

The Impact of the 2008 Global Crisis on Human Development: An Examination of the Human Assets Index

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Abstract

We examine the impact of the 2008 Global Crisis on 142 “Less-Developed” Countries as defined in Closset, Feindouno, and Goujon (2014). We look at the Human Assets Index (i.e. HAI), as well as each of its four components that include two health dimension indicators (i.e. the Undernourishment Index and the Under-five mortality index) and two education dimension indicators (i.e. the Adult Literacy Rate and the Secondary Enrollment Index). First, we look at how the index and each of its components have changed over the 1980-2011 period. We find that there has been a gradual improvement in all of the HAI indicators. Then, to examine the impact of the Global Crisis, we compare the three-year period just before the Global Crisis and the three-year period just after the Global Crisis. Our results show that, for the overall sample, the Global Crisis has not had a significant impact on any of the indicators. However, further examination reveals that the relatively developed countries within the sample have actually improved their HAIs after the crisis. Therefore, we conclude that crises tend to have different effects on a country’s development depending on how developed the country is before the crisis begins.

Keywords: global crisis, human development, human assets index

JEL: G01, I10, I20, O15, O57

1. Introduction

There has been an ongoing debate on economic growth and human development. Some of the previous studies (i.e. Ranis and Stewart (2001), Ranis and Stewart (2005), and Suri et al. (2011)) show that there is a bi-directional causality: economic growth supports human development and at the same time human development supports economic growth. Other studies like Shahbaz, Aamir, and Alam (2009) show that while there is a bi-directional causality in some cases, there is also evidence of one-way causality between the two in certain cases (i.e. while human resource development causes economic growth, economic growth does not cause

human development). Suri et al. (2011) contend that human development must be given priority for the achievement of both higher economic growth as well as human development.

Several studies (i.e. Block et al. (2004), Bloem, Semba, and Kraemer (2010), Breisinger et al. (2011), and others) specifically examine the impact of economic and/or financial crises on human development. These studies show that “poor” populations are more vulnerable to a crisis; hence they are affected more negatively compared to populations that are more developed and richer in terms of resources. These studies generally focus on local or regional populations to draw conclusions. They make policy recommendations to help prevent health related problems that stem from an economic or financial crisis situation.

In this study, we make three main contributions. First, in order to contribute to this discussion, we use a newly developed measure called the “Human Assets Index” (i.e. HAI) which is recently created by Closset, Feindouno, and Goujon (2014). This new index focuses on two dimensions: health and education. The two health dimension indicators are the Undernourishment Index and the Under-five mortality index. The two education dimension indicators are the Adult Literacy Rate and the Secondary Enrollment Index. Closset, Feindouno, and Goujon (2014) calculate the index values for 172 “Less Developed Countries” for the period from 1980 to 2011. This dataset is perfect for this study because as we mention above, the previous studies show that poorer, less developed populations are affected more negatively in the face of a crisis. Therefore, by using this new dataset, we are focusing on all of the countries in the world except for the highly developed countries like United States, Canada, etc. We are hoping to provide results that are more universal 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. None of the previous research papers has examined the impact of the 2008 Global Crisis on human development issues like health and education across the whole world. Because of data availability issues, we focus on two periods: the three-year period that comes just before the crisis (i.e. the 2005 to 2008 period) and the three-year period that comes just after the crisis (i.e. the 2008 to 2011 period). We compare the two periods in terms of the HAI. We want to see how the Global Crisis has affected these “Less Developed Countries” in terms of their “human assets”. We also compare the two periods in terms of how the two health indicators (i.e. the undernourishment index, and the under-five mortality rate) and the two education indicators (i.e. the adult literacy rate, and the secondary enrollment index) are affected due to the crisis.

Finally, we answer this question: “Within our sample, when a crisis starts, are relatively less developed countries suffer more when compared to relatively more developed countries?” If poorer populations suffer more, this statement should also be true within our sample. In order to differentiate between different levels of development, we divide our sample into three: we classify the highest one third of the countries in terms of their 2005 HAI values as “High HAI Countries”; the middle one third as “Medium HAI Countries”; and the lowest one third as “Low

HAI Countries”. Then, we run tests for each subgroup. These additional tests should shed a new light on the relationship between pre-crisis development levels and human development problems that arise due to crises.

