The Economic Welfare Cost of Conflict: An Empirical Assessment

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Abstract

War, whether external or internal, large or small, is a costly endeavor. Loss of life, loss of close friends or family, and the destruction of material possessions all play a part in the costs of war. The purpose of this paper is to capture only the material, economic welfare costs of conflict stemming from the altered path of consumption resulting from conflict. As such, the measure is quite a lower bound for the true and more encompassing welfare loss from living in a non-peaceful world. But how much would an individual be willing to pay to avoid just the economic costs of conflict? Remarkably, even these pure economic welfare losses from conflict are quite large. We find that, on average, individuals who live in a country that has experienced some conflict during the 1950-2004 sample would **permanently** give up to approximately 9 percent of their current level of consumption to live in a purely peaceful world. Such large potential welfare gains from reducing warfare should make economists and policy-makers take note, and continue to investigate and advocate for domestic and international institutions to realize such gains.

JEL Codes: E21, E32, H56.

Keywords: Growth, Conflict, Welfare Costs.

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Abstract

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... when the army engages in protracted campaigns, the resources of the state will not suffice.

The Art of War, Sun-Tzu (1963) p.73.

Mankind does have the capacity, over time, to correlate the costs and benefits of universal undertakings. Throughout much of the time for which we have a record of human behaviour, mankind can clearly be seen to have judged that war's benefits outweighed its costs, or appeared to do so when a putative balance was struck. Now the computation works in the opposite direction. Costs clearly exceed benefits.

A History of Warfare, John Keegan (1993) p. 59.

War may sometimes be a necessary evil. But no matter how necessary, it is always an evil, never a good. Nobel Prize Acceptance Speech, Jimmy Carter (2002).

1 Introduction

Conflict can have many deleterious effects on the well-being of individuals. First, there is the destruction and loss of life that directly results from war. Turmoil also leads to decreased and uncertain supplies of necessities as the means of production are redirected from consumer goods to those necessary for the war effort. Emotional pain and suffering, forced conscription, in addition to the very real possibility of death, although difficult to quantify, add significantly to the cost of conflict. Keegan (1993) remarks that:

Some of these costs **[of war]** *are material. The superinflationary expense of weapon procurement distorts the budgets even of the richest states, while the poor states deny themselves the chance of economic emancipation when they seek to make themselves militarily formidable. The human costs of actually going to war are even higher. Rich states, as between themselves, recognise that they are not to be borne. Poor states which fall into war with rich states are overwhelmed and humiliated. Poor states fight with each other, or are drawn into civil war, destroy their own well-being, and even the structures which make recovery from the experience of war possible. War truly has become a scourge, as was disease through most of human history. Keegan (1993) p. 59.*

Many other authors have also suggested that the 20^{th} century has brought forth changes in terms of regime as well as technological change in mass destruction such that no nation can be expected

to gain economically from conflict–e.g., Howard (1983, p. 22), Pigou (1940, pp. 21-22), Robbins (1942, pp. 68 and 71) and Wright (1965, pp. 242 and 1367).[1] Needless to say, war provides no reasonably expected prospects for economic or personal betterment for ordinary citizens.[2]

Of course, this opens up the question of why we observe conflict despite it making representative individuals worse off? These issues are broadly discussed in Hess and Orphanides [1995,2001a,b]. Simply put, while citizens are not expected to gain by war, it is leaders that choose to enter wars, not citizens. In particular, Hess and Orphanides [2001b] argue that non-democratic leaders engage in potentially beneficial appropriative conflict through their ability to enjoy the benefits from conflict while leaving their citizenry to face the costs of conflict. In contrast, while democratically elected leaders are not able to avoid the potential costs from war that the citizenry are faced with, they are further motivated by the desire to hold office and enjoy any office specific rents. Indeed, Hess and Orphanides [1995,2001a,2001b] demonstrate how such 'wag the dog' motives for war can be sustained by rational voters.[3]

In this paper, we provide a lower bound estimate for the welfare costs of conflict by exploring only the forgone consumption from being mired in a world of conflict. Following the approach by Lucas (1987), we demonstrate how one can theoretically 'price' the effect that war has on consumption's growth and volatility. Intuitively, these consumption growth costs from war would be avoided in a perpetually peaceful world, which allows us to calculate the equivalent variation of how much individuals would be willing to give up in order to live in a peaceful world.[4]

It is worth noting that implicit in the methodology is the assumption that obviating conflict is possible. Further, the peaceful world we consider removes the effect of war from **all** participants. That is the cost estimates that we provide are not those from choosing a peaceful path when others

[1]Mueller (1989) goes so far as to say that major war between modernized countries is not only unprofitable but heading towards extinction. Indeed, he conjectures that it will follow the progression of dueling and slavery: from objectionable, to unfashionable, and then finally to unthinkable. Howard (2000) takes a less sanguine perspective: "So although it is tempting to believe that as the international bourgeois community extends its influence a new and stable world order will gradually come into being, we would be unwise to expect anything of the kind [p. 113]."

[2]See Lau, Poutvaara and Wagener (2002) and Nordhaus (2002) for recent studies that examine particular facets of the cost of conflict. In particular, the former study examines the cost of the draft while the latter explores the government spending costs to the U.S. of a potential conflict with Iraq. Also see Stiglitz and Blime (2008) and Davis, Murphy and Topel (2009) for ex ante and ex post views of the costs to the U.S. of the War in Iraq.

[3]See Garfinkel and Skaperdas (1996) for a deeper consideration of the economic appropriative motive for conflict.

[4]Other researchers have also examined how financial markets are affected by conflict - e.g. see Frey and Waldenstrom (2003).

have not (i.e., the costs of 'turning the other cheek'). Rather, the cost estimates are an individual country's net economic benefit from a peaceful world.

The remainder of the paper is organized as follows. In Section 2 we present a theoretical measure for estimating the economic welfare costs of conflict. Sections 3 and 4 discuss the data sources and compute the empirical magnitudes of the welfare costs of conflict, respectively. We conclude in Section 5.

2 Theory

To construct the lower bound estimate of the cost of conflict, we adopt a technique first suggested by Lucas (1987) to estimate the potential gains from removing business cycles.[5] Our model differs from Lucas (1987) in that the disruption to the economy is due to conflict rather than traditional business interruption. In our exercise, we will compare two consumption paths — one path with conflict disruptions and another without such frictions. The difference between these paths is then compared in welfare calculations as gains to utility. This framework follows work by Barro (2009) and Blomberg and Hess (2009). We refer the reader to each for a more formal explanation.

Our framework assumes representative agents in country i that obtain utility through the following process:

$$U_{it} = E_t \left\{ \sum_{s=t}^{\infty} (1+\theta)^{-(s-t)} \left[\frac{C_{is}^{1-\rho}}{1-\rho} \right] \right\}, \tag{1}$$

where $C_{is} = (1+\mu_i)^{s-t}\overline{C_i}\exp^{[\epsilon_{is}-\frac{1}{2}\sigma^2_{\epsilon_{is}}]}$, θ is the discount rate, $\Delta\epsilon_{is} = \upsilon_{is}$ is a well-behaved shock with variance σ_i^2, $\sigma^2_{\epsilon_{is}} = (s-t)\cdot\sigma_i^2$, μ_i is the growth rate of consumption, and $\overline{C_i}$ is the baseline level of consumption for country i in period t. This would be the level of consumption under the presumption of no conflict. Using the fact that $\exp[1-\rho]\epsilon_{is}$ is log-normally distributed, it follows

[5] Using U.S. data from the post-war period, Lucas estimated that the certainty equivalent of completely eliminating the business cycle was trivial—averaging less than one-tenth of one percent of consumption growth. Further, an increase of this magnitude was only for a relatively large coefficient of risk aversion ($\rho = 10$). This type of measure has also been used in other contexts. For example, it can also be used to gauge the welfare costs of international risk sharing–see van Wincoop (1994) and Crucini and Hess (2000).

that:

$$E_t\{C_{is}^{1-\rho}\} = (1+\mu_i)^{(1-\rho)(s-t)}\overline{C_i}^{1-\rho}\exp\left[-\left\{(1-\rho)\rho\sigma_i^2/2\right\}(s-t)\right]. \tag{2}$$

As in Blomberg and Hess (2009), we assume that

$$\Phi_i \equiv (1+\theta)^{-1}(1+\mu_i)^{1-\rho}\exp-\left\{(1-\rho)\rho\sigma_i^2/2\right\} < 1 \tag{3}$$

holds for all country i and substituting (2) into (1) yields:

$$U_{it} = \left[\frac{\overline{C_i}^{1-\rho}}{1-\rho}\right][1-\Phi_i]^{-1}. \tag{4}$$

Equation (4) provides a baseline utility to compare consumption in the peaceful state versus the wartime state. This allows one to compare the historical path of consumption, where there is some observed probability of entering into a state of war, as well as the counterfactual path where the effects of war are eliminated, denoted with '*'.[6] In this case we can examine the consumption, τ_i^*, that incorporates the welfare gain associated with peace versus its current path, namely:

$$\tau_i^* = \left[\frac{1-\Phi_i}{1-\Phi_i^*}\right]^{\frac{1}{1-\rho}} - 1. \tag{5}$$

Some might question the validity of this counter-factual, that is, whether it is indeed possible to avoid conflict in all cases? Or, whether the ultimate cost of anticipating and preventing conflict is higher than the costs of engaging in war?[7] While acknowledging these points, we believe that the

[6] In neoclassical growth models, shocks, such as war, that affect the return on investment have short-run effects on the growth rate and the level of output but do not affect the steady-state rate of growth in the economy. Endogenous growth models allow distortionary taxes and (un)productive expenditure to affect the steady state growth rate. Bleaney, Gemmell and Kneller (2001) find evidence that strongly supports endogenous growth models. In particular, they find that when financed by a mixture of non-productive expenditures and and non-distortionary taxation, productive expenditures raise and distortionary taxes lower the growth rate. Also see Quah (1997) for a broader perspective on shortcomings of exogenous growth models. Moreover, the relationship between output and consumption will be affected by conflict, and it is the latter that is required in measuring welfare. Indeed, Braun and McGrattan (1993) argue that "output rises and private investment and consumption are crowded out" (p. 198) during both World Wars for both the U.S. and U.K. See also McGrattan and Ohanian (1999).

