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What’s in a Figure? Estimating Recurrence of Civil War

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It is often said that a country that has experienced civil war has nearly a 50 per cent risk of sliding back into war within five years. This has been widely cited in the academic literature and in policy debates, including in UN documents and preparatory work for the establishment of the UN Peacebuilding Commission. A closer examination of the origins, circulation and establishment of this figure gives a glimpse into the process whereby academic findings are converted into conventional wisdom and effectively inserted into the policy debate, even though the findings themselves are unstable. In this case, the authors of the original figure revised their initial 50 per cent estimate down to around 20 per cent only four years after their first study, but the change was barely noted. This article examines the process whereby the findings were made, and offers a note of caution about the wholesale adoption of such figures by policymakers and academics.

The Origins, Uses and Evolution of a Figure

This story begins in 2002, when Paul Collier, then director of the Development Research Group at the World Bank, and Anke Hoeffler of Oxford University, published a paper in the Journal of Conflict Resolution (JCR) on civil war in Africa. The article presented an econometric model that sought to account for the factors that determine the onset of civil war – a model that was subsequently applied to data on African countries. One factor that Collier and Hoeffler investigated was called ‘peace duration’, defined as ‘the number of months since the end of the previous conflict [i.e. civil war] or since 1945, if there has been no conflict subsequent to this date’. Analysing this factor for all countries, they found that ‘shortly after a conflict, on average, countries face a 50% risk of renewed conflict during the next five years’.

A slightly modified version of this finding, based on new calculations and a revised data set, reached a broader audience in 2003 when a team led by Collier produced a comprehensive World Bank report entitled Breaking the Conflict Trap. As the title indicates, the thesis is that countries that have experienced civil war are likely to plunge into renewed violence unless the conditions which gave rise to war in the first place are addressed. Providing ‘poverty-efficient’ aid to stimulate early post-war economic growth was seen as particularly important to help states escape from the trap of recurrent conflict. The size of the trap, so to speak, was also calculated, producing a figure of just under 50 per cent: ‘The typical country reaching the end of a civil war faces around a 44 percent risk of returning to conflict within five years’.

The 2002 article and the World Bank publication were widely distributed and cited. Soon, policymakers and researchers were claiming that half or almost half
of countries emerging from civil war tend to revert to violence within the first five post-war years. In the UN system, forces favouring a stronger international peacebuilding regime quickly seized on the World Bank study. The December 2004 report of the High-level Panel, which had been established by the UN Secretary-General to prepare the ground for UN reforms, cited a ‘high risk’ of civil war recurrence in post-conflict countries. In the subsequent March 2005 report of the Secretary-General that outlined the reform agenda, the risk of recidivism was restated in stronger form and specifically cited to justify the need for a UN Peacebuilding Commission:

Our record of success in mediating and implementing peace agreements is sadly blemished by some devastating failures . . . for instance in Angola in 1993 and in Rwanda in 1994. Roughly half of all countries that emerge from war lapse back into violence within five years. These two points drive home the message: if we are going to prevent conflict we must ensure that peace agreements are implemented in a sustained and sustainable manner . . . I therefore propose to Member States that they create an intergovernmental Peacebuilding Commission [emphasis added].

The Commission for Africa, established by Tony Blair in 2004, used the same figure in its final report issued in March the following year. The section on post-conflict peacebuilding is premised on the high risk of recurrent civil war, which is stated at the outset: ‘Half of all countries emerging from conflict relapse into violence within five years.’ The information is sourced to a paper presented by Collier to the High-level Panel on UN reform.

Estimates involving probability had now been replaced with a statement of certainty. The qualifying adjective ‘typical’ that appears in the World Bank report was also lost. This is perhaps understandable. The Bank’s report mentions the qualifying word only once and explains neither how the term is to be understood (as a statistical average or a designation of a sub-set of states?) nor how the qualification might limit the validity of the generalization.

