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Economic Crises and Human Development: A Comparison of Developed versus Developing Countries

Halil D. Kaya
Northeastern State University, United States

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Abstract
In this study, we examine the impact of the 2008 Global Crisis on the Human Development Index (i.e. HDI) values of Developed versus Developing Countries. We have a comprehensive sample of 174 countries. Over the 1980 to 2013 period, while there has been a gradual and consistent improvement in the index values, this improvement has slowed down sharply after the 2008 crisis. Our tests for the overall sample confirm that there is a significant slowdown in the rate of improvement in HDI values after 2008. When we divide our sample into "Very high HDI", "High HDI", "Medium HDI", and "Low HDI" country groups, and run our tests, we are seeing that for all subgroups, there has been a significant slowdown in the improvement rate. Our findings show that while the slowdown is sharper for "Very high HDI", "High HDI", and "Medium HDI" groups, for "Low HDI" group the slowdown is relatively softer. We conclude that it is essential for both developed and less developed countries to take precautions regarding human development issues before a crisis hits.

Keywords: Human Development, Development, Economic Crises

JEL classifications: G01, I10, 120, O15, O57

1. Introduction

Previous research shows conflicting results regarding the relation between economic growth and human development. While most of the previous studies (i.e. Ranis and Stewart (2001), Ranis and Stewart (2005), and Suri et al. (2011)) show that economic growth supports human development and at the same time human development supports economic growth, other studies (i.e. Shahbaz, Aamir, and Alam (2009)) show that in certain cases, there is a one-way causality: human development causes economic growth, but not the other way around.

Several studies (i.e. Block et al. (2004), Bloem, Semba, and Kraemer (2010), Breisinger et al. (2011), and others) focus on the possible impact of economic crises on human development. All

of these studies show that "poor" populations are more vulnerable to a crisis; hence they are affected more negatively when compared to other populations.

In this study, we examine the impact of the 2008 Global Crisis, which is called the "Great Recession" by several experts, on countries' human development scores. We make three main contributions. First, we do not focus on a single country or a region. Instead, we use a comprehensive dataset of 174 countries which have Human Development Index (i.e. HDI) values calculated for the 1980 to 2013 period. By using a more comprehensive dataset, we are hoping to draw more generalized conclusions when compared to the previous studies.

Second, we focus on the most recent crisis, which is the 2008 Global Crisis that has affected all of the countries in the world. As far as we know, none of the previous research papers has examined the impact of the 2008 Global Crisis on human development across the whole world.

Finally, we examine how development level itself affects the relation between the economic crisis and human development. In other words, "are developed countries (i.e. countries with relatively higher HDI values) and less developed countries (i.e. countries with relatively lower HDI values) affected similarly when facing an economic crisis?" As mentioned above, previous research has shown that "poor" and "vulnerable" countries tend to suffer more in periods of crisis. Is this really true? Using our comprehensive dataset of 174 countries (with varying levels of HDI), we can test for this hypothesis.

We believe that the results found in this study will shed a new light on the relation between economic growth (and crises) and human development. We are doing our analyses during a very distinct time period in history: the six year period surrounding the 2008 crisis (i.e. the 2005 to 2011 period). This is a very significant event; it affected all of the countries in the world, and its impact is still continuing.

The paper proceeds as follows: Section 2 reviews the previous literature. Section 3 states the hypotheses. Section 4 explains the data and the methodology. Section 5 shows the empirical results. Finally, Section 6 concludes.

2. Literature Review

Previous studies examine the relation between economic growth and human development. While some of them show that there is a bi-directional causality between them, some argue that there is only a one-way causality.

Ranis and Stewart (2001) examine the link between economic growth and human development in Latin American countries. They show that the countries that are successful in improving human development either started out with relatively good growth and human development or initiated rapid improvements in human development. They argue that countries which made

early progress in human development stood a better chance of sustaining or improving their human development record during difficult economic downturns. They also contend that income distribution is an important variable in explaining differences in performance. Worsening income distributions tend to precede worsening human development periods. The authors also contend that the relative effectiveness of human development expenditures is an important mechanism for sustaining improvements in human development.