[7] See Kaysen's (1990) review of Mueller (1989) for an insightful discussion of this point.

essential question is meritorious: namely, what is the direct economic welfare loss from conflict? For even if current dispute resolution methods and institutions cannot avert all conflicts, pointing out the potential benefits may lead to the development of new institutions, or better enforcement and adherence to peaceful resolution, which can in turn lead some countries away from violence. By calculating this cost, we reveal the absolute minimum that people would be willing to pay in order to enjoy the economic benefits from peace.

For the time being let's put aside for now the estimation issues involved in creating a synthetic path of 'peaceful' consumption. From a theoretical standpoint, however, both the average rate of consumption growth and the variance of consumption may differ in these two scenarios. For example, the growth rate of consumption could fall during (or after) war because a country's economic infrastructure has been damaged. In addition, economic volatility could rise during a war, as the fortunes of the various warring countries ebb and flow. To keep matters simple, denote the the mean and variance of the log-change of per-capita consumption in a peaceful world as μ_i^* and σ_i^{2*}, respectively.

In the following sections, the historical effects of conflict on the consumption growth path are estimated. In practical terms, we provide estimates of the change in each country's per-capita consumption growth rate and its variability if it were to move from its current path where wars occur to a path where they do not. This involves estimating parameters for μ_i, μ_i^*, σ_i^2, and σ_i^{2*}. In this way, the value of removing these effects of conflict on the expected economic welfare from consumption can be priced.

It should be clear that what we provide is a lower bound estimate on the true cost of conflict since many of the costs discussed earlier are not included in this calculation. The costs neglected are many: loss of life, loss of close personal friends or family, forced conscription, distributional costs, etc. Rather, by focusing only on the welfare costs of conflict stemming from consumption, a truly lower bound estimate of war's ultimate harm is obtained.

3 The Data

This section begins with a description of the data. The economic data are obtained from the most current update to the Summers and Heston (1991) data set. To gauge the impact of conflict, both internal and external, on consumption's empirical moments, three main data sources are used. To measure internal conflict, we use the data set constructed by Gurr and Harff (1997). The external conflict data are from the International Crisis Behavior data set by Brecher, Wilkenfeld and Moser (1988, 1997) and the updated Correlates of War data by Small and Singer (1982). Both conflict data sets were used to construct the dummy variables for the eight types of conflict discussed below.

The data for internal conflicts were obtained from the State Failure Data Set compiled by a research team under the direction of Ted Robert Gurr of the University of Maryland and Barbara Harff of the U.S. Naval Academy, originally for use by the CIA. The data was originally assembled in 1994 and updated in 2006. The State Failure data divides internal conflict into four categories. First, **ethnic conflict** (ETHN) is defined as conflict between the government and national ethnic, religious, or other communal minorities seeking changes in their status. In order to be considered a war, more than 1000 individuals had to be mobilized and 1000 fatalities must have occurred during a given year. Second, **genocide** (GENO) includes the promotion, execution, and/or consent of sustained policies by governing elites or their agents that result in more than 1000 deaths per year of either a communal group or a politicized non-communal group (politicide). This differs from ethnic conflict in that victims counted are non-combatants. Third, **revolution** (REVO) is defined as conflict between the government and politically organized groups seeking to overthrow those in power. Groups include political parties, labor organizations, or parts of the regime itself. Once again, in order to be considered a war, more than 1000 individuals had to be mobilized and 1000 fatalities must have occurred per year. Finally, **regime change** (REGM) includes state collapse and shifts from democratic and authoritarian rule as defined by a shift of at least 3 points on the Freedom House polity scale. Further, the level of violence associated with the regime change must at minimum include armed violence in the capital (as in the case of violent coups). This measure does not include nonviolent transitions.[8] In all, ETHN, GENO, REVO and REGM are dummy

[8]See Collier and Sambanis (2002) and the references therein for a broader description of the economic causes and consequences of civil wars.

variables that take the value 1 if an internal conflict of that type takes place, and zero otherwise.

The data for external conflict were obtained from the International Crisis Behavior (ICB) project undertaken by Brecher, Wilkenfeld and Moser (1988) and Brecher and Wilkenfeld (1997), and includes the initiation or escalation of a conflict that warrants the highest level of severity. Also, from this data set, periods where a conflict continues can also be determined. They define **external conflict** (EXT), a trigger to a foreign policy crisis, as:

> ... a specific act, event or situational change which leads decision-makers to perceive a threat to basic values, time pressure for response and heightened probability of involvement in military hostilities. A trigger may be initiated by: an adversary state; a non-state actor; or a group of states (military alliance). It may be an environmental change; or it may be internally generated. *Brecher, Wilkenfeld and Moser* (1988) [p. 53]

A foreign policy crisis with the highest intensity of violence, 'full-scale war,' was deemed a violent external conflict.[9]

External conflicts, both inter- and extra-state wars, that appear in the Correlates of War database, initiated by Small and Singer (1982), are used to determine whether a conflict is large-scale or **big** (B). The Correlates of War data is helpful in this regard as these conflicts are required to have at least 1000 military casualties to be included in their data set. External conflicts that are not deemed 'big', are deemed **small** (S).[10] Both types of external conflict are disaggregated using the ICB data into **home** (H) and **away** (A) conflicts–conflicts which occur on the actor's home territory, and those that do not, respectively. In all, there are four types of external conflict: external big home (EXTBH), external big away (EXTBA), external small home (EXTSH), and external small away (EXTSA). Each type of external conflict is again coded as a dummy variables that take the value 1 if an internal conflict of that type takes place, and zero otherwise.

Finally, the economic data are from the Summers and Heston data set. We calculated log per-capita annual consumption growth rates for most countries from 1950 to 2004, although the

[9] This definition was similarly adopted in Blomberg, Hess and Thacker (2006), Hess and Orphanides (1995,2001a) and Blomberg and Hess (2002).

[10] A similar classification is used in Hess and Orphanides (2001a) for the United States.

data for a number of countries does not begin until 1960 or later. Table 1 indicates the number of observations per country used in the empirical analysis, where the binding constraint is data for the economic variables available from the most recent versions of cross-country, economic data sets. Demographic and descriptive data are taken from the World Bank's Social Indicators and Fixed Factors data set as well as various sources described in Sala-i-Martin (1997) − see Data Appendix.

4 Evidence

In the following sub-sections, we quantify the impact of conflict on consumption's mean growth and volatility. Sub-section 4.1 provides some summary statistics on conflict on a country-by-country basis. In sub-section 4.2 we quantify the effect that conflict has on consumption's statistical moments. Finally, in sub-section 4.3 we compute the welfare costs of conflict as well as demonstrate the robustness of these computations to changes in the methods for estimating the effect of conflict on consumption.

4.1 Empirical Regularities

This section begins by examining the average incidence of conflict by type. We consider eight different specifications for conflict: large external wars fought on home territory ($EXTBH$), small external wars fought on home territory ($EXTSH$), large external wars fought away ($EXTBA$), small external wars fought away ($EXTSA$), genocides ($GENO$), ethnic conflicts ($ETHN$), abrupt and disruptive regime changes ($REGM$), and revolutionary wars (REV). Table 1 reports the fraction of time that countries (1) engaged in at least one conflict during the sample period 1950-2004. Moreover, the OBS column lists the number of observations that are available in the data set, where the limiting factor is economic data availability from the most recent version of the Summers-Heston (1991) data set. The Data Appendix reports those countries that did not have either internal or external conflicts, as defined by the data sets described above, or for whom there was no consumption data.[11] Table 1 raises several questions about the way in which conflicts are

[11]Note that Summers and Heston (1992) data are not available for a number of extremely poor countries such as Angola. Since many of these countries have been devoured by conflict, the omission of these countries is likely to

coded. For example, according to the table, the former Yugoslavia was not included in the data and did not engage in conflicts from 1960 to 1990. However, many – though not all – of the nations that emerged from the former state did engage in conflicts. Hence, Bosnia and Croatia are both coded as being engaged in conflict according to the international relations datasets. Serbia and Montenegro was not. Laos and Kuwait provide additional examples of well-known 'conflicts' that do not appear in Table 1. Internal war data do, in fact, indicate that Laos was in a sustained state of ethnic and revolutionary conflict throughout the 1960's and 1970's. The availability of consumption growth data for Laos (1985-1991) is the limiting factor. Since more than five years of consumption growth data are available, Laos is included in the sample. However, because the conflict data do not overlap the consumption growth data no conflicts are recorded during this period. Similarly the Gulf War (1990) is recorded as a full scale war but Kuwait consumption growth is only available until 1989. Again, such an omission gives strength to the argument that the welfare cost measure is a lower-bound estimate.

4.2 Estimation

We begin with a baseline specification that follows from the permanent income hypothesis(PIH) which suggests that changes to consumption are unforecastable if agents are rational and the discount rate is equal to the rate of interest. In this case, we estimate

$$\Delta log(c_{it}) = \alpha_1 \cdot INIT_{it} + \alpha_2 \cdot CONT_{it} + \alpha_3 \cdot COMPL_{it} + I_i + T_t + e_{it}, \tag{6}$$

where again $\Delta log(c_{it})$ is the log-difference of per-capita consumption for country i at time t, I_i and T_t are estimated individual and time fixed effects, respectively. For the conflict variables, $INIT$ is the initiation or escalation of a conflict, $CONT$ is the continuation of a conflict other than its initial year, and $COMPL$ refers to the completion of a conflict. More formally, $W_{it} = 1$ if a war-conflict type event occurs for country i in period t. $INIT_{it} = 1$ if $\Delta W_{it} > 0$, $CONT_{it} = 1$ if $W_{it} = 1$ and $\Delta W_{it} = 0$, and $COMPL = 1$ if $\Delta W_{it} < 0$.[12]

bias downward even further our admittedly lower bound cost of conflict. See the Data Appendix for the omitted countries.

