Opportunity and Calamity:

Modes of Recovery After Civil War

By Grant Louis Oliveira

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"Success represents the 1% of your work which results from the 99% that is called failure."
Soichiro Honda

Table of Contents

Figures and Diagrams

Full readouts from STATA 12.0 are included in the Appendix

Datasets and Do Files Available Upon Request

Contact: grant.oliveira@gmail.com, (559) 362-7225

Chapter 1: Introduction

Overview

With the end of World War II, the era of large-scale conflict between global powers seems to have, at least for a time, slowed to a halt. However, while nations of the developed world choose to settle their differences through diplomatic and economic measures, the developing world has seen an alarming increase in civil conflict. Throughout the 20th century the developing world has undergone a process of decolonization, which has been followed by an attendant rise in the prevalence and prominence of civil war. According to recent studies, civil wars since 1945 are on average four times longer than earlier civil wars. Civil wars have been responsible for an estimated 25 million deaths in this period, and restrict the socio-economic growth and development of some of the world's poorest nations.[1] The disorder that follows a civil conflict is not constrained to its country of origin either. Perhaps Roy Licklider put it best when he wrote, "We also worry about civil wars because, in this increasingly interdependent world, they are not private quarrels; they attract outside involvement and may escalate into international conflicts which will involve us directly. Some of the most intense Cold War confrontations, for example, resulted from interventions in civil wars in

[1] Hironaka, Ann. Introduction. In *Neverending Wars: The International Community, Weak States, and the Perpetuation of Civil War*, 2. Cambridge, MA: Harvard University Press, 2005.

the Third World in places like Korea, the Middle East, Vietnam, and Afghanistan." [2] With this in mind, it is not difficult to see the importance of attempting to identify the most consistently successful methods of ending the violence and setting these war torn nations back on the path of economic and social recovery.

A great deal of scholarship has been devoted to developing theories on conflict resolution in civil war, and successful protocols for establishing a lasting peace. Civil conflicts have proven to be an incredibly complex phenomenon rich with avenues for study. Take for example the most essential act of ending hostilities between warring parties. That negotiations occur at all would seem to indicate that participants have begun to find the costs of war unacceptable and are prepared to make compromises to avoid them.[3] From this standpoint it would seem to follow that in every negotiation there is potential for successful resolution, but this does not always seem to be the case. According to research by Barbara Walter, 51% of all civil wars between 1940 and 1992 included some form of peaceful negotiation. Of those negotiations, only 62% produced a signed bargain of some kind. Even more perplexing is that while sometimes war continues because of a breakdown in negotiations, oftentimes war continues *in spite* of an agreement on a peace settlement. Of the 62% of civil wars in Walter's study that produced signed peace agreements, only 57% successfully implemented the terms and

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[2] Licklider, Roy E. *Stopping the Killing: How Civil Wars End*. New York: New York University Press, 1993.

[3] Cunningham, David E. "Veto Players and Civil War Duration." *American Journal of Political Science* 50, no. 4 (2006): 875-92. doi:10.1111/j.1540-5907.2006.00221.x.

conditions of said bargain. [4] With such a high rate of failure for even the first step towards creating peace and restoring stability, it is easy to see how difficult it can be to engineer a lasting peace.

Political scientists have for decades studied this process to determine what factors successful post-conflict peacebuilding processes have in common. A mounting body of research implies that the involvement of a third party arbitrator such as the United Nations in peacebuilding is positively correlated with successful outcomes at every stage.[56] Third party arbitrators have been shown to increase the likelihood that a treaty will be signed. Several studies have also indicated that third party arbitrators can successfully act as enforcers after treaties are ratified to assure both sides that commitments made in negotiations will be upheld into perpetuity and that neither side will resume hostilities. This enforcement provides security in the tenuous post-war period, allowing for economic, political and social recovery. Further research indicates that of all types of third party intervention, the multidimensional peacebuilding approach of the United Nations engenders particularly beneficial outcomes. The presence of U.N. peacebuilding missions is positively correlated with many of the positive externalities

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[4] Walter, Barbara F. *Committing to Peace: The Successful Settlement of Civil Wars*. Princeton, NJ: Princeton University Press, 2002.

[5] Walter, Barbara F. *Committing to Peace: The Successful Settlement of Civil Wars*. Princeton, NJ: Princeton University Press, 2002.

[6] Doyle, Michael W., and Nicholas Sambanis. "International Peacebuilding: A Theoretical and Quantitative Analysis." *The American Political Science Review* 94, no. 4 (2000): 779. doi:10.2307/2586208.

associated with increased stability including Real GDP growth, increased electricity consumption, and increased duration of peace. [7]

With these studies in mind, this paper seeks to review in greater detail the effect of U.N. peacekeeping missions on the ground. Indicators of improvement on a broad scope like the aforementioned economic metrics are encouraging, and imply that U.N. peacekeeping missions have beneficial effects on the stability and security of post-conflict societies. However, few studies have attempted to observe in detail the effects of these missions on human development, a key factor in the continued stability of a society.

Literature Review

A central tenet of realist thought in international relations is that the global system exists in a state of anarchy populated by states that behave as rational actors. According to this view, bargaining between two sovereign combatants is difficult because there is no higher authority that can emphatically assure that commitments made during negotiation will be followed.[8] The lack of a regulatory body creates a problem similar to Prisoner's Dilemma. If the two combatants are able to decide on a mutually agreeable peace settlement and do not renege on their promises, surely both sides will benefit from the cessation of hostilities as wars are inherently costly in material resources, human lives,

[7] Sambanis, N. "Short- and Long-Term Effects of United Nations Peace Operations." *The World Bank Economic Review* 22, no. 1 (January 30, 2008): 9-32. doi:10.1093/wber/lhm022.

[8] Flores, T. Edward, and I. Nooruddin. "Democracy under the Gun Understanding Postconflict Economic Recovery." *Journal of Conflict Resolution* 53, no. 1 (2008): 3-29. doi:10.1177/0022002708326745.

and losses in productivity. [9] However, there are often even greater benefits for cheating. Negotiation means making compromises where total victory does not. If one side has an opportunity to renege and use military force to take an advantage over the other, they often will.[10]

A number of realist scholars have argued for the application of this theory to civil conflict, supported by two major observations: (1) Combatants in civil wars, like sovereign states, are rational actors rather than rigid ideologues (2) A similar anarchic system exists inherently between two sides in a civil war, with similar benefits for cheating. Using a logit regression analysis of a variety of factors that may increase or decrease the probability of both sides in a civil war initiating negotiations, Walter (2002) found that the higher the costs of a given war (defined as casualties divided by the duration of fighting), the more likely negotiations are to occur. Walter also notes that parties in a civil war are more likely to negotiate if they have reached a military stalemate, which empirical data suggests becomes increasingly likely the longer a civil war wears on. In Zartman (1985) we find concurring evidence of the compelling effect a long term military stalemate can have on the decision to negotiate or not. From these observations, we can see that the decision to enter negotiations is a rational one rather than a strictly ideological one.

Furthermore, Walter (1997, 1999) points out that in civil war combatants are historically even more likely to renege on commitments made in negotiation than in

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[9] Wittman, D. "How a War Ends: A Rational Model Approach." *Journal of Conflict Resolution* 23, no. 4 (1979): 743-63. doi:10.1177/002200277902300408.

[10] Fearon, James D. "Rationalist Explanations for War." *International Organization* 49, no. 03 (1995): 379. doi:10.1017/S0020818300033324.

international conflict, indicating a similar credible commitment problem at the intrastate level with similar incentives for cheating. Walter (2002) posits that the reason international disputes are more likely to result in successful settlement is because sovereign nations can retreat into their territorial domains and do not have to fully disarm to initiate negotiations. In the case of civil wars, most often a condition of negotiation is ceasefire, and a condition of the final peace treaty is full disarmament. For guerilla armies, a lull in activity can result in serious losses in war fighting capability and often not all combatants agree that peace is beneficial, or at least they do not all agree at the same time.[11] When the military wing of one side dissolves as agreed, it gives the opposing side an upper hand, loosening stalemates, lowering defenses and offering the side that cheats and chooses not to fully disarm a chance to finish the war once and for all. As Walter states succinctly, "The greatest challenge is to design a treaty that convinces the combatants to shed their partisan armies and surrender conquered territory even though such steps will increase their vulnerability and limit their ability to enforce the treaty's other terms."[12] Unfortunately, that inability to enforce the treaty's other terms after military force is surrendered too often results in a reversion to civil war. This conclusion is supported by Robert Harrison Wagner's findings in his study, "The Causes of Peace" (1994). Wagner notes that civil wars ended by negotiation rather than total victory are much more likely to result in a return to violence by the same parties after more than five years (50% of negotiated settlements vs. 15% of military victories.)