Ranis and Stewart (2005) argue that "because of the strong two-way relationship between economic growth and human development, one has to promote both to sustain progress in either. Economic growth, which is an important input into human development improvement, is itself not sustainable without improvement in human development". The authors contend that "economic policy has tended to focus priority on getting the economic fundamentals 'right' as a necessary precondition for economic growth, arguing that human development improvement must await such economic growth". The authors continue "In sharp contrast, our findings contradict the view that human development improvement may be postponed until economic resource expansion makes it affordable. If human development improvement is postponed in this way, economic growth itself will not be sustained".

Shahbaz, Aamir, and Alam (2009) investigate the causality between economic growth and human resource development in Pakistan. They show that there is a long run relation between human resource development and economic growth in Pakistan. They find that in some cities, economic growth does not cause human resource development, while human resource development causes economic growth. On the other hand, in other cities, there is a bi-directional causality.

Suri et al. (2011) explore the two-way relationships between economic growth and human development. They show that human development is not only a product of economic growth but also an important input to it. They contend that human development must be given priority for the achievement of both higher economic growth as well as human development.

Several previous papers examine the impact of economic or financial crises on human health. These papers' findings are similar in the sense that all of them agree on the negative impact of crises on human health.

Block et al. (2004) examine the impact of drought and financial crisis of 1997/1998 on Indonesia's child health measures. They find that there was a significant drop in mean weight for height measure as well as children's blood hemoglobin levels. Bloem, Semba, and Kraemer (2010) contend that factors including economic crisis affects the global food supply system which in turn affects the nutritional well-being of the poor by reducing their access to nutritious food. They argue that, in order to prevent the hunger problem, countries tend to emphasize consumption of calorie-rich but nutrient-poor food and this leads to a decline in dietary quality and quantity and increasing micronutrient malnutrition (or hidden hunger).

Breisinger et al. (2011) find that during the food and fuel crises in 2008, Yemen's economic growth accelerated because oil-driven growth dominated the negative growth impacts of the food crisis. The authors show that despite this oil-driven growth, poverty in both rural and urban areas has increase sharply in 2008. They contend that the 2009 financial crisis has impacted Yemen negatively due to low oil prices. According to the authors, this growth decline has compounded the poverty effects of the food crisis.

Brinkman et al. (2010) examine the impact of the global economic and financial crisis on food consumption, nutrition, and health. They show that the cost of food has increased in several countries, forcing households to reduce quality and quantity of food consumed. According to the authors, the most affected groups have been young children, pregnant and lactating women, and the chronically ill. The authors suggest that undernutrition during the first two years of life has life-long consequences; therefore governments should take precautions to mitigate the impact of crises on nutrition.

Christian (2010) examines the impact of the 2008 economic crisis on childhood mortality. The author contends that there are several factors that influence childhood mortality. These are increases in childhood wasting and stunting, intrauterine growth restriction, and micronutrient deficiencies such as that of vitamin A, iron, and zinc. According to the author, for vulnerable populations, nutritional and health surveillance data are urgently needed to monitor both the impacts of a crisis and of interventions. The governments need to ensure that vulnerable populations are targeted with known nutritional interventions at all times.

Darnton-Hill and Cogill (2010) contend that food prices are rising due to the global economic crisis, fuel price volatility, and climate change. The rising food prices have an adverse impact upon the poor, especially those in food-importing, resource-limited countries. According to the authors, "a reduction in dietary quality, an increase in micronutrient deficiencies, and increases in infectious disease morbidity and mortality initially compromise maternal and child nutrition". They argue that recent macroeconomic shocks have greatly increased the number of people who are vulnerable to hunger in developing countries. Similar to the other authors, in order to inform policy decisions, Darnton-Hill and Cogill (2010) suggest nutritional surveillance systems to be strengthened and expanded.

De Pee et al. (2000) show that the 1997 economic crisis in Indonesia has caused the country's currency to devalue significantly which has resulted in increased food prices. The authors argue that such a large reduction of purchasing power has negatively affected both nutrition and health. There has been a considerable weight low among mothers and adolescents. According to the authors, when a crisis hits, governments need to take specific actions directed towards women, especially to pregnant and lactating women.

