

## Dynamics in Educational Outcomes by Gender: Evidence from Pakistan

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**Abstract.** There is strong empirical evidence that show females as a marginalized group in many aspect within Pakistan with its education sector being no different. However it is extremely important not only to document this fact but to analyze how such tendencies are evolving over time within society. This paper is an attempt in this direction, whereby in our analysis not only we assess how different are female and male population in terms of their current enrollment and attained education patterns but also in terms of structure of change in their attainment distribution as we move from older towards younger cohorts. Our findings show though gender should remain an important policy concern in domain of education sector given the prominent discrepancies in current enrolment and attained schooling estimates within male and female population, however distributional analysis of attainment patterns over age cohorts show that there is definitely some evidence of structural shifts in terms of changing economic constraints and social norms within Pakistan. This can be inferred from evidence that show much stronger inclination of higher education in younger cohorts within female attainment distribution.

**Keywords.** Educational attainment, Gender, Age cohort analysis, Pakistan.

**JEL.** I21, J16.

### 1. Introduction

How gender materialize in different educational path for males and females in a population is essentially a results of interaction of economic constraints with social limitations in a patriarchal society. In case of Pakistan also we find ample evidence that reveal the marginalized position of females in educational outcomes as has been documented in Sathar & Lloyd (1994), Sabir (2002), Ali (2003), Mahmood (2004), Ghuman & Lloyd (2010), and Qureshi (2012). Within these research there is ample evidence of both economic and social factors as strong determinant of females' education. For example distance to schooling, presence of single-sex along with other determinant like parental income and education (especially mother's education) to name a few comes out to be a strong predictor of girls' enrolment in case of Pakistan (especially in rural areas) indicating how safety concern for female child and patriarchal concern of honor along with economic determinants can be considered a binding constraint for female educational prospects (Sathar & Lloyd, 1994; Saqib, 2004; Lloyd, 2004; Ghuman & Lloyd, 2010; Qureshi, 2012). Hence study of phenomenon of how educational outcomes evolve in response to gender within a society requires a broader perspective on schooling outcomes that can give us sense of how social and economic forces interact to generate such dynamics beside focus on the current enrolment likelihood by gender as has been largely done within

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research on the issue in Pakistan. In above context a useful approach that will be followed in this paper in understanding the gender dynamics within the education sector is to study not just the current enrolment patterns for males and females for younger age cohort of school-going ages but to take a wider view to problem by understanding the trends of attained education of males and females across various educational levels over different age cohorts. This will help us gauge into deeper mechanism of gender dynamics in educational outcomes by revealing the historical trends of the issue in hand and not just the dynamics for current population of school-going age. Further not only patterns of educational attainment of males and females over various levels of education are formulated in this study but a rough trend of attrition or continuation in studies as one move from lower to higher educational level for males and females are also evaluated so as to capture in totality the gender dynamics in education sector. So far in literature we can find only one study Mahmood (2004) in context of Pakistan that use age cohort analysis to study the educational attainment, however this work improves on their methodology by analyzing the shape of male and female attainment distribution and not just gender gaps in attained education as has been done previously and how such shape change as we move from older to younger age cohorts. This kind of work has not been done so far in context of Pakistan.

The layout of the paper is as follows. The following section provides us with description of data and empirical methodology employed. Sections 3 and 4 describe our findings on current enrollment patterns by gender across age cohort within age group 2-29 and transition in school attendance from lower to higher levels of education within age group 15-19. A discussion on patterns in attained education without and with division by age cohorts is done in section 5 and 6. Final section concludes the paper.

## 2. Empirical Methodology

Within PSLM 2010-11 HIES micro-data that has been used for this current study, we find an opportunity to not only analyze patterns in current enrolment for the school-going age groups by gender but also those emerging within attained education level over grouping into various age cohorts. The information of attained education levels by age cohort is extremely useful as it not only gives us opportunity to analyze patterns in final completed grades across groups of individuals that are part of different generations but also help to understand that as we move from older to younger cohort, how does attainment shares vary across primary, secondary and tertiary level of education within male and female distributions. With this in mind, we will divide our following analysis into study of patterns that emerge from variation in estimates in attained education percentages within male and female distribution for primary, secondary and tertiary levels of education as we move across following cohorts:

- Cohorts 60-64 to 15-19
- Cohorts 60-64 to 20-24
- Cohorts 60-64 to 35-39 and Cohorts 35-39 to 15-19

Hence through this methodology not only can we get to assess the human capital building process by gender with much wider coverage of the problem by observing behavior across individuals of different age groups but can also get a sense of how social tendencies and economic constraints that keep girls away from education evolve in population as we move across different age groups. This is so examination of how attainment shares across different educational level within a cohort vary as one move from one cohort to another provides an assessment of the direction in which female and male attainment distribution move. In case we find a shift in distributional shares within female attainment profile towards higher educational levels as one move towards younger cohorts, then this pattern can be considered as an indication of break in gender rigidities that arise through mutual interconnections of social and economic processes that restrict females' education.

