

## **Gender Equality in India in Context to Socio-Economic Prosperity: A Quantitative Analysis in Terms of Income and Education.**

### **Background:**

GDP growth is primarily an indication of economic growth in which all other social factors are expected to be improved. Life expectancy, maternal health, service, literacy rate, school going children are social development indicators which also measure the growth and progress of specific country. I have a research question whether India, a economically growing giant country in South Asia has maintained gender equality in terms of income and education. Economic affairs usually hold in formal organizations where inequality regimes exists. According to Acker, J.(2006:443) gender, as socially constructed differences between men and women and the beliefs and identities that support difference and inequality, is also present in all organizations. Gender was, not too in distant past, almost completely integrated with class in many organizations. For this research, I have tried to examine the gender in/equality through a quantitative methodology<sup>1</sup>. Out of many factors, gender inequality is an indication to imbalanced development that largely posed to negative development process. Many gender differences exist in the society due to the cultural practices. In context of rapid economic development, social development in respect to women capability is expected to be equal to men especially education and income. In a general assumption of the Asian context, women are still far behind than the men in terms of economic and social status. Compared to Western world, South Asia is seen more pertaining gender inequality. For a balance development of a society from economic to all sectors women have to be considered for outstanding contributors. Desai and Potter (eds. 2002) also argue as:

*“Education greatly strengthens women’s ability to perform their vital role in creating healthy households. Much emphasis has been placed on the role of female education in promoting good health. It increases their ability to benefit from health information and to*

---

<sup>1</sup> South Asia has countries which are literally and culturally homogeneous in terms of status of women. Basically economic and education status of women is far behind than men. I have quantitatively analyzed this particular topic with an available data from *World Value Survey* pertaining to India.

*make good use of health services; it increases their access to income and enables them to live healthier lives (381).*

The statement of Desai and Potter is very important from the development perspective. It has been widely discussed macro economic growth however; this growth has to be examined by deconstructing the share of women. Women are half earth which implicitly contributes economic growth which is hardly accounted as economic outcomes. Following the table, still 71% of people live in rural parts of India that means the situation of women is worse compared to men. The another thing is that the hypothesis for analysis gives a ground that does the level of

## India

Item	1990	1995	2000	2002	2003	2004	2005	2006
<b>POPULATION</b>								
Total population million; as of 1 July	835	923	1019	1051	1068	1085	1101	1118
Population density persons per square kilometer	254	281	314	320	325	330	335	340
Population annual change, %	2.1	2.1	1.8	1.6	1.6	1.6	1.5	1.5

**Figure 1 Source: www.adb.org**

education give an opportunity to increase income? To understand the problem of women it needs to search on various in depth perspectives. We have a specific problem among women that is lack of education. Obviously, lacking adequate education means unable to make more money. Until and unless women are financially strong or have economic freedom, it is hard to see a balanced growth. It is sure that capability of women can contribute not only healthy households but also economic support. India is gaining an incredible growth in Gross Domestic Product (GDP) in recent years. There are many factors which obviously have contributed to rapid economic growth. The question persists: where is the women and their contribution to it? This analysis delimits the other factors and purely focuses whether the distribution of education and income are justifiable from gender perspective. Socioeconomic prosperity of India has a great impact on changing patterns of livelihoods and attitudes within the people. Examining different factors, it seems that high skilled education, stable government with democratic practice, liberal trade and multinational investment and new technology for mass production contributed to a rapid growth in all of socio economic sectors.

Let's see the over all population of India from following table. According to the table, India has total population by 2002 is 1051 million. Out of total, urban population covers 28.1% which is increasing gradually every year.

<b>Growth of Output</b> annual change, %								
GDP	5.6	7.3	4.4	3.8	8.5	7.5	8.4	9.4
Agriculture	4.0	-0.7	-0.2	-7.2	10.0	0.0	6.0	2.7
Industry	7.1	11.6	6.4	7.1	7.4	9.8	9.6	10.9
Services	5.2	10.1	5.7	7.4	8.5	9.6	9.8	11.0

Source: [www.adb.org](http://www.adb.org)

The following paper has a quantitative research approach to evaluate, test or experiment the GDP growth and gender sensitization.

### Quantitative Approach

In a statistical analysis of gender in/equality a country specific, there are many variables to be tested however, this following analysis has been done on an account of two major variables such as income and education. The research question is whether there is gender equality in India in terms of income and education level. It is a hypothesis that income discrepancy depends upon the level of education. The data has been retrieved from WVS 2001 to test gender equality. This analysis hasn't explained about a course of time how gender status has gradually been changed from specific period but it will show the differences of income and educational status between men and women. It will show the income differences between men and women where controlling variable is education.

