pre-Amendment	1.7	0.7	3.5	2.6	2.3
Post-Amendment	0.7	0.3	0.8	0.9	2.9

Overall Educational Status



	Psakistan	Punjab	Sindh	KPK	Balochistan
Pre-Amendment	2.3	2.2	2.6	2.8	2.5
Post-Amendment	1.4	1.5	0.8	1.6	3.2

Source: Estimated from PSLM Surveys, 2004-05, 2008-09, 2010-11, 2014-15.

4 Discussion and Conclusion

The four nationally representative large household surveys of Pakistan considered in this research provide an opportunity to compare the performance of provincial governments in improving access to education and reducing the disparities with respect to gender and region across two distinct eras in terms of macroeconomic performance, financing of education, and political governance. On the macroeconomic front, the average annual growth rate of GDP was higher (5.1 percent) during 2005-2009 as compared to 3.9 percent during 2011-2015. On the financing side, provinces had increased resources in the second period as a result of the 7th NFC Award. As expected, public expenditure on social services also increased during this period. For instance, aggregate provincial expenditure on education increased from 1.5 percent of GDP in 2010 to 1.8 percent in 2015. However, the analysis indicates that the increased expenditure did not translate into improving educational outcomes, which perhaps is due to the political governance. While the 18th Amendment gave unprecedented autonomy to the provincial governments in terms of decentralization and devolution of power, the same practice of devolution was not adopted by most of the provinces with regard to rendering financial and legislative powers to local governments. Thus, the two periods of analysis also differ in terms of the functioning of local governments, which has implications for the delivery of social services.

Non-compensatory composite indices were developed for this research to summarize the status of educational achievement in terms of access to and parity in education. The construction of non-compensatory indices is based on the assumptions of non-substitutability of the individual indicators. This notion ensures that all indicators have the same importance, and full compensation among them is not allowed.

The results reveal that barring Balochistan, growth in the composite values of indicators of educational performance during 2005-2009 is significantly high as compared to that during 2011-2015. While improvement in the status of education has not been impressive in all the provinces, comparatively low performance in the second largest province, Sindh, is a matter of serious concern.

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Appendix-A

District-Wise Information on Educational Status

Figure A-1: Composite Indices of Educational Status – Punjab | *[2005 National Value = 100]*

	Overall Index – 2015		Constituent Indices – 2015		
	Value	National Rank Order [Lowest = 1, Highest = 114]	Indicators of Access to Education	Gender Parity	Regional Parity
Islamabad	116.9	114	127.2	111.1	111.0
Jhelum	115.7	113	122.1	114.4	110.2
Rawalpindi	115.3	112	124.0	110.6	110.4
Gujrat	115.2	111	120.1	114.6	110.8
Chakwal	115.1	110	118.8	115.9	110.7
Sialkot	114.7	109	120.1	114.0	109.9
Lahore	114.7	108	120.6	114.0	108.9
Gujranwala	114.2	107	116.9	118.1	107.4
Mandi Bhauddin	113.1	106	112.9	119.9	106.4
Narowal	112.6	105	116.1	110.8	111.0
Sheikhupura	111.9	104	111.9	113.8	110.3
Faisalabad	110.8	101	112.9	111.6	108.0
Kasur	110.8	100	112.0	109.9	110.8
T.T.Singh	110.7	99	113.0	112.5	106.7
Attock	110.3	97	116.3	107.4	106.8
Hafiz Abad	109.9	96	111.4	110.8	107.7
Nankana Sahib	109.9	95	113.8	107.9	108.0
Sargodha	108.5	93	110.8	109.7	105.0
Leiah	106.9	90	110.7	104.5	105.5
Sahiwal	106.7	89	106.2	107.9	106.0
Multan	106.0	86	105.8	108.7	103.5
Khushab	106.0	85	108.3	105.7	104.2
Khanewal	105.1	80	104.2	104.5	106.6
Okara	104.4	79	104.9	105.7	102.7
Jhang	104.1	77	106.7	101.0	104.6
Mianwali	103.9	75	106.1	101.9	103.8
Bahawalnagar	103.7	72	103.0	105.7	102.3
Vehari	102.9	68	101.4	107.4	99.7
Chiniot	102.8	67	103.4	100.1	105.0
Bhakkar	102.5	65	104.3	98.5	104.4
Pakpattan	102.3	64	103.3	101.4	102.3
Lodhran	101.9	62	100.5	103.2	102.2
Bahawalpur	101.3	57	98.9	104.4	100.7
R. Y. Khan	99.9	52	96.8	102.0	100.9
Muzaffargarh	98.9	48	97.0	99.4	100.4
D.G.Khan	96.4	37	96.9	97.7	94.7
Rajanpur	94.3	28	93.0	97.3	92.6