Though focusing on trends in completed level of education through comparison across birth cohorts by gender is extremely useful technique both in statistical and conceptual dimensions. Statistically in the sense that use of this framework avoids the problem of accounting for the percentage of students that may repeat or skip grades that being more of a concern with current enrollment indicator (Mahmood, 2004). And conceptually since representation of the problem of differential behavior by gender within this methodology requires extraction of information from data encompassing the historical evolution across individuals at different life cycle with varied histories as compared to concentration on just younger cohort of individuals as done in study of current enrollment behavior. However such an analysis has its own shortcomings as attained educational information for individuals will not reveal the eventual completed grade for those individual who are currently enrolled. Beside this if objective of research is also to make an assessment of how the socio-economic, demographic and parental background characteristics of the individuals relates to schooling behavior of individuals so as to identify the policy tools from the findings then a study of current enrollment behavior in the younger cohorts of school going ages can be a more fruitful exercise given that such a group may be much better depiction of the problem in hand that is “does there exist a shortfall in educational demand of females versus males in a household in today’s generation which should ideally be in school and if so then what factors are causing such discrepancies?”. Hence a focus on completed education is important tool since it provides us leverage to understand the historical trends of the matter but it by no means undermine the significance of research based on the current enrollment proxy of educational outcomes; use of which has its own merits. With this in mind, we all analyze the patterns of current enrollment from individuals between ages 5-29 using age cohort analysis, since this indicator is closer to reality of educational outcomes in younger generation. Further since analysis based on current enrollment may miss out variation in trends across older and younger cohorts, hence in attempt to understand the dynamics of gender in human capital process in totality, we will document patterns that come out from study of current enrollment by gender with those arising from shifts of educational attainment over different age-cohort within male’s and female’s respective attainment distribution as we move across lower to higher educational benchmarks and gender variation in transition rates<sup>1</sup> from matric to intermediate level of education.

### 3. Age Cohort Profile of Current Enrollment

Looking in the current enrollment pattern by age cohort in table 1, few important findings stand out. Let us briefly look in to such patterns as below:

- Firstly we can see that males are always enrolled in higher proportion than females at each age group. This patterns of positive gender gap in favor of males is observed in rural societies of all four provinces and also in urban areas in all province except in urban Punjab whereby within age cohorts 10-14 and 15-19 males are enrolled in slightly higher percentage than females.
- Further not only the overall enrollment ratio for both males and females are relatively lower within rural segments compared to urban areas but also show relatively higher gender gaps in favor of males again emphasizing that gender differentiation hold its most solid grip within the traditional rural communities.
- Official designated age for primary education is 5-9 years of age in which ideally all children should have been enrolled had the target of universal education being met. Not only we find that enrollment level within this age group is way below 100 percent both in urban and rural segment for both males and females but except for Province Punjab there is found to be less proportion enrolled in 5-9 years of age that in 10-14 age group. This is reflection of those children who are either repeating grades or were probably late in joining the school system than the official declared age. This pattern of huge presence of

children being enrolled in primary education beyond the official age limit of 5-9 years for primary level can be seen clearly in figure 1 for both male and female children. However this problem is of somewhat less magnitude between secondary and tertiary level where portion who are late in joining tertiary level seem relatively low as evident from pattern for secondary level in figure 1.

- Finally beyond age group 10-14 there is sharp decline in enrollment percentages with each jump towards older age cohort indicating possible drop out as one move to higher levels of education for both males and females.

Hence from above patterns, it is evident that there does exist variation in dynamics in line of gender in educational outcomes in Pakistan. These dynamics are most prominent in rural sector.

### 4. Transition in School Attendance

Table 2 presents percentage of those who complete grade 12 from those who have attained grade 10 within age cohort 15-19 age group. Two striking facts come out from patterns in table 2 below. Firstly within this age cohort very low proportion go on to complete intermediate level of education being only of about 20.54% for overall Pakistan with corresponding figure of only 18.13% for males and 23.52% for females. These low levels of transition towards grade 12 in attained education are seen in estimates for each province being 22.07% for Punjab, 21.91% for Sindh, 18.46% for KPK and 14.10 for Baluchistan. Part of this low attained education grade 12 from those who have already completed matriculation could be attributed to those who are behind the official age of completion of secondary education and but even accounting for that such estimates seem low. Moreover even more surprising finding is that percentage gender gap except for rural KPK, rural Sindh and rural Baluchistan is negative indicating that overall there is trend of more females completing grade 12 among those who have completed grade 10 with 15-19 age group. This is a very crude estimate of transition trends but from these estimates it seems that females are moving on to higher levels of education more than males within this age group especially in urban populations of all provinces and both urban and rural segments of Punjab. The above patterns combine with findings of previous section indicate something extremely interesting that though females in percentage terms are in relatively marginalized position in terms of enrollment in urban Sindh, urban Baluchistan and Urban KPK, yet they are transiting from matric to intermediate in much higher proportion. Hence this may indicate that even though females may be in marginalized position in terms of having on average less proportion with exposure to formal schooling than males, yet the structure of gender dynamics in relation to both access and demand of schooling may be evolving within Pakistani society because of which we are observing relatively higher transition rates for females than males. This is a puzzle that we will try to resolve in our discussion to come.