[12]Note that the dummy variables embody an implicit structure in the evolution in the observed states of conflict. For instance, for a given type of conflict (e.g. Big Wars at Home), let $s_{1t} = 1$ if peace at time t and zero otherwise,

The empirical specification embodied in equation (6) allows for a wide range of dynamics in how conflict affects consumption growth. For example, the initiation of a conflict will lead to a temporary effect on a country's consumption growth rate, and a permanent effect on the log-level of consumption, as long as α_1, the coefficient on $INIT$, differs from zero. Moreover, separately allowing for conflict continuations to affect consumption is meant to capture the possibility that conflicts that last longer than a year, $CONT$, may lead to different expected consumption paths than if the conflict was short and lasted one period. Finally, there remains the possibility that any effects of conflict on consumption growth may reverse themselves once the conflict has reached completion. Such rebound effects are proxied by including $COMPL$ in the specification. Taken together, the empirical specification in equation (6) allows for initial effects of conflict on consumption, duration effects of conflict on consumption, and the reversal of these forces upon the completion of a conflict. However, below in Table 5, we explore some changes in the specification to examine the robustness of our lower bound estimates of the welfare costs of conflict.[13,14]

let $s_{2t} = 1$ if INIT at time t and zero otherwise, let $s_{3t} = 1$ if CONT at time t and zero otherwise, and let $s_{4t} = 1$ if COMPL at time t and zero otherwise. Then the observed states follow a restricted transition matrix according to:

$$\begin{bmatrix} s_{1t} \\ s_{2t} \\ s_{3t} \\ s_{4t} \end{bmatrix} = \begin{bmatrix} \phi_{11} & 0 & 0 & \phi_{14} \\ \phi_{21} & 0 & 0 & \phi_{24} \\ 0 & \phi_{32} & \phi_{33} & 0 \\ 0 & \phi_{42} & \phi_{43} & 0 \end{bmatrix} \begin{bmatrix} s_{1t-1} \\ s_{2t-1} \\ s_{3t-1} \\ s_{4t-1} \end{bmatrix}$$

The transition matrix indicates that the state of peace can only be followed by peace or an initiation. An initiation can only be followed by a continuation of conflict or its completion. The continuation of a conflict can only be followed by a further continuation or a completion of the conflict. And the completion of a conflict can only be followed by peace or by the initiation of a new conflict. Note further that $\phi_{11} = 1 - \phi_{21}$, $\phi_{14} = 1 - \phi_{24}$, $\phi_{32} = 1 - \phi_{42}$, and $\phi_{33} = 1 - \phi_{43}$. Following standard procedures, one can estimate the steady state fractions of peace and conflict per-country. Unfortunately, the size of the transition matrix becomes too unwieldy to estimate for eight separate types of conflict in order to obtain these steady-state vectors. Nevertheless, this study compares the growth and volatility of consumption under the observed historically observed fraction of peace and conflict (rather than the steady state fractions), with the growth and volatility of consumption when the **only** observed state is that of peace.

[13] Another potential source of error in the specification is the possible dynamic nature of the relationship being estimated. Although this would not bias the estimated coefficients of the impact of conflict on growth, the estimated standard errors of the coefficients would be biased. In fact, simple least squares would provide a consistent but inefficient estimate of the coefficients, though, as mentioned, a non-robust estimate of the standard errors would be biased. The latter is not a problem in the results below as the estimated standard errors were calculated as in Newey-West, where we have corrected for heteroskedasticity of unknown form and allow for serial correlation of up to a fourth order moving average. Arellano and Bond (1991) suggest an alternative way to explicitly estimate a dynamic panel data model with fixed effects by instrumenting a version of equation (6) which also includes a lagged dependent variable. Note that in comparing the Arellano and Bond (1991) estimates of the mean effect of war (not shown) to those estimates in Table 2, the pattern of significance is identical and the coefficients are very similar in magnitude.

[14] The estimated effects presented below are not affected by the inclusion of other economic variables that are often used in the economic growth literature, such as the log of population, openness, etc... See Blomberg, Hess and Orphanides (2004) for empirical specifications of the economic effects of conflict where these other factors are included.

Table 2 reports the estimates of equation (6) using data for all 184 countries for which there is consumption and conflict data–see Data Appendix.[15] The estimated standard errors of the coefficients, reported in parentheses, are robust to heteroskedasticity and serial correlation of unknown form–see Newey and West (1987). The first column of Table 2 displays the average effect of the initiation of conflict on a country's per-capita consumption growth rate, controlling for fixed individual country and time effects. All eight individual types of conflict under consideration are included in the regression.[16] Columns two and three of Table 2 display the average effect of continuation and completion of conflict, respectively. We report in the last three columns results from a parsimonious specification that includes only the variables that were statistically significant below the .1 level when all of the coefficients are estimated jointly. Importantly, the effects reported in columns four through six are used in the welfare calculations presented below.

Taking the estimated coefficient on $EXTSH$ from the first column as an example, the estimate is negative and statistically significant at below the .05 level. This implies that the initiation or escalation of a small external war on a nation's home territory lowers annual per-capita consumption growth by 4.8 percentage points.[17] One can also interpret this finding as saying that consumption growth would be almost 5 percentage points higher than observed for the year that a country was involved in the initiation or escalation of a large external home war–provided the country had somehow managed to avoid the initiation of a conflict. Similarly, the initiation of external small wars away ($EXTSA$), ethnic wars ($ETHN$), regime change ($REGIM$)and revolutions ($REVO$) all bring about a significant decline in consumption growth.[18] Interestingly, as shown in the second column of results, the continuation of conflicts does not appear to create continued

[15]That is, the regressions are estimated with data for 111 countries that faced some type of conflict and 73 countries that did not. Currently, according to the data for the current time period, there are 188 countries. However, there is insufficient economic data for Angola, Guyana, Libya, and the Seychelles. See discussion below.

[16]The findings in Table 1 suggest a positive correlation between certain types of conflicts (e.g. genocide and ethnic conflicts. The average correlation between genocide and ethnic conflicts across countries with at least one genocide is 0.51. The average correlation between genocide and ethnic conflicts for countries with at least one ethnic conflict is 0.41. Similarly, the average correlations for regime changes and revolutions when there has been at least one regime change or revolution, respectively, are 0.36 and 0.12. However, this does not materially affect the results below. For example, when we experimented with a variable that combined a number of these conflicts to ensure that multicollinearity was not a problem, the pattern of significance was unchanged and the magnitudes remained similar.

[17]It is somewhat surprising that the coefficient on big wars at home is not significantly different from zero. Future drafts of the paper will investigate this further.

[18]These results broadly concur with Caplan (2001) who finds that real output growth falls substantially during domestic wars. However, in contrast, Caplan also finds that real output growth rises slightly during foreign wars. We believe that this may be due to his use of a smaller data set (66 countries) and failure to parse out the initiation, continuation, and conclusion of internal and external conflicts as well as the various types of internal conflict.

decreases in the growth rate of consumption, with the exception of the case of revolutions (REVO). Moreover, there do not appear to be any continued declines or rebounds in the growth rate of consumption after the completion of a conflict. Finally, in order to allow for a more parsimonious specification, the three columns on the right hand side of Table 2 report the estimated specification when only the significant variables are included. Again, these findings suggest that the initiations of conflicts bring about the strongest consumption responses, and that continuation and completions of conflicts bring about few changes to the pattern of consumption growth.

Interestingly, by netting out the effect of wars on consumption growth from expression (6), the estimation procedure allows the country's estimated individual effects as well as the aggregate time effects to change. In essence, $\widehat{\mu}_i^*$ confounds both effects so that even countries who do not experience war may be beneficially impacted if aggregate consumption growth strengthens because *other* countries become more peaceful. To separate out these two effects, define $\widehat{\mu}_i^{*'} = \hat{I}_i + \sum_{t=1}^{T} \hat{T}_t'$ where $\hat{T}_t'$ were obtained from a constrained form of expression (6) where $\alpha_1 = \alpha_2 = \alpha_3 = 0$.[19] Simply put, $\widehat{\mu}_i^{*'}$ is the estimate of the i^{th} country's consumption growth rate if it were only to enjoy the local-direct benefits from peace, while $\widehat{\mu}_i^*$ includes both the local-direct and global benefits of consumption growth from peace.[20]

Turning now to the impact of conflict on economic volatility, Table 3 presents the individually and jointly estimated effects of eliminating different types of conflict on the variance of mean-adjusted consumption growth.[21]

As in Table 2, the first three columns of Table 3 display results from the initiation, continuation, and completion of conflict estimated individually, and the last three columns present a parsimonious joint specification which excludes insignificant regressors. Again taking the first column as an example, we find that the coefficients on $EXTBA$ is positive and statistically significant at the .01 level. This implies that the volatility of consumption growth is higher during the initiation of big wars that take place on foreign soil.[22] Also, the results in the first column

[19] Namely, the $\hat{T}_t'$ are estimated from the regression: $\Delta log(c_{it}) = I_i + T_t' + \varepsilon$.

[20] In an important contribution, Alesina and Spolaore (2000) demonstrate that this global 'peace dividend' may not materialize in a world where the number and size of nations is endogenous, and the per-capita costs of defense spending decline with the country size.

[21] A formal explanation of how measures of volatility are calculated is found in Blomberg and Hess (2009).

[22] Recall from the results in Table 2 that the initiation $EXTBA$ did not have a significant impact on the growth

suggest that the initiation of small wars fought at home, ethnic wars ($ETHN$) and regime changes ($REGIM$) also lead to an increase in consumption volatility. Like the results in Table 2, however, the initiations of conflicts seem to uniformly increase volatility in the same manner in which they were found to lower consumption growth. Finally, the continuation of small wars away from home and revolutions significantly raises consumption volatility, as does the completion of big wars away from home. Somewhat surprisingly, the completion of small wars away significantly lowers consumption volatility.

Using the estimates from equation (8) presented in the last three columns of Table 3, one can calculate the predicted squared growth of peaceful consumption growth using equation (7) as $\left[\widehat{X_{it}^*}\right]^2 = \exp\left\{2 \cdot [\hat{I}_i + \hat{T}_t + \hat{u}_{it}]\right\}$. From this expression, one can calculate the variance of peaceful consumption growth, $\widehat{\sigma}_i^{2*} = (1/T)\sum_{t=1}^{T}\left[\widehat{X_{it}^*}\right]^2 - [\widehat{\mu}_i^*]^2$. Again, as in the case for mean consumption growth, $\widehat{\sigma}_i^{2*}$ combines both the country's individual growth improvement with the indirect benefit from faster world consumption growth in a peaceful world. Hence, following the earlier definition of $\widehat{\mu}_i^{*'}$, define $\widehat{\sigma}_i^{2*'}$ as the global volatility of consumption which is assumed unchanged if the world were to move to peace.[23]

Taken together, Tables 2 and 3 lead to one obvious conclusion: very different types of conflict affect the level and volatility of consumption growth. The initiation and continuations of revolutions, and the initiations of small conflicts at home and abroad, as well as the initiations of ethnic war and disruptive regime changes reduce average per-capita consumption growth. The initiation, continuation and completion of participation in large wars abroad, the continuation of revolutions , and the initiations of ethnic wars and disruptive regime changes increase the volatility of per-capita consumption growth, while the continuation of small external foreign wars decrease its volatility.

rate of consumption.