Source: Estimated from PSLM Survey data 2014-15

Figure A-2: Composite Indices of Educational Status – Sindh
[2005 National Value = 100]

	Overall Index – 2015		Constituent Indices – 2015		
	Value	National Rank Order [Lowest = 1, Highest = 114]	Indicators of Access to Education	Gender Parity	Regional Parity
Karachi	111.1	102	119.3	111.9	100.4
Noshero Feroz	106.5	88	109.4	101.3	108.5
Dadu	106.0	84	107.8	105.7	104.6
Hyderabad	103.0	69	104.1	103.0	102.1
Larkana	102.7	66	102.1	98.4	107.3
Sukkur	100.5	56	103.2	97.6	100.5
Khairpur	100.2	55	100.4	93.7	105.8
Jamshoro	99.9	53	97.3	97.3	104.8
SB - Nawab Shah	98.7	47	98.6	95.2	102.1
Matiari	97.8	43	96.3	94.5	102.3
Shahdadkot	97.2	42	90.8	96.8	103.4
Mirpur Khas	96.6	40	95.5	97.1	97.3
Tando Alah Yar	96.6	39	90.7	99.1	99.5
Thatta	96.5	38	89.1	105.1	95.1
Shikarpur	96.2	36	92.9	94.6	100.8
Sanghar	94.7	30	93.3	92.3	98.3
Badin	94.5	29	91.1	93.7	98.7
Ghotki	93.8	25	90.9	87.5	102.0
Umer Kot	93.3	23	90.0	90.8	98.9
Tando M Khan	93.1	22	86.9	97.1	95.1
Tharparkar	93.1	21	91.3	89.4	98.2
Jacobabad	93.1	20	89.2	92.6	97.3
Sujawal	91.1	15	86.6	89.6	96.8
Kashmore	91.0	14	87.0	88.9	96.8

Source: Estimated from PSLM Survey data 2014-15

Figure A-3: Composite Indices of Educational Status – KPK
[2005 National Value = 100]

	Overall Index – 2015		Constituent Indices – 2015		
	Value	National Rank Order [Lowest = 1, Highest = 114]	Indicators of Access to Education	Gender Parity	Regional Parity
Haripur	111.7	103	115.3	111.2	108.5
Malakand	110.5	98	112.8	100.9	116.6
Abotabad	109.7	94	115.9	105.8	107.0
Mansehra	106.9	91	110.3	103.5	106.8
Chitral	106.1	87	109.0	102.1	106.9
Nowshera	105.7	83	108.5	97.0	110.9
Kark	105.3	81	110.0	96.6	108.2
Mardan	104.0	76	106.5	94.7	109.7
Lower Dir	103.7	74	106.4	95.0	108.7
Peshawar	103.7	73	107.9	96.6	105.8
Swabi	103.6	71	105.2	95.9	109.0
Charsada	102.2	63	102.9	94.2	108.5
Swat	101.6	61	102.1	94.9	107.4
Lakki Marwat	101.5	60	103.5	89.7	109.3
Kohat	100.1	54	105.2	92.7	101.8
Bannu	99.8	51	103.8	88.7	105.3
Hangu	97.8	44	100.3	85.2	105.7
Tank	95.4	34	95.0	89.6	100.9
D.I.Khan	95.0	32	95.1	94.1	95.8
Upper Dir	94.2	26	93.5	89.9	98.9
Bonair	91.8	17	96.0	87.3	—
Batagram	90.3	12	93.1	87.5	—
Shangla	86.8	5	90.0	83.3	—
Tor Ghar	81.6	3	84.3	78.3	—
Kohistan	80.7	2	83.8	76.8	—

Note: The sign '—' in cells indicate no urban area is reported for these districts.