**Table 1.** Percentage Currently Enrolled for Total and Urban Rural Divide by Age Cohorts and by Gender at National Level and Provincial Level

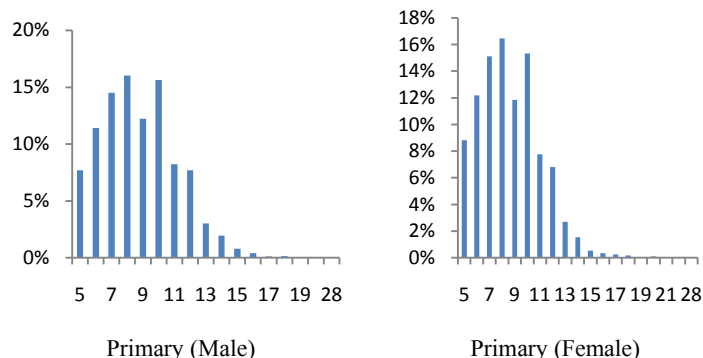
Pakistan									
Age Group	Total			Urban			Rural		
	Both Gender	Male	Female	Both Gender	Male	Female	Both Gender	Male	Female
5 to 9	66.39	71.34	60.95	77.6	80.87	74.05	60.54	66.41	54.07
10 to 14	70.04	77.28	61.64	81.34	84.1	78.21	63.26	73.25	51.58
15-19	41.41	47.6	34.39	52.08	54.84	49.1	33.78	42.63	23.38
20-24	14.22	17.19	11.29	20.5	22.5	18.43	9.06	12.62	5.68
25-29	3.22	4.11	2.35	4.8	5.82	3.7	2.04	2.73	1.4
Punjab									
5 to 9	79.03	81.34	76.59	87.76	89.51	85.88	73.93	76.51	71.24
10 to 14	77.54	79.54	75.41	85.68	84.29	87.2	72.19	76.36	67.79
15-19	45.11	47.39	42.71	55.18	54.27	56.11	37.14	42.06	31.84
20-24	15.61	17.43	13.99	23.32	24.1	22.58	9	11.37	7
25-29	3.83	4.87	2.82	6.06	7.42	4.55	1.92	2.38	1.51
KPK									
5 to 9	70.74	76.92	63.56	80.35	83.17	77.11	66.56	74.23	57.63
10 to 14	75.98	87.56	63.02	83.61	90.15	75.91	72.37	86.29	57.17
15-19	46.51	58.9	33.51	54.59	60.69	48.48	42.32	58.01	25.47
20-24	16.11	21	11.76	20.85	24.35	17.47	13.09	18.71	8.35
25-29	4.28	5.13	3.55	5.14	6.01	4.42	3.71	4.57	2.97
Sindh									
5 to 9	56.63	61.19	51.5	70.37	73.19	67.29	49.22	54.85	42.8
10 to 14	60.67	69.19	50.56	74.78	77.31	72.14	51.69	64.5	35.19
15-19	34.55	40.57	27.54	46.15	48.04	44.19	25.23	35.1	12.63
20-24	12.48	15.73	8.68	16.99	19.17	14.55	7.81	12.31	2.25
25-29	2.85	3.75	1.87	3.95	4.53	3.27	1.92	3.04	0.75
Baluchistan									
5 to 9	52.69	61.8	42.93	65.24	72.49	57.6	46.54	56.62	35.65
10 to 14	60.51	72.57	43.83	78.95	86.55	68.5	49.56	64.3	29.1
15-19	35.41	44.7	21.56	50.8	61.07	35.64	24.7	33.38	11.63
20-24	9.81	14.04	4.83	17.46	22.26	10.85	4.74	7.91	1.36
25-29	0.77	1.51	0	1.33	2.54	0	0.51	1.01	0

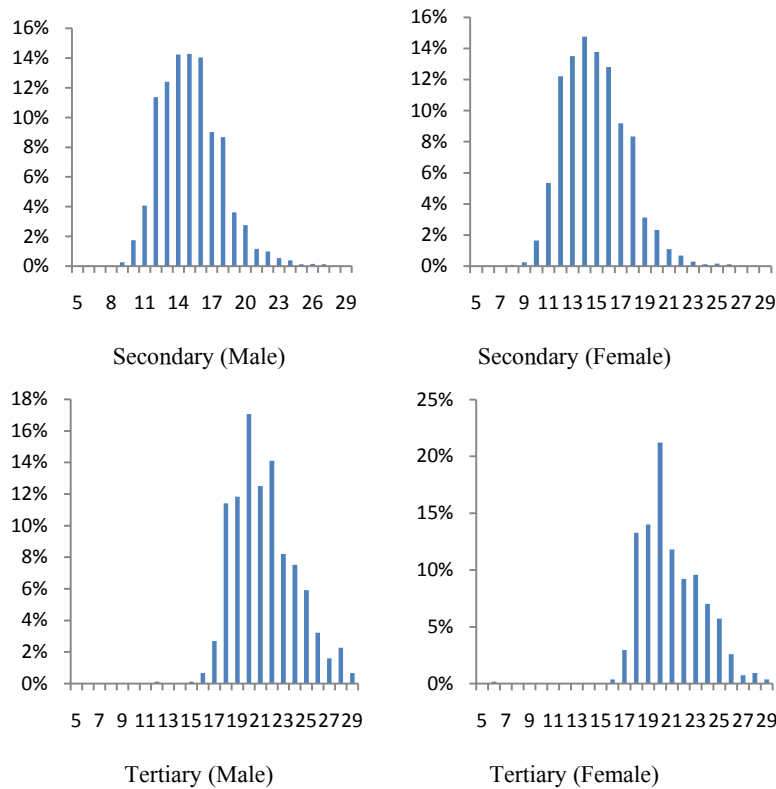
Data Source: PSLM 2010-11 HIES micro-data