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[11] Stedman, Stephen John. "Spoiler Problems in Peace Processes." *International Security* 22, no. 2 (1997): 5. doi:10.2307/2539366.

[12] Walter, Barbara F. *Committing to Peace: The Successful Settlement of Civil Wars*. Princeton, NJ: Princeton University Press, 2002.

Much of the literature characterizes conflict resolution in civil war as a credible commitment problem with insurgents, despite being ideologically driven, as rational actors who make the decision to begin and end conflicts based on cost-benefit analysis. It is because of this that intervention from a third party with the military clout to enforce terms of treaties makes civil conflicts more likely to be successfully resolved. Statistical analyses in Walter (2002) support this conclusion. After weighing a variety of different variables that could contribute to successful settlement in 72 civil conflicts since 1945, Walter found that no factor correlated with successful resolution nearly as strongly as the involvement of a third party arbitrator.

These observations are relevant to my study because Walter's definition of successful resolution required that a nation remain conflict free for five years or more after the cessation of hostilities. Third party interventions seem to provide the stability necessary for growth and recovery. If there is a bigger, more powerful body mitigating the credible commitment problem and the former combatants can be sure that there will be no reneging on the terms of the settlement, then a favorable environment exists for post-conflict societies to recover.

Multiple studies have confirmed the positive externalities of the stability third party intervention provides. Research by Michael W. Doyle and Nicholas Sambanis (2000) indicates settlements that involve third party peacebuilding missions can help improve local capacities to recover in the post conflict period. This study points out that U.N. peacebuilding missions in particular are uniquely tailored to the needs of the country at hand, and that this tailoring can lead to even greater benefits than simple peacekeeping missions that are focused solely on preventing violence. Of the ideal role of

international interventions, Doyle and Sambanis write, “In both [developed and developing nations who have experienced civil war] reconstruction is vital; the greater the social and economic devastation, the larger the multidimensional international role must be, whether consent-based *multidimensional peacekeeping* or nonconsent (sic) enforcement followed by and including multidimensional peacekeeping. International economic relief and productive jobs are the first signs of peace that can persuade rival factions to disarm and take the chance on peaceful politics. Institutions need to be rebuilt, including a unified army and police force and the even more challenging development of a school system that can assist the reconciliation of future generations.” [13] A later study by Sambanis (2008) shows that United Nations peacekeeping missions are more successful in improving some of the macro-level factors that put a nation at risk for conflict recidivism than other forms of intervention, and that in fact, interventions by other third parties had no statistically significant effect on these metrics at all.[14] Sambanis tested a sample of civil wars that were ended with the help of United Nations peacekeeping missions against another sample that were not, finding that United Nations peacekeeping missions were positively correlated with Real GDP growth, increased exports, and perhaps most tellingly, durability of peace.

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[13] Doyle, Michael W., and Nicholas Sambanis. "International Peacebuilding: A Theoretical and Quantitative Analysis." *The American Political Science Review* 94, no. 4 (2000): 779. doi:10.2307/2586208.

[14] Sambanis, N. "Short- and Long-Term Effects of United Nations Peace Operations." *The World Bank Economic Review* 22, no. 1 (January 30, 2008): 9-32. doi:10.1093/wber/lhm022.

Puzzle

From the literature review we can see a fair amount of academic consensus regarding the effect of third parties, and the United Nations in particular, on the outcome of civil conflict. It is well argued that third parties can mitigate credible commitment issues and allow the peace process to reach a favorable conclusion. There also seems to be evidence on both a theoretical and an empirical level that United Nations peacekeeping missions can help improve indicators for some socioeconomic factors that are key to reducing the likelihood of conflict recidivism and attaining participatory peace.[15]

However, no broad based study has yet been carried out to evaluate how effective United Nations peacebuilding missions are in improving the everyday living conditions of the average citizen. While there are indicators that would seem to suggest that the U.N. would be helpful in improving these conditions, there is no concrete evidence that the U.N. is effective in improving human development. That peacebuilding missions do so is of imperative importance. The conditions of the average citizen have a critical impact on if the nation chooses to divide and go to war with itself. It is after all the average citizen that marches into battle, the average citizen who razes a village to the ground, and the average citizen who kills his countryman. Today's discontented citizen is tomorrow's

[15] Doyle and Sambanis (2006) define "participatory peace" as not only the end of war, but the absence of significant residual violence, undivided sovereignty, and a minimum level of political openness. Essentially, the model of stability most would associate with the idea of peace as opposed to simply the lack of war.

soldier, and to improve his condition is to safeguard the nation from further violence. With this study, I will test the U.N.'s effectiveness in doing so.

Chapter 2: Research Design and Hypotheses

Research Design

To test the efficacy of United Nations intervention in forwarding human development, I have elected to perform a quantitative study of all civil war resolutions since 1990, which is roughly the year the United Nations decided to change the focus of its missions from simple military peacekeeping to multifaceted peacebuilding operations. I have compiled one group of 17 successfully resolved conflicts that have seen United Nations involvement in the peacebuilding process. I will test each of them for improvement in the Human Development Index in a five year period following the end of the war using a multivariate regression model. I will test the same metrics against a group 25 of civil wars that were resolved without the involvement of the United Nations. This group has been divided into two categories: those that were resolved with the help of another third party (whether another nation or a multinational group such as NATO), and all other outcomes (including wars settled by spontaneously by the belligerents, and wars that ended with victory for either side.) To further explore the data, I will control for region, GDP per capita, duration of conflict, and casualties per capita.

Unit and Scope of Analysis

I have selected the period from 1990 to 2008 as the timeframe for my investigation. This period was selected for a variety of reasons. In its own literature, the United Nations identifies the end of the Cold War as the turning point for its policy on intervention from simple military protection to multidimensional missions aimed at a broader array of problems. Beyond that, the U.N.'s change in focus for its peacebuilding missions did not occur in a vacuum. The end of the Cold War marked a drastic change in the geopolitical system, usually described as a shift from bipolarity with the U.S. and the Soviet Union as the main superpowers, to a more tiered system with the U.S. at the top in terms of power and influence and a number of second tier powers including China, Russia, the U.K., France and Germany alternately balancing and supporting the United States. This change in dynamics is important because it colors the way in which individual nations respond to crises and the level of influence the U.N. is capable of asserting.

It is somewhat difficult to place an exact date on "the end of the Cold War", so for the sake of convenience I have selected 1990 as a starting year. The last war included in the study will have begun in 2008. This year was selected as an end date because my research design requires a five year period from the official end of conflict to measure improvement on human development indicators, and at this time 2013 is the latest year for which these metrics are available. The five year period was selected as an appropriate timeframe to measure improvement because it is consistent with the existing literature. In

most studies of post civil war conflict resolution, five years is used as a benchmark for success or failure in cessation of hostilities, and improvement in economic indicators. [16] [17]

Civil wars for study have been chosen from the publically available *Correlates of War (COW) Intra-State War* database. Per the dataset's codebook:

> "Within the COW war typology, an intra-state war must meet same definitional requirements of all wars in that the war must involve sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related combatant fatalities within a twelve month period." In addition, "[intra-state wars] must involve armed forces capable of "effective resistance on both sides…(a) both sides had to be initially organized for violent conflict and prepared to resist the attacks of their antagonists, or (b) the weaker side, although initially unprepared, is able to inflict upon the stronger opponents at least five percent of the number of fatalities it sustains."[18]

This particular dataset is ideal for a number of reasons. Its requirement of effective resistance rules out isolated acts of terrorism and one-sided government genocides, reducing the dataset to only the types of conflicts the U.N. would consider involving itself in: protracted, organized civil wars with a large enough scope to attract international

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[16] Walter, Barbara F. "Explaining the Intractability of Territorial Conflict1." *International Studies Review* 5, no. 4 (2003): 137-53. doi:10.1111/j.1079-1760.2003.00504012.x.

[17] Sambanis, N. "Short- and Long-Term Effects of United Nations Peace Operations." *The World Bank Economic Review* 22, no. 1 (January 30, 2008): 9-32. doi:10.1093/wber/lhm022.

[18] Correlates of War Intrastate War Codebook http://www.correlatesofwar.org/COW2%20Data/WarData_NEW/Intra-StateWars_Codebook.pdf

attention. Beyond these considerations, it seems to be somewhat of an "industry standard", having been utilized in previous works by Walter and Sambanis.