Source: Estimated from PSLM Survey data 2014-15

Figure A-4: Composite Indices of Educational Status – Balochistan
[2005 National Value = 100]

	Overall Index – 2015		Constituent Indices – 2015		
	Value	National Rank Order [Lowest = 1, Highest = 114]	Indicators of Access to Education	Gender Parity	Regional Parity
Quetta	107.8	92	107.1	100.3	115.1
Gwadar	105.4	82	105.9	96.0	111.9
Kalat	104.2	78	104.6	105.9	102.4
Musa Khel	103.2	70	97.8	98.4	112.4
Qillah Saifullah	101.5	59	91.1	75.3	122.3
Mastung	101.4	58	103.5	97.0	103.5
Pashin	99.1	50	95.4	97.3	104.5
Khuzdar	99.0	49	96.0	98.6	102.2
Loralai	98.5	46	98.8	90.4	105.4
Nashki	98.2	45	95.1	87.6	107.9
Sibbi	97.2	41	96.1	101.2	94.1
Jafarabad	95.7	35	90.5	86.8	107.2
Kharan	95.3	33	96.4	95.6	94.3
Bolan/Kachhi	94.8	31	92.4	94.2	98.1
Lasbilla	94.3	27	90.4	97.5	94.9
Ziarat	93.6	24	90.4	89.0	100.4
Nasirabad	92.6	19	90.2	87.2	99.8
Kohlu	92.2	18	88.8	86.7	100.2
Awaran	91.7	16	93.4	89.7	—
Zhob	90.9	13	94.0	86.0	92.3
Jhal Magsi	90.1	11	83.1	87.0	99.0
Hernai	89.4	10	86.0	85.2	96.3
Dera Bugti	87.7	9	81.6	78.7	98.7
Barkhan	87.5	8	88.0	77.6	93.9
Washuk	87.5	7	88.9	85.7	—
Qilla abd	87.3	6	81.4	81.2	97.4
Chaghi	86.2	4	83.0	83.2	92.0
Sheerani	79.3	1	85.9	64.0	—

Note: PSLM 2015 survey was not conducted in two districts (Ketch/Turbat and Panjgure).
The sign '—' indicate no urban area is reported for these districts

Source: Estimated from PSLM Survey data 2014-15

Figure A-5: Trend in Overall Composite Indices of Educational Status – Punjab
[2005 National Value = 100]