De Pee et al. (2010) argue that the global economic crisis, commodity price hikes, and climate change have worsened the position of the poorest and most vulnerable people. According to the authors, these crises threaten the development of an entire generation of children because they irreversibly shape their health and intellectual ability. The authors contend that investments in nutrition are among the most cost-effective development interventions because of their very high benefit to cost ratios. They suggest the use of complementary food supplements to increase a meal's nutrient content. According to the authors, these supplements can be in the form of micronutrient powder or low-dose lipid-based nutrient supplements provided by governments.

Fouere et al. (2000) investigate the effects of currency devaluation on dietary change and nutritional vulnerability of poor households in Africa. They find that if the dietary changes made by people due to the economic crisis continue, they will pose a dual health risk: reducing dietary diversity and altering the bacteriological quality of prepared meals.

Martin-Prével, Yves, et al. (2000) examine the effects of the January 1994 devaluation of the African Financial Community (CFA) franc on the nutritional situation in Congo. They find a decline in the quality of the foods offered to the infants. There have been greater levels of stunting and wasting among children, mothers with lower body mass index, and infants with reduced birth weights.

Nikoloski and Ajwad (2013) analyze the effects of the 2009 crisis in Russian households. They find that poor (lowest quintile) households affected by an income shock spent less on health services, compared to households not affected by an income shock. They also find that vulnerable people affected by the crisis in 2009 altered their health and nutrition behavior. Households with low educational attainment of household heads tend to decrease expenditures on both food and health services, while households that had a higher number of elderly people tend to curb the use of health services.

Ruel et al. (2010) compares urban poor to rural poor with regard to their suffering (or vulnerability) during a crisis. They show that “the poorest of the poor are the ones who will be most affected, irrespective of the continent, country, or urban or rural area where they live”. According to the authors, “the severity of their suffering depends on their ability to adapt and on the specific nature, extent, and duration of the coping strategies they adopt”.

Thorne-Lyman et al. (2010) develop a simple household dietary diversity score by summing the number of days each household has consumed an item from each of seven food groups over a seven day period. The authors find that this dietary diversity score is significantly correlated to per capita non-grain food expenditures, total food expenditures, and total household expenditures. After controlling for other measures of socioeconomic status, they find that the dietary diversity score is significantly associated with monthly per capita food and total expenditures. The authors also find that “low dietary diversity during the period prior to major

food price increases indicates potential risk for worsening of micronutrient deficiencies and child malnutrition in Bangladesh".

Tiwari and Zaman (2010) evaluate the consequences of higher food prices in 2008 as well as the 2009 global crisis on the incidence of undernourishment. They estimate that the incidence of undernourishment may have increased by 6.8 percent in 2008 due to the significant global food price spike. They also estimate that the global crisis may have led to an additional 4.4 percent increase in undernourishment in 2009.

Webb and Block (2012) show that structural transformation in a country raises total income and that poverty falls faster with strong support by government for agriculture. They argue that, this in turn supports improved nutrition, especially in rural areas. The authors warn that transformation brings problems through health risks associated with rising obesity.

West and Mehra (2010) state that dietary quality and diversity reflect adequacy of vitamin A and that both can deteriorate in response to economic crises. They argue that "the prevalence of vitamin A deficiency, night blindness, and other related disorders (e.g., anemia) may have increased during the 2008 crisis, and that it might not have necessarily recovered once food prices waned later in 2008". They contend that lost employment may be a factor in slow nutritional recovery, despite some easing of food prices. According to the authors, "vitamin A deficiency should still be preventable amid economic instabilities through breast feeding promotion, vitamin A supplementation, fortification of foods targeted to the poor, and homestead food production that can bolster income and diversify the diet".

Wodon and Zaman (2010) argue that "rising food prices after 2008 are likely to lead to higher poverty in Sub-Saharan Africa as the negative impact on net consumers outweighs the benefits to producers". They contend that the most common policy response in Sub-Saharan African countries in 2008 was reducing taxes on food, while outside the region subsidies were the most popular measure. According to the authors, "Sub-Saharan African countries also have a higher prevalence of food-based safety net programs, some of which were scaled up to respond to rising prices". The authors suggest that the benefits from reducing import tariffs on staples are likely to accrue largely to the non-poor. According to Wodon and Zaman (2010), "safety net programs can be more effective, but geographic targeting and other investments to strengthen safety nets are necessary to ensure that fewer people are affected by future crises".