**Table 1 sex distribution**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	1137	56.8	56.8	56.8
	Female	865	43.2	43.2	100.0
	Total	2002	100.0	100.0	

There is no doubt that India is achieving an incredible economic growth despite it is on the ring of failing and authoritarian countries in South Asia. The analysis has tried to focus on gender in/equality by examining income discrepancies in an influence of educational variables between male and female. The table no. 1, the sample observation is 1137 for male and 865 for female. The majority of sample has been taken from male so the analysis has to be turned into not

numerical but percentage of both sexes. The sample has been covered 56.8% for the male and 43.2% for female. The sample observation of this data base must have some problem at collecting process. It is generally expected that the sample should have equal representation from both male and female sexes. However our analysis will be based on percentages of male and female sample which are expected to represent the overall population. For the beginning of test, we are examining the observations of income distributions. The table no 2 shows the number of observation distributed at different income groups.

**Table 2 income distribution**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IN: Less than Rs 500 per month	57	2.8	2.9	2.9
	IN: 501 – 1000 per month	359	17.9	18.1	21.0
	IN: 1001 – 3000 per month	749	37.4	37.8	58.7
	IN: 3001- 5000 per month	319	15.9	16.1	74.8
	IN: 5001 – 10000 per month	302	15.1	15.2	90.1
	IN: 10001 – 20000 per month	121	6.0	6.1	96.2
	IN: 20001 – 30000 per month	26	1.3	1.3	97.5
	IN: 30001 – 50000 per month	11	.5	.6	98.0
	IN: more than 50000 per month	39	1.9	2.0	100.0
	Total	1983	99.1	100.0	
Missing	No answer	5	.2		
	Don't know	14	.7		
	Total	19	.9		
Total	2002	100.0			

Let's first see the income distributions. First category the lowest income group has been categorised as less than 500Rs per month. The second category has 501 to 1000 income group per month. They can be assumed as lowest income group. It means that around 21% of the observed sample group has lowest income group. The majority of income groups from 1001 to 10000 income groups combined, it covers around 60% of the population which has been presumed as a middle income group. Similarly, if assumed as 10001 to more than 50000 incomes per month they represent 10% income group. The table gives an overall view of different income groups in which we have still no idea whether men earns more than women or women earns

more than men. Therefore we have to check out by income groups into sex segregation. Let's see it from another table 3.

**Income (country specific)**

**Table 3 income distribution between male and female by percentage**

	Sex		Total
	Male	Female	
Income (country specific) IN: Less than Rs 500 per month	2.2%	3.7%	2.9%
IN: 501 – 1000 per month	18.0%	18.2%	18.1%
IN: 1001 – 3000 per month	37.3%	38.4%	37.8%
IN: 3001- 5000 per month	17.7%	14.0%	16.1%
IN: 5001 – 10000 per month	15.4%	15.0%	15.2%
IN: 10001 – 20000 per month	6.4%	5.7%	6.1%
IN: 20001 – 30000 per month	1.2%	1.4%	1.3%
IN: 30001 – 50000 per month	.8%	.2%	.6%
IN: more than 50000 per month	1.0%	3.3%	2.0%
Total	100.0%	100.0%	100.0%

According to table 3, we have different levels of income among the sample population. Now we have to see the differences of level of income between male and female. In this table we see that there are significant difference between male and female at lowest income group and highest income group. In this two extreme income groups more number of women represent contrasts to male. In less than 500 income group, more women represent and at the same time, earning more than 50000 per month, comparatively more women fall in this category. While at the same time, from 1001 to 3000 earning group, there is slightly high percentage of women than the men. It is in general sense, more women are socially and culturally bound, limited mobility and have less time to work longer hours. It is therefore, more women earn less than 500- 1000 per month. But in contrast to highly income group more than 50000 per month, there are still more percentage of women than the man. What does it reflect? Are there many women who earn more than 50,000 per month than the men? Or is it only data collection error where women combined their income with the income of their counterpart? On the other hand, the chi square test shows that the value is different from zero indicates a relationship between variables. Since the chi-square value that

is positive we can confirm that income and sex have a relationship. The significance value gives us an idea whether we can trust the sample to the population. With 0.002 significance value, we can trust this sample database which is highly significant.

### Chi-Square Tests

**Table 4**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.452(a)	8	.002
Likelihood Ratio	24.804	8	.002
Linear-by-Linear Association	.063	1	.802
N of Valid Cases	1983		

a 1 cells (5.6%) have expected count less than 5. The minimum expected count is 4.75.