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

2. Literature Review

Several studies examine the relation between economic growth and human development. While some of these studies 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. 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.

Shahbaz, Aamir, and Alam (2009) investigate the causality between economic growth and human resource development 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) 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.

There are several papers that examine the impact of economic or financial crises on human health. Their findings are somewhat similar in the sense that all of them agree on the negative impact of crises on human health. Block et al. (2004) find that there was a significant drop in mean weight for height measure as well as children’s blood hemoglobin levels in Indonesia after the 1997/1998 crisis. Bloem, Semba, and Kraemer (2010) contend that 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. Breisinger et al. (2011) show that the slowing economy in Yemen after the 2008 crisis has compounded the poverty effects of the food crisis.

Brinkman et al. (2010) show that the most affected groups after the 2008 crisis have been young children, pregnant and lactating women, and the chronically ill. Christian (2010) examines the impact of the 2008 economic crisis on childhood mortality. The author contends that, for vulnerable populations, nutritional and health surveillance data are urgently needed to monitor both the impacts of a crisis and of interventions. Darnton-Hill and Cogill (2010) contend

that the rising food prices have an adverse impact upon the poor, especially those in food-importing, resource-limited countries. 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. 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. The authors contend that investments in nutrition are among the most cost-effective development interventions because of their very high benefit to cost ratios.

Fouere et al. (2000) investigate the effects of currency devaluation on dietary change and nutritional vulnerability of poor households in Africa. 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. 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. Ruel et al. (2010) 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". Thorne-Lyman et al. (2010) 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) estimate that the global crisis may have led to an additional 4.4 percent increase in undernourishment in 2009. Webb and Block (2012) shows that structural transformation in a country supports improved nutrition, especially in rural areas. 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. Wodon and Zaman (2010) suggest that the benefits from reducing import tariffs on staples are likely to accrue largely to the non-poor.

3. Hypotheses

We expect our sample countries to suffer in terms of HAI (and its components, which are education and health dimensions) due to the global crisis. Therefore, we expect to see a slower improvement or even deterioration in these dimensions.

Our first hypothesis is:

Hypothesis 1: For the whole sample, during the three-year period after the crisis (i.e. 2008-2011), the improvement in the HAI index and its components slows down or reverses when compared to the three-year period before the crisis (i.e. 2008-2011).

Due to their rich resources and their strong cultures/traditions, we expect the relatively more developed countries within our sample to be more resilient to the crisis. We will first divide our sample into three: We will classify the upper one third of the countries with respect to HAI as “High HAI countries”, the middle one third of the countries as “Medium HAI countries”, and the lower one third as “low HAI countries”. Then, we will run nonparametric tests to compare the HAI levels for each group pre- and post-crisis.

Our second hypothesis is:

Hypothesis 2: Due to the crisis, the more developed countries with relatively higher HAI values do not suffer as much as the less developed countries with relatively lower HAI values.

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 and the three years after the crisis. That way, we will be able to compare the two periods more accurately. Comparing the percentage changes during the pre- and post-crisis periods would allow us to detect even a slowdown in improvement levels due to the crisis. To compare pre- and post-crisis periods, we will use the Mann-Whitney-Wilcoxon test.

4. Empirical Results

Table 1 summarizes the process that brings together the four components of the HAI (i.e. the Undernourishment Index (U), the Under-five mortality index (U5M), the Adult Literacy Rate (LR), and the Secondary Enrollment Index (SE)). The procedure is explained in more detail in Closset, Feindouno, and Goujon (2014). Basically, the two health dimension indicators (i.e. U and U5M) and the two education dimension indicators (i.e. LR and SE) are aggregated (using averaging). But, before the aggregation, each of the four indicators is normalized by Closset, Feindouno, and Goujon (2014) to keep it within (0-100).