**Table 2.** Proportion Completed Intermediate (Grade 12) of those who Completed Matric (Grade 10) for Age Cohort 15-19

Area/ Gender	Pakistan	Punjab	KPK	Sindh	Baluchistan
Overall					
Both	20.54	22.07	18.46	21.91	14.1
Male	18.13	18.36	17.68	20.05	13.71
Female	23.52	25.19	19.69	24.73	15.25
% Gap	-22.91	-27.11	-10.2	-18.92	-10.09
Urban					
Both	23.84	25.78	22.34	24.73	15.24
Male	20.8	23.76	20.38	20.26	14.41
Female	26.71	27.17	24.63	29.33	16.98
% Gap	-22.12	-12.55	-17.25	-30.92	-15.13
Rural					
Both	15.88	16.43	15.32	16.86	11.43
Male	15.3	12.02	15.9	19.8	12.5
Female	16.95	21.4	14.17	6.9	0
% Gap	-9.73	-43.83	12.2	186.95	100

Data Source: PSLM 2010-11 HIES micro-data





**Figure 1.** Age Distribution of Currently Enrolled Students at Primary, Secondary and Tertiary Levels of Education By Gender for Overall Pakistan

### 5. Educational Attainment Pattern:

An overview of the educational attainment profile for Pakistan can be obtained by evaluating the percentage distribution of population (aged 10 years and above) who completed various levels of education from the total of those who ever attended school by gender and by rural-urban divide as presented in Table 3 below. It is evident from Table 3 that only 60.31 percent of population aged 10 years and above has been exposed to formal schooling with about almost 40 percent of the population in excluded category of being among those who have “never attended” school. Of those who have attended school, majority have completed levels within secondary education (54.39%) followed by those with completed grades within primary level of education by proportion of 36.28% and tertiary level of education by amount of 8.57%signifying massive gaps in education sector in terms of concentration of bulk of population within range of low levels for attained human capital. Also among those with completed grades within secondary level of education from total population of those who ever attended school, the share of individuals with completed grades in middle school amounts to figure of 22.05% and those within matric level come out to be at 23.34% while proportion reaching intermediate is estimated at only 9 percent which is indicative of substantial attrition from matric to intermediate level of education with much lower attainment successively at higher educational levels as is evident from low percentages of 5.51% and 2.36% for graduates at bachelors and masters levels respectively and mere 0.65% and 0.05% of total educated population being equipped with professional skills pertaining to fields such as engineering, medicine, law and university education related to agriculture field and MPhil/PhD degrees respectively.

**Table 3. % of Population (Aged 10 Years and above) who Completed Various Levels of Education within Male and Female Attainment Distribution**

Gender	% of Pop. that Ever Attended School (10+)	% of Population with Completed Grades Within											
		Primary Level			Secondary Level				Tertiary Level				
		Below Grade 5	Grade 5	Overall Prim.	Middle	Matric	Inter*	Overall Sec.	Bachelor	Masters	MPhil./PHD	Prof.**	Overall Tertiary
Pakistan													
Both	60.31	18.39	17.89	36.28	22.05	23.34	9	54.39	5.51	2.36	0.05	0.65	8.57
Male	72.72	18	16.06	34.06	22.78	24.55	9.14	56.47	5.2	2.5	0.06	0.88	8.64
Female	47.51	18.99	20.78	39.77	20.9	21.42	8.74	51.06	6	2.14	0.05	0.31	8.5
% Gap		-5.21	-22.7	-14.35	8.99	14.6	4.58	10.59	-13.33	16.82	20	183.8	1.64
Urban													
Both	73.33	13.47	13.99	27.46	21.31	25.78	12.14	59.23	8.06	3.49	0.1	1.14	12.79
Male	81.75	13.87	12.74	26.61	21.33	26.23	12.22	59.78	7.55	3.71	0.11	1.61	12.98
Female	64.53	12.94	15.65	28.59	21.28	25.18	12.04	58.5	8.72	3.19	0.09	0.52	12.52
% Gap		7.18	-18.59	-6.9	0.235	4.17	1.49	2.18	-13.417	16.3	22.2	209.6	3.67
Rural													
Both	51.1	23.38	21.85	45.23	22.81	20.86	5.81	49.48	2.93	1.22	0.01	0.17	4.33
Male	66.27	21.65	18.99	40.64	24.07	23.07	6.43	53.57	3.13	1.44	0.01	0.24	4.82
Female	35.58	26.68	27.3	53.98	20.4	16.65	4.61	41.66	2.54	0.81	0	0.04	3.39
% Gap		-18.85	-30.44	-24.71	17.99	38.55	39.48	28.58	23.22	77.77	100*	500	42.18

**Note:** Above percentage distribution across educational progression from primary to tertiary level do not give out % of those with highest completed grades categorized as other in the data; \*Here individuals with diplomas related to training of technical skills has been grouped with intermediate level given that both these qualification may allow person to look for jobs with more or less similar level of socio-economic status, \*\* Prof. category is sum of all those individuals who have degrees related to profession of engineering, medicine, law, or agricultural sector; Data Source: PSLM 2010-11 HIES micro-data.