The Chi square value is significant at 0.2% level. This chi square value 0.2% has only risk the chance of error with the whole population. We can have a confidence level at 98.8% on the sample database. The next point is that the value 24.452 shows that there is statistical relationship between variables between income and sex.

### Directional Measures

**Table 5**

			Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	.011	.005	2.453	.014
		Income (country specific) Dependent	.000	.000	.(c)	.(c)
		Sex Dependent	.028	.011	2.453	.014
	Goodman and Kruskal tau	Income (country specific) Dependent	.001	.000		.163(d)
Sex Dependent		.012	.005		.002(d)	

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Cannot be computed because the asymptotic standard error equals zero.

d Based on chi-square approximation

The table 5 is the directional measure of sex and income. Sex is nominal therefore we need to see the lambda value which shows statistical relationship between a constant variable sex and ordinal variable income. According to the table the Lambda value is 0.011 which is less than 0.05 values. We can confirm that the value 0.014 which is less than 0.5, is highly significant. Although there is a relationship between sex and income however the strength is very weak that means there is no so such a high difference of income in either case of male or female. This

shows that sex and income has obviously a relationship statistically however it is very weak. It means that there is no such a high differences of income between two sexes. Except two extreme income groups there is no significant difference at income distributions. It can also mean that there is no linear relationship in income group.

Until now examining the income distribution between male and female we have observed that there is no big contrast between two sexes. Let us check the descriptive statistics of education.

**Education (country specific)**

**Table 6**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IN: Non – Literate : Anybody who cannot read or write	602	30.1	30.2	30.2
	IN: Below Primary : Literate but no complete primary school	194	9.7	9.7	39.9
	IN: Primary Pass : Completed Class V but not Class VIII	244	12.2	12.2	52.2
	IN: Middle Pass : Completed Class VIII but not Class X	259	12.9	13.0	65.2
	IN: Matric:Completed Class X/ High School or Equivalent	228	11.4	11.4	76.6
	IN: Intermediate/College No Deg:Class XI/PUC/Post Matric Dpl	194	9.7	9.7	86.4
	IN: Graduate: B.A., B.Sc., B.Com., Polytech., Computer, BTC	184	9.2	9.2	95.6
	IN: Post Graduate:M.A.,M.Sc.,M.Com.,B.Ed., M.Ed.,LI.B.,PG)	68	3.4	3.4	99.0
	IN: Professional Degrees and Higher Research Degrees	20	1.0	1.0	100.0
	Total	1993	99.6	100.0	
Missing	Don't know	9	.4		
Total		2002	100.0		

Table 6 has frequency distribution of different education levels among the sampled groups in which majority of sample population fall on least education group. The frequency out of 1993 observed group, 30.1% sample falls on this category. However, we have no idea how is frequency distributed between male and female. There are two other major categories which are literate up to class VII and metric pass group. After illiterate group, more percentage of observations falls on these two groups such as 259 and 228 respectively. These groups represent 13% and 11.4% as well. Since we don't know about different education level distributed between male and female groups therefore the table 7 will show it to further analysis. Let's go to table 7.

**Case Processing Summary**

**Table 7**

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Education (country specific) * Sex	1993	99.6%	9	.4%	2002	100.0%

**Education (country specific) \* Sex Crosstabulation % within Sex**

**Table 8**

		Sex		Total
		Male	Female	
Education (country specific)	IN: Non – Literate : Anybody who cannot read or write	20.5%	42.9%	30.2%
	IN: Below Primary : Literate but no complete primary school	10.6%	8.6%	9.7%
	IN: Primary Pass : Completed Class V but not Class VIII	12.1%	12.4%	12.2%
	IN: Middle Pass : Completed Class VIII but not Class X	14.1%	11.6%	13.0%
	IN: Matric:Completed Class X/ High School or Equivalent	14.1%	7.9%	11.4%
	IN: Intermediate/College No Deg:Class XI/PUC/Post Matric Dpl	11.4%	7.5%	9.7%
	IN: Graduate: B.A., B.Sc., B.Com., Polytech.,Computer ,BTC	11.7%	6.0%	9.2%

	IN: Post Graduate:M.A.,M.Sc.,M.Com.,B.Ed.,M.Ed.,L.I.B.,PG)	4.0%	2.7%	3.4%
	IN: Professional Degrees and Higher Research Degrees	1.5%	.3%	1.0%
Total		100.0%	100.0%	100.0%

Table 7 is descriptive presentation of education level between male and female sexes. Education is an important indicator to see the gender equality. A general hypothesis is that higher the education, higher the income levels. The categories of education have been distributed from illiterate group to higher research groups. In this examination we will see the percentile distribution between male and female at different education levels. More women fall in the least educated group shows a contrast that is an indication of a significant level of inequality in education between two sexes.