[23] More formally, this is calculated in 2 steps. First calculate

$$[X_{it}^*]^{'2} = \exp\left\{2 \cdot [\hat{I}_i + \hat{T}_t^{'} + \hat{u}_{it}]\right\}, \tag{7}$$

where $\hat{T}_t^{'}$ is obtained from the following regression:

$$log(|X_{it}^*|) = I_i + T_t + \varepsilon. \tag{8}$$

Second, calculate $\widehat{\sigma}_i^{2*'} = (1/T)\sum_{t=1}^{T}[X_{it}^*]^{'2} - [\widehat{\mu}_i^{*'}]^2$.

4.3 Welfare Calculations

To implement the welfare calculations embodied in expression (5), parameter values for the discount rate (θ) and the coefficient of relative risk aversion (ρ) must be provided, in addition to the consumption growth and volatility measures calculated from findings in Tables 2 and 3. Columns one through six of Table 4 provide these latter measures: namely, they present on a country-by-country basis the observed and constructed economic characteristics required for implementing the welfare calculations of conflict. Columns seven and eight contain the estimated welfare cost of conflict for the local-direct and global benefits of peace. The last two columns of Table 4 provide an indication of the sensitivity of these welfare calculations to changes in θ and ρ.

Columns one and three of Table 4 present the observed mean growth rates of consumption per-person, $\widehat{\mu}_i$, and the counterfactual or synthetic mean growth rate of consumption per-person growth that has been adjusted to remove the impact of conflict, $\widehat{\mu}_i^*$. We also report in column two the 'synthetic' peaceful growth of consumption when the potential global benefit from reduced conflict is removed, $\widehat{\mu}_i^{*'}$. Columns four and six present the observed standard deviation of the growth of consumption per-person, $\widehat{\sigma}_i^2$, and the variance of consumption growth adjusted to remove the effect of conflict, $\widehat{\sigma}_i^{2*}$. Again, column five reports the 'synthetic' peaceful standard deviation of consumption when the potential global benefit from reduced conflict is removed, $(\widehat{\sigma}_i^{*'})$. To reiterate, while the empirical specifications (6) and (8) impose the restriction that a given type of conflict has the same impact on each country for a given year, countries will have differing growth and volatility benefits from peace based on the types of conflicts in their observed data as well as the frequency with which they were in conflict.

The final step in implementing the welfare calculation, (5), is to specify values for θ and ρ. Clearly, changes in θ and ρ will affect τ_i. Columns 7 and 8 of Table 4 provide results for the welfare measures using $\theta = .08$ and $\rho = 2$. These values were chosen for the following reasons, based on the criteria just discussed. First, these parameter values are certainly plausible, even though θ looks a bit high and ρ looks a bit low. Second, for all countries, $\Phi_i < 1$ and $\Phi_i^* < 1$ when evaluated at these values of θ and ρ. Third, and most importantly, these parameters provide a relatively robust lower bound for the welfare calculations. To demonstrate this, columns 9 and 10 of Table 4 present the

point elasticity measure of τ_i with respect to ρ and θ, $\epsilon_{\tau_i\theta}$ and $\epsilon_{\tau_i\rho}$, respectively.[24] These elasticity measures answer the following simple question: If the value of ρ (θ) changes by x percentage points, by how many percentage points does τ_i change? Namely, by $\%\Delta\tau_i = x \cdot \epsilon_{\tau_i\rho}$.

Table 4 affirms that the world could benefit greatly from eliminating conflict.[25] Estimates of the economic cost of conflict for each country are given in columns 7 and 8. The estimates differ depending on whether or not the global benefit to a country if all conflict is removed. The table is arranged by region. This table has two key findings. First, most countries, many of whom are quite poor, would be willing to permanently pay a substantial amount to live a peaceful world. For example, in Africa, the countries who would gain the most from peace would be Liberia and the Democratic Republic of the Congo (formerly Zaire). We find that a citizen of the Angola would permanently give up to 64.73 percent of his current level of consumption in order to live in a peaceful world (38.35 percent if only local-direct effects are allowed), while a citizen of the Democratic Republic of the Congo would give up 59.1 (49.46) percent. Argentina, Cyprus, India and Iraq are countries that would pay the most in their respective regions to live in a more peaceful world.[26] Guatemala would permanently give up about 17 percent of current consumption to live in peace, Laos 20 percent, while Iraq would willingly sacrifice around 77 percent of current consumption.

Second, using a relatively low value of ρ and a high value of θ suggests that, on average, we are computing a lower bound estimate of the benefits of peace. Returning to the example of Liberia, the elasticity of τ_i with respect to ρ ($\epsilon_{\tau_i\rho}$) is 2.65 which implies that doubling ρ from 2

[24] The formulae for these measures are:

$$\epsilon_{\tau_i\rho} = \left[\frac{\rho/(1-\rho)}{\tau_i/(1+\tau_i)}\right] \cdot \left[log(1+\tau_i) + \left(\frac{\Phi_i(log(1+\mu_i) + (1-2\rho)\sigma_i^2/2)}{1-\Phi_i}\right) - \left(\frac{\Phi_i^*(log(1+\mu_i^*) + (1-2\rho)\sigma_i^{2*}/2)}{1-\Phi_i^*}\right)\right]$$

$$\epsilon_{\tau_i\theta} = \left[\frac{\theta/(1+\theta)}{(1-\rho)\tau_i/(1+\tau_i)}\right]\left[\left(\frac{\Phi_i}{1-\Phi_i}\right) - \left(\frac{\Phi_i^*}{1-\Phi_i^*}\right)\right]$$

[25] While all countries will benefit from reduced conflict due to the global effect of improved world consumption growth, only the welfare improvement for countries who have been directly involved in conflict are reported in Table 4. The average value of τ_i for countries that did not engage in conflict is 3.3. One can consider this to be the measure of a global 'peace dividend.'

[26] The calculations for the G7, and Eastern and Western Europe are quite a bit lower and so are not discussed in detail. However, it is worth noting that the benefit from eliminating business cycles using Lucas' original calculation– where shocks to the log-level of consumption are i.i.d. around a deterministic trend – is 0.08 percent for the United States. If instead we use the same methodology and perform a Lucas-type calculation of the benefit from eliminating the innovations to the consumption growth rate, this increases to 0.32 percent. The United States' global benefit from eliminating conflict (4.5 percent) clearly outweighs both of these other calculations.

to 4 would increase τ_i by 265% – namely, to 171 percent of current consumption. Similarly, the elasticity of τ_i with respect to θ ($\epsilon_{\tau_i\theta}$) is -6.06 implies that decreasing θ from .08 to .04 would increase τ_i by 600% – namely to over 360 percent of current consumption. From Table 4, however, one can see that $\epsilon_{\tau_i\theta}$ are all negative, suggesting that choosing a high discount rate of $\theta = .08$ is biasing down the estimates of the consumption welfare cost of conflict. In contrast, the effect of a rise in the coefficient of relative risk aversion, ρ, has ambiguous effects on the change in τ_i. Indeed for many countries, such as those in the G7, the reported values for $\epsilon_{\tau_i\rho}$ are negative. For the U.S., in fact, doubling ρ from 2 to 4 would lower τ_i^* by about one-half, so that the consumption welfare cost of conflict would be about 2.3 percent of current consumption. However, as demonstrated in Table 5 below, on average the value for $\epsilon_{\tau_i\rho}$ is nearly zero (the average value is -0.01), so that the selection of a relatively low value of $\rho = 2$ is not systematically lowering the value of τ_i^* for the average country.

The top panel of Table 5 summarizes the findings reported in Table 4. On average, a world consumer who lives in a country that has experienced conflict over the time period considered (top row), would willingly give up approximately 9 percent of his annual level of consumption as a one time payment in order to live in a world of perpetual peace. Taking the first panel of Table 5, row one indicates that the average estimated annual per-capita consumption growth on the synthetic, conflict-free consumption path ($\widehat{\mu}^*$) is 0.62 percentage points higher than the average observed consumption growth ($\widehat{\mu}$). Similarly, the average of the standard deviation of 'peaceful' consumption growth, $\widehat{\sigma}^* = 5.79$, is less than the volatility of observed consumption growth, $\widehat{\sigma} = 6.15$. Also, the average elasticity of the welfare measure τ_i^* with respect to ρ and θ are zero and negative one, respectively, suggesting that higher values of ρ and lower values of θ will likely make the average costs of war higher.[27]

In the remaining panels of Table 5 we experiment with broader specifications for how conflict affects a country's expected consumption path. To wit, we allow for region specific variation in the $\widehat{\alpha}$'s and $\widehat{\delta}$'s. We also attempt to control for possible reverse causality of weak consumption growth leading to conflict, such as the 'diversionary wars' of the type suggested by Hess and

[27] A simple test reveals that the average value for $\epsilon_{\tau_i\theta}$ ($\epsilon_{\tau_i\rho}$) is (is not) significantly different from zero in a two-tailed test at or below the .10 level.

Orphanides (1995). Hess and Orphanides (1995) develop a diversionary theory of external conflict wherein elected leaders with innate but unknown conflict handling skills may initiate conflict during economic downturns in order to reveal these skills and help their chances at re-election.[28] Accordingly, we explore censoring the data such that if a conflict is immediately preceded by a year when per-capita consumption growth was more than one standard deviation below the country's average per-capita consumption growth, the conflict is not counted as having occurred.

The results presented in the final three panels of Table 5 are broadly in line with the base specification. In general, these modifications slightly increase the average estimated cost of conflict. Censoring the war data without allowing for regional variation (panel 2) slightly increases the average global and local-direct welfare gains from peace and also increased the median gain. Censoring also significantly increases the average local-direct gain from peace but again decreases the median when regional variation is allowed (panels 2, 3 and 4). Allowing for region by region estimation of the effect of conflict on growth increases the average and median gain from peace irrespective of censoring. The average elasticity of τ_i with respect to ρ remains near zero in all panels except panel 4, while the elasticity of τ_i with respect to θ is essentially unaffected at -1.0.