3. Hypotheses

We expect our sample countries to suffer in terms of human development (measured by HDI) due to the global crisis. Therefore, we expect to see a slower improvement in HDI values after 2008.

Our first hypothesis is:

Hypothesis 1: For the whole sample, during the three-year period after the crisis, the improvement in the HDI values slows down when compared to the three-year period before the crisis.

Since previous research shows that "poor" populations tend to suffer more, we expect the countries that have the lowest HDI values to suffer (or slow down) more when compared to the other groups. 49 countries in our sample fall into the "Very High HDI" category (HDI values in 2013 range from 0.808 to 0.944); 53 countries fall into the "High HDI" category (HDI values range from 0.700 to 0.790); 42 countries fall into the "Medium HDI" category (HDI values range from 0.556 to 0.698); and 43 countries fall into the "Low HDI" category (HDI values range from 0.337 to 0.540.

Our second hypothesis is:

Hypothesis 2: Due to the crisis, compared to the relatively more developed countries with relatively higher HDI values, the least developed (i.e. the lowest HDI) countries suffer more.

In all of our nonparametric tests, we will look at the percentage change in the level of each indicator (rather than the actual level of each indicator) during the three years before (i.e. 2005 to 2008) and the three years after (i.e. 2008 to 2011) the crisis. To compare pre- and post-crisis periods, we will use the Mann-Whitney-Wilcoxon test.

4. Data and Methodology

Table 1 lists the countries in the sample. The data has been obtained from United Nations Development Programme. The Human Development Index (i.e. HDI) combines three dimensions:

- A long and healthy life: Life expectancy at birth
- Education index: Mean years of schooling and Expected years of schooling
- A decent standard of living: GNI per capita (PPP US$)

In total, there are 174 countries in our sample. Panel A shows the countries that are in the "Very High HDI Countries" group; Panel B shows the countries that are in the "High HDI Countries" group; Panel C shows the countries that are in the "Medium HDI Countries" group; and Panel D shows the countries that are in the "Low HDI Countries" group.

Table 1. List of Countries in Each HDI Group

Very High HDI Countries (in descending HDI order):
Norway, Australia, Switzerland, Netherlands, United States, Germany, New Zealand, Canada, Singapore, Denmark, Ireland, Sweden, Iceland, United Kingdom, Hong Kong, Republic of Korea, Japan, Israel, France, Austria, Belgium, Luxembourg, Finland, Slovenia, Italy, Spain, Czech Republic, Greece, Brunei Darussalam, Qatar, Cyprus, Estonia, Saudi Arabia, Lithuania, Poland, Slovakia, Malta, United Arab Emirates, Chile, Portugal, Hngary, Bahrain, Cuba, Kuwait, Croatia, Latvia, Argentina
High HDI Countries (in descending HDI order):
Uruguay, Bahamas, Montenegro, Belarus, Romania, Libya, Oman, Russian Federation, Bulgaria, Barbados, Palau, Malaysia, Mauritius, Trinidad and Tobago, Lebanon, Panama, Venezuela, Costa Rica, Turkey, Kazakhstan, Mexico, Seychelles, Sri Lanka, Iran, Azerbaijan, Jordan, Serbia, Brazil, Georgia, Peru, Ukraine, Belize, The former Yugoslav Republic, Bosnia and Herzegovina, Armenia, Fiji, Thailand, Tunisia, China, Algeria, Dominica, Albania, Jamaica, Colombia, Ecuador, Suriname, Tonga, Dominican Republic
Medium HDI Countries (in descending HDI order):
Maldives, Mongolia, Samoa, Palestine, Indonesia, Botswana, Egypt, Paraguay, Gabon, Bolivia, Moldova, El Salvador, Uzbekistan, Philippines, South Africa, Syrian Arab Republic, Iraq, Guyana, Viet Nam, Cape Verde, Guatemala, Kyrgyzstan, Namibia, Timor-Leste, Honduras, Morocco, Nicaragua, Tajikistan, India, Cambodia, Ghana, Lao People's Democratic Republic, Congo, Zambia, Bangladesh, Sao Tome and Principe, Equatorial Guinea
Low HDI Countries (in descending HDI order):
Nepal, Pakistan, Kenya, Swaziland, Angola, Myanmar, Rwanda, Cameroon, Nigeria, Yemen, Madagascar, Zimbabwe, Papua New Guinea, Solomon Islands, Comoros, Tanzania, Mauritania, Lesotho, Senegal, Uganda, Benin, Sudan, Togo, Haiti, Afghanistan, Djibouti, Cote d'Ivoire, Gambia, Ethiopia, Malawi, Liberia, Mali, Guinea-Bissau, Mozambique, Guinea, Burundi, Burkina Faso, Sierra Leone, Chad, Central African Republic, Congo, Niger