Unfortunately, the necessary country by country statistics for my investigation were not available for all of the wars included in the COW database in this timeframe. This is unsurprising. Data gathering and reporting is already oftentimes unreliable in very poor and war-torn nations, and the fact that the specific data I need comes from the very last year of the civil war does not make matters easier. Thankfully, these cases were a relative rarity, and I was able to locate the necessary metrics for the vast majority of my desired dataset. In addition, if there were two incidences of civil war in a country within five years of each other, they were coded as one continuous conflict.

Dependent Variable

Change in Human Development Index

The Human Development Index was devised by economists from the United Nations in an effort to quantify the quality of life in a nation in a single metric. As such, it is germane for inclusion in our study. The Human Development Index combines life expectancy, education, literacy and standard of living (calculated as the natural logarithm of gross domestic product per capita at purchasing power parity) into one measure. I have elected to study the change in this figure in the five years following a civil conflict. This variable ΔHDI is the simple difference found by subtracting the HDI at T_0 (the end of the

conflict per the COW database) from the HDI at T_5 (five years after the end of the conflict per the COW database.) Human Development Index was selected as the primary variable of study because it is the most comprehensive variable available to measure human development. Other variables measuring human development factors - such as hunger, press freedom, and access to medical care - are available, but not comprehensively within my desired period of study. At the moment, the HDI is the most widely available, best recorded statistic measuring human development.

Independent Variables

I will use a number of independent variables in my study to more accurately determine whether the results are attributable to U.N. peacekeeping efforts. They are as follows:

Casualties per Capita

Casualties per capita is a composite variable that I have designed by collecting the casualty count estimates (both civilian and military) of each conflict and dividing it by the population of the nation on the year the war ended. This control is utilized as a proxy for the level of destruction wrought by each of these wars. Intuitively, we would think that on average countries would recover from less destructive conflicts more easily than more destructive conflicts, resulting in a disparity that could cloud our results if the wars in one group of nations is "smaller" on average than the other. It should be noted that this

variable can be a bit "hazy." Casualty estimates vary wildly in many cases based on who is reporting them, on top of the intrinsic difficulty of gathering data in a war zone. In this study, I have tried to remain somewhat consistent by picking the median estimate rather than the highest or the lowest in each case, but the potential fallibility of the data is acknowledged. However, I believe the variable is still quite useful, as it is a matter of scale. Whether the estimate is high or low, the lowest estimate of a very large and deadly civil war is still going to be much higher than that of a small and relatively contained one, and that scaling of damage is what the variable is really trying to get at.

U.N. Intervention

The effect of U.N. intervention on the Human Development Index is the primary focus of this paper. In my statistical analysis, U.N. intervention will be represented by a simple binary dummy variable.

Third Party Intervention

The U.N. is not the only body that assists war-torn nations in their peacebuilding process. Individual nations, oftentimes neighbors of the segregated state, will involve themselves in negotiations as an arbitrator and maintain a role even after the fighting is over in peacekeeping. To evaluate whether or not the U.N. is specifically more effective than any other alternative, we must test the efficacy of this type of intervention as well. This control will be represented by a dummy variable indicating whether or not a third party nation was involved in the peace process in any way.

Summary of Variables

Fig 1: Summary of Variables

Description of Variable	Variable Abbreviation
Change in HDI over 5 year period following the end of civil conflict	*_HDI*
Estimated casualties from the war divided by population of the country in the last year	*casupercap*
GDP Per Capita of the nation on the first year of peace	*StartGDPPC*
Whether or not there was UN involvement	*un*
Whether or not another third party was involved	*tp*
All other types of resolution	*other*

Hypotheses

In this thesis, I test three hypotheses about the recovery process following civil conflicts. These hypotheses follow from my assumption that the U.N. has a uniquely positive influence on post-conflict recovery, even when compared to other patterns of resolution and recovery.

Hypothesis 1: HDI will improve after five years of peace, regardless of the type of intervention.

A return to stability, even if it is in the short run, will lead to improvements in quality of life. Civil wars are disruptive forces that interrupt the political, economic and social progress of a nation. I submit that the factors of the Human Development Index – education, life expectancy, and purchasing power – are all directly affected by this disruption and that the end of civil war will lead to improvements in these metrics.

Hypothesis 2: U.N. peacebuilding missions are positively correlated with higher rates of growth in Human Development Index in the 5 year period following the conclusion of hostilities in civil conflicts from 1990 to the present than all other settlement types.

As reviewed above, the impact of third parties on the outcome of civil conflicts is palpable. Third parties have been shown to deliver stability and more reliably lead to lasting peace. More specifically, the involvement of the U.N. has been connected to positive growth in GDP Per Capita and other economic metrics as well as longer lasting and more stable peace. I therefore assert that the U.N. will have a uniquely positive effect on quality of life and development in post-conflict societies as represented by the Human Development Index.

Hypothesis 2.1: U.N. peacebuilding missions are even more positively correlated with higher rates of growth in HDI in a five year period when controlled for Casualties Per Capita.

There is a possibility that the wars in which the U.N. choses to intervene are more destructive on average than those it does not or vice versa. Societies recovering from more destructive wars would intuitively seem likely to recover at a different rate than those rebuilding from a less destructive conflict. When this difference is factored in, I believe the expected improvement in development from U.N. involvement will be clearer.

Hypothesis 2.2: U.N. peacebuilding missions are even more positively correlated with higher rates of growth in HDI when controlled for both Casualties Per Capita and GDP Per Capita.

GDP Per Capita may confound our results in much the same way that Casualties Per Capita would. I speculate that richer countries would recover at a different rate than poorer ones. We must control for this effect to determine whether or not the U.N. is principally responsible for improvements on HDI.

Hypothesis 3: Civil wars that end with the involvement of another third party will have higher rates of growth in HDI in a five year period than those with no outside involvement at all.

Research by Walter (2000) and others have attested to the stabilizing influence any powerful third party, not just the U.N., can have on the negotiation process and the

attainment of sustainable peace. While further research seems to indicate the U.N.'s superiority in dealing with civil conflict, I would still speculate that the added stability provided by a third party arbitrator is beneficial to recovery in Human Development.

Chapter 3: Statistical Analysis

The first test I chose to run was to simply see the mean ΔHDI in each sample (U.N. involvement, Third Party involvement, and all others). This test is a broad stroke just to get a rough idea of how to proceed.

Fig. 2: Summary of ΔHDI in Each Group

```
. summarize _hdi if un==1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
_hdi	17	.0294706	.0573728	-.108	.125

```
. . summarize _hdi if tp==1
```

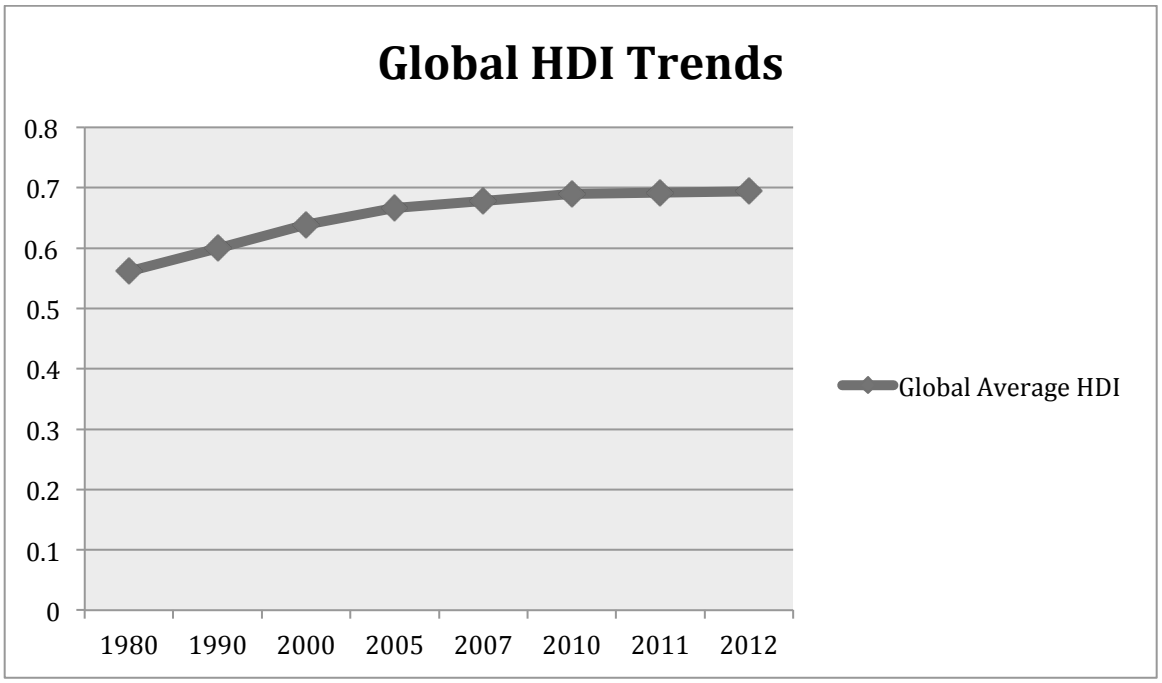
Variable	Obs	Mean	Std. Dev.	Min	Max
_hdi	5	.0202	.1131358	-.167	.112

```
. summarize _hdi if other==1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
_hdi	20	.0385	.0536053	-.028	.208

Already we can see that our sample is quite small in each category, and that therefore the results may not be statistically significant in the strictest sense. This, however, does not mean that the data that we will uncover is any less important or useful in evaluating the effect of third party interventions on human development. For example, despite this issue we can already make two intriguing observations. First, HDI improves substantially in all groups after the conclusion of a civil war. This improvement is substantial even considering the global upward trend in HDI that has been the pattern since the metric was first measured globally in 1980.