					Percentage Change		
	2005	2009	2011	2015	2005-2009	2011-2015	2005-2015
Islamabad	114.7	116.6	115.2	116.9	1.7	1.5	1.9
Jhelum	108.0	112.5	112.1	115.7	4.2	3.2	7.1
Rawalpindi	110.2	113.2	113.5	115.3	2.8	1.6	4.7
Gujrat	110.0	112.1	111.7	115.2	1.8	3.1	4.7
Chakwal	108.8	110.8	113.5	115.1	1.8	1.4	5.7
Sialkot	111.1	112.7	114.0	114.7	1.5	0.6	3.3
Lahore	111.5	112.9	112.7	114.7	1.3	1.8	2.9
Gujranwala	110.7	112.0	113.7	114.2	1.3	0.5	3.2
Mandi Bhauddin	103.2	109.0	108.6	113.1	5.6	4.2	9.6
Narowal	105.6	108.7	108.8	112.6	3.0	3.5	6.7
Sheikhupura	103.5	108.6	108.6	111.9	5.0	3.1	8.2
Faisalabad	105.8	108.0	108.9	110.8	2.1	1.8	4.8
Kasur	101.3	105.1	107.4	110.8	3.7	3.2	9.4
T.T.Singh	104.5	107.8	109.9	110.7	3.2	0.7	6.0
Attock	104.2	106.3	110.0	110.3	2.0	0.3	5.8
Hafiz Abad	103.5	105.9	108.9	109.9	2.4	1.0	6.3
Nankana Sahib	.	106.8	109.4	109.9	.	0.5	.
Sargodha	102.0	105.6	104.7	108.5	3.5	3.7	6.3
Leiah	99.4	100.2	102.0	106.9	0.8	4.8	7.5
Sahiwal	101.1	101.3	106.1	106.7	0.2	0.5	5.5
Multan	99.4	103.4	104.2	106.0	4.0	1.8	6.7
Khushab	101.0	103.9	105.9	106.0	2.8	0.1	5.0
Khanewal	99.2	101.5	102.0	105.1	2.3	3.1	5.9
Okara	98.7	102.0	102.6	104.4	3.4	1.8	5.8
Jhang	95.9	100.0	102.0	104.1	4.3	2.0	8.5
Mianwali	98.7	102.2	105.2	103.9	3.6	-1.3	5.3
Bahawalnagar	98.6	98.2	104.1	103.7	-0.4	-0.4	5.1
Vehari	98.2	102.0	101.6	102.9	3.9	1.3	4.8
Chiniot	.	.	99.0	102.8	.	3.9	.
Bhakkar	96.6	102.6	98.1	102.5	6.2	4.5	6.1
Pakpattan	97.5	98.4	99.0	102.3	0.9	3.4	4.9
Lodhran	94.5	100.6	99.7	101.9	6.5	2.3	7.9
Bahawalpur	99.9	98.9	101.0	101.3	-1.0	0.3	1.5
R. Y. Khan	96.1	96.9	100.2	99.9	0.9	-0.3	4.0
Muzaffargarh	91.9	96.6	96.2	98.9	5.1	2.8	7.6
D.G.Khan	94.7	94.8	94.7	96.4	0.1	1.7	1.8
Rajanpur	95.0	90.6	93.8	94.3	-4.6	0.6	-0.7

Note: Cells with no figures/data indicate changes in district boundaries (formation of new districts).

Source: Estimated from PSLM Survey datasets, 2004-05, 2008-09, 2010-11 and 2014-15.

Figure A-6: Trend in Overall Composite Indices of Educational Status – Sindh
[2005 National Value = 100]

					Percentage Change		
	2005	2009	2011	2015	2005-2009	2011-2015	2005-2015
Karachi	108.8	110.0	109.1	111.1	1.1	1.8	2.1
Noshero Feroz	100.3	107.4	99.7	106.5	7.2	6.9	6.2
Dadu	96.1	104.9	105.1	106.0	9.2	0.8	10.3
Hyderabad	98.9	107.4	106.8	103.0	8.6	-3.5	4.1
Larkana	93.1	97.8	98.0	102.7	5.1	4.8	10.4
Sukkur	101.1	100.0	98.7	100.5	-1.2	1.8	-0.7
Khairpur	98.8	100.7	99.7	100.2	1.9	0.6	1.5
Jamshoro	.	98.5	96.1	99.9	.	4.0	.
SB - Nawab Shah	94.6	98.0	95.8	98.7	3.6	3.0	4.4
Matiari	.	98.1	98.0	97.8	.	-0.2	.
Shahdadkot	.	96.1	96.4	97.2	.	0.9	.
Mirpur Khas	93.8	95.2	99.2	96.6	1.5	-2.6	3.0
Tando Alah Yar	.	98.1	97.8	96.6	.	-1.3	.
Thatta	92.1	91.4	91.0	96.5	-0.8	6.1	4.7
Shikarpur	98.3	99.2	95.9	96.2	0.9	0.3	-2.2
Sanghar	93.2	98.8	98.4	94.7	6.0	-3.7	1.6
Badin	96.7	96.4	95.3	94.5	-0.3	-0.8	-2.2
Ghotki	97.0	95.3	92.3	93.8	-1.8	1.6	-3.3
Umer Kot	.	.	97.6	93.3	.	-4.4	.
Tando M Khan	.	98.7	93.7	93.1	.	-0.7	.
Tharparkar	93.1	96.7	94.9	93.1	3.9	-1.8	0.1
Jacobabad	89.7	93.4	91.4	93.1	4.1	1.9	3.8
Sujawal	.	.	.	91.1	.	.	.
Kashmore	.	96.3	92.3	91.0	.	-1.5	.