The findings from table 1 above also reveal an obvious pattern of differential behavior in educational attainment by gender among those that have been trained in formal system of schooling whereby female backwardness in terms of completed education is evident not only in having much lower proportion among those who got exposed in some form to schooling experience (47.51% for females as compared to 72.72% of males among the population of 10 years and above that have ever attended school) but also because of much denser concentration of females towards lower educational level among the population of educated females compared to the distribution of educated males across educational divisions. Of the total educated females, almost 40 percent of females have attained education that fall within the primary level (with almost half of this proportion with completed grades below primary grade 5), about 51.06% have completed grades that fall within the secondary educational categorization of being either with completed middle, matric or intermediate degrees and only 8.5% are among those that seek higher education beyond the secondary level. However important point to take away from pattern in attainment spread by gender is that compared to educated females, the percentage distribution of educated males by educational categorization reveal that among the educated males there is found to be less presence of those that have completed grades that fall within primary educational range compared to their female counterpart (34.06% for males and 39.77% for females) and higher proportion that have attained grades both within secondary categorization (56.47% for males and 51.06% for females) and within tertiary educational grouping (8.64% for males and 8.5% for females). This indicates that among the much smaller pool of educated females compared to educated males a larger proportion of females have obtained primary grade 5 or less level of education while higher percentages of males than females have completed higher studies both at secondary and tertiary level of education among their respective population by gender of those who have exposure to schooling.

In terms of percentage gender gap across educational classes, above observed patterns are translated into prevalence of negative percentage of magnitude 14.35% at primary level of education and positive figures of almost 11% and almost 2% for secondary and tertiary levels of education respectively again emphasizing the disadvantageous position of females in attained education at national level for Pakistan (refer to Table 3). Moreover this pattern of relative difference in educational attainment of males from females in comparison across the respective educated populations by gender tilting heavily towards females at primary level of education and favoring males for secondary and tertiary levels holds its ground in both rural and urban segments of Pakistan with relative gaps being of noticeable magnitudes in rural societies (corresponding rural and urban estimates of percentage gender gap are -24.7% and -6.9% for primary level respectively, 28.6% and 2.2% for secondary level respectively and 42.2% and 3.7% for tertiary levels respectively (refer to Table 3).

To sum, the key findings that come out from study of attained education for males and females in Pakistan (without disaggregation by age cohorts) are as below:

- We find that attained education is concentrated predominantly at low levels of primary and secondary education with a very small proportion completing tertiary level of education. This is alarming sign for Pakistan's policy makers and planners in terms of accumulation of very low skill human resource base. Hence a stress on higher studies along with strengthening of primary and secondary base is essential in context of Pakistan
- Further there is definitely present a prominent variation in line of gender in human capital accumulation, whereby not only females have much lower level of attained education than males on average but in analysis of attainment distribution by gender, we find that female distribution is concentrated slightly towards left of that of males that is more towards lower education levels.



- Finally gender gap in education in favor of males is mostly a rural phenomenon as can be seen from estimates above that there exist prominent gender gaps in rural population and marginal (in fact negligible) in case of urban population.

## 6. Age Cohort Profile of Educational Attainment

In resolving the puzzle of why there exists gender differences in educational outcomes and how they can be reduced in Pakistan, it is important to trace the patterns in educational attainment by gender over age cohorts. This is most essential for aggregation without taking into account the variation in educational experience across age by hiding how discrepancies in educational outcomes by gender are evolving from older to younger age cohorts can falsely impose the gender rigidities arising from distant past onto our understanding of current patterns. Moreover through this analysis not only can we have an idea of historical trends in gender disparities within Pakistan but also will be able to judge the validity of patterns that comes out from aggregate estimates as done in preceding discussion against the findings across age cohorts, whereby in case the latter analysis endorse the findings from previous section then this will add to their worth further and in case of contradictions will reveal to what extent has aggregation obscured the true picture.

Hence in relative comparisons, it is important to know how varied pattern emerge in educational attainment when estimates take into account variation by age cohort in contrast when such partitioning is ignored. With this in mind, we will divide our following analysis into study of patterns that emerge from estimates in Table 3 across following cohorts:

- Cohorts 60-64 to 15-19
- Cohorts 60-64 to 20-24
- Cohorts 60-64 to 35-39 and Cohorts 35-39 to 15-19

Within this divisions of cohorts, we will evaluate how percentage shares within the educational attainment spread by gender are changing between primary, secondary and tertiary levels of education for males and females within their respective distributions.

### *6.1. Analysis of patterns as one move from cohorts 60-64 to 15-19*

The patterns that comes out from percentage distribution across levels by gender for national estimates as reported in Table 4 is that as we move from those in age cohort 60-64 (born within years 1946-50) to those in age cohort 15-19 (born within years 1991-1995)<sup>ii</sup> among population of those who has schooling experience in some form, there is a profound decrease in share of those with completed grades representing primary grade 5 or less and a substantial increase for those with completed education within secondary levels for both males and females. This trend is evident from drop in estimates of percentage share in overall primary level for males and females from 35.55% and 44.66 % respectively in age cohort 60-64 to values of as low as 21.48 % for males and 25.64% for females and considerable rise in estimates for percentage share within secondary education from 49.11% to 77.24 % for males and from 48% to 72.92% for females. Further the drop in share of those with completed education within primary level is relatively more for female (-42.6%) than males (-39.6%) and that of rise in proportions within educated population completing secondary education is comparatively more for males (57.3%) than females (51.9%) in comparison of percentage distribution of educational attainment across primary and secondary level by gender among those in age group 60-64 years from those in age group 15-19. These patterns show that in comparison with same periods by gender we find not only that male distribution is relatively more concentrated towards secondary levels of education and less towards those with completed primary in comparison to patterns within the female educational attainment profile across primary and secondary level of education for both age groups of 60-64 and 15-19 endorsing the patterns that had

emerged from aggregate estimates in the last section but also the educational attainment distribution for males is relatively more negatively skewed as compared to that of females among primary and secondary levels as we move from older age cohort of 60-64 years of age to much younger population of those in 15-19 age range.