Table 1. The Composition of the Human Assets Index (HAI)

As explained in detail by Closset, Feindouno, and Goujon (2014), the HAI is a composite

indicator which aggregates two health dimension indicators (the Percentage of the population undernourished, and the Mortality rate for children aged five years or under),

and two education dimension indicators (Gross secondary school enrollment ratio, and

Adult literacy rate). These four indicators are normalized by the authors using a min-max

procedure to keep them within (0-100)). The HAI Index is the arithmetic average of them.

Undernourishment index (U)

Under-five mortality index (U5M)

Adult Literacy Index (LR)

Secondary Enrollment Index (SE)

$$HAI = (U+U5M+LR+SE)/4$$

Table 2 lists the countries in the sample. In total, there are 142 countries with the required data. We classify the 47 countries that have the highest HAIs as the “High HAI Countries”, and we classify the 47 countries that have the lowest HAI as the “Low HAI Countries”. The remaining 48 countries are classified as the “Medium HAI Countries”.

Panel A shows the countries that are in the “High HAI Countries” group; Panel B shows the countries that are in the “Medium HAI Countries” group; and Panel C shows the countries that are in the “Low HAI Countries” group

Table 2. List of Countries in Each HAI Group

Panel A. High HAI Countries (in ascending HAI order):

Armenia, Moldova, Kiribati, Serbia, Oman, Bulgaria, Mongolia, St. Vincent and the Grenadines,

Montenegro, Bahamas, Saudi Arabia, United Arab Emirates, Chile, Fiji, Cuba, Ukraine,

Azerbaijan, West Bank & Gaza, South Africa, Sri Lanka, Croatia, Jamaica, Guyana, Kazakhstan,

Aruba, Qatar, Antigua and Barbuda, Hungary, Republic of Korea, Palau, Latvia, Estonia,

Brunei Darussalam, Poland, Lithuania, Uzbekistan, Uruguay, Belarus, Tonga, Libya, Israel,

Barbados, Grenada, Dominica, Bahrain, Kuwait, Seychelles

Panel B. Medium HAI Countries (in ascending HAI order):

Guatemala, India, Timor-Leste, Honduras, Indonesia, El Salvador, Namibia, Ecuador, Paraguay,

Nicaragua, Syrian Arab Republic, Dominican Republic, Panama, Malaysia, Suriname, Thailand,

China, Cape Verde, Venezuela, Iran, Botswana, St. Lucia, Vietnam, Costa Rica, Bermuda,

Algeria, Georgia, Egypt, Turkey, Trinidad and Tobago, Mexico, Tajikistan, Colombia,

Cayman Islands, Russia, Philippines, Lebanon, Samoa, Romania, Macedonia,

Bosnia and Herzegovina, Bolivia, Argentina, Tunisia, Peru, Jordan, Kyrgyz Republic,

St. Kitts and Nevis

Panel C. Low HAI Countries (in ascending HAI order):

Somalia, Niger, Central African Republic, Mozambique, Burkina Faso, Burundi, Rwanda, Chad,

Afghanistan, Uganda, Tanzania, Madagascar, Angola, Djibouti, Mauritania, Senegal, Mali,

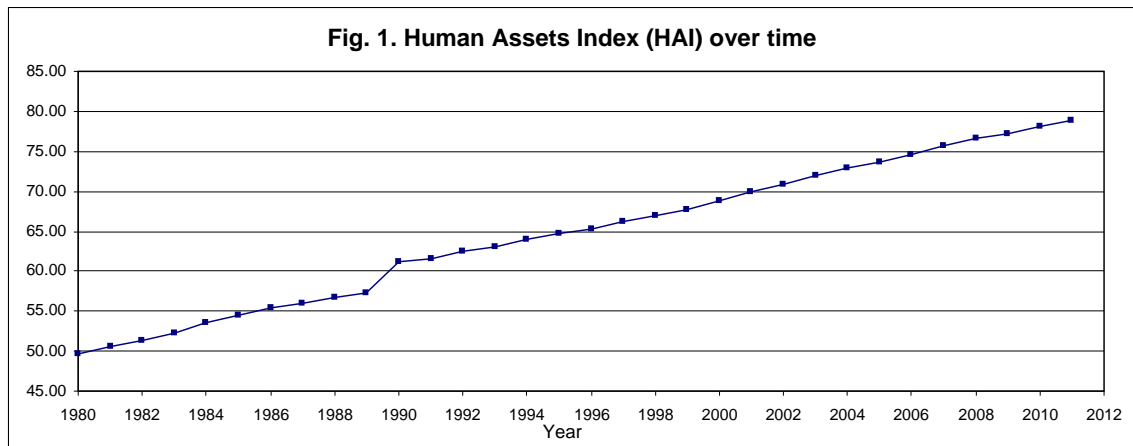
Ethiopia, Cameroon, Malawi, Pakistan, Eritrea, Solomon Islands, Guinea, Sudan,

