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FEATURE

Economic Wealth and Education: A Global Comparison

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***Abstract.** Poverty has long been associated with lower levels of school achievement within developed nations, as well as across nations. The level of economic wealth of a nation has also been found to be correlated with many aspects relating to education: funding, access, human resources, literacy, etc. This paper uses World Bank data to describe educational achievement and gender equity in education in countries at each of four levels of economic wealth as described by the World Bank. Results show that GNI is a good indicator of educational achievement across levels of economic wealth, that wealthier countries in general have higher educational achievement, with a few understandable exceptions, and that girls' education is an issue mainly in Level 1 countries.*

In recent years, *education for all students* has become a mantra, where “all” has been specifically spelled out to include girls, the poor, the disabled, and those who live in isolated areas. Specifically, the phrase “education for all” (EFA) was coined by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) at meetings in Thailand in 1990, and became more famous at the World Education Forum in Dakar in April of 2000. In Dakar, the nations of the world sat together to develop serious plans for how to improve education in their countries during the new millennium. From that meeting came the clear understanding that “the heart of EFA activity lies at the country level” (UNESCO, 2000, p. 10). The participants of the conference vowed to provide support for nations who could not fund education at the necessary levels, and set goals to ensure “that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to, and complete, free and compulsory primary education of good quality” (UNESCO, 2000, p. 15). This concern for better worldwide access to primary education also showed up as part of the United Nations Millennium Declaration voted in

September of 2000. The Millennium Development Goals (MDGs) were developed from this declaration (United Nations Development Programme [UNDP], 2012). On the MDG list, Goal Number 2 is to provide universal primary education, and Goal Number 3 is gender equity.

This worldwide focus on improving access to education has stimulated multitudes of initiatives involving major NGOs (non-governmental organizations) and most of the governments of the world. This global focus has also inspired a large amount of research on the topic. Studies have shown that factors predicting school success are more stable in developed countries (see for example Chiu, 2007). Some studies on this issue have compared urban students with rural ones and found that a gap in achievement appears in some countries, but not in others (UNESCO, 2005; Zhang, 2006). In some countries, however, the rural students are actually advantaged academically (Elijio, n.d.). Results from one study showed that access to books and materials was a higher predictor of achievement than socioeconomic status (SES) in developing countries (UNESCO, 2005). Another showed that across developed and under-developed countries, children from families with many books finished an average of 3 more years of schooling (Evans, Kelley, Sikora, & Treiman, 2010).

But how does wealth around the world actually affect education in real life? Are the poorer countries of the world doomed to lower achievement in education? Are there countries that perform well in spite of their modest standard of living? Are there relatively wealthy countries whose students do not perform as well as others? How does poverty affect the education of girls vs. that of boys? What are the major concerns of the governments of countries at different levels of economic wealth? These are some of the questions that will be addressed in this present study.

This study is a follow-up expansion on the preliminary work of Vyhmeister (2009) on “economic wealth and educational concerns.” Vyhmeister (2009) explored the connections between economic wealth and educational issues in four countries; one at each of the four levels of Gross National Income (GNI) as defined by the World Bank (2008). Those four levels are *low income* (Level 1; \$1025 or less), *lower middle income* (Level 2; \$1026-\$4035), *upper middle income* (Level 3; \$4036-\$12,475), and *high income* (Level 4; \$12,476 or more); (World Bank, 2012). The findings from Vyhmeister (2009) suggested that at the lowest level of GNI, a country tends to be focused on primary education needs, and that as GNI goes up, the focus on education rises to secondary, tertiary, and special issues, such as minority groups and children with disabilities. Having only looked at four countries, however, these findings were rather tentative. For that reason, the current study uses World Bank data to study patterns of education on a broader scale, using as many data points as available from the World Bank data set (www.worldbank.org/data) to achieve a more complete description.

While educational achievement is generally reported at the national level, this approach to reporting may potentially mask differences among groups within a country. Countries like the United States have documented concerns within their population that certain groups of students tend to perform less well scholastically than others, often noting that success divides along racial and SES lines (see for example Hampden-Thompson & Johnston, 2006; Muller, Riegle-Crumb, & Schiller, 2004; “Social Class ‘Defines’,” 2003). These within-country differences are important, but are beyond the scope of this present study.