**Education level (recoded) \* Sex Crosstabulation**  
**Table 9**

		Sex		Total	
		Male	Female		
Education level (recoded)	Lower	Count	489	551	1040
		% within Sex	43.2%	63.9%	52.2%
	Middle	Count	319	168	487
		% within Sex	28.2%	19.5%	24.4%
	Upper	Count	323	143	466
		% within Sex	28.6%	16.6%	23.4%
Total	Count	1131	862	1993	
	% within Sex	100.0%	100.0%	100.0%	

Now we have to analyze that if we recode the education in three ordinal groups i.e. low, middle and high how the distribution would be in both sexes. It was also necessary to recode the different education categories because we can see that there is very small percentage at higher research degree and master level. Recoding the education groups into only three groups will help us to check how much percentage of male and female groups fall in the different education level categories. According to the cross tab of education level into three categories between male and female we have following results. In three major categories, a majority of women fall in the illiterate group. This shows that India has more gender imbalance in terms of education. At the same time if we look at different categories such as middle level and higher level of education more percentage of men fall compared to women.

## Chi-Square Tests

**Table 10**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	85.290(a)	2	.000
Likelihood Ratio	86.249	2	.000
Linear-by-Linear Association	77.502	1	.000
N of Valid Cases	1993		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 201.55.

Table 10 has statistical analysis of chi square test of education and sex. The outcomes of chi square 85.290 is bigger than 0 value which says that education and sex has strong statistical relationship. At significance level it is strong.

The above tests of education and income variables have been tested separately. Now we need to see the discrepancies of income level at different education levels. The objective of this analysis is to see if there is income distribution differs between male and female with controlling education factor. The following table is outcome of crosstab between male and female after recoding income into three levels and education at three levels as well.

### Income level \* Education level (recoded) \* Sex Crosstabulation

**Table 11**

Sex	Income level			Education level (recoded)			Total
				Lower	Middle	Upper	
Male	Low	Count	170	48	10	228	
		% within Education level (recoded)	35.1%	15.1%	3.1%	20.3%	
		Count	235	117	66	418	
	Medium	% within Education level (recoded)	48.6%	36.9%	20.6%	37.3%	
		Count	79	152	244	475	
		% within Education level (recoded)	16.3%	47.9%	76.3%	42.4%	
	High	Count	484	317	320	1121	
		% within Education level (recoded)	100.0%	100.0%	100.0%	100.0%	
		Total					
Female	Low	Count	165	21	2	188	
		% within Education level (recoded)	30.3%	12.5%	1.4%	22.0%	

	Medium	Count	246	55	26	327
		% within Education level (recoded)	45.2%	32.7%	18.4%	38.3%
	High	Count	133	92	113	338
		% within Education level (recoded)	24.4%	54.8%	80.1%	39.6%
Total		Count	544	168	141	853
		% within Education level (recoded)	100.0%	100.0%	100.0%	100.0%

While analyzing the table 14, we have various interesting data among male and female on income and education groups. In the male group, despite upper level of education, 3.1% male population have low incomes. At the same time a significant percentage 15.1% of the population have middle level education however their income is in lower group. In this male group, it is interesting that a majority of male population despite having lower education earn medium level of income in contrast to 20.6% males have medium income despite they have upper level of education.

In contrast to male group, a majority of women population 45.2% despite having lower education earns medium level of income. There is drastic contrast that 80.1% of women who have upper level of education earn high level of income. This shows that compare to male, if women have upper level of education they can earn more than men.

In that case it is interesting that this least educated female earns more than the male in the same category. The question raised here that if this women group count income of their own along with income of their counter part male. Here is also an interesting fact that in the education level the distribution is not so contrast to different categories of education levels in male group where as compared to female group.

## Chi-Square Tests

**Table 12**

Sex		Value	df	Asymp. Sig. (2-sided)
Male	Pearson Chi-Square	309.677(a)	4	.000
	Likelihood Ratio	337.048	4	.000
	Linear-by-Linear Association	288.735	1	.000
	N of Valid Cases	1121		
Female	Pearson Chi-Square	173.519(b)	4	.000
	Likelihood Ratio	186.697	4	.000
	Linear-by-Linear Association	157.700	1	.000
	N of Valid Cases	853		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 64.47.

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 31.08.