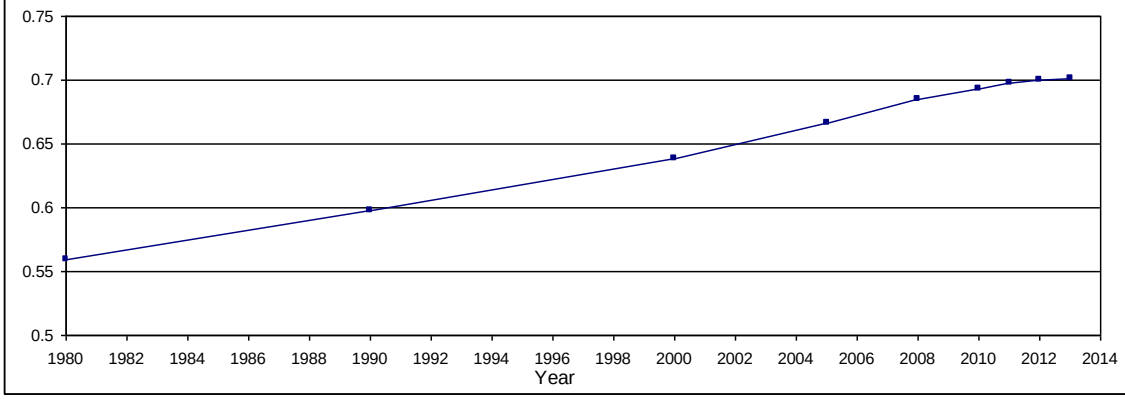
In order to officially test for the difference between the HDI values pre- and post-crisis, we run nonparametric tests (i.e. Mann-Whitney-Wilcoxon test). We compare the HDI values for our overall sample pre- and post-crisis. Due to data availability issues, we use the 2005 to 2008 period as our pre-crisis period, and the 2008 to 2011 period as our post-crisis period. We also

compare the HDI values of each subgroup (i.e. “Very High HDI Countries”, “High HDI Countries”, etc.) pre- and post crisis.

5. Empirical Results

First, we look at the time trend in HDI over the 1980 to 2013 period. Figure 1 shows the HDI for the overall sample over time. For the whole sample, we find that there has been a gradual and consistent improvement in the index values. We can also see that there has been a slowdown in the improvement rate in HDI after 2008. We believe that this slowdown has been due to the Global Crisis that occurred in 2008.

Fig. 1. Human Development Index (HDI) over time



Next, we look at the time trend in HDI for several sub-samples. We look at how HDI has changed during this period for “Very high HDI”, “High HDI”, “Medium HDI”, and “Low HDI” country groups. Figures 2, 3, 4, and 5 show the graphs for each group. As we can see from these graphs, although all groups have a gradual increase over time, the “Low HDI” group has a relatively sharper increase (or improvement) over the 2000 to 2008 period. We are also seeing that, similar to the whole sample, there has been a slowdown in the improvement rate in HDI after 2008 for each sub-group.