The United States has found that race differences in achievement tend to be reduced or even to disappear altogether when socioeconomic status is taken into consideration (Ferguson, 2002). There is a common, basic understanding, often stated (see for example Vyhmeister, 2009) that wealth affects education, and that children who come from poverty-stricken families do not usually get the same opportunities for learning as children from more affluent families. Characteristics that define poverty, however, differ vastly across countries, and even across communities. In some places, living in poverty means going to bed hungry. In other places, it means you might not have as many toys as your friends, or your parents have to work two jobs to buy you those toys. Being poor in a rich country does not increase your chances of dying of common childhood diseases, as it does in other places (World Health Organization [WHO], 2008). For example, in the United States,

The overwhelming majority of the poor have air conditioning, cable TV, and a host of other modern amenities. They are well housed, have an adequate and reasonably steady supply of food, and have met their other basic needs, including medical care. (Rector & Sheffield, 2011, para. 1).

This is clearly not the same as being “poor” in other places. Explained in terms of GNI, the poverty line, as defined by the U.S. Government places American “poor” in Level 3, or upper middle income, compared to the rest of the world (see U.S. Department of Health and Human Services, 2012). Although the cost of living is not the same in every part of the world, globalization has made it more standardized than it was years ago. This makes using the World Bank GNI categories a reasonable option, since in spite of the differences in cost of living, it makes some level of comparison possible.

Acknowledging the differences in wealth and educational access within a country, but recognizing that educational programs are necessarily designed at the country level, the question that drives this research is whether or not country-level data shows the same variation that research has shown within countries. Many studies have shown that SES makes a difference in educational achievement within a country (see Sirin, 2005 for a meta-analysis reviewing 74 such studies). It has also been shown that many poor countries struggle with educational achievement (e.g., Lockheed, 2012). The question is whether the GNI of a

country is a statistically sound indicator of educational achievement, in spite of within-country variation in wealth distribution. Can GNI help us understand patterns of educational achievement around the world? That is the focus of this study.

Method

The purpose of this quantitative study is to expand and test Vyhmeister's (2009) original model of current educational issues and GNI, based on a statistical analysis of World Bank data by country, and by GNI level. The goal is to analyze patterns in the educational data by GNI level, to better understand the interaction between poverty and educational concerns in both developing and developed countries of the world.

Because of the ease of accessibility of World Bank data on education, all available data points on world education were used for this analysis. Not all countries provide all data points on a yearly basis. For that reason, 2010 data was used rather than 2011 data, since it was found to be much more complete. Paired *t* tests were used to compare educational data on males and females within a GNI category. ANOVA was used to compare data across GNI levels.

For consultation of government documents, however, the countries were purposively selected by region. Those that qualified were considered to be representative of the region, had a minimum population size, and a relatively peaceful recent history, since war and unrest disrupt normal patterns of education. All four levels of GNI were represented in as many regions of the world as possible (not all regions have nations at all GNI levels).

Data

Primary School Completion

One of the most basic measures of educational achievement is primary school completion. This measure was found to be highly affected by GNI level (see Table 1). In the poorest countries, an average of 66% of the children complete primary school. The data showed a clear trend of greater percent of students completing primary school with higher GNI through the first two levels, but with Level 3 and Level 4 being virtually identical. It seems that 96.5% is the maximum average that countries are able to achieve as a whole for primary school completion, and once basic conditions and minimum financing are met, all nations achieve this level. Note that the *SD* drops as the GNI rises.

Table 1
Percent of Primary School Completion by GNI Level

GNI Level	<i>n</i>	<i>M</i>	<i>SD</i>	Significance
Level 1	24	66.04	18.42	$p < .001$ with 2, 3 and 4
Level 2	32	86.57	16.24	$p < .001$ with 1, $p < .05$ with 3 and $p < .08$ with 4
Level 3	30	96.56	11.09	$p < .001$ with 1, $p < .05$ with 2 and $p > .99$ with 4
Level 4	25	96.54	10.76	$p < .001$ with 1, $p < .08$ with 2, and $p > .99$ with 3

Note. The number of participating countries varies by available data, with a total of 106 countries providing data on primary school completion in 2010.