Table 15 shows that the variables education and income has strong statistical relationship. We can assume that the data is highly significant and trustable. Pearson chi square value for male and female is positive or higher than 0 values. Mean while the difference of P values between male 309.677 and female 173.519 indicate that the variable education has stronger statistical relationship for male compared to female. It means that the more education level the male has the more chances of higher income.

Finally, we are analyzing regression model to test the income with different education categories. This analysis will tell us how change in education can predict income level and also considering the variable sex. Since the income categories are non-linear and ordinal we however would like to treat them interval variable. Our controlling variable education needs to be recoded into dummy variable into three different variables. We would like to test that sex female and low education are reference variable to compare the other dummy variables of education to compare the income variable. Table 13 shows what variables were entered to test the regression.

**Variables Entered/Removed(b)**

**Table 13**

Model	Variables Entered	Variables Removed	Method
1	sex male, education middle, education high(a)	.	Enter

a All requested variables entered.

b Dependent Variable: Income (country specific)

**Model Summary**

**Table 14**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423(a)	.179	.178	1.376

a Predictors: (Constant), sex male, education middle, education high

According to regression analysis, we have R Square value is 0.179 which is approximately 18%. This means that we can explain only 18% income difference with education and sex variables. It is understood that excluding other influencing variables education and sex only contributes to 18% to predict income differences.

**ANOVA(b)**

**Table 15**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	816.529	3	272.176	143.713	.000(a)
	Residual	3748.018	1979	1.894		
	Total	4564.548	1982			

a Predictors: (Constant), sex male, education middle, education high

b Dependent Variable: Income (country specific)

According to table ANOVA, our regression module is highly significant with the help of dummy variable of education and sex. According to the table 15, we can trust the square value.

**Coefficients(a) Table 16**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	356003.225	.052		6809239.320	.000
	education middle	.644	.077	.182	8.404	.000
	education high	1.621	.078	.451	20.698	.000
	sex male	-.265	.064	-.087	-4.162	.000

a Dependent Variable: Income (country specific)

In the end, we have coefficients at table 16 which shows that compared to low education (as a reference) our beta value 0.644 for middle education and 1.621 for high education increases in this ratio. Since we don't have constant intervals in different income categories, it is rather difficult to interpret this regression module. As per beta value for sex male, we have negative value, which shows that compared to female male has lower chances of increasing income level. The regression module, which has been violated the assumption of mathematics using ordinal variable income as interval variable therefore we think that the result of regression module has inconsistency or less trustworthy result. It is inconclusive module compare to cross tab methodology of gender difference analysis.

### **Conclusion:**

Doing various cross tabulations, here we have concluded that the data from 2001 of India shows there is a big gap of education between male and female groups. It is interesting that more women despite having low level of education have higher level of income compared to male. The question is how these women group put themselves in the category of medium level income group despite having low education. Do they also count other income such as incomes of other family members with their income? In the upper level of education group more percentage of women has higher level of income. This indication shows that it needs further examination of household income and its distribution. The other important factor such as in top highest income group women earn more money compared to male. This part shows that women are capable to generate more income than the men if they have high level of education. This part also indicates that what type of education helps to gain higher income. The conclusion is that women in majority have low education status but they have two extreme situations i.e. they fall in lowest income group and top highest income group. It is suggested that another statistical analysis is required when there is equality of men and women having same level of education. The existing problem is that women have less chance to go to school or enhance their capability compared to men because of cultural constraints. We have to infer that India has no income discrepancy between male or female but more discrepancy in education. Education is an important factor contributing at raising incomes levels..

## **References:**

Acker, J. (2006) Inequality regimes: Gender, class, and race in organizations. *Gender & Society* 2006; 20; 441. web: <http://www.sagepublications.com>

Creswell, J.W.(2003) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 2<sup>nd</sup> Edition Sage Publication.

Creswell, J.W. (2007) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Sage Publication

Desai and R.B.Potter (eds. 2002) *The Companion to Development Studies*. Arnold, London.

Flick, U. (2006) *An introduction to qualitative research* Sage Publication Ltd.

Hancock, B (2002) *An Introduction to Qualitative Research* Trent Focus Group.

Heyzer, N. (March 2005) 'Making the links: women's rights and empowerment are key to achieving the Millennium Development Goals'. *Gender and Development* Vol. 13. No. 1.

F. Andy (2005) *Discovering Statistics Using SPSS* 2<sup>nd</sup> Edition, Sage Publication.

Kates, R.W., T.M. Parris and A.A Leiserowitz (April 2005) 'What is Sustainable Development? Goals, Indicators, Values and Practice'. *Environment* Vol 47, No. 3.

Website:

[www.adb.org](http://www.adb.org)

[www.wvs.org](http://www.wvs.org)