To further understand the potential benefits to a country from living in a peaceful world, Table 6 reports empirical results for the factors which influence these benefits. In particular, we are interested in the regional, economic and governmental influences that indicate whether a country is more likely to gain from a peaceful world. The dependent variable in each regression is a country's willingness to pay in order to move to a more peaceful world. All countries for which there are data are used in these empirical estimates, since all countries may enjoy the global benefits from reduced conflict. Hence, there is data for 184 countries rather than just those listed in Table 4. The general specification is:

$$\tau_i^* = Constant + R_i + \theta_1 \cdot Economics_i + \theta_2 \cdot DEMO_i + \theta_3 \cdot (Economics_i \times DEMO_i) + v_i, \quad (9)$$

where R_i represents the estimated regional effects. The governance variable in the regression is

[28] As Meade (1940) states: 'Poverty, and in particular the fall from comfort to poverty in a period of national economic collapse, breeds a state of mind in which military adventures appear more attractive than would otherwise be the case.' (p. 15)

$DEMO_i$ which indicates whether the government was deemed to be democratic or not at the beginning of the sample–See Gurr and Harff (1997). The economic variables considered are the country's initial log-level of real GDP per-capita, whether the country's exports are more than fifty percent related to fuel ($EXPFUEL$) and the initial openness of each country's economy ($OPEN$), as measured by initial exports plus imports, divided by GDP–see the Data Appendix.

In column (I) of Table 6, we present the empirical results when just the regional effects are estimated. Notice that in order to avoid collinearity, we include a constant though G7 is removed as an explanatory variable. Interestingly, the regional variation suggests that, relative to the G7 countries, all regions except for Eastern and Western Europe have significantly more to gain from a more peaceful world. In columns (II) through (V), we present evidence on the additional impact of economic factors on the welfare costs of conflict. The regression results indicate that the primary economic factor is a country's trade openness and initial level of GDP – columns (II) and (III). As for the former finding, an increase in a country's trade sector tends to lower their expected gain from peace. In other words, closed economies have more to gain from peace than do open economies. Of course, given the strong empirical evidence on the liberal peace espoused by Bruce Russett (2002) and others, this is likely due to the fact that more open economies are less likely to be engaging in conflict anyway. As for the latter finding, poorer countries have more to gain from peace, perhaps in part because long histories of conflict may be what is making them relatively poorer. Another interesting finding is that a country's initial level of real GDP affects the benefits from peace – column (II). The empirical results presented in columns (IV) and (V) suggest that a country's status as an oil exporter and democratic governance do not directly affect its benefits from peace. Column (VI) of Table 6, when all these variables are included simultaneously, indicates that the pattern of regional variation is diminished, that initial levels of GDP and openness still matter, and whether a country is a fuel exporter now raises the benefits to peace. This indicates s, are slightly changed.

To explore whether a country's democratic governance affects its benefits from peace indirectly through its economic conditions, in column (VII) of Table 6 we present estimates where we include the interaction terms between the economic variables and democracy. While these new interaction variables are typically insignificant, Democratic governments that are more open to trade

have significantly more to gain from peace. The other estimated coefficients are largely unaffected by the inclusion of these additional variables.

5 Conclusion

Following Lucas (1987), this paper estimates the potential economic gain from peace as the certainty equivalent of how much individuals would be willing to give up of their current consumption up in order to live in a peaceful world. Using panel data (unbalanced) for 184 countries, we calculate a synthetic path of consumption that removes the effects of war on the mean and volatility of consumption growth.[29] From these estimates, the cost of conflict are calculated. The main finding is that a lower bound estimate of the average benefit from eliminating war is about 9 percent of per capita annual consumption. In addition, though many of the poorest countries stand to benefit greatly from peace, the benefits to developed economies can often be substantial. The results are robust to regional effects and possible reverse causality of the type considered by Hess and Orphanides (1995). Further, both data limitations and the nature of this technique suggest that the calculation represents a *lower* bound estimate of the possible gain from eliminating conflict.

In an attempt to assign an actual dollar value to this lower bound estimate of the cost of war, at an admitted loss of generality, multiply each country's calculated cost of conflict (τ_i) by their actual per-capita and total consumption in 2000 international dollars. By this measure, the average (world) cost of conflict is $224 per person for the $184 countries who appear in our sample. The countries whose citizens would be willing to pay the most to avoid conflict are Iraq ($1,428), the United States ($1,070), the United Kingdom ($ 903), Cyprus ($872), and Israel ($851). Recall that these are not one-time payments, but a permanent per-capita payment, so that the simple present discounted value is twenty-one times higher for a risk free rate of 5 percent. Similarly, the total world cost of conflict in 2000 dollars and for the year 2000 population is $918 billion, and this permanent payment would grow at the rate of population growth. In 2000 dollars and population, the United States, India, China, Indonesia and the United Kingdom as countries face the highest

[29] See Blomberg, Hess and Orphanides (2004) and Eckstein and Tsiddon (2004) for analyses of the economic costs of terrorism. While the former paper finds only a small economic effect of terrorism on long run economic growth, the latter paper does find a larger impact for the case of Israel.

costs of conflict–$210, $83, $57, $51, and $35 billion, respectively. The magnitude of the potential consumption welfare and dollar gains from eliminating conflict should make economists, political scientists, and policy-makers continue to investigate and advocate for domestic and international institutions to realize such gains.

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Data Appendix

Omitted Countries and Countries Without Coded Conflict

The following countries do not have a coded conflict: Antigua and Barbados, Austria, the Bahamas, Bahrain, Belize, Bermuda, Bhutan, Bolivia, Botswana, Brunei, Bulgaria, Cameroon, Cape Verde, Costa Rica, Denmark, Djibouti, Dominica, Estonia, Finland, Gabon, Grenada, Hong Kong, Iceland, Ireland, Jamaica, Japan, Kazakhstan, Kiribati, Kyrgyz Republic, Latvia, Lithuania, Luxembourg, Macao, Macedonia, Madagascar, Malawi, Malta, Mauritania, Mauritius, Mexico, Micronesia, Moldova, Mongolia, Namibia, Netherlands, Netherlands Anti., Norway, Palau, Paraguay, Poland, Portugal, Puerto Rico, Samoa, Sao Tome, Serbia, St. Kitts, St. Lucia, St. Vincent, Suriname, Sweden, Switzerland, Taiwan, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Ukraine, United Arab Emirates, Vanuatu, and Venezuela

The following countries are not considered for lack of data: Angola, Guyana, Libya and the Seychelles.

Economic Data

- Penn World Tables (Summers & Heston)
  - $\Delta log(c_{it})$: Log difference of real GDP per capita in constant dollars using chain index (1985 international prices in PWT5) times consumption share of GDP (1985 international prices).
  - GDP_{ini}: initial level of real GDP per capita in constant dollars using chain index (1985 international prices in PWT5).
  - $OPEN_{ini}$: initial openness measured as the ratio of exports plus imports to GDP.

External Conflicts

- International Crisis Behavior Project: Actor Level Data Set: Brecher, Wilkenfeld and Moser (1997).
  - EXTS: Full scale war (SEVVIO = 4).
  - Home (H): crisis took place on the crisis actor's home territory (CRACTLOC = 1).
  - Away (A): crisis did not take place on the crisis actor's home territory (CRACTLOC $\neq$ 1).
- Peace Science Society International: Correlates of War Inter-State War Data, 1816-1997 Correlates of War Extra-State War Data, 1816-1997.
  - EXTB: Military conflicts between states (inter-state wars) or between state and non-state actor (extra-state wars).
  - If a conflict satisfies both EXTB and EXTS, then it is viewed as big (EXTB). Distinguishing feature between the two is that EXTB is coded for more than 1,000 annual deaths.

Internal Conflict

- State Failure Task Force: Internal Wars and Failures of Governance, 1954-1996 Data Set, Gurr and Harff (1997).
  - GENOCIDE: Genocide/Politicides with more than 1,000 annual casualties.
  - ETHNIC: Ethnic wars with more than 1,000 annual deaths.
  - REGIME: Abrupt or disruptive regime changes with significant armed violence.
  - REVOLT: Revolutionary Wars with more than 1,000 annual deaths.

Global Development Network Growth Database: Social Indicators and Fixed Factors, Easterly and Sewadeh

- World Bank Group: Global Development Network Growth Database
  - EXPFUEL: Major exporter of fuel/oil (greater than 50% of total exports of goods and services).
  - ETHFRAC: Ethnic fractionalization.
  - DEMO: Democracy from Gurr and Harff (1997). Equal to 1 if a democracy and zero otherwise.

Table 1A: Fraction (Percentage) of Time Spent in Conflict by Type 1950-2004

SUB-SAHARA	Type of Conflicts								
	EXTBH	EXTSH	EXTBA	EXTSA	GENO	ETHN	REGM	REV	OBS
Benin							7.3		45
Burkina Faso							1.8		46
Burundi					20.0	32.7	14.5		44
C. Afr Rep							1.8		34
Chad		3.6		3.6		54.5	10.9		44
Comoros							7.3		44
Congo-DR		9.1			9.1	38.2	32.7	25.5	35
Congo-Rep							3.6	5.5	44
Cote d'Iv						5.5	5.5	5.5	44
Equat. Guin.					20.0		1.8		44
Eritrea	5.5	5.5							13
Ethiopia	9.1	9.1	14.5		7.3	56.4	9.1	30.9	54
Gambia							1.8		44
Ghana							3.6		49
Guinea								3.6	46
Guinea-Bis							5.5	3.6	44
Kenya						10.9	1.8		54
Lesotho							5.5	1.8	44
Liberia							12.7	18.2	34
Mali						10.9			45
Mozam.								30.9	44
Niger			3.6				1.8		45
Nigeria					7.3	9.1	7.3	10.9	55
Rwanda					5.5	25.5	1.8		44
Senegal			3.6			14.5	3.6		44
Sierra Leone			3.6				14.5	20.0	34
Somalia		1.8	3.6		7.3	30.9	27.3	12.7	35
South Afr.						18.2		12.7	55
Sudan					70.9	70.9	9.1		34
Swaziland							1.8		35
Tanzania	3.6	3.6	3.6						44
Uganda	3.6	3.6			29.1	47.3	10.9	5.5	54
Zambia							10.9	1.8	49
Zimbabwe						12.7	1.8	14.5	50
Total	0.6	1.1	0.9	0.1	6.3	14.0	6.5	7.3	42.1

Notes: Conflict types are external big wars at home (EXTBH), external small wars at home (EXTSH), external big wars away (EXTBA), external small wars away (EXTSA), Genocide (GENO), ethnic war (ETHN), regime change (REGM), and revolution (REV). OBS is the number of observations per country where economic data is available from the most recent version of the Summers-Heston (1991) data set.