Fig. 3: Global Trends in Human Development Index Growth



From the UNDP Online Database

Post-conflict societies improved their HDI by .032 on average in the five years following the cessation of conflict. By contrast, the mean five year improvement of the global average HDI in between 1990 and 2010 was .0225. This difference is consistent even when development status (least developed vs. most developed) is considered[19]

Second, improvement in HDI is on average quite a bit higher in countries in which no intervention occurred at all. This is surprising, and in direct contradiction to my H_0. More tests are necessary before we can take this result at face value. From here we move on to a multivariate regression model. I will start out with the simplest model and add variables step by step to measure their impact.

Fig 4: Regression 1: ΔHDI -> [Group]

Group	*Coefficient*	*P>|t|*	*R-squared*
UN	*-.005*	*.788*	*.002*
Third Party	*-.018*	*.640*	*.005*
Other	*.111*	*.570*	*.008*

See Appendix: Figs 1-3

The first regression seems to reinforce our initial observations from the first test. Intervention of both kinds is very slightly negatively correlated with growth rather than the expected positive growth, while conversely, no intervention is slightly positively correlated to growth in HDI. Second, our R-squared is very small in each case, meaning

[19] Appendix 1

that the correlation between these regressions and the data is low. While the coefficient of change directly resulting from the type of third party involvement alone is small, there are likely other factors making it difficult to draw any conclusions. With this in mind, the next test adds the GDP of the nation at the end of the war to the equation.

Fig 5: *Regression 2: ΔHDI -> [Group], StartGDPPPC*

Group	*Coefficient*	*P>|t|*	*Coefficient of GDPPC*	*P>|t|*	*R-squared*
UN	*-.011*	*.588*	*-.2.77e-06*	*.753*	*.011*
Third Party	*-.014*	*.647*	*-3.80e-06*	*.672*	*.009*
Other	*.016*	*.408*	*-3.5e-06*	*.686*	*.021*

See Appendix Figs. 4-6

While the results remain statistically insignificant in the strictest sense, controlling for *StartGDPPC* has had a noticeable effect on the effect of intervention on HDI growth. While *StartGDPPC* plays an extremely minimal role on its own effecting HDI growth, in tandem with UN intervention it changes the picture quite significantly, nearly doubling the coefficient of change. Intervention of any kind continues to be negatively correlated with HDI growth, in contrast with my initial hypotheses. The R-squared has risen significantly in each category, indicating an important connection between these two factors. It would seem as though countries with higher GDP Per Capita at the end of the war grow more successfully than those with lower GDP Per Capita, and at the same time, it seems as though in general the nations included in the *Other* category are less negatively affected by this phenomena.

Fig 6: Regression 3: ΔHDI -> [Group], StartGDPPPC, Casupercap

Group	*Coefficient*	*P>|t|*	*Coefficient of GDPPC*	*P>|t|*	*Coefficient of Casupercap*	*P>|t| of Casupercap*	*R-squared*
UN	*-.009*	*.581*	*2.12e-06*	*.790*	*.887*	*.002*	*.240*
Third Party	*-.018*	*.494*	*9.22e-07*	*.909*	*.899*	*.002*	*.243*
Other	*.017*	*.326*	*1.37e-06*	*.862*	*.893*	*.002*	*.253*

See Appendix: Figs. 7-9

In the final regression in this set, Casualties Per Capita is added to the equation. The addition of this variable has tremendous impact on the results. The negative correlation between U.N. intervention and growth in HDI is reduced but remains higher than in the direct variance. Third party intervention is much more negatively correlated to growth than before, and the positive correlation between all other outcomes and growth grows even more powerful. GDP Per Capita in each case is now very slightly positively correlated to growth in HDI rather than very slightly negatively correlated as before, but again this effect is minimal. The most notable effect here is that of Casualties Per Capita. The coefficient of casualties per capita dwarves that of any other variable, and across the board it is actually statistically significant. This implies that the most powerful predictive factor on whether or not a post-conflict society will improve in human development factors is not necessarily third party involvement at all, but the level of damage wrought by the war.

These results are extremely counterintuitive, and contrary to the literature. As seen in the literature review, the current consensus of contemporary research into civil conflict resolution tells us that we should expect wars in which the U.N. is involved to be

more likely to be successfully resolved, with longer durations of peace, improvements in GDP and electricity consumption and other factors. Overall, these observations would seem to show that the involvement of the U.N. leads to a net positive outcome for post-civil conflict societies. The results of my study, at least when taken at face value, seem to fly in the face of this conclusion. According to my study, not only are U.N. peacekeeping missions negatively correlated with growth in HDI, but so are not-U.N. third party interventions. The well documented stability that is provided by third parties from the initiation of peace talks to the cessation of violence to the post war recovery period does not seem to have a positive effect on the human development status of the nation.

These results raise several intriguing questions about the nature of recovery after the cessation of civil conflict. As we can see, even when factoring in *StartGDP* and *Casualties Per Capita*, post-conflict societies that have had no peacebuilding missions still seem to recover more quickly than ones that do not, in contrast to my main hypotheses. Indeed, while these results are not fully generalizable due to their small sample size, they are not insignificant. The Human Development Index is rated on a scale from 0 to .999 with every nation having a decimal score rounded to the thousandth (0.XXX). If the difference in the coefficient of change for U.N. involvement and lack thereof is .0271, we are seeing a serious disparity in growth potential to scale. What explains this disparity?

The most plausible explanation I arrived at is selection bias. It would make sense that on average the United Nations would choose to intervene in more destructive, longer lasting wars. These countries would no doubt have a more difficult time recovering economically, and therefore socially, than less afflicted countries. Casualties per capita,

while illustrative, do not necessarily tell the whole story of the damage. Civil war destroys not only people and property, but product. Civil wars cause a great deal of business uncertainty, both foreign and domestic. If business owners are unsure whether or not to open their doors for fear that their work will be destroyed or that their clientele will be run off by the reignition of war, and if foreign investors do not invest their capital for the same reasons, then economic improvement will naturally happen much more slowly. It has been established that economic improvement is directly tied to improvement in human development conditions, so this business uncertainty is a substantial detriment to the progress toward a healthy society.

What model can we use to attempt to show this effect? I hypothesize that business uncertainty is a function of duration of war and casualties per capita. We have already seen the significant effect casualties per capita have on *ΔHDI*. I predict that duration will be similarly important in causing investor uncertainty, as longer wars would be more likely to be publicized, increasing investor awareness and uncertainty. Duration of war would also likely have an effect on domestic industrial growth as well, as a war that has dragged on for years would be likely to effect the psyche of the average citizen. When war becomes the only reality and it seems like the end is nowhere in sight, I hypothesize that citizens become less likely and less able to invest themselves in capital intensive projects that could potentially benefit the economy.

To test the effect of these two factors on business development in the post-conflict period, I introduce a new variable, *ΔLNGDPPC*. Civil conflicts have been shown to have a significant effect on GDP. Research by Carnahan, Gilmore and Durch demonstrates that GDP Per Capita drops during civil wars, and recovers after (hardly a surprising

conclusion)[20]. As mentioned earlier in this paper, further research by Nicholas Sambanis shows that U.N. peacekeeping missions have beneficial effects on Real GDP growth in the post conflict recovery period. However, in my opinion Real GDP is not an accurate measure of actual economic growth in the post-conflict period, especially in countries in which the U.N. has established peacebuilding missions. Findings by Carnahan, Gilmore and Durch indicate that much of the immediate economic growth provided by U.N. peacebuilding missions is directly associated with services accommodating members of the peacebuilding mission, for example upscale housing and restaurants serving foreign cuisine to cater to the tastes of U.N. operatives. In addition, the U.N. often pays much better than local employers, and therefore is able to slough off a limited amount of highly skilled native talent. These additions create a small, high earning sector of the economy that would certainly improve the net GDP of a nation, but I do not expect that they are proportional to the population, or that they trickle down to the average citizen. I believe that improvement in per capita GDP is a more appropriate tool for analyzing the natural growth of the native economy. To create a variable for this growth, I followed the same protocol I used when gathering my variable for Human Development Index ($T_5 - T_0$). I then scaled this variable logarithmically to aid in comparison between countries.