Democratic Republic of Congo, Guinea-Bissau, Nigeria, Cambodia, Lesotho, Benin, Liberia,

Vanuatu, Lao PDR, Bhutan, Gambia, Bangladesh, Yemen Republic, Sao Tome and Principe,

Nepal, Swaziland, Togo, Ghana, Myanmar, Kenya, Iraq, Morocco

Figure 1 shows the improvement of the HAI over the 1980 to 2011 period. The HAI gradually improved over time except for the 1989 to 1990 period when there was a relatively larger improvement.



Figures 2-5 show how each of the components of the HAI has changed over time. Figure 2 shows the time trend for the “Under Five Mortality Rate” (i.e. U5M). There has been a gradual decrease (or improvement) in this rate over the 1980 to 2011 period. The decrease was somewhat smaller over the 1986 to 1994 period, but we can still say that there has been a gradual improvement in U5M.

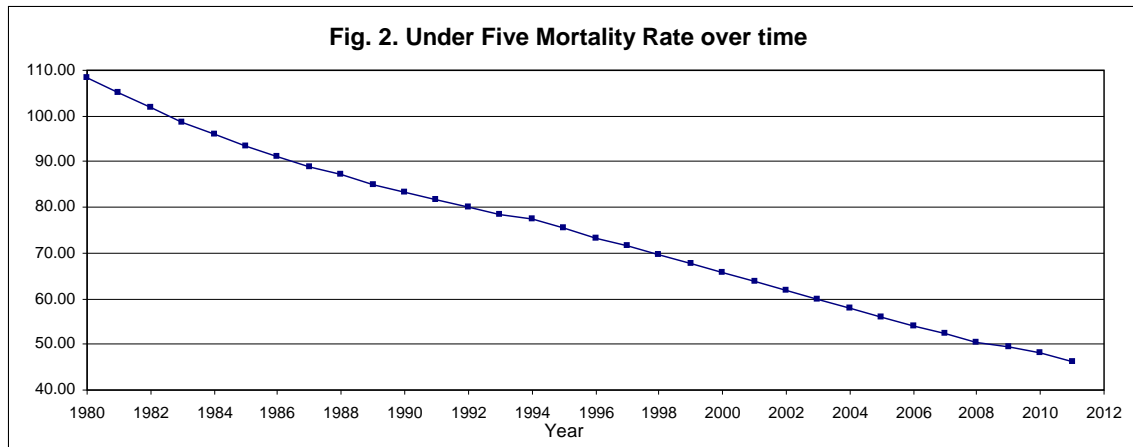


Figure 3 shows the time trend for the “Undernourishment Index” (it is also called the “Undernourished Prevalence) (i.e. U). Although there has been a gradual decrease (or improvement) in this rate over the 1980-2011 period, we are seeing that the index was almost flat (i.e. no improvement) between 1980 and 1984, and there was a big decrease (improvement) in 1989-1990 and then a big increase (worsening in undernourishment) in 1990-1991. But again, on average, there has been a gradual improvement in undernourishment in these countries.