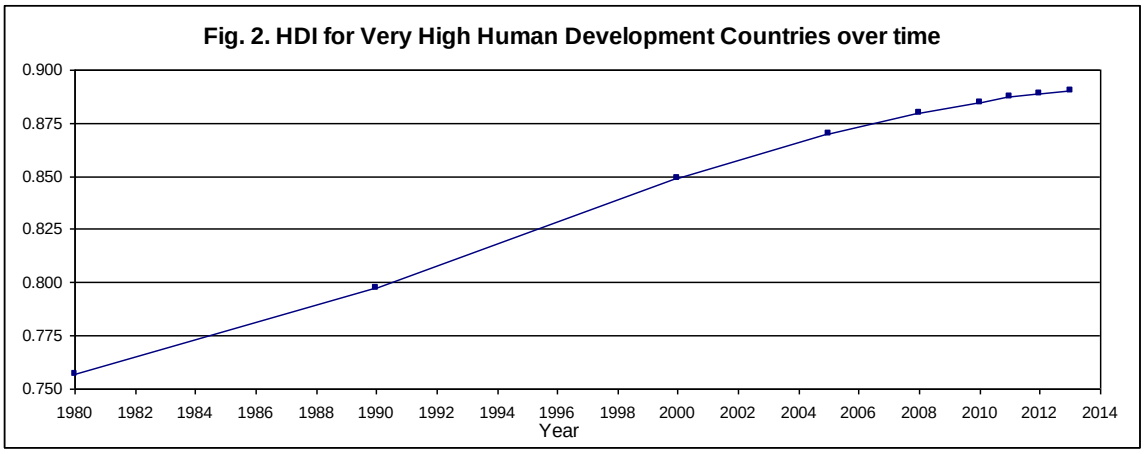


Fig. 2. HDI for Very High Human Development Countries over time
0.900
0.875
0.850
0.825
0.800
0.775
0.750
1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014
Year

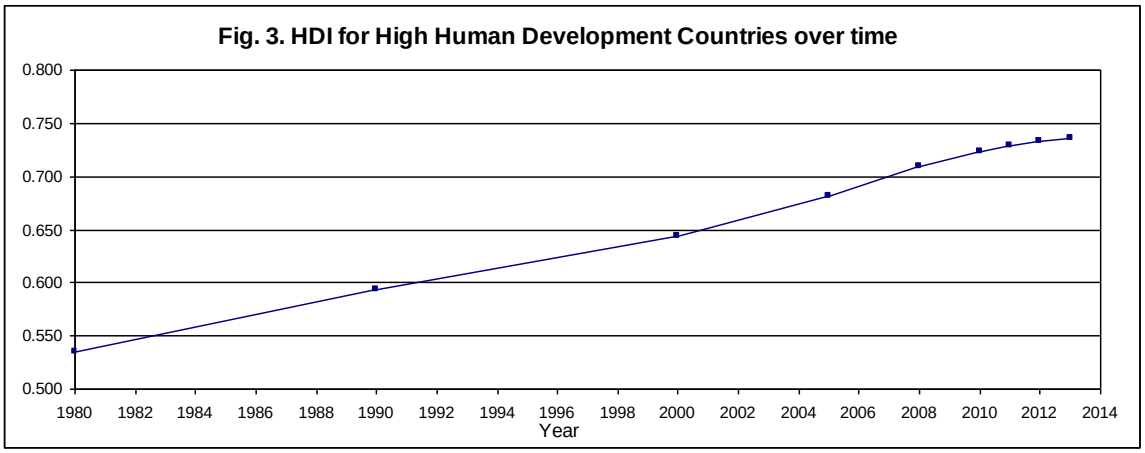


Fig. 3. HDI for High Human Development Countries over time
0.800
0.750
0.700
0.650
0.600
0.550
0.500
1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014
Year