[20] Carnahan, Michael, Scott Gilmore And, and William Durch. "New Data on the Economic Impact of UN Peacekeeping." *International Peacekeeping* 14, no. 3 (2007): 384-402. doi:10.1080/13533310701422943.

Fig. 7: Multivariate Regression ΔLNGDPPC -> Casualties Per Capita, Duration

```
. reg _lngdppc casupercap length
```

Source	SS	df	MS		
Model	.63969267	2	.319846335	Number of obs =	41
Residual	10.1296354	38	.266569353	F(2, 38) =	1.20
				Prob > F =	0.3124
Total	10.7693281	40	.269233202	R-squared =	0.0594
				Adj R-squared =	0.0099
				Root MSE =	.5163

_lngdppc	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
casupercap	-3.477783	2.4204	-1.44	0.159	-8.377627	1.422061
length	-.0058595	.0089404	-0.66	0.516	-.0239583	.0122393
_cons	.470427	.1269454	3.71	0.001	.2134396	.7274144

As with the last two series of regressions, our sample size is still relatively small and as such it is much more difficult to achieve statistical significance in the strictest sense. Still, the effect of both casualties per capita and length on the five-year growth of per capita GDP is clear.

Now we must address what this means for our primary subject of inquiry: the effect of U.N. peacebuilding missions on growth in HDI. To see if there is a selection bias in the way the U.N. selects which nations to intervene in, we must see what if any critical differences exist in our data between the wars the U.N. chose to intervene in, and those it did not. First, I ran a Student's T-Test of the duration of each war, by whether or not the U.N. intervened.

Fig. 8: Student's T-Test, Duration of Conflict by UN Intervention

```
. ttest length, by(un)

Two-sample t test with equal variances

   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      25        7.91    1.561382    7.806909    4.687466   11.13253
       1 |      17    13.30059    2.542735    10.48396    7.910231   18.69095
---------+--------------------------------------------------------------------
combined |      42      10.0919    1.428799    9.259679    7.206386   12.97742
---------+--------------------------------------------------------------------
    diff |           -5.390588     2.82111               -11.09226   .3110885
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =  -1.9108
Ho: diff = 0                                     degrees of freedom =       40

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0316         Pr(|T| > |t|) = 0.0632          Pr(T > t) = 0.9684
```

As we can see, the wars that the U.N. chooses to involve itself in are nearly twice as long as those it does not. Next, I ran the same test but with Casualties per Capita.

Fig. 9: Student's T-Test, Casualties Per Capita by UN Intervention

```
. ttest casupercap, by(un)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	25	.017237	.0081714	.0408571	.000372	.034102
1	17	.0172509	.0048866	.0201481	.0068917	.0276101
combined	42	.0172426	.0051997	.0336982	.0067415	.0277437
diff		-.0000139	.010725		-.0216901	.0216622

```
    diff = mean(0) - mean(1)                                  t =  -0.0013
Ho: diff = 0                     degrees of freedom =       40

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4995         Pr(|T| > |t|) = 0.9990          Pr(T > t) = 0.5005
```

The results of this test are less clear. It seems the casualties per capita of the wars the U.N. intervenes in are largely similar to the ones it does not. While the results of these tests are intriguing, I can only positively establish a section bias in U.N. mission selection by duration, and total casualties.

Beyond having the effect of scaring off crucial foreign investment, long and destructive civil wars hint at deeper problems that the country is attempting to resolve through war. As the famous axiom goes: war is politics through other means, and in the case of civil conflicts, deep abiding problems that have roots in the very bedrock of society are being fought over. In their landmark paper "Greed and Grievance in Civil War", Paul Collier and Anke Hoeffler developed a model for how civil wars begin that

has been widely accepted since it was proposed in 1999.[21] The Collier and Heoffler examined 78 five-year increments when civil war occurred from 1960 to 1999, as well as 1,167 five-year increments of "no civil war" for comparison, and subjected the data set to regression analysis to see the effect of various factors. The factors that were shown to have a statistically significant effect on the chance that a civil war would occur in any given five-year period were: availability of finance, opportunity cost of rebellion (i.e. is it possible or probable for young males to succeed economically in the pre-war society? What are they losing by putting their professional lives on hold to join a rebel army?), military advantage (i.e. Can a rebellion be easily quashed? High levels of population dispersion and mountainous terrain make it easier for rebellions to hide, organize, and defend themselves), domination of a smaller ethnic group by a larger one, population size (larger size correlates to higher likelihood), time since last rebellion (post civil war governments have low levels of legitimacy and recognition and are easily viewed as disposable.)

It does not seem unreasonable to propose that countries with longer lasting civil wars simply have a greater vulnerability to these problems. Perhaps longer lasting civil wars come about in societies that are intrinsically disadvantaged in terms of stability. It also does not seem unreasonable to postulate that the same factors that the Collier-Hoeffler model says start civil conflicts are also a detriment to recovery and human development. Nations that perpetually have low access to capital (for example if the

[21] Collier, P. "Greed and Grievance in Civil War." *Oxford Economic Papers* 56, no. 4 (2004): 563-95. doi:10.1093/oep/gpf064.

banking system is unreliable or non existent), long standing ethnic divides, or a highly dispersed and separated population face much greater challenges in the post-conflict recovery process than nations that do not. If it is true that these problems are correlated with longer civil wars, then again, it is unsurprising that U.N. involvement is negatively correlated with growth. The U.N. seems to choose to involve itself in much more damaging, longer lasting civil wars on average, wars that are more likely to be fought over deep seated national issues that are much more difficult to recover from.

Another possible culprit for the discrepancy between HDI improvement with third party intervention and improvement without third party intervention would be to test for an incidental regional bias. It's possible that U.N. intervention is skewed towards certain regions with either (1) more lasting civil conflicts (2) more devastating civil conflicts or (3) a higher tendency for civil conflict due to any number of factors that can be regionally applicable (mountainous terrain, low population density, strong sectarian or ethnic divides, or high economic dependence on commodities.) This skewing may not be necessarily intentional, it could just be statistically effective due to the low number of observations in my study. To test for this, I first assigned one of five dummy variables (Europe and Central Asia, Sub-Saharan Africa, East Asia, Latin America and Arab States) to each conflict. I then tested for the number of incidences in each by group.

Fig 10: Regional Distribution of Civil Conflicts 1990-2008

	Europe/Central Asia	Sub-Saharan Africa	East Asia	Latin America	Arab States
UN	2	10	1	4	0
Third Party	2	2	1	0	0
Other	5	7	2	0	5

As we can see, U.N. intervention is strongly skewed toward Sub-Saharan Africa (and to a lesser extent, Latin America) while *Other* is much more balanced across the board. Seeing this skewed distribution, I ran a series of multivariate regressions adding my regional variables to the equation. Third party interventions other than the U.N. were not included in this analysis, because with no more than two observations in each category no further trends could be extrapolated with this test. Results of these two tests are included on the next two pages.

Fig 11: Multivariate Regression ΔHDI -> UN, Casualties Per Capita, StartGDPPC, Regional Controls

```
. reg _hdi un startgdppc casupercap europeandcentralasia subsaharanafrica eastas
> ia latinamericaandthecaribbean arabstates
```

Source	SS	df	MS		
Model	.060337013	8	.007542127	Number of obs =	41
Residual	.09102294	32	.002844467	F(8, 32) =	2.65
				Prob > F =	0.0236
Total	.151359953	40	.003783999	R-squared =	0.3986
				Adj R-squared =	0.2483
				Root MSE =	.05333

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
un	.0155647	.020895	0.74	0.462	-.0269969	.0581264
startgdppc	7.46e-07	8.32e-06	0.09	0.929	-.0000162	.0000177
casupercap	.7577303	.3438665	2.20	0.035	.0572971	1.458164
europeandce~a	-.0985122	.0744623	-1.32	0.195	-.2501869	.0531625
subsaharana~a	-.101863	.0675094	-1.51	0.141	-.2393752	.0356492
eastasia	-.059954	.0763999	-0.78	0.438	-.2155756	.0956675
latinameric~n	-.132845	.0765058	-1.74	0.092	-.2886823	.0229923
arabstates	-.0476864	.0764261	-0.62	0.537	-.2033614	.1079885
_cons	.1020818	.0717638	1.42	0.165	-.0440963	.2482599

Fig 12: Multivariate Regression ΔHDI -> Other, Casualties Per Capita, StartGDPPC, Regional Controls