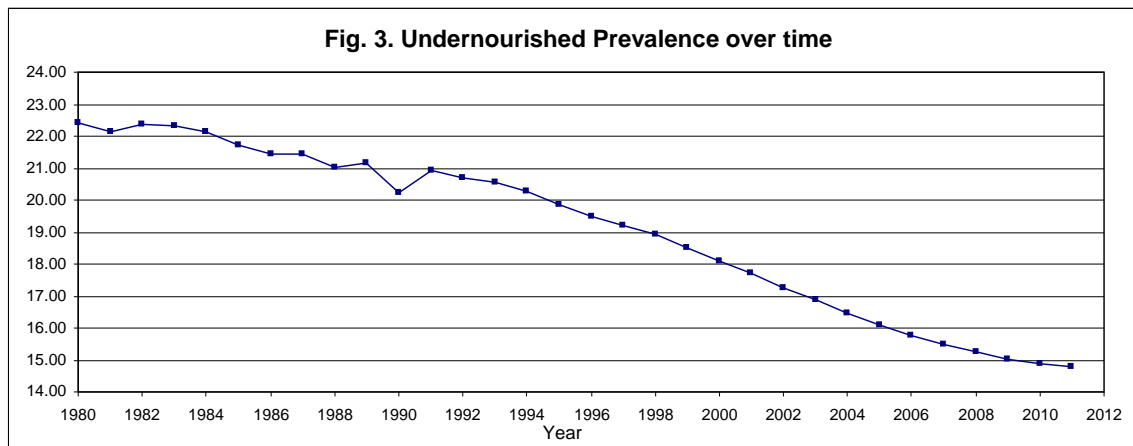


Figure 4 shows the time trend for the “Literacy Rate” (i.e. LR). Although there has been a gradual increase (or improvement) in this rate over the 1980 to 2011 period, we are seeing a sharp increase (or improvement) over the 1988-1990 period.

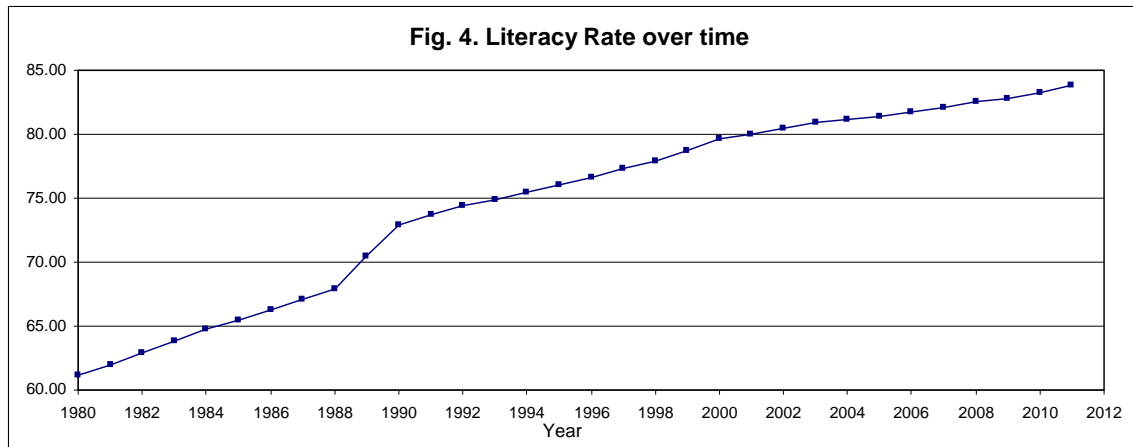


Figure 5 shows the time trend for the “Secondary Enrollment Gross Rate” (i.e. SE). Although there has been a gradual decrease (or improvement) in this rate over the 1980-2011 period, we are seeing that there was a relatively larger improvement in 1980-1981 period and the rate was almost flat (i.e. no improvement) between 1986 and 1989. On average, we can say that there has been a gradual improvement in the “Secondary Enrollment Gross Rate” in these countries.