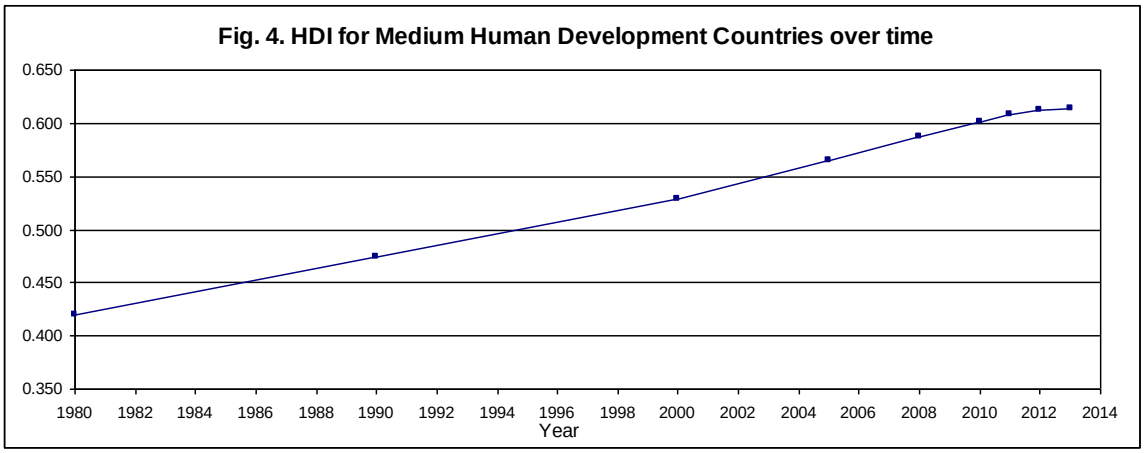


Fig. 4. HDI for Medium Human Development Countries over time
0.650
0.600
0.550
0.500
0.450
0.400
0.350
1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014
Year

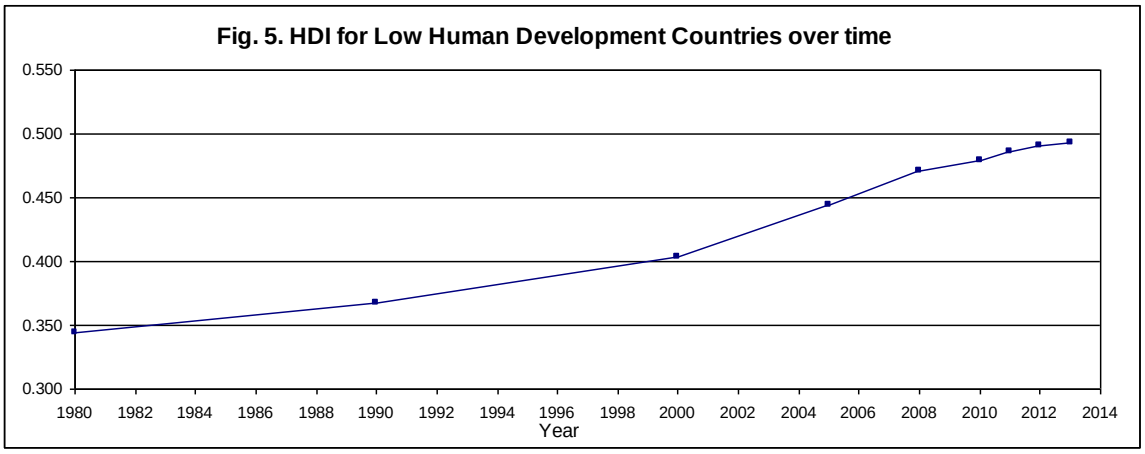


Table 2 shows the results of our nonparametric tests that compare the improvement in HDI pre- and post-crisis. We compare the pre- and post-crisis periods for the overall sample (i.e. "World"), as well as for the sub-samples (i.e. "Very High HDI", "High HDI", "Medium HDI", and "Low HDI"). As mentioned above, we are comparing the percentage changes pre- and post-crisis rather than comparing the levels of HDI.

We run nonparametric tests (i.e. Mann-Whitney-Wilcoxon tests) to compare the pre- and post-crisis periods. Due to data availability issues, we use the 2005 to 2008 period as our pre-crisis period, and the 2008 to 2011 period as our post-crisis period.

For the overall sample (i.e. "World"), our results show that there is a significant slowdown in the rate of improvement in HDI values after 2008 (p-value<0.0001). While the median HDI improvement rate is 2.55% for the 2005-2008 period, it is only 1.48% for the 2008-2011 period.

Table 2. % Change in the Human Dev. Index before and after the 2008 Crisis

		2005-2008			2008-2011			Wilcoxon
Variables	**N**	**Mean**	**Median**	**Std**	**Mean**	**Median**	**Std**	**p-value**
World	174	3.28	2.55	2.71	2.13	1.48	2.34	<0.0001
Very High HDI	47	1.47	1.09	1.15	0.74	0.65	1.08	0.0009
High HDI	48	2.45	2.39	1.59	1.28	1.02	1.94	<0.0001
Medium HDI	37	3.76	3.36	2.52	2.48	1.87	1.71	0.0046
Low HDI	42	5.81	5.12	3.10	4.35	4.37	2.59	0.0485

For the "Very high HDI" group, the drop is again statistically significant at 1% level (p-value=0.0009). The median HDI improvement rate is 1.09% for the 2005-2008 period, while it is only 0.65% for the 2008-2011 period.