```
. reg _hdi other startgdppc casupercap europeandcentralasia subsaharanafrica eas
> tasia latinamericaandthecaribbean arabstates
```

Source	SS	df	MS		
Model	.05896408	8	.00737051	Number of obs =	41
Residual	.092395874	32	.002887371	F(8, 32) =	2.55
				Prob > F =	0.0283
				R-squared =	0.3896
				Adj R-squared =	0.2370
Total	.151359953	40	.003783999	Root MSE =	.05373

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
other	-.0052441	.0196616	-0.27	0.791	-.0452936	.0348053
startgdppc	1.92e-06	8.23e-06	0.23	0.817	-.0000148	.0000187
casupercap	.7296441	.3458663	2.11	0.043	.0251376	1.434151
europeandce~a	-.1030472	.0759232	-1.36	0.184	-.2576977	.0516034
subsaharana~a	-.100982	.0692538	-1.46	0.155	-.2420474	.0400834
eastasia	-.0632628	.0780506	-0.81	0.424	-.2222466	.095721
latinameric~n	-.1272592	.0787687	-1.62	0.116	-.2877058	.0331873
arabstates	-.0530934	.0768142	-0.69	0.494	-.2095588	.103372
_cons	.1110932	.0756975	1.47	0.152	-.0430976	.265284

The addition of regional variables has an enormous effect on our results, essentially flipping them upside down. The coefficient of U.N. intervention has gone from -.009 to .015, a massive positive change. Conversely, the coefficient of change for the *Other* category has gone from .017 to -.005, almost the exact opposite effect. The overwhelmingly positive correlation of Casualties per Capita is lessened significantly. *StartGDPPC* remains largely irrelevant. Given the way that the data was skewed in each groups, it seems that this change is largely the result of the inclusion of more cases of U.N. intervention in Sub-Saharan Africa proportional to the size of the whole group.

These effects further the conclusion that selection bias figures heavily into the results of this study. The U.N. chooses to involve itself in nations where aid is most needed, where stability is most in jeopardy, and where reignition of war is likely. The types of conflicts found in Sub-Saharan Africa exemplify this theme. Wars in this region share many similar attributes. They tend to be mineral or petrochemical rich post-colonial societies with high degrees of sectarian violence due to the arbitrary borders drawn by European colonizers. Each of these factors contributes to the intractability of civil conflict. The U.N. can only do so much to improve these types of situations, and while on a whole these conflicts still may not experience positive growth in the postwar period, it does not seem unreasonable to posit that it is better that they are there, given the positive benefits of U.N. involvement found by other studies as well as the general improvement in HDI demonstrated after regional controls are factored in.

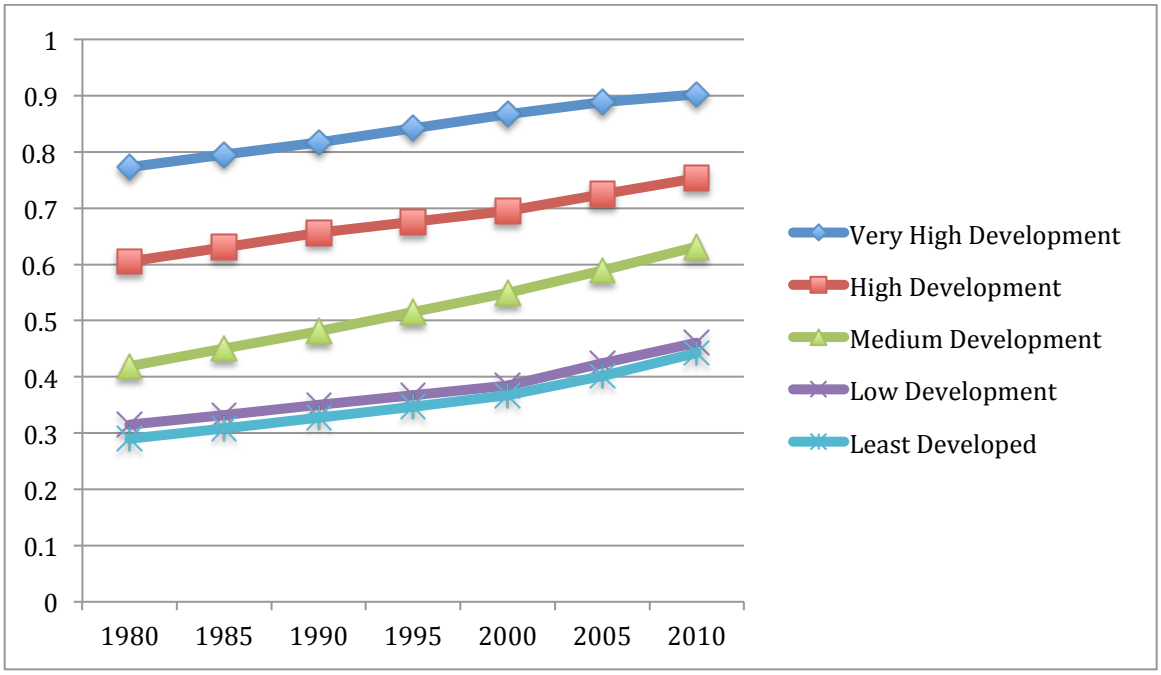
A second intriguing question arises from the data: Why would nations more damaged by war improve more quickly? A possible explanation may be found if we try to conceptualize how Human Development Index numbers improve naturally. First we should look at the equation for the Human Development Index. The Human Development Index consists of three factors weighted evenly: Life expectancy at birth, as an index of population health and longevity, knowledge and education, as measured by the adult literacy rate (with two-thirds weighting) and the combined primary, secondary, and tertiary gross enrollment ratio (with one-third weighting), and standard of living, as indicated by the natural logarithm of gross domestic product per capita at purchasing power parity. I would argue that growth in each of these factors is heavily constrained by the law of diminishing marginal returns. Consider for example a nation just recovering

from a particularly deadly civil war. The school system is likely to be in shambles, if it is even existent at all. Enrollment is minimal, and if the war has been going on for years, then literacy is likely to be down as well. The nation's score for this third of the HDI in this period is liable to be essentially zero. The war ends and suddenly the school system can actually begin to redevelop. New schools are being constructed, and students are enrolling in them. The improvement in HDI in this period will be huge, if only because it is so easy to improve on zero.

Now consider a nation with a very high development status, like Norway, Australia or the United States. Gains in HDI by year would be expected to be much smaller for the opposite reason. When you already have 99% enrollment in Primary and Secondary school and 100% literacy, as Norway did in 2012, then in it fairly difficult to make any gains in that category. This pattern is pervasive in each factor of the HDI. If your nation already has one of the best standards of living or one of the best, most well established healthcare systems, then your HDI is not going to improve much numerically even if things are consistently getting better.

This effect is actually observable. The U.N. gathers HDI information and then sorts it into numerous categories for study. One of the ways it sorts this data is by development. If we graph the average HDI of "very high" development nations against the development of "very low" development nations, we can see this effect.

Fig 13: Human Development Growth By Category



From the UNDP Online Database

As we can see, Human Development Index improvement by year is higher in countries with Medium Development and Low Development than it is in countries with High or Very High Development. If Human Development Growth in general is marginal and skewed toward countries in which educational and health infrastructure are just being built rather than merely improved, then it makes sense that marginal improvement would be associated with casualties per capita, as a truly devastating civil war would essentially "press the restart button" on these essential services.

Chapter 4: Conclusion

Summary of Findings

Despite these encouraging results, the effect of U.N. intervention in civil conflicts on human development is not fully determined. Despite its limits however, this study does provide useful suggestions for where to begin to study the externalities created by U.N. peacekeeping missions on human development. Overall, the results of this study in my estimation remain in accordance with the literature. From these results it seems that U.N. interventions are indeed a positive and stabilizing force in the period after civil war, not only in helping stop the violence and bring a stable peace, but also in improving conditions on the ground for everyday citizens. That being said, the U.N. is not a cure-all. As we observed after controlling for region and factoring investor confidence, sometimes civil conflicts arise from situations that seem nigh unfixable. Civil conflicts arise for a reason. It requires deep, irreconcilable differences for countrymen to begin fighting in the first place. Like a cough lozenge that masks the symptoms but does not cure the disease, the U.N. can only stave off the fighting and work to make conditions a bit more livable, and to give these nations a chance of recovery, not immediately reverse what is often centuries of mistrust and culture clash.

Avenues for Further Research

The results of this study are intriguing, but by no means conclusive. The nature of this type of data set makes getting large numbers of hard statistics difficult. However, it is my opinion that it is better to achieve a rough understanding of a problem and identify possible ways to refine future inquiries than to ignore it. If every study of international relations and political science waited for perfect data sets and experimental conditions before proceeding, the APSR would be hard pressed for material indeed.

The first issue is of course the size of the dataset. The U.N. has only been conducting multidimensional peacekeeping missions since 1990, which means that there is an extremely limited amount of data from which to draw conclusions. This problem can be solved simply with time. The age of civil war is far from over and in 10-20 years, supposing that the U.N. continues its current strategy of post-conflict intervention, a larger and more comprehensive dataset will be available for study. In addition, the dataset will have a longer experimental timeframe, meaning outcomes could be measured after intervals of 5, 10 or even 15 years.

The second issue is the main dependent variable, the Human Development Index itself. While the Human Development Index is a decent measure of quality of life overall, it is sticky for a number of reasons. The factors of the Human Development Index take time to gather and observe. Quantifying the development of school systems and improvement educational systems necessarily takes time - outcomes will not be measurable until students taught under new systems reach adulthood, and for many the civil war will have arrested their educational development to such a point that final

judgments cannot be made until even later. Life expectancy suffers from similar problems, with changes made in one year not showing their effects until several years later. These problems make it fairly difficult to use HDI to establish trends in human development factors. This much was not unknown going into this study either. The original conception of this thesis used more fine tuned measures such as unemployment, civilian homicide, press freedom, and others. These metrics were not available in all countries and all years, making the construction of a comprehensive data set impossible. Again, I chose to deal in broad strokes to play at the larger question of what externalities U.N. peacebuilding missions have for human development. This is also a problem that I believe will be solved with time. Data on these topics is rapidly becoming more available and more precise, due to increased data gathering efforts, and the precision and communication afforded by widespread availability of computers and the internet. With these improvements, I am hopeful that if this study were repeated in 10 to 20 years it may be able to yield more fruitful, specific conclusions.

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Appendix:

All statistical operations performed in STATA 12.0

Fig. 1: Linear Regression ΔHDI -> UN