Table 1B: Fraction (Percentage) of Time Spent in Conflict by Type 1950-2004

LATIN	Type of Conflicts								
AMER.	EXTBH	EXTSH	EXTBA	EXTSA	GENO	ETHN	REGM	REV	OBS
Argentina		1.8	3.6		9.1		3.6		55
Brazil							9.1		54
Chile					7.3		1.8		54
Colombia			5.5					58.2	54
Cuba			3.6	3.6			12.7	7.3	34
Dom. Rep.							7.3	1.8	53
Ecuador							5.5		54
El Salvador		1.8							54
Guatemala					23.6	36.4		56.4	54
Haiti							5.5		31
Honduras	1.8	1.8							55
Nicaragua		3.6				7.3	5.5	18.2	55
Panama							1.8		54
Peru							5.5	29.1	54
Uruguay							5.5		55
Total	0.1	0.6	0.8	0.2	2.5	2.7	4.3	10.7	50.1
MIDEAST									
Algeria					1.8	1.8	1.8	27.3	44
Bahrain									34
Egypt	10.9	10.9	18.2	10.9				14.5	54
Greece			12.7				1.8		54
Iran	16.4	5.5	18.2		21.8	12.7	14.5	10.9	49
Iraq	20.0	14.5	20.0		30.9	56.4	1.8	1.8	34
Israel	18.2	12.7	14.5	1.8		32.7			55
Jordan	1.8	3.6	10.9	3.6			1.8	3.6	50
Kuwait		3.6	5.5						34
Lebanon						30.9	29.1	1.8	13
Morocco			3.6			27.3	1.8		54
Oman			1.8					12.7	34
Qatar			1.8						34
Saudi Ar		3.6	7.3	5.5					34
Syrian	9.1	7.3	5.5	5.5	3.6		10.9		44
Yemen		12.7						21.8	15
Total	3.6	3.5	5.8	1.6	2.8	7.7	3.0	4.5	38.3

Table 1C: Fraction (Percentage) of Time Spent in Conflict by Type 1950-2004

	Type of Conflicts								
ASIA	**EXTBH**	**EXTSH**	**EXTBA**	**EXTSA**	**GENO**	**ETHN**	**REGM**	**REV**	**OBS**
Afghanistan	1.8	1.8			27.3	23.6	16.4	49.1	35
Australia			29.1						55
Bangladesh		1.8	3.6			29.1	3.6		32
Cambodia	18.2	9.1	29.1		9.1		5.5	34.5	34
China		5.5	29.1		20.0	27.3		9.1	53
Fiji							1.8		34
India	7.3	7.3				54.5		7.3	54
Indonesia					36.4	54.5	5.5	25.5	45
Korea, DR		3.6	7.3						34
Korea, R	7.3	3.6	23.6				3.6		52
Laos						34.5	29.1	36.4	34
Malaysia					1.8	80.0	1.8	3.6	49
Maldives						1.8			35
Nepal							3.6	16.4	44
New Zealand			20.0						55
Pakistan	3.6	5.5	9.1		9.1	40.0	3.6		55
P New Guin						16.4			34
Philippines			21.8		9.1	60.0	7.3	45.5	55
Singapore							5.5		45
Solomon Isl							7.3		34
Sri Lanka					3.6	40.0		5.5	54
Thailand			18.2			1.8	3.6	34.5	54
Vietnam	29.1	5.5	29.1	9.1	20.0			14.5	15
Total	1.9	1.2	6.3	0.3	3.9	13.2	2.8	8.1	41.2

Table 1D: Fraction (Percentage) of Time Spent in Conflict by Type 1950-2004

	Type of Conflicts								
E. EUR.	**EXTBH**	**EXTSH**	**EXTBA**	**EXTSA**	**GENO**	**ETHN**	**REGM**	**REV**	**OBS**
Albania							1.8	1.8	15
Armenia			7.3				3.6		9
Azerbaijan			7.3			12.7	5.5		1
Belarus							3.6		9
Bosnia & Herz		7.3			7.3	7.3	7.3		14
Croatia		3.6		7.3					15
Czech Rep							3.6		15
Georgia						5.5		3.6	13
Hungary	1.8						3.6	1.8	35
Romania								1.8	45
Russian			14.5			16.4	1.8		14
Slovak Rep			1.8						18
Slovenia		1.8				3.6	1.8		15
Tajikistan			1.8					12.7	11
Turkey			16.4	3.6		32.7	3.6		55
Uzbekistan			1.8						14
Total	0.1	0.8	3.2	0.7	0.5	4.9	2.3	1.4	19.2
W. EUR.									
Belgium			9.1						55
Cyprus		3.6	1.8			5.5	12.7		35
France			12.7	9.1			1.8		55
Germany			3.6						35
Italy			3.6						55
Spain			5.5						55
UK			14.5	9.1		21.8			55
Total		0.5	7.3	2.6		3.9	2.1		49.3
G7									
Canada			12.7						55
France			12.7	9.1			1.8		55
Germany			3.6						35
Italy			3.6						55
UK			14.5	9.1		21.8			55
USA			32.7	12.7					55
Total			13.3	5.2		3.6	0.3		51.7

Table 2: Estimated Effect of Conflict on Real Per-Capita Consumption Growth

	Individual Specification			Joint Specification		
	INIT	CONT	COMPL	INIT	CONT	COMPL
EXTBH	−2.917	−5.683	4.936			
	[2.006]	[3.784]	[4.022]			
EXTSH	−4.808**	−0.335	−2.597	− 5.841***		
	[1.908]	[7.530]	[3.222]	[1.682]		
EXTBA	−0.364	2.363	−1.710			
	[1.140]	[1.872]	[1.801]			
EXTSA	−2.923**	1.166	1.056	−3.087**		
	[1.477]	[2.226]	[1.206]	[1.411]		
GENO	−2.379	−1.263	4.121			
	[1.953]	[1.292]	[2.753]			
ETHN	−5.585**	0.991	2.234	−5.916**		
	[2.474]	[0.671]	[1.788]	[2.406]		
REGIM	− 4.268***	−1.814	−0.104	− 4.177***		
	[1.381]	[1.425]	[1.194]	[1.371]		
REVO	− 4.574***	−2.110**	1.532	− 5.193***	−2.151**	
	[1.667]	[0.940]	[1.815]	[1.668]	[0.904]	
NOBS	7146	7146	7146	7146	7146	
R-squared	0.04	0.03	0.03	0.04	0.04	

Notes: Robust standard errors are presented in square brackets. *, ** and *** represent statistical significance at the .10, .05 and .01 levels, respectively. The data are from 1950-2004, an unbalanced panel of 184 countries (see Data Appendix). The first three columns of the results report the estimated effects from equation (5), when the initiation of a conflict (INIT), the continuation of a conflict (CONT) and the completion of a conflict (COMPL) are estimated separately. The results of the final three columns are for when all three measures of conflict are included simultaneously and only those coefficients that were significantly different at the below the .1 level were retained in the specification.

Table 3: Estimated Effect of Conflict on Real Per-Capita Consumption Volatility

	Individual Specification			Joint Specification		
	INIT	CONT	COMPL	INIT	CONT	COMPL
EXTBH	− 0.221	0.232	−0.126			
	[0.235]	[0.183]	[0.291]			
EXTSH	0.344**	0.574**	0.091	0.308**	0.621***	
	[0.135]	[0.245]	[0.184]	[0.141]	[0.231]	
EXTBA	0.216*	0.013	0.348***	0.225*		0.328***
	[0.125]	[0.113]	[0.111]	[0.123]		[0.115]
EXTSA	0.062	0.276	−0.424*			−0.391*
	[0.251]	[0.312]	[0.217]			[0.217]
GENO	0.007	0.039	−0.065			
	[0.201]	[0.104]	[0.250]			
ETHN	0.545***	−0.039	0.081	0.545***		
	[0.154]	[0.070]	[0.210]	[0.146]		
REGIM	0.246**	0.132	0.037	0.233*		
	[0.123]	[0.120]	[0.131]	[0.119]		
REVO	0.200	0.152*	0.145		0.145*	
	[0.184]	[0.091]	[0.156]		[0.089]	
Observations	7146	7146	7146	7146	7146	7146
R-squared	0.03	0.02	0.02	0.03	0.03	0.03

Notes: Robust standard errors are presented in square brackets. *, ** and *** represent statistical significance at the .10, .05 and .01 levels, respectively. The data are from 1950-2004, an unbalanced panel of 184 countries (see Data Appendix). The first three columns of the results report the estimated effects from equation (8), when the initiation of a conflict (INIT), the continuation of a conflict (CONT) and the completion of a conflict (COMPL) are estimated separately. The results of the final three columns are for when all three measures of conflict are included simultaneously and only those coefficients that were significantly different at the below the .1 level were retained in the specification.