For the "High HDI" group, the slowdown is significant at 1% level (p-value<0.0001). The median HDI improvement rate is 2.39% for the 2005-2008 period, while it is only 1.02% for the 2008-2011 period.

Similarly, for the "Medium HDI" group, the slowdown is significant at 1% level (p-value=0.0046). While the median HDI improvement rate is 3.36% for the 2005-2008 period, it is only 1.87% for the 2008-2011 period.

So, all of the results are significant at 1% level except for the "Low HDI" group. For the "Low HDI" group, the difference in the HDI values pre- and post-crisis is significant at 5% level (p-value=0.0485). For this group of countries, the median HDI improvement rate is 5.12% for the 2005-2008 period, while it is only 4.37% for the 2008-2011 period.

Therefore, looking at the table, we confirm our first hypothesis that states "*For the whole sample, during the three-year period after the crisis, the improvement in the HDI values slows down when compared to the three-year period before the crisis".* Our results here show that, for the overall sample (i.e. "World"), there is a significant slowdown due to the crisis.

Again, looking at the table, we reject our second hypothesis that states "*Due to the crisis, compared to the relatively more developed countries with relatively higher HDI values, the least developed (i.e. the lowest HDI) countries suffer more".* Our results here show that the slowdown in Low HDI group's improvement is not as severe as the other groups (both in terms of the actual decrease in the index value and the statistical significance). While the Low HDI group has a 14.65% decrease in the index value (from 5.12 to 4.37), for the Very High HDI group, there is a 40.37% decrease; for the High HDI group, there is a 57.32% decrease; and for the Medium HDI group, there is a 44.35% decrease.

We conclude that the level of development itself is an important variable that affects the relation between economic growth (and crises) and human development. The slowdown for countries that are more developed at the beginning of a crisis is much more severe when compared to the slowdown for countries that are the least developed.

6. Conclusion

In this study, we examine the impact of the 2008 Global Crisis on the Human Development Index (i.e. HDI) values of Developed versus Developing Countries. In total, there are 174 countries in our sample.

First, we look at the time trend in HDI over the 1980 to 2013 period. For the whole sample, we find that there has been a gradual and consistent improvement in the index values. We notice one issue though: for our overall sample, there has been a slowdown in the improvement rate

in HDI after 2008. We contend that this slowdown has been due to the Global Crisis that occurred in 2008.

We also look at the time trend in HDI for several sub-samples. We look at how HDI has changed during this period for "Very high HDI", "High HDI", "Medium HDI", and "Low HDI" country groups, and find that although all groups have a gradual increase, the "Low HDI" group has a relatively sharper increase (or improvement) over the 2000 to 2008 period. We also find that, similar to the whole sample, there has been a slowdown in the improvement rate in HDI after 2008 for each sub-group.

Then, in order to officially test for the difference between the HDI values pre- and post-crisis, we run nonparametric tests (i.e. Mann-Whitney-Wilcoxon test). We compare the HDI values for our overall sample pre- and post-crisis. Due to data availability issues, we use the 2005 to 2008 period as our pre-crisis period, and the 2008 to 2011 period as our post-crisis period. Our results show that there is a significant slowdown in the rate of improvement in HDI values after 2008 (p-value<0.0001).

When we run our individual tests for "Very high HDI", "High HDI", "Medium HDI", and "Low HDI" country groups, we find that for all subgroups, there has been a significant slowdown in the improvement rate. All of the results are significant at 1% level except for the "Low HDI" group. For the "Low HDI" group, the difference in the HDI values pre- and post-crisis is significant at 5% level.

Our results show evidence of economic crises' impact on countries' human development efforts. Although crises seem to affect both developed and developing countries, interestingly, the least developed countries tend to suffer less. The least developed countries tend to continue their efforts even during the crises periods. We conclude that, since all countries are suffering due to a global crisis, it is essential for governments around the world to take precautions regarding human development issues before a crisis hits.

Corresponding Author

Halil D. Kaya, Northeastern State University, United States, kaya@nsuok.edu; 3100 E. New Orleans St., Broken Arrow, Oklahoma, 74014.

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