Though the trends are clear, there are outliers that are worth mentioning. There are countries like the Seychelles (Level 3) which have very high primary school completion, beyond most of the Level 4 countries. It is important to note that some of the data, however, could be misleading, as the primary school completion rates in some countries are over 100%. This can happen when older students are completing primary school alongside the group that is in the normal age range for primary completion. So some of the high numbers could indicate a country that is “catching up” educationally.

Other interesting outliers are countries that have a lower than expected primary completion rate. Countries with low primary completion include Chad (Level 1), which has had a lengthy civil war, and Angola (Level 2), which ended its civil war in 2002 with 1/3 of their people displaced, and conditions like these:

The refugees return to a country where, according to the United Nations, 80 percent of people have no access to basic medical care. More than two-thirds have no running water. A whole generation of children has never opened a schoolbook. Life expectancy is less than 40 years. Three in ten children will die before reaching their fifth birthday. (Polgren, 2003, para. 10)

They have begun to rebuild, including access to newfound oil revenues and governmental stability (Central Intelligence Agency [CIA], 2012a), but schooling does not rebound instantly from these conditions.

Another country with low primary completion is Equatorial Guinea, which registers at Level 4 based on their GNI, however, this is oil wealth with a corrupt and mismanaged government, so the money does not reach the general population (CIA, 2012b). Unsurprisingly, they perform educationally more like a much poorer country, as that is the level of wealth that the people are actually

experiencing. Equatorial Guinea was dropped from this analysis because it was an outlier with these characteristics.

Table 2

Percent of Secondary School Enrollment by GNI Level

GNI Level	<i>n</i>	<i>M</i>	<i>SD</i>	Significance
Level 1	24	38.48	25.16	$p < .02$ with 2, $p < .001$ with 3 and 4
Level 2	32	56.45	18.94	$p < .02$ with 1, $p < .001$ with 3 and 4
Level 3	30	78.34	9.76	$p < .001$ with 1 and 2, $p < .07$ with 4
Level 4	20	89.70	7.37	$p < .001$ with 1 and 2, $p < .07$ with 3

Secondary School Enrollment

Secondary school enrollment statistics (see Table 2) tell a similar story to primary completion, with a few interesting variations. The percent of secondary school enrollment (expressed as a percentage of the population of secondary school age) rises noticeably with each level of GNI, ranging from a mere 38% in the poorest countries to 90% in the wealthiest nations. The standard deviation, however, indicates an extremely high degree of variability across countries, especially within Levels 1 and 2. That variability reduces as the GNI level increases, showing that Levels 3 and 4 are much more similar across nations in high school enrollment.

Tertiary Enrollment

Of all the statistical analyses by GNI level, tertiary enrollment (expressed as a percentage of the population within 5 years of the age of expected high school completion) is the most clearly differentiated. Every comparison between every level is significant, and the actual mean differences are substantial (see Table 3). Tertiary attendance varies from a mere 5% in the poorest countries to 63% in the wealthiest of nations; however the variation is high across countries at the same level. Levels 3 and 4, which show similarities across many of the other comparisons, are clearly significantly different at the tertiary level. Whereas levels of secondary enrollment showed similar patterns, tertiary enrollment jumps by over 20% between Levels 3 and 4.

Table 3
Percent of Tertiary Enrollment by GNI Level

GNI	<i>N</i>	<i>M</i>	<i>SD</i>	Significance
Level 1	17	5.45	5.17	$p < .001$ with 2, 3 and 4
Level 2	20	23.83	19.36	$p < .001$ with 1 and 4, $p < .02$ with 3
Level 3	24	40.69	17.70	$p < .001$ with 1, $p < .02$ with 2, $p < .01$ with 4
Level 4	19	63.03	24.80	$p < .001$ with 1 and 2, $p < .01$ with 3

Gender and Education

One of the strongest voices in recent years in the world of development has been the call for better education for girls (see for example UNDP, 2012). But are girls really that far behind in education? Research shows that in developed countries, girls often do better in school than boys (Zembar & Blume, 2009), and that more girls than boys finish college and graduate programs (Buchmann & DiPrete, 2006). So there is some question as to what the real gender issue is. Data show that gender issues in education are highly related to GNI levels. At the lowest GNI level, Level 1, primary school completion is correlated with gender. Significantly more boys than girls complete elementary school (see Table 4).