Note: Cell with no figures/data indicate changes in district boundaries (formation of new districts).

Source: Estimated from PSLM Survey datasets, 2004-05, 2008-09, 2010-11 and 2014-15.

Figure A-7: Trend in Overall Composite Indices of Educational Status – KPK
[2005 National Value = 100]

					Percentage Change		
	2005	2009	2011	2015	2005-2009	2011-2015	2005-2015
Haripur	102.8	107.8	110.0	111.7	4.8	1.5	8.6
Malakand	102.8	107.6	104.5	110.5	4.7	5.7	7.5
Abotabad	106.3	111.3	108.3	109.7	4.7	1.3	3.2
Mansehra	99.0	102.9	101.5	106.9	4.0	5.3	8.0
Chitral	99.5	102.7	105.2	106.1	3.2	0.8	6.6
Nowshera	99.2	102.2	102.5	105.7	3.0	3.2	6.5
Kark	96.8	97.8	99.8	105.3	1.0	5.5	8.7
Mardan	99.3	102.3	99.7	104.0	3.0	4.3	4.7
Lower Dir	98.3	98.7	100.4	103.7	0.4	3.3	5.5
Peshawar	96.7	99.7	101.8	103.7	3.2	1.8	7.3
Swabi	99.7	101.6	105.5	103.6	1.9	-1.8	3.9
Charsada	97.6	101.2	98.7	102.2	3.7	3.5	4.7
Swat	95.5	95.6	99.2	101.6	0.1	2.4	6.5
Lakki Marwat	96.0	95.2	93.8	101.5	-0.9	8.2	5.7
Kohat	95.6	97.3	97.2	100.1	1.7	3.1	4.7
Bannu	92.7	96.1	98.0	99.8	3.7	1.8	7.7
Hangu	94.2	100.1	96.0	97.8	6.3	1.9	3.9
Tank	90.7	90.2	89.8	95.4	-0.5	6.3	5.2
D.I.Khan	91.5	93.2	91.4	95.0	1.8	4.0	3.8
Upper Dir	89.3	98.3	100.5	94.2	10.1	-6.3	5.5
Bonair	85.2	90.0	89.6	91.8	5.7	2.5	7.8
Batagram	87.2	96.6	96.1	90.3	10.8	-6.0	3.5
Shangla	85.3	88.7	90.5	86.8	4.1	-4.1	1.8
Tor Ghar				81.6			
Kohistan	78.9	82.3	81.0	80.7	4.4	-0.3	2.3

Note: Cells with no igures/data indicate changes in district boundaries (formation of new districts).

Source: Estimated from PSLM Survey datasets, 2004-05, 2008-09, 2010-11 and 2014-15.

Figure A-8: Trend in Overall Composite Indices of Educational Status – Balochistan
[2005 National Value = 100]