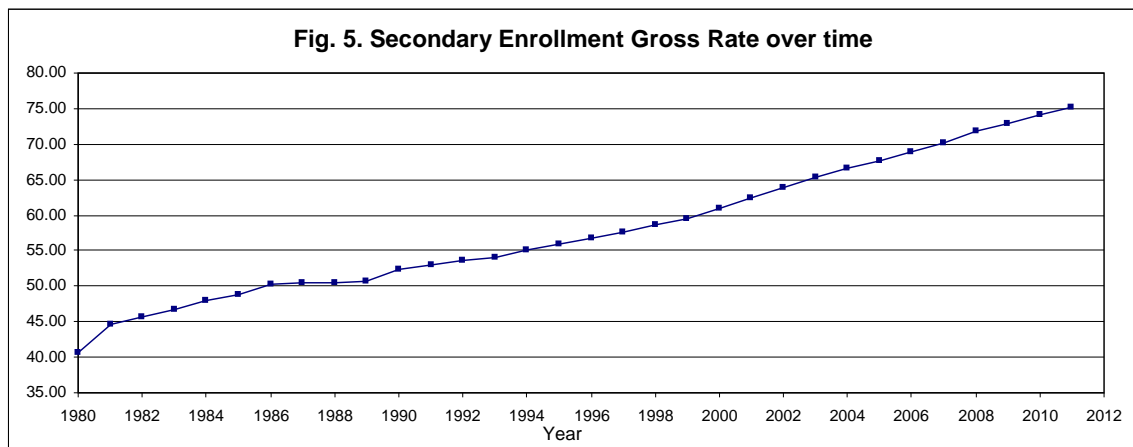


Table 3 shows the results of our nonparametric tests that compare the improvement in HAI and its four components pre- and post-crisis. Here, as mentioned above, we are comparing the percentage changes pre- and post-crisis rather than comparing the levels of the indicators. As we can see from the table, none of the differences between the pre- and post-crisis periods is significant at 5% level. Only, the results for “Undernourished Prevalence” is significant at 10% level. The HAI increases at a slower rate after the crisis when compared to pre-crisis (the median percentage change is 2.56% in 2008-2011 versus 3.09% in 2005-2008). So, the

improvement in human development in our whole sample of countries has slightly slowed down after the crisis but this drop is not statistically significant.

“Under Five Mortality Rate” has been lowered by 10.84% (i.e. median) from 2005 to 2008, and it continued to go down by 10.86% from 2008 to 2011. There is no statistically significant difference between the drop rates (p-value=0.4176).

“Undernourished Prevalence” has been lowered by 0.89% from 2005 to 2008, but there was no drop in this rate from 2008 to 2011. Therefore, we can say that the improvement in this area has disappeared after the crisis. The difference in the drop rates (i.e. 0.89% versus 0%) is significant at 10% level (p-value=0.0931).

“Literacy Rate” has gone up by 0.96% from 2005 to 2008, and it continued to go up by 1.28% from 2008 to 2011. There is no statistically significant difference between the increases (p-value=0.1409).

“Secondary Enrollment” has gone up by 5.09% from 2005 to 2008, and it continued to go up by 5.34% from 2008 to 2011. There is no statistically significant difference between the increases (p-value=0.1670).

Although there has been a slowdown in the improvement rates in HAI and its components, this slowdown is not statistically significant except for “Undernourished Prevalence”. Therefore, we reject our first hypothesis regarding a slowdown in HAI and its components (except for “Undernourished Prevalence”).

Table 3. % Change in the Human Assets Index before and after the 2008 Crisis

Variables	N	2005-2008			2008-2011			Wilcoxon
		Mean	Median	Std	Mean	Median	Std	p-value
HAI	140	4.71	3.09	6.87	3.95	2.56	4.99	0.4216
Under Five Mortality Rate	162	10.92	-10.84	6.42	11.02	-10.86	7.46	0.4176
Undernourished Prevalence	168	-4.91	-0.89	19.17	-4.67	0.00	30.38	0.0931
Literacy Rate	168	1.99	0.96	6.00	2.05	1.28	4.29	0.1409
Secondary Enrollment	142	8.64	5.09	14.19	8.94	5.34	11.39	0.1670

Note: The HAI Index and its components exclude the developed countries.

Table 4 shows the results of our nonparametric tests that compare the improvement in HAI for each subgroup of countries (i.e. “High HAI Countries”, “Medium HAI Countries”, and “Low HAI Countries”) pre- and post-crisis. As we can see from the table, there has been an improvement in HAI for High HAI Countries, rather than a deterioration. While the median percentage increase in HAI from 2005 to 2008 is 0.61% for this group, it is 1.63% from 2008 to 2011. This difference is significant at 3% level (p-value=0.0299).