Only at Level 1 were girls significantly lower in primary school completion, however (see Table 5). This failure to get basic education is reflected at the higher levels of education, as well. In countries where girls do not finish primary school, they never catch up.

Table 5 summarizes the statistically significant relationships relating to educational achievement by gender. By Level 2, girls not only completed primary school equally with boys, but also attended secondary school at a similar rate to boys. Once Level 2 students reached college, this difference gave way to the patterns of the more affluent countries, with girls enrolling at a greater level.

Table 4
Gender and Primary School Completion in Level 1 GNI Countries

Gender	<i>n</i>	% Completing Primary School	<i>SD</i>	<i>p</i> value
Male	24	69.29	16.78	<.01
Female	24	62.75	20.90	<.01
Total	24	66.04	18.42	

Table 5
A Summary of Educational Achievement by Gender

GNI Level	Primary completion	Secondary enrollment	College Enrollment
Level 1	Females < Males	Females < Males	Females < Males
Level 2	Females = Males	Females = Males	Females > Males
Level 3	Females = Males	Females > Males	Females > Males
Level 4	Females = Males	Females > Males	Females > Males

As with overall primary completion above, Levels 3 and 4 showed basically identical patterns, with almost universal completion of primary school, and after that, the girls achieved better results than the boys (see Table 5). Secondary enrollment numbers show females with a significant advantage, but the mean differences are actually quite small. In college, however, the difference widens, with 47% of the females in the population in Level 3 enrolling as compared to 35% of the male population. This college difference widens further in Level 4, where 70% of females enroll, compared with 57% of males.

The message from the gender data is that if girls are just given the opportunity to complete primary school, the other levels will follow naturally. There is, however, a parallel concern in the more developed countries about how to improve the success rate for boys, especially at the higher levels of education.

Conclusions

The following conclusions were drawn from the data analyzed in this study. If girls are educated at the primary level, they will keep up, and even get ahead. This suggests that poor countries that are successful at increasing the enrollment of girls at the primary level will also experience an increase in secondary and tertiary achievement. Income level is significantly related to educational achievement at the national level, in spite of within-country variation in wealth distribution. World Bank categories based on GNI levels are a useful tool for classification of countries for educational research. This usefulness holds from the poorest of nations to the wealthiest, and outliers have logical explanations for why they deviate from the normal pattern. Future research should address questions such as; do government policies relating to education change as GNI levels change? What are the major educational concerns of the governments of countries at different levels of economic wealth? What can we do to improve education for females in the poorest countries and for males in the rest of the world?