### *6.2. Analysis of patterns as one move from cohorts 60-64 to 20-24*

Moving on to comparison of age cohort 20-24 which has educational attainment mix that contains all three levels namely primary, secondary and tertiary in educated pool of males and females within their corresponding distributions by gender with those within age group 60-64 years again endorse the above patterns as can be seen in comparison by gender within 15-19 age group and across 15-19 and 60-64 age groups. Whereby estimates of age cohort 20-24 for overall Pakistan show that males within their attainment spread are found to be in less proportion at primary level and in higher percentage at secondary levels in percentage comparison with females within their corresponding attainment distribution (females: 23.7% for primary and 60.37% for secondary level; males: 20.77% for primary and 68.98% for secondary level). Further comparison of age cohort 20-24 estimates with those of 60-64 again show that as we move down to younger age group from the oldest, there is drop in shares of those with primary attained education and increase of those with secondary attained education for both males and females indicating a plausible shift in both preference and availability of education for both gender over time in Pakistan; however drop at primary level is found to be relatively more for females (-46.93% for females and -41.57% for males) and rise at secondary level being more for males (40.46% for males and 25.77% for females). Further in terms of comparison of females with males within their percentage attainment distribution at tertiary level of education, males' fare relatively better within age cohort of 60-64 years (14.53% for males and 7.33% for females) and trends revert in favor of females for those within age group 20-24 (15.28% for females and 9.34% for males). This shows that overall as we move from oldest to youngest age group with individuals belonging to attained education from primary to tertiary level of education, there is a tendency for distribution of females within their attainment profile to be relatively more inclined towards university level of education compared to males. This can be considered as sign that the hold of economic and social elements that perhaps restricted female in going to tertiary level of education against female education may have somewhat diluted over time.

### *6.3. Analysis of patterns as one move from cohorts 60-64 to 35-39 and from 35-39 to 20-24*

Further disaggregation of trends across cohorts over longer and shorter generation gaps as we go from age groups 60-64 to 35-39 and 35-39 to 20-24 for primary and secondary levels again confirms our previous findings in analysis across age cohorts 60-64 and 15-19 where we find that as we move down towards 20-24 birth group from relatively younger age cohort of 35-39 years or from oldest age group of 60-64 years or from age group 60-64 to those within 35-39 age bracket, there is drop in share of individuals with acquired education of primary level for both males and females within their respective distribution by gender and increase in that of individuals with completed education within secondary categorization, however the rate at which there is drop within females and males percentage shares across cohorts varies between these two comparisons. For example as one compares across 60-64 and 35-39 age groups the relative decline in percentage share for males comes out to be -39.6% being higher than -22.16% for females at primary level. In comparison to these figures as one moves from age group 35-39 towards 20-24 the drop in share is more for females than males (-31.81% for females and -3.2% for males). Similarly at secondary level of education there is increase in percentage share of those with attained secondary education for

both males and females however we find a discrepancy in patterns in sense the rise in percentage shares being higher for males as one compare across 60-64 and 35-39 age groups (20.5% for males and 4.89% for females) and relatively greater for females as one moves from estimates for 35-39 to 20-24 age cohort (19% for females and 16.53% for males). Similar deviations in patterns are observed in patterns at tertiary level of education as there is marked increase in shares for both males and females across 60-64 and 35-39 cohorts being much higher for females (94.9% for females and 28.1% for males); however across 35-39 and 20-24 cohorts there is relative decrease in percentage share by -49.83% for males and increase for females by amount of 6.92%.

The above patterns reflects gap in history of these two generation (60-64 to 35-39 and 35-39 to 20-24) are being translated at varying degree in shifts in patriarchal and economic tendencies across these longer and shorter views to generational difference. For example overall we do find that position of females within its attainment profile is improving overtime tilting relatively more towards university education compared to males within their own distribution, however in comparison across 60-64 age groups and 35-39 with that across younger age cohorts of 35-39 and 20-24, one find that transition towards tertiary education is happening with much stronger force in the former. Further a close evaluation of educational attainment patterns by gender at tertiary level of education by age cohorts indicate an interesting finding that there is present positive gender gaps with relatively larger presence of males towards higher graduate levels studies within their distribution compared to corresponding distributional share of females at older age cohorts and as we go towards younger cohorts these dynamics change in favor for females making overall negative gender gap for tertiary level of education indicating that the situation of females in accessing higher education has improved relatively over time.

The above findings can be reflected as an indication of reduction in social and economic forces that marginalized female over time in the sense among males and females who get opportunity of education, females are accessing tertiary education in relatively higher proportions than males within their relevant attainment spreading across educational levels by gender, however it should not be mistakenly considered as sign of elimination of differential treatment across gender in attained education. This is so the most we can infer from above patterns is that in which direction has the distributional shares changed across different educational benchmarks over cohorts within the marginal population of females who got educated as oppose to males who have comparatively much larger representation in total population of those who attended and completed school. However the fact that on average female have much lower level of current enrolment than males at all levels of education in both urban and rural part of Pakistan indicate that gender bias in education remains a relevant policy concern. However positive element within these dynamics as is evident from age cohort analysis and analysis of transition rate by gender is that there is definitely emerging some positive structural tendencies within Pakistani society which can be coming from either changing social norms or changing economic conditions such as better access to education for female etc. or both.