Table 4A. Welfare Calculations

SUB-SAHARAN	GROWTH			VOLATILITY			COST		ELAST	
AFRICA	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
Benin	1.22	1.38	1.63	3.84	3.75	3.7	1.78	4.56	-0.23	-0.88
Burkina Faso	-0.43	-0.33	-0.07	5.39	5.37	5.29	1.44	5.09	0.22	-1.10
Burundi	0.10	0.42	0.68	7.00	6.85	6.76	4.40	7.91	0.14	-1.05
Central African	0.31	0.38	0.63	5.83	5.83	5.75	0.91	4.22	0.04	-1.00
Chad	-0.86	-0.56	-0.30	7.19	6.89	6.79	5.26	9.38	0.45	-1.21
Comoros	-0.56	-0.35	-0.09	5.4	5.21	5.13	3.33	7.04	0.26	-1.12
Congo, Dem. Rep.	-3.97	-2.68	-2.43	8.98	8.37	8.25	49.46	59.10	0.85	-2.65
Congo, Rep.	-0.76	-0.48	-0.22	10.75	10.57	10.42	5.46	10.28	0.75	-1.32
Cote d'Ivoire	0.84	1.20	1.45	5.22	5.16	5.08	4.18	7.18	-0.13	-0.93
Equatorial Guin.	3.32	3.42	3.68	16.59	16.59	16.35	1.18	4.96	0.36	-0.94
Eritrea	-3.74	-4.04	-3.78	16.47	14.89	14.68	15.17	42.88	5.69	-6.34
Ethiopia	1.28	2.43	2.69	4.75	4.22	4.16	12.82	15.57	-0.25	-0.88
Gambia	0.45	0.55	0.81	9.30	9.25	9.12	1.51	5.18	0.26	-1.06
Ghana	2.17	2.33	2.58	11.27	11.19	11.03	1.95	5.12	0.03	-0.90
Guinea	0.22	0.37	0.62	3.73	3.72	3.67	1.81	4.99	-0.04	-0.99
Guinea-Bissau	-0.08	0.17	0.43	9.73	9.57	9.43	4.16	8.21	0.43	-1.15
Kenya	-0.33	-0.05	0.21	6.33	6.32	6.23	3.98	7.67	0.19	-1.10
Lesotho	2.60	2.83	3.09	6.44	6.42	6.33	2.16	4.66	-0.39	-0.79
Liberia	-3.93	-3.67	-3.42	15.67	15.00	14.78	38.35	64.73	2.65	-6.06
Mali	0.68	0.81	1.06	6.11	6.12	6.03	1.53	4.69	-0.04	-0.96
Mozambique	0.57	1.14	1.39	4.20	3.99	3.93	6.89	9.91	-0.12	-0.95
Niger	-0.68	-0.58	-0.32	6.41	6.33	6.24	1.71	5.63	0.37	-1.16
Nigeria	0.11	0.65	0.91	8.46	8.37	8.25	7.58	11.28	0.18	-1.08
Rwanda	0.46	0.79	1.05	6.83	6.76	6.67	4.31	7.63	0.03	-1.00
Senegal	-0.36	-0.18	0.08	3.95	3.94	3.88	2.47	5.95	0.11	-1.07
Sierra Leone	-0.93	-0.52	-0.26	5.96	5.58	5.50	6.92	10.91	0.36	-1.19
Somalia	-1.74	-1.31	-1.05	7.00	6.76	6.67	8.44	13.26	0.67	-1.40
South Africa	1.34	1.77	2.03	2.2	2.16	2.13	4.55	7.22	-0.32	-0.86
Sudan	1.12	1.75	2.00	5.74	5.72	5.64	7.00	9.92	-0.20	-0.91
Swaziland	4.01	4.08	4.34	6.28	6.25	6.16	0.64	2.79	-0.57	-0.70
Tanzania	0.49	0.62	0.88	4.76	4.65	4.59	1.65	4.78	-0.03	-0.97
Uganda	1.02	1.65	1.90	4.76	4.43	4.37	7.3	10.18	-0.18	-0.91
Zambia	1.54	1.78	2.03	9.92	9.89	9.75	2.82	6.05	0.00	-0.94
Zimbabwe	0.36	0.87	1.12	8.84	8.72	8.59	6.99	10.60	0.15	-1.06
Total	0.39	0.78	1.04	7.39	7.20	7.10	6.77	11.75	0.34	-1.37

Notes: See Tables 2 and 3. The first six columns provide observed and synthetic measures of the mean and standard deviation of consumption growth b country. $\hat{\mu}_i$ and $\hat{\sigma}_i$ are the mean and standard deviation of observed consumption growth by country i. $\hat{\mu}_i^{*'}$ is the estimate of the ith country's consumption growth rate if it were only to enjoy the local-direct benefits from peace, while $\hat{\mu}_i^*$ includes both the local-direct and global benefits to consumption growth from peace. $\hat{\sigma}_i^{*'}$ and $\hat{\sigma}_i^*$ are the analogous calculations for a country's growth volatility (i.e. standard deviation). The welfare calculations are obtained using expressions (6) for the values $\rho = 2.0$ and $\theta = .08$. Note that while all countries will benefit from reduced conflict due to the global effect of improved world consumption growth, we only report in Table 4 the welfare improvement for countries who have been directly involved in conflict. The last two columns of Table 4 display the elasticity of τ_i^* with respect to ρ and θ.

Table 4B. Welfare Calculations

LATIN AMERICA	**GROWTH**			**VOLATILITY**			**COST**		**ELAST**	
	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
Argentina	0.61	0.87	1.13	5.33	5.21	5.14	3.22	6.32	-0.06	-0.96
Brazil	2.95	3.02	3.28	3.85	3.81	3.76	0.72	3.00	-0.51	-0.75
Chile	2.11	2.19	2.45	6.06	6.02	5.93	0.87	3.50	-0.30	-0.82
Colombia	1.31	2.66	2.91	1.88	1.81	1.79	13.98	16.61	-0.33	-0.86
Cuba	3.52	4.31	4.56	7.22	7.20	7.10	6.82	9.11	-0.50	-0.73
Dominican Rep.	2.81	2.98	3.24	6.04	6.00	5.92	1.60	4.02	-0.42	-0.77
Ecuador	1.61	1.69	1.94	3.04	3.04	3.00	0.85	3.47	-0.33	-0.84
El Salvador	1.37	1.47	1.73	2.97	2.96	2.92	1.13	3.83	-0.29	-0.86
Guatemala	1.06	2.39	2.65	1.81	1.72	1.70	14.28	16.98	-0.29	-0.89
Haiti	1.56	1.64	1.89	6.17	6.12	6.03	0.92	3.74	-0.19	-0.87
Honduras	0.77	0.88	1.13	2.49	2.48	2.44	1.24	4.14	-0.19	-0.92
Nicaragua	0.21	1.00	1.25	7.34	6.90	6.80	10.92	14.37	0.08	-1.04
Panama	2.43	2.51	2.76	4.96	4.96	4.89	0.74	3.21	-0.41	-0.79
Peru	1.73	2.61	2.86	5.32	5.07	5.01	9.25	11.90	-0.30	-0.85
Uruguay	1.07	1.15	1.40	5.42	5.42	5.34	0.89	3.83	-0.15	-0.91
Total	2.15	2.54	2.80	4.66	4.58	4.52	4.49	7.20	-0.28	-0.86
MIDDLE EAST										
Algeria	0.48	1.21	1.47	8.18	8.02	7.90	9.66	13.10	0.05	-1.02
Egypt	2.55	3.42	3.68	3.27	3.1	3.06	8.07	10.39	-0.47	-0.77
Greece	3.18	3.27	3.52	2.43	2.32	2.29	0.75	2.93	-0.57	-0.73
Iran	0.84	1.90	2.15	6.89	6.59	6.49	12.86	15.95	-0.11	-0.96
Iraq	0.43	1.26	1.52	21.68	17.74	17.49	67.44	76.99	0.52	-2.2
Israel	3.18	3.76	4.02	3.74	3.50	3.45	5.13	7.33	-0.54	-0.73
Jordan	0.14	0.58	0.84	7.49	7.05	6.95	6.71	10.24	0.18	-1.06
Lebanon	3.89	4.44	4.69	6.72	6.72	6.62	4.50	6.69	-0.57	-0.71
Morocco	1.95	2.13	2.38	5.01	4.93	4.86	1.89	4.49	-0.32	-0.83
Oman	4.00	4.32	4.57	16.38	15.46	15.24	6.35	9.67	0.36	-0.87
Qatar	-2.49	-2.44	-2.19	12.17	12.07	11.89	2.00	10.04	2.22	-2.04
Saudi Arabia	0.94	1.13	1.39	9.41	8.49	8.37	4.44	7.81	0.33	-0.99
Syria	1.49	1.91	2.16	10.58	9.94	9.80	6.43	9.73	0.16	-0.96
Yemen, Rep.	0.09	1.97	2.23	9.90	9.90	9.76	26.29	30.16	0.08	-1.13
Total	1.99	2.55	2.81	8.85	8.27	8.15	11.61	15.39	0.09	-1.07

Table 4C. Welfare Calculations

	GROWTH			VOLATILITY			COST		ELAST	
ASIA	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
Afghanistan	-1.84	-1.2	-0.94	9.44	8.44	8.32	16.27	21.70	0.85	-1.53
Australia	1.94	1.95	2.20	2.24	2.17	2.14	0.08	2.58	-0.39	-0.81
Bangladesh	1.29	1.59	1.85	3.14	3.06	3.02	3.24	5.96	-0.28	-0.87
Brunei	0.89	0.94	1.19	6.25	6.25	6.16	0.56	3.64	-0.06	-0.94
Cambodia	-1.54	-0.71	-0.46	5.05	4.54	4.47	14.48	18.77	0.37	-1.29
China	4.24	4.85	5.10	3.90	3.72	3.67	4.76	6.74	-0.66	-0.67
Fiji	1.43	1.50	1.76	6.50	6.49	6.39	0.82	3.71	-0.16	-0.89
India	1.73	2.60	2.86	2.67	2.54	2.50	8.69	11.23	-0.38	-0.83
Indonesia	2.71	4.14	4.40	3.56	3.56	3.51	12.75	15.02	-0.49	-0.76
Korea, Dem. Rep.	4.11	4.16	4.42	5.32	5.32	5.24	0.38	2.46	-0.63	-0.68
Korea, Rep.	4.32	4.48	4.74	3.45	3.39	3.34	1.25	3.22	-0.69	-0.67
Laos	0.65	2.15	2.41	4.93	4.85	4.78	17.53	20.52	-0.18	-0.95
Malaysia	3.33	3.63	3.89	3.72	3.68	3.63	2.57	4.75	-0.58	-0.72
Maldives	5.67	5.76	6.02	3.78	3.79	3.74	0.59	2.34	-0.84	-0.60
Nepal	0.93	1.53	1.78	2.83	2.83	2.79	6.64	9.47	-0.24	-0.91
New Zealand	1.47	1.47	1.73	2.96	2.90	2.85	0.09	2.76	-0.29	-0.85
Pakistan	1.83	2.51	2.76	3.29	3.06	3.01	6.87	9.40	-0.37	-0.83
Papua New Guinea	2.06	2.14	2.40	10.31	10.29	10.14	0.95	4.03	-0.03	-0.89
Philippines	1.89	3.09	3.34	2.23	2.16	2.13	11.68	14.14	-0.41	-0.82
Samoa	0.72	0.77	1.02	4.29	4.29	4.22	0.56	3.56	-0.12	-0.94
Singapore	3.58	3.69	3.94	3.18	3.17	3.12	0.87	2.99	-0.62	-0.70
Solomon Islands	-1.62	-1.55	-1.29	8.86	8.77	8.64	1.69	6.87	1.00	-1.44
Sri Lanka	3.30	3.58	3.83	4.88	4.88	4.81	2.35	4.58	-0.55	-0.73
Thailand	2.91	4.04	4.30	3.54	3.32	3.27	10.05	12.28	-0.51	-0.75
Tonga	3.77	3.82	4.08	6.97	6.97	6.87	0.40	2.65	-0.52	-0.72
Vanuatu	1.29	1.34	1.59	5.84	5.84	5.76	0.53	3.42	-0.17	-0.90
Vietnam	2.73	4.36	4.61	2.49	2.49	2.45	14.32	16.54	-0.50	-0.75
Total	2.10	2.48	2.73	4.57	4.48	4.42	4.12	6.85	-0.29	-0.86