References

- Buchmann, C., & DiPrete, T. A. (2006). The growing female advantage in college completion: The role of family background and academic achievement. *American Sociological Review*, 71(4), 515-541. doi:10.1177/000312240607100401
- Central Intelligence Agency. (2012a). *The world factbook: Angola*. Retrieved from <https://www.cia.gov/library/publications/the-worldfactbook/geos/ao.html>
- Central Intelligence Agency. (2012b). *The world factbook: Equatorial Guinea*. Retrieved from <https://www.cia.gov/library/publications/the-worldfactbook/geos/ek.html>
- Chiu, M. M. (2007). Families, economies, cultures, and science achievement in 41 countries: Country-, school-, and student-level analyses. *Journal of Family Psychology*, 21(3), 510-519.
- Elijio, A. (n.d.). *Reading achievements in urban and rural communities: Comparative analysis of the equity in education*. Unpublished manuscript, Vilnius University, National Examinations Center. Retrieved from http://www.iea.nl/fileadmin/user_upload/IRC2006/IEA_Program/PIRLS/Elijio.pdf
- Evans, M. D. R., Kelley, J., Sikora, J., & Treiman, D. J. (2010). Family scholarly culture and educational success: Books and schooling in 27 nations. *Research in Social Stratification and Mobility*, 28(2), 171-197. doi:10.1016/j.rssm.2010.01.002
- Ferguson, R. F. (2002, November). *What doesn't meet the eye: Understanding and addressing racial disparities in high-achieving suburban schools*. North Central Regional Educational Laboratory. Retrieved from <http://www.ncrel.org/gap/ferg/does.htm>
- Hampden-Thompson, G., & Johnston, J. S. (2006, April). *Variation in the relationship between nonschool factors and student achievement on international assessments*. U.S. Department of Education. Institute of Education Sciences. National Center for Educational Statistics, Statistics in Brief. Retrieved from <http://nces.ed.gov/pubs2006/2006014.pdf>
- Lockheed, M. E. (2012). The condition of primary education in developing countries. In H. Levin & M. E. Lockheed, *Effective schools in developing countries* (pp. 20-40). Abingdon, United Kingdom: Routledge.
- Muller, C., Riegle-Crumb, C., & Schiller, K. (2004). *Race, social class, and academic achievement in US high schools*. Paper presented at the annual meeting of the American Sociological Association, August 14, 2004,

- San Francisco, CA. Retrieved from http://www.allacademic.com/meta/p110025_index.html
- Polgren, L. (2003, July 30). Angolans come home to 'negative peace.' *The New York Times*. Retrieved from <http://www.nytimes.com/2003/07/30/world/angolans-come-home-to-negative-peace.html>
- Rector, R., & Sheffield, R. (2011). Air Conditioning, Cable TV, and an Xbox: What is Poverty in the United States Today? *The Heritage Foundation: Leadership for America, Backgrounder #2575*. Retrieved from <http://www.heritage.org/research/reports/2011/07/what-is-poverty>
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417-453.
- Social class 'defines school achievement.' (2003, April 23). Guardian News and Media, retrieved from guardian.co.uk
- UNESCO. (1990, March 22-24). *Tenth meeting of the high-level group on EFA*. Jomtien, Thailand. Retrieved from <http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-all/international-cooperation/high-level-group/10th-meeting-jomtien-thailand/>
- UNESCO. (2000, April 26-28). The Dakar framework for action. Education for all: Meeting our collective commitments. *World Education Forum*, Dakar, Senegal. Retrieved from <http://unesdoc.unesco.org/images/0012/001211/121147e.pdf>
- UNESCO. (2005). *EFA global monitoring report*. Retrieved from http://www.unesco.org/education/gmr_download/chapter2.pdf
- United Nations. General Assembly. (2000, September 18). *United Nations Millennium Declaration*. A/RES/55/2. Retrieved from <http://www.un.org/millennium/declaration/ares552e.pdf>
- United Nations Development Programme. (2012). *The millennium development goals: Eight goals for 2015*. Retrieved from <http://www.undp.org/content/undp/en/home/mdgoverview.html>
- U.S. Department of Health & Human Services. (2012). *2012 HHS poverty guidelines*. Retrieved from <http://aspe.hhs.gov/poverty/12poverty.shtml>
- Vyhmeister, S. (2009). Economic wealth and educational concerns. *International Forum*, 12(1), 18-37.
- The World Bank. Data & Statistics. (2008). *Change in terminology*. Retrieved from <http://go.worldbank.org/EQ2OS6HDX0>
- The World Bank. (2012). *How we classify countries*. Retrieved from <http://data.worldbank.org/about/country-classifications>

- World Health Organization. (2008). *The World Health Report: Surviving the first five years of life*. Retrieved from <http://www.who.int/whr/2003/chapter1/en/index2.html>
- Zembar, M. J., & Blume, L. B. (2009). *Middle childhood development: A contextual approach*. Upper Saddle River, NJ: Pearson.
- Zhang, Y. (2006). Urban-rural literacy gaps in sub-Saharan Africa: The roles of socioeconomic status and school quality. *Comparative Education Review*, 50(4), 581-602. Abstract retrieved from Academic Search Premier database.

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