```
. regress _hdi un
```

Source	SS	df	MS	Number of obs =	42
				F(1, 40) =	0.07
Model	.000291738	1	.000291738	Prob > F =	0.7884
Residual	.159801597	40	.00399504	R-squared =	0.0018
				Adj R-squared =	-0.0231
Total	.160093335	41	.003904715	Root MSE =	.06321

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
un	-.0053694	.0198697	-0.27	0.788	-.0455275	.0347887
_cons	.03484	.0126413	2.76	0.009	.009291	.060389

Fig 2: Multivariate Regression 2 ΔHDI -> TP

```
. reg _hdi tp
```

Source	SS	df	MS	Number of obs =	42
				F(1, 40) =	0.22
Model	.000882101	1	.000882101	Prob > F =	0.6404
Residual	.159211235	40	.003980281	R-squared =	0.0055
				Adj R-squared =	-0.0194
Total	.160093335	41	.003904715	Root MSE =	.06309

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
tp	-.0141514	.0300605	-0.47	0.640	-.0749058	.0466031
_cons	.0343514	.0103718	3.31	0.002	.0133891	.0553136

Fig 3: Linear Regression ΔHDI -> Other

```
. reg _hdi other
```

Source	SS	df	MS	Number of obs =	42
Model	.001299242	1	.001299242	F(1, 40) =	0.33
Residual	.158794093	40	.003969852	Prob > F =	0.5705
				R-squared =	0.0081
Total	.160093335	41	.003904715	Adj R-squared =	-0.0167
				Root MSE =	.06301

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
other	.0111364	.0194664	0.57	0.570	-.0282067	.0504794
_cons	.0273636	.0134331	2.04	0.048	.0002144	.0545129

Fig 4: Multivariate Regression 1 ΔHDI -> UN, StartGDPPC

```
. reg _hdi un startgdppc
```

Source	SS	df	MS	Number of obs =	41
Model	.001649767	2	.000824883	F(2, 38) =	0.21
Residual	.149710186	38	.003939742	Prob > F =	0.8120
				R-squared =	0.0109
Total	.151359953	40	.003783999	Adj R-squared =	-0.0412
				Root MSE =	.06277

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
un	-.0110029	.0201235	-0.55	0.588	-.0517408	.0297351
startgdppc	-2.77e-06	8.75e-06	-0.32	0.753	-.0000205	.0000149
_cons	.0373746	.0148874	2.51	0.016	.0072366	.0675125

Fig 5: Multivariate Regression 2 ΔHDI -> TP, StartGDPPC

```
. reg _hdi tp startgdppc
```

Source	SS	df	MS	Number of obs =	41
				F(2, 38) =	0.17
Model	.001314329	2	.000657165	Prob > F =	0.8473
Residual	.150045624	38	.003948569	R-squared =	0.0087
				Adj R-squared =	-0.0435
Total	.151359953	40	.003783999	Root MSE =	.06284

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
tp	-.014108	.0305446	-0.46	0.647	-.0759422	.0477263
startgdppc	-3.80e-06	8.91e-06	-0.43	0.672	-.0000218	.0000142
_cons	.0357957	.0139916	2.56	0.015	.0074712	.0641202

Fig 6: Multivariate Regression ΔHDI -> Other, StartGDPPC

```
. . reg _hdi other startgdppc
```

Source	SS	df	MS	Number of obs =	41
				F(2, 38) =	0.41
Model	.003200794	2	.001600397	Prob > F =	0.6662
Residual	.148159159	38	.003898925	R-squared =	0.0211
				Adj R-squared =	-0.0304
Total	.151359953	40	.003783999	Root MSE =	.06244

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
other	.0163645	.0195608	0.84	0.408	-.0232343	.0559632
startgdppc	-3.55e-06	8.71e-06	-0.41	0.686	-.0000212	.0000141
_cons	.0258506	.0156472	1.65	0.107	-.0058256	.0575268

Fig 7: Multivariate Regression ΔHDI -> UN, Casualties Per Capita, StartGDPPC

```
. reg _hdi un startgdppc casupercap
```

Source	SS	df	MS		
Model	.036333779	3	.01211126	Number of obs =	41
Residual	.115026174	37	.003108816	F(3, 37) =	3.90
				Prob > F =	0.0163
Total	.151359953	40	.003783999	R-squared =	0.2400
				Adj R-squared =	0.1784
				Root MSE =	.05576

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
un	-.0099451	.0178787	-0.56	0.581	-.0461708	.0262806
startgdppc	2.12e-06	7.91e-06	0.27	0.790	-.0000139	.0000181
casupercap	.887463	.2656948	3.34	0.002	.3491142	1.425812
_cons	.0176043	.0144887	1.22	0.232	-.0117526	.0469613

Fig 8: Multivariate Regression ΔHDI -> TP, StartGDPPC, Casualties Per Capita

```
. reg _hdi tp startgdppc casupercap
```

Source	SS	df	MS		
Model	.036845604	3	.012281868	Number of obs =	41
Residual	.114514349	37	.003094982	F(3, 37) =	3.97
				Prob > F =	0.0151
				R-squared =	0.2434
				Adj R-squared =	0.1821
Total	.151359953	40	.003783999	Root MSE =	.05563

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
tp	-.0186839	.027076	-0.69	0.494	-.0735451	.0361772
startgdppc	9.22e-07	8.01e-06	0.12	0.909	-.0000153	.0000171
casupercap	.8992155	.2653918	3.39	0.002	.3614807	1.43695
_cons	.0169599	.0135775	1.25	0.219	-.0105508	.0444706

Fig 9: Multivariate Regression ΔHDI -> Other, Casualties Per Capita, StartGDPPC