**Table 4. Percentages within Male and Female Populations Completing Different Educational Levels by Age/Birth Cohorts in Pakistan**

Age Group (Birth Cohort)	Gender	% of Population with Completed Grades Within											
		Primary Level			Secondary Level				Tertiary Level				
		Below Grade 5	Grade 5	Overall Prim.	Middle	Matric	Inter*	Overall Sec.	Bachelors	Masters	MPhil./PHD	Prof.**	Overall Tertiary
10 to 14 (1996-2000)	Male	55.16	17.97	73.13	24.85	5.23	0.3	30.38	0	0	0	0	0
	Female	52.9	19.95	72.85	24.32	1.88	0.02	26.22	0	0	0	0	0
	% Gap	4.27	-9.92	0.384	2.179	178.19	1400	15.86	0*	0*	0*	0*	0*
15-19 (1991-95)	Male	8.6	12.88	21.48	33.46	38.47	5.31	77.24	0.27	0.07	0	0.13	0.47
	Female	9.1	16.54	25.64	27.53	37.71	7.68	72.92	0.7	0.05	0	0.08	0.83
	% Gap	-5.49	-22.13	-16.22	21.54	2.02	-30.86	5.92	-61.43	40	0*	62.5	-43.37
20-24 (1986-90)	Male	6.45	14.32	20.77	19.19	31.03	18.76	68.98	7.48	1.37	0	0.49	9.34
	Female	5.49	18.21	23.7	15.11	26.57	18.69	60.37	12.65	2.29	0	0.34	15.28
	% Gap	17.48	-21.36	-12.36	27	16.78	37.45	14.26	-40.87	-40.17	0*	44.12	-38.87
25-29 (1981-85)	Male	6.2	13.13	19.33	19.6	31.43	13.6	64.63	9	5.07	0.1	1.23	15.4
	Female	5.64	20.31	25.95	16.1	23.23	12.51	51.84	14.1	6.62	0.21	0.77	21.7
	% Gap	9.93	-35.35	-25.51	21.73	35.29	8.71	24.67	-36.17	-23.41	-52.38	59.74	-29.03
30-34 (1976-80)	Male	5	14.7	19.7	19.07	31.41	13.54	64.02	9.65	4.61	0.1	1.39	15.75
	Female	6.03	21.05	27.08	16.04	26.22	12.91	55.17	10.88	5.63	0.23	0.79	17.53
	% Gap	-17.08	-30.17	-27.25	18.89	19.79	4.88	16.04	11.31	-18.11	-56.52	75.94	-10.15
35-39 (1971-75)	Male	6.29	15.18	21.47	15.96	28.05	15.18	59.19	10.44	5.74	0.22	2.22	18.62
	Female	7.29	27.47	34.76	18.18	20.18	11.99	50.35	9.79	3.9	0.1	0.5	14.29
	% Gap	-13.72	-44.74	-38.23	-12.21	38.99	26.61	17.56	6.64	47.18	120	344	30.3
40-44 (1966-70)	Male	6.33	20.25	26.58	15.59	26.12	12.39	54.1	11.33	5.8	0.2	1.27	18.6
	Female	7.09	30.32	37.41	17.19	24.28	8.9	50.37	7.99	3.47	0	0.3	11.76
	% Gap	-10.72	-33.21	-28.95	-9.31	7.58	39.21	7.41	41.8	67.15	100*	323.33	58.16
45-49 (1961-65)	Male	7.56	20.4	27.96	19.37	24.14	10.57	54.08	9.1	5.65	0.07	2.13	16.95
	Female	6.16	30.11	36.27	19.54	22.54	9.33	51.41	7.39	3.35	0.18	0.88	11.8
	% Gap	22.73	-32.25	-22.91	-0.87	7.09	13.29	5.19	23.14	68.66	-61.11	142.04	43.64
50-54 (1956-60)	Male	6.7	17.86	24.56	18.79	27.54	10.52	56.85	9.3	5.4	0.09	2.32	17.11
	Female	6.99	32.63	39.62	16.78	23.55	8.86	49.19	6.76	3.5	0	0.47	10.73
	% Gap	-4.15	-45.27	-38.01	11.98	16.94	18.74	15.57	37.57	54.29	100*	393.62	59.46
55-59 (1951-55)	Male	6.09	23.58	29.67	17.23	26.56	10.37	54.16	7.12	5.18	0.13	2.73	15.16
	Female	6.14	32.89	39.03	17.1	21.49	8.33	46.92	8.77	3.95	0	1.32	14.04
	% Gap	-0.81	-28.31	-23.98	0.76	23.59	24.49	15.43	-18.81	31.14	100*	106.82	7.98
60-64 (1946-50)	Male	10.99	24.56	35.55	16.48	24.72	7.91	49.11	6.46	4.68	0.16	3.23	14.53
	Female	9.33	35.33	44.66	18.66	24.67	4.67	48	5.33	2	0	0	7.33
	% Gap	17.79	-30.48	-20.39	-11.68	0.2	69.37	2.31	21.2	134	100*	100*	98.23

**Notes for Table 4:** Above percentage distribution across educational progression from primary to tertiary level do not give out % of those with highest completed grades categorized as other in the data; \*Here individuals with diplomas related to training of technical skills has been grouped with intermediate level given that both these qualification may allow person to look for jobs with more or less similar level of socio-economic status, \*\* Prof. category is sum of all those individuals who have degrees related to profession of engineering, medicine, law, or agricultural sector; Data Source: PSLM 2010-11 HIES micro-data