On the other hand, for both Medium HAI and Low HAI Countries, there was a deterioration in HAI after the crisis although this deterioration is not statistically significant. For Medium HAI Countries, there is a 5.46% increase in HAI from 2005 to 2008. This improvement has slowed down to 3.92% after the crisis. The difference between these two rates is not statistically significant (p-value=0.3053). Although the improvement in HAI for these countries has slightly slowed down after the crisis, this is not a statistically significant change in the improvement rate.

For Low HAI Countries, there is a 16.98% increase in HAI from 2005 to 2008. This improvement has slowed down to 14.28% after the crisis. The difference between these two rates is not statistically significant (p-value=0.4699). Similar to the Medium HAI Countries, although the improvement in HAI for Low HAI Countries has slightly slowed down after the crisis, this is not a statistically significant change in the improvement rate.

Our results here confirm our second hypothesis which states that “Due to the crisis, the more developed countries with relatively higher HAI values do not suffer as much as the less developed countries with relatively lower HAI values”. The more developed countries within our sample do actually improve in HAI after the crisis.

Table 4. % Change in the Human Assets Index for Each Subgroup

Variables	2005-2008				2008-2011			Wilcoxon
	N	Mean	Median	Std	Mean	Median	Std	p-value
High HAI Countries	47	1.00	0.61	6.02	2.71	1.63	4.68	0.0299
Medium HAI Countries	48	5.20	5.46	6.90	5.08	3.92	6.60	0.3053
Low HAI Countries	47	19.79	16.98	18.26	19.10	14.28	13.06	0.4699

Note: The HAI Index and its components exclude the developed countries.

5. Conclusion

In this study, we examine the impact of the 2008 Global Crisis on the “Less-Developed” Countries as defined in Closset, Feindouno, and Goujon (2014). Although there are 172 countries in that category, only 142 of them have the required data, therefore our study focuses on them.

We look at the Human Assets Index (i.e. HAI) which is calculated by Closset, Feindouno, and Goujon (2014). We also examine each of HAI’s four components. These are two health dimension indicators (i.e. the Undernourishment Index and the Under-five mortality index) and two education dimension indicators (i.e. the Adult Literacy Rate and the Secondary Enrollment Index). First, we look at how the index and each of its components have changed over the 1980-2011 period. We find that there has been a gradual improvement in all of the HAI indicators. All four indicators gradually improved over the 1980-2011 period. So, we conclude that globally, almost all of these 142 countries improved in these dimensions.

In order to examine the impact of the Global Crisis on each indicator as well as on the HAI as a whole, we compare the three-year period just before the Global Crisis (i.e. the 2005-2008 period) and the three-year period just after the Global Crisis (the 2008-2011 period). Our selection of this three-year window pre- and post-crisis is due to the availability of data. Our results show that, for the overall sample, the Global Crisis has not had a significant impact on any of the indicators. This result has surprised us because we have been expecting a significant and negative impact on the health and education indicators.

Then, we classified our sample countries into three groups: the high HAI countries, the medium HAI countries, and the low HAI countries. So, one third fall into the high HAI category, one third falls into the medium HAI category; and one third fall into the low HAI category. When we examine the impact of the Global Crisis on each HAI group, we find that while the relatively developed countries within the sample (i.e. the high HAI countries) have actually improved their HAIs after the crisis. Therefore, we conclude that crises tend to have different effects on countries’ development depending on how developed the country is just before the crisis begins.

These relatively developed countries (within the “Less Developed Countries” group as defined by Closset, Feindouno, and Goujon (2014)) are able to keep up with their progress in health and education even during a global crisis period. We argue that their culture and their resources are the two main factors that drive their continued progress. One may argue that these relatively developed countries (i.e. the high HAI group) within the “Less Developed Countries” group as defined by Closset, Feindouno, and Goujon (2014) are similar to the “Developed Countries” (as defined by the same authors) with respect to their resources and cultures. They have resilience when they confront a global crisis. On the other hand, less developed countries do not have enough resources to be resilient when facing a crisis. They also do not have a strong

culture/tradition that would support their previous improvements in health and education areas.

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