```
. reg _hdi other startgdppc casupercap
```

Source	SS	df	MS		
Model	.038398644	3	.012799548	Number of obs =	41
Residual	.11296131	37	.003053008	F(3, 37) =	4.19
				Prob > F =	0.0119
Total	.151359953	40	.003783999	R-squared =	0.2537
				Adj R-squared =	0.1932
				Root MSE =	.05525

_hdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
other	.0172367	.0173111	1.00	0.326	-.017839	.0523124
startgdppc	1.37e-06	7.84e-06	0.17	0.862	-.0000145	.0000173
casupercap	.8939708	.2632869	3.40	0.002	.3605009	1.427441
_cons	.0059293	.0150379	0.39	0.696	-.0245404	.036399

Country of O	End Year	TS	StartHDI	EndHDI	_HDI	Casualties	Population	CasuPerCap	StartGDPPC	EndGDPPC	_GDPPC	Europe and (	Sub Saharan	East Asia	Latin Americ	Arab States	Length	UN	TP	OTHER	LNStartGDPI	LNEndGDPPI	_LNGDPPC
Namibia	1990	1995	0.569	0.644	0.075	13835	1415447	0.009774	1660	2118	458	0	1	0	0	0	23	1	0	0	7.414573	7.658228	0.243655
First Liberia	1990	1995	0.333	0.31	-0.023	100000	2102877	0.047554	183	65	-118	0	1	0	0	0	7	0	0	1	5.209486	4.174387	-1.0351
Dniestrian In	1992	1997	0.757	0.59	-0.167	316	3709000	8.52E-05	625	527	-98	1	0	0	0	0	0.33	0	1	0	6.437752	6.267201	-0.17055
Nicaragua	1992	1997	0.611	0.51	-0.101	40000	4342319	0.009212	413	906	493	0	0	0	1	0	29	1	0	0	6.023448	6.809039	0.785592
Nagorno-Kar	1993	1998	0.68	0.721	0.041	10992	3369673	0.003262	357	608	251	0	0	1	0	0	6	0	1	0	5.877736	6.410175	0.532439
Abkhazia Rev	1994	1999	0.637	0.742	0.105	21583	4861600	0.004439	517	629	112	1	0	0	0	0	1	0	1	0	6.248043	6.444131	0.196088
South Yemer	1994	1999	0.361	0.468	0.107	7000	14396720	0.000486	289	449	160	0	0	0	0	1	0.17	0	0	1	5.666427	6.107023	0.440596
Second Rwar	1994	1999	0.187	0.395	0.208	800000	5728464	0.139653	132	231	99	0	0	0	0	0	4	0	0	1	4.882802	5.442418	0.559616
Mozambique	1994	1999	0.281	0.323	0.042	1000000	15453464	0.06471	140	225	85	0	1	0	0	0	15	1	0	0	4.941642	5.4161	0.474458
El Salvador	1995	2000	0.604	0.62	0.016	80000	5748013	0.013918	1653	2204	551	0	0	0	1	0	12	1	0	0	7.410347	7.698029	0.287682
Angola	1995	2000	0.344	0.375	0.031	519432	12104952	0.042911	2118	455	-1663	0	1	0	0	0	26	1	0	0	7.658228	6.120297	-1.53793
Second Som	1995	2000	0.159	0.284	0.125	300000	6346440	0.047271	.	.	.	0	1	0	0	0	23	1	0	0	.	.	.
First Chechn	1996	2001	0.7	0.72	0.02	103284	1.48E+08	0.000699	2651	2101	-550	1	0	0	0	0	1	0	0	1	7.882692	7.650169	-0.23252
First Sierra L	1996	2001	0.24	0.26	0.02	50000	3919708	0.012756	222	251	29	0	1	0	0	0	10	1	0	0	5.402677	5.525453	0.122776
Guatemala	1997	2002	0.5	0.535	0.035	140000	10449636	0.013398	1702	1766	64	0	0	0	1	0	36	1	0	0	7.439559	7.476472	0.036913
Fifth DRC	1997	2002	0.25	0.24	-0.01	225000	44078397	0.005105	138	112	-26	0	1	0	0	0	0.5	0	0	1	4.927254	4.718499	-0.20875
Croatia	1998	2003	0.74	0.77	0.03	20000	4501000	0.004443	5578	7690	2112	1	0	0	0	0	4	1	0	0	8.626586	8.947676	0.32109
Third Rwand	1998	2003	0.27	0.382	0.112	800000	7169658	0.111581	277	202	-75	0	1	0	0	0	4	0	1	0	5.624018	5.308268	-0.31575
Second Turk	1999	2004	0.735	0.757	0.022	16500	62243779	0.000265	4012	5867	1855	0	0	0	0	1	15	0	0	1	8.297045	8.677099	0.380054
Guinea-Bissa	1999	2004	0.339	0.349	0.01	665	1245530	0.000534	180	376	196	0	1	0	0	0	1	0	1	0	5.192957	5.929589	0.736632
Second Sierr	1999	2004	0.258	0.335	0.077	50000	4030443	0.012406	166	290	124	0	1	0	0	0	10	1	0	0	5.111988	5.669881	0.557893
Algerian Islar	1999	2004	0.693	0.729	0.036	44000	31276295	0.001407	1555	2550	995	0	1	0	0	0	12	0	0	1	7.349231	7.843849	0.494618
Oromo Liber	1999	2004	0.321	0.371	0.05		64158887	0	122	134	12	0	1	0	0	0	26	0	0	1	4.804021	4.89784	0.093819
Second Cong	1999	2004	0.429	0.52	0.091	350000	3044444	0.114964	773	1348	575	0	1	0	0	0	7	0	0	1	6.650279	7.206377	0.556098
Tajikistan	2000	2005	0.49	0.55	0.06	50000	6186152	0.008083	178	340	162	1	0	0	0	0	5	1	0	0	5.181784	5.828946	0.647162
Moluccas Se	2000	2005	0.54	0.56	0.02	3000	2.09E+08	1.44E-05	790	1273	483	1	0	0	0	0	3	0	0	1	6.672033	7.149132	0.477099
Fourth Chad	2000	2005	0.29	0.3	0.01	1310	8301151	0.000158	167	664	497	0	1	0	0	0	4	0	0	1	5.117994	6.498282	1.380288
Second Philig	2001	2006	0.61	0.62	0.01		79297756	0	962	1201	239	1	0	0	0	0	15	0	0	1	6.869014	7.09091	0.221895
Second Aceh	2002	2007	0.55	0.58	0.03	3830	2.15E+08	1.78E-05	680	1871	1191	1	0	0	0	0	29	0	0	1	6.522093	7.534228	1.012136
Second Chec	2003	2008	0.74	0.72	-0.02	20000	1.45E+08	0.000138	2976	11700	8724	1	0	0	0	0	9	0	0	1	7.998335	9.367344	1.369009
Third Burunc	2003	2008	0.378	0.27	-0.108	3150	7264340	0.000434	108	187	79	0	1	0	0	0	12	1	0	0	4.682131	5.231109	0.548977
Fourth Liberi	2003	2008	0.3	0.35	0.05	150000	3124222	0.048012	131	231	100	0	1	0	0	0	4	1	0	0	4.875197	5.442418	0.56722
Haiti	2004	2009	0.43	0.45	0.02	50	9129933	5.48E-06	401	663	262	0	0	0	1	0	0.11	1	0	0	5.993961	6.496775	0.502814
Coéte d'Ivoir	2004	2009	0.4	0.42	0.02	2700	17144325	0.000157	903	1239	336	0	1	0	0	0	4	1	0	0	6.805723	7.12206	0.316337
Second Nige	2004	2009	0.448	0.42	-0.028	15000	1.36E+08	0.00011	646	1091	445	0	1	0	0	0	3	0	0	1	6.4708	6.99485	0.52405
First Yemeni	2005	2010	0.4	0.466	0.066	2250	20139661	0.000112	832	1401	569	0	0	0	0	1	16	0	0	1	6.723832	7.244942	0.521109
Kashmir Insu	2005	2010	0.48	0.547	0.067	27700	2.24E+08	0.000123	740	1419	679	0	0	1	0	0	16	0	0	1	6.60665	7.257708	0.651057
Second Nepa	2006	2011	0.41	0.46	0.05	7030	25634043	0.000274	353	704	351	0	0	1	0	0	10	1	0	0	5.866468	6.556778	0.69031
Philippine Jo	2006	2011	0.62	0.651	0.031	2823	87366573	3.23E-05	1399	2358	959	0	0	1	0	0	4	0	0	1	7.243513	7.765569	0.522056
Waziristan	2006	2011	0.47	0.513	0.043	3000	1.61E+08	1.86E-05	853	1214	361	0	0	0	0	1	9	0	0	1	6.74876	7.101676	0.352916
Darfur	2006	2011	0.36	0.419	0.059	178258	32397535	0.005502	862	1538	676	0	1	0	0	0	3	1	0	0	6.759255	7.338238	0.578983
Second Yem	2007	2012	0.42	0.46	0.04	3500	21182162	0.000165	1020	1494	474	0	0	0	0	1	4.75	0	0	1	6.927558	7.309212	0.381654