## **7. Conclusion**

How do we achieve target of universal primary education in Pakistan and how do we keep students that have enrolled to continue with schooling to higher levels are the most important policy questions which can only be effectively answered if one is well-informed about the trends in educational outcomes and of proportion of students indulging in continuation or discontinuation of schooling at critical transitions say from primary to secondary benchmark and higher. Hence an accurate description of patterns in educational achievements is crucial for both understanding the dynamic of low human capital stock build up and also for finding ways of getting out of such low-educational trap. In this context gender discrepancy in human capital building process plays an important role. In this paper an attempt has been to see through key patterns in such discrepancies not only through evaluation of patterns in current enrollment and attained education but also in structure of change in attainment distribution of males from that of females as we move from older towards younger cohort.

In our analysis we find that females are in marginalized position than males in terms of educational outcomes not only in sense of having relatively much lower current enrolment rates and much lower attained levels but also in sense of having female concentrated at relatively lower levels of education within their attainment distribution. This trends of females being relatively concentrated at lower levels of education than males remain intact within a cohort but an interesting element that emerge from age cohort analysis is that as we move from older to younger age groups, there is inclination within female attainment distribution to shift towards higher educational level; this effect being most pronounced at tertiary level of education. Further this tendency of shifts within female distribution towards higher education in contrast to that within male distribution can also be seen in estimate for continuation in studies as one move from matric to intermediate level for males and females within age cohort 15-19, whereby we find females to be making transition in higher proportion than males. Hence from our analysis we can safely conclude that though gender should remain an important policy concern in domain of education sector given the prominent discrepancies in current enrolment and attained schooling by gender, however distributional analysis of attainment patterns over age cohorts show that there is definitely some evidence of structural shifts in terms of economic and social norms, whereby we see that within female attainment distribution there is much higher inclination of higher education in younger cohorts.

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Notes

<sup>i</sup> Through restricting the analysis of highest completed grade for age cohort of 15-19 years<sup>i</sup>, we can calculate proportion of completed intermediate (Higher Secondary level Grade 12) among those who have achieved matric level degree (Grade 10). Through this rough estimate of the transition proportions from matric to intermediate level, not only we will be able to identify what portion of male and female children gets dropped out of the educational system at crucial transitions such as grade 10 to grade 12<sup>i</sup>, but also can compare the transition pattern by gender, an insight that can be of crucial significance in policy debate [Holmes. (2003)].

<sup>ii</sup> Our analysis of distributional shares between primary and secondary level has been restricted to age group 15-19 years (as opposed to 10-14) as relevant youngest cohort for within this grouping of 15-19 we will have a tangible presence of those with completed middle, matric and intermediate levels besides those with attained education within primary level given the official age by which studies Mahmood, N. (1997, 2004) distributional shares across primary, secondary and tertiary levels of education, we will restrict the age group 20-24 years as youngest relevant cohort.

Appendix

Appendix Table A: Educational System Profile in Pakistan

Levels	Categorization	Grades	Subjects taught	Official
Pre-school	Pre-school	Play Group, Nursery, Kindergarten (KG)	Elementary skills	3 years
Primary	Primary	1 to 5	Elementary skill development in Urdu, English, Mathematics, Arts, Science, Social Studies, Islamiyat and Geography	5 years
Secondary	Middle	6 to 8	Urdu, English, Mathematics, Arts, Science, Social Studies, Islamiyat and sometimes Computer Studies. Additional courses on language such as Turkish, Arabic, Persian, French and Chinese are taught depending on institution	3 years
	High (Matric)	9 to 10	Eight courses in total compulsory subject: (Mathematics, English, Urdu, Islamiyat and Pakistan Studies) Elective subject (Biology, Chemistry, Physics and Computer)	2 years
	Intermediate/ Higher Secondary (FSc/FA)	11 to 12	Groups choice(pre-medical, pre-engineering, humanities and commerce) Each group consists of three electives and as well as three compulsory subject of English, Urdu, Islamiyat (grade 11 only) and Pakistan Studies (Grade 12 only).	2 years
	Vocational Training	Equivalent to Higher Secondary grade	Polytechnic diploma/other diplomas	-
	Professional college/University for Bachelor's degree courses	Undergraduate / Graduate /post graduate degree	Engineering (B.Engg/BS Engg), medicine (MBBS), dentistry (BDS), veterinary medicine (DVM), law (LLB), architecture (B.Arch), pharmacy (Pharm-D) and nursing (B.Nurs).	4 to 5 years
	University	Bachelors (Pass)	Students normally read three optional subjects (such mathematics, statistics and Economics combination etc) in addition to almost equal number of compulsory subject such as English and Pakistan Studies	2 years
Tertiary		Bachelor of Arts (BA), Bachelor of Science (B.Sc), Bachelor of Commerce (B.Com).		
		Bachelor (Honors)	Students normally specialize in a chosen field of study	3 to 4 years
		Master degree	Field will be defined according to Bachelor education	2 years
		Masters in Philosophy (M.Phil)	Field will be defined according to master degree	Minimum 2 years
		Doctor of Philosophy (PhD)	Field will be defined according to Master/Mphil. Degree	Minimum 2 years

**Note:** Age group is for being enrolled in that particular level and not necessarily completion of that level for example at age 9 the student will be attending grade 5 and may complete fifth grade at age 10.

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