Table 4D. Welfare Calculations

	GROWTH			VOLATILITY			COST		ELAST	
E. EUROPE	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
Albania	4.23	3.92	4.17	4.85	4.78	4.71	-2.43	-0.38	-1.08	-0.68
Armenia	5.31	5.45	5.71	1.93	1.89	1.87	0.98	2.75	-0.83	-0.61
Azerbaijan	1.54	1.88	2.14	6.59	6.53	6.44	3.75	6.60	-0.21	-0.88
Belarus	9.21	9.35	9.61	3.58	3.58	3.53	0.72	2.05	-1.10	-0.49
Bosnia & Herze	8.69	8.06	8.31	19.94	14.27	14.07	10.49	12.75	0.91	-0.65
Croatia	0.14	-0.16	0.09	8.56	7.27	7.16	-1.32	2.35	1.73	-1.08
Czech Rep	1.85	2.01	2.26	4.13	4.13	4.07	1.62	4.22	-0.35	-0.83
Georgia	-1.36	-1.09	-0.83	14.55	14.29	14.08	8.23	15.54	1.67	-1.80
Hungary	2.52	2.90	3.16	2.89	2.89	2.85	3.54	5.88	-0.49	-0.77
Romania	3.88	4.00	4.25	4.39	4.39	4.33	0.96	3.05	-0.63	-0.69
Russian Fed	0.57	-0.06	0.19	14.33	12.01	11.84	-0.37	4.24	3.36	-1.23
Slovak Rep	1.08	1.11	1.37	5.11	5.11	5.04	0.38	3.30	-0.16	-0.91
Slovenia	3.23	2.68	2.93	3.38	3.15	3.10	-4.56	-2.34	-0.69	-0.73
Tajikistan	4.20	3.76	4.02	6.29	5.67	5.59	-2.90	-0.79	-1.86	-0.69
Turkey	2.14	2.56	2.82	4.90	4.56	4.49	4.39	6.91	-0.34	-0.81
Uzbekistan	-1.10	-1.09	-0.83	11.02	10.89	10.73	0.75	6.01	1.13	-1.41
Total	2.88	2.83	3.09	7.28	6.59	6.49	1.51	4.51	0.07	-0.89
W EUROPE										
Belgium	2.15	2.16	2.41	1.51	1.46	1.44	0.06	2.49	-0.44	-0.79
Cyprus	4.62	5.15	5.40	4.75	4.14	4.08	4.33	6.26	-0.62	-0.66
France	2.61	2.85	3.11	1.47	1.41	1.39	2.22	4.51	-0.52	-0.76
Germany	2.23	2.27	2.53	1.19	1.13	1.12	0.45	2.85	-0.46	-0.79
Italy	3.17	3.18	3.43	1.93	1.91	1.88	0.05	2.22	-0.59	-0.72
Spain	3.27	3.27	3.53	2.65	2.63	2.59	0.05	2.22	-0.59	-0.72
United Kingdom	2.12	2.45	2.71	1.86	1.86	1.83	3.15	5.57	-0.45	-0.8
Total	2.88	3.05	3.30	2.20	2.08	2.05	1.47	3.73	-0.52	-0.75
G7										
Canada	1.75	1.76	2.01	1.58	1.56	1.54	0.05	2.6	-0.38	-0.82
France	2.61	2.85	3.11	1.47	1.41	1.39	2.22	4.51	-0.52	-0.76
Germany	2.23	2.27	2.53	1.19	1.13	1.12	0.45	2.85	-0.46	-0.79
Italy	3.17	3.18	3.43	1.93	1.91	1.88	0.05	2.22	-0.59	-0.72
United Kingdom	2.12	2.45	2.71	1.86	1.86	1.83	3.15	5.57	-0.45	-0.8
United States	2.25	2.47	2.73	1.50	1.48	1.46	2.12	4.51	-0.47	-0.79
Total	2.35	2.50	2.75	1.59	1.56	1.54	1.34	3.71	-0.48	-0.78

Table 5. Robustness of Welfare Calculations

Uncensored without Regional Parameter Variation

	GROWTH			VOLATILITY			COST		ELAST	
	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
average	1.71	2.08	2.33	6.15	5.87	5.79	5.73	9.28	−0.01	−1.04
std	2.38	3.1	3.1	3.98	3.56	3.51	9.31	11.43	0.89	0.76
median	1.51	1.86	2.12	5.22	5.11	5.04	3.15	6.05	−0.21	−0.88

Censored without Regional Parameter Variation

	GROWTH			VOLATILITY			COST		ELAST	
	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
average	1.3	1.97	2.07	6.19	5.99	6.02	12.24	13.53	−0.06	−1.19
std	2.5	4.83	4.83	3.98	3.92	3.94	30.75	32.16	2.08	1.46
median	1.1	1.42	1.52	5.28	5.1	5.12	9.12	10.22	−0.18	−0.93

Uncensored with Regional Parameter Variation

	GROWTH			VOLATILITY			COST		ELAST	
	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
average	1.20	1.60		6.16	6.38		5.10		−0.02	−1.08
std	2.02	2.14		3.95	4.03		18.79		0.80	0.83
median	1.39	1.55		5.32	5.39		2.35		−0.17	−0.92

Censored with Regional Parameter Variation

	GROWTH			VOLATILITY			COST		ELAST	
	$\hat{\mu}_i$	$\hat{\mu}_i^{*'}$	$\hat{\mu}_i^*$	$\hat{\sigma}_i$	$\hat{\sigma}_i^{*'}$	$\hat{\sigma}_i^*$	$\tau_i^{*'}$	τ_i^*	$\epsilon_{\tau_i^*,\rho}$	$\epsilon_{\tau_i^*,\theta}$
average	1.06	1.48		6.18	6.31		7.20		−0.24	−1.33
std	2.09	2.21		3.96	4.26		22.96		2.46	2.41
median	1.23	1.51		5.28	5.41		3.38		−0.23	−0.90

Notes: See Table 4. The top panel provides cross-country summary statistics for the data in Table 4. The rows report the mean, standard deviation and the median of the cross country statistics for each column. The second panel repeats the exercise when all conflicts are censored as follows: if the conflict is preceded by a year when the growth of per-capita consumption is more than one standard deviation below the country's mean per-capita consumption growth, the conflict is not counted as having occurred. Though not shown, this will change the estimated parameters in tables 2 and 3. The third panel returns to the non-censored definition of conflict, though the estimated parameters in equation (8) were obtained by estimating the equation separately over the following regional sub-samples: Sub-saharan Africa, Middle East, Asia, Western Europe, Eastern Europe, Latin American and North America. The fourth panel allows for the censored definition of conflict and region-by-region parameter variation. Only local-direct effects of conflict are reported when estimating over the regional sub-samples.

Table 6: Factors Influencing A Country's Potential Gain from Peace

$$\tau_i^* = \alpha_0 + R_i + \theta_1 Economics_i + \theta_2 DEMO_i + \theta_3 (Economics_i \times DEMO_i) + \varepsilon_i$$

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
EAST ASIA	2.697**	0.178	3.355***	2.602**	2.533*	0.341	−0.056
	[1.268]	[1.235]	[1.256]	[1.285]	[1.313]	[1.253]	[1.212]
E EUROPE	0.531	−0.618	1.347	0.531	0.376	−0.158	−0.401
	[1.014]	[1.080]	[0.996]	[1.017]	[0.996]	[1.014]	[0.992]
MID EAST	5.530**	3.250	6.569***	5.121**	5.237**	3.124	2.958
	[2.217]	[2.051]	[2.289]	[2.254]	[2.191]	[2.050]	[2.205]
SOUTH ASIA	5.686**	1.786	6.335***	5.686**	5.632**	2.249	1.585
	[2.368]	[2.945]	[2.183]	[2.375]	[2.307]	[2.718]	[2.923]
W EUROPE	−0.551	−1.252	−0.377	−0.551	−0.663	−1.303	−1.781*
	[0.752]	[0.897]	[0.656]	[0.754]	[0.790]	[0.853]	[0.962]
SUB SAHARA	2.984***	−0.566	3.869***	2.857***	2.784***	−0.310	−0.655
	[0.842]	[1.369]	[0.796]	[0.840]	[0.923]	[1.425]	[1.412]
LAT AMER	1.664*	0.009	2.418**	1.586	1.485	0.261	0.131
	[0.981]	[1.108]	[0.986]	[0.992]	[1.101]	[1.213]	[1.266]
$ln(GDP_{ini})$		− 1.633***				− 1.649***	−1.199**
		[0.489]				[0.492]	[0.573]
$OPEN_{ini}$			−0.014**			−0.013**	− 0.027***
			[0.007]			[0.006]	[0.008]
$EXPFUEL$				2.654		3.446**	4.797***
				[1.723]		[1.356]	[1.497]
$DEMO$					− 0.381	− 0.698	2.970
					[0.703]	[0.703]	[5.918]
$DEMO$							0.018*
$\times OPEN_{ini}$							[0.010]
$DEMO$							−0.626
$\times ln(GDP)_{ini}$							[0.672]
$DEMO$							−3.899
$\times EXPFUEL$							[2.555]
Observations	170	170	170	170	170	170	170
R-squared	0.13	0.19	0.19	0.15	0.14	0.26	0.28

bbb Notes: Regressions include 170 countries for which data are available as all countries may enjoy the global benefits from reduced conflict. The dependent variable in each regression is τ_i^* computed for $\rho = 2.0, \theta = .08$. R_i are the regional dummy variables. $DEMO_i = 1$ indicates that the government was deemed democratic at the beginning of the sample. The economic variables considered are each country's initial log of GDP per capita $ln(GDP_{ini})$, whether a country's exports are more than fifty percent related to fuel ($EXPFUEL = 1$) and the initial openness of each country's economy ($OPEN_{ini}$) as measured by initial exports plus imports divided by GDP.