					Percentage Change		
	2005	2009	2011	2015	2005-2009	2011-2015	2005-2015
Quetta	102.4	105.6	104.7	107.8	3.1	3.0	5.3
Gwadar	91.8	103.2	98.1	105.4	12.4	7.5	14.8
Kalat	93.2	95.0	99.0	104.2	2.0	5.3	11.8
Musa Khel	83.2	79.9	75.3	103.2	-3.9	37.1	24.1
Qillah Saifullah	86.2	88.7	88.0	101.5	3.0	15.3	17.8
Mastung	94.8	88.9	102.3	101.4	-6.3	-0.9	6.9
Pashin	100.2	101.9	102.9	99.1	1.7	-3.7	-1.1
Khuzdar	91.1	94.1	99.9	99.0	3.4	-0.9	8.7
Loralai	87.6	91.6	85.7	98.5	4.6	15.0	12.4
Nashki	.	99.1	90.2	98.2	.	8.9	.
Sibbi	90.8	94.9	100.5	97.2	4.5	-3.3	7.0
Jafarabad	91.2	94.5	87.0	95.7	3.6	9.9	4.9
Kharan	87.6	91.8	97.7	95.3	4.8	-2.5	8.8
Bolan/Kachhi	88.8	90.0	97.6	94.8	1.4	-2.8	6.8
Lasbilla	90.8	95.6	91.3	94.3	5.3	3.3	3.8
Ziarat	96.0	113.1	94.9	93.6	17.9	-1.5	-2.5
Nasirabad	86.8	94.6	87.8	92.6	9.0	5.5	6.8
Kohlu	.	94.1	88.5	92.2	.	4.1	.
Awaran	85.2	89.3	96.4	91.7	4.8	-4.8	7.6
Zhob	86.5	90.9	87.7	90.9	5.1	3.6	5.1
Jhal Magsi	85.0	88.5	103.2	90.1	4.0	-12.7	5.9
Hernai	.	.	95.7	89.4	.	-6.7	.
Dera Bugti	.	87.8	82.0	87.7	.	6.9	.
Barkhan	91.7	84.9	81.4	87.5	-7.5	7.5	-4.5
Washuk	.	88.2	92.0	87.5	.	-4.9	.
Qilla abd	89.1	92.3	99.0	87.3	3.6	-11.8	-2.0
Chaghi	92.8	96.0	87.0	86.2	3.4	-1.0	-7.1
Sheerani	.	.	88.3	79.3	.	-10.2	.
Ketch/Turbat	98.2	98.7	92.8	.	0.5	.	.
Panjgur	94.2	94.4	94.9	.	0.2	.	.

Note: Cells with no figures/data indicate either changes in district boundaries (formation of new districts) or PSLM survey was not conducted.

Source: Estimated from PSLM Survey datasets, 2004-05, 2008-09, 2010-11 and 2014-15.

Figure A-9: Districts Showing Declining Trend in Overall Composite Indices of Educational Status

During 2005-2009		During 2011-2015	
Districts	**Rate of Declining (%)**	**Districts**	**Rate of Declining (%)**
Balochistan: ***(3)***		***Balochistan:*** ***(14)***	
Musa Khel	-3.9	Mastung	-0.9
Mastung	-6.3	Pashin	-3.7
Barkhan	-7.5	Khuzdar	-0.9
KPK: ***(2)***		Sibbi	-3.3
Lakki Marwat	-0.9	Kharan	-2.5
Tank	-0.5	Bolan/Kachhi	-2.8
Sindh: ***(4)***		Ziarat	-1.5
Sukkur	-1.2	Awaran	-4.8
Thatta	-0.8	Jhal Magsi	-12.7
Badin	-0.3	Hernai	-6.7
Ghotki	-1.8	Washuk	-4.9
Punjab: ***(3)***		Qilla abd	-11.8
Bahawalnagar	-0.4	Chaghi	-1.0
Bahawalpur	-1.0	Sheerani	-10.2
Rajanpur	-4.6	***KPK:*** ***(5)***	
		Swabi	-1.8
		Upper Dir	-6.3
		Batagram	-6.0
		Shangla	-4.1
		Kohistan	-0.3
		Sindh: ***(10)***	
		Hyderabad	-3.5
		Matiari	-0.2
		Mirpur Khas	-2.6
		Tando Alah Yar	-1.3
		Sanghar	-3.7
		Badin	-0.8
		Umer Kot	-4.4
		Tando M Khan	-0.7
		Tharparkar	-1.8
		Kashmore	-1.5
		Punjab: ***(3)***	
		Mianwali	-1.3
		Bahawalnagar	-0.4
		R. Y. Khan	-0.3

Note: Number of Districts in the respective category are shown in the parentheses.

Source: Estimated from PSLM Survey datasets, 2004-05, 2008-09, 2010-11, 2014-15.

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