In the meantime, the ‘nearly half’ estimate had been gaining acceptance. The principal author of the World Bank report had been to the UN headquarters and lectured about the nature of the ‘conflict trap’. The academic world had also noticed the finding. Leading scholars started to cite the risk of recurrence of civil war, and the process of circulation itself seemed to bestow a measure of verification. For instance, writing on ‘violence prediction’ for an encyclopaedia on public health published in 2004, Bruce Russett concluded that ‘countries that have experienced a civil war are 50 per cent more likely than other states to have another one within the next five years’. Russett does not footnote a source for this estimate, but his bibliography includes a reference to the 2002 Collier and Hoeffler article in the JCR. The 50 per cent figure also appeared in an article by Nicholas Sambanis, and was clearly referenced to Collier and Hoeffler’s work. Yet Sambanis interprets the figure quite differently, suggesting that Collier and Hoeffler find ‘that the risk of civil war is 50 percent greater immediately after the previous war ends than in other time periods’. Roland Paris, author of what rapidly became a classic book on post-war peacebuilding,
also uses the 50 per cent figure, citing the World Bank report. ‘The very fragility of war-shattered states – and the fact that countries with a recent history of civil violence had an almost 50 percent chance of slipping back into violence – created the need’ for peacebuilding efforts, Paris writes in the introduction to *At War’s End*, published in 2004.\textsuperscript{10} Paris and Sambanis replace the five-year period with other time-qualifying factors for civil war recurrence, but retain the short-term window of vulnerability.

As the above citations show, the meaning of the 50 or 44 per cent estimate of recidivism provided by Collier and his associates is not entirely clear. There are several possible interpretations. The figure could express the risk of civil war for countries that have already experienced such wars \textit{as compared to countries that have not} (as Russett concludes). It could mean the risk of recurrent war in the civil-war group over time, that is, when comparing different periods with one another. Thirdly, it could express the risk of recurrence for a \textit{sub-set of states within the civil war group}, whose shared parameters make them the most vulnerable to renewed war. This could be the ‘typical’, but unidentified, state in the World Bank study. Finally, the figure could express the average risk of recurrent war within the civil-war group within a given period. In other words, if a country has experienced a civil war once, what are the chances of plunging into another one within, for instance, the next five years? This apparently is the interpretation of both Paris and the office of the UN Secretary-General.

Yet if this last interpretation is to be accepted, a simpler method of calculating the risk produces a figure significantly lower than 50 per cent. Let us use the same list of countries and conflicts that Collier and his team used for their 2003 study. Their data reference is another 2002 paper by Collier and Hoeffler, called *Greed and Grievance in Civil War*, which like the *JCR* article draws on the Correlates of War (COW) data set.\textsuperscript{11} Table 1 in the *Greed and Grievance* paper presents the countries and conflicts studied, covering the period 1960–99. We can then readily do the arithmetic. Of the 49 countries listed,\textsuperscript{12} civil war did not recur at all in about half the cases, and that is within the entire 40-year period covered by the data set. Of the remaining cases, a second civil war did occur in 12 countries, but that was after a first five-year period of peace. In some of these countries war did not recur for decades, as in Algeria, where one war is listed as ending in 1962 (the war of independence) and another one as starting in 1991 (between the government and the rebel Islamic Salvation Front, FIS). In only 13 cases did a second civil war recur within the first five-year period, which gives an average recurrence rate of around 26 per cent. Using conflicts as the unit of analysis we arrive at a similar rate of civil war recidivism for the first five years after the previous war, namely 23 per cent.\textsuperscript{13} Barbara Walter, who likewise used the COW data set but covered a slightly longer period (1945–96), also arrived at a lower recurrence ratio than did Collier. Of 58 civil wars, only 22 were followed by another recurrence ratio than did Collier. Of 58 civil wars, only 22 were followed by another, and that was within the full 50-year period, not the first five post-war years on which Collier and associates focused.\textsuperscript{14} Indeed, Walter finds that the statistical material in the COW data set gives ground for concluding that ‘single wars... are more the norm [than recurrent conflict].’\textsuperscript{15}
Returning to Collier’s risk analysis, arguably it makes a difference whether the risk of recurrent war is nearly 50 per cent or only half that, and thus what methods are used and which concepts of risk are applied. Collier and his team state that they use the logit regression technique of econometric analysis. But, as noted, they provide no further information of what characterizes ‘the typical country’ that in the World Bank study has a 44 per cent chance of sliding back into civil war. Nor, in that study, is there any further explanation of methods used, only a reference to the earlier Greed and Grievance paper, which does not discuss recurrence rates. Moreover, when the recurrence rate of 44 per cent is given in Breaking the Conflict Trap no reference is made to the 2002 JCR article where the 50 per cent figure first appeared. Most readers, including those at the UN, could be forgiven for understanding the ‘nearly half’ estimate as a simple arithmetic measure of average risk of renewed war, which applies to all countries that once have experienced civil war. However, in this sense, our calculations show that only one-quarter – and not one-half – of countries that emerge from war lapse back into violence within five years.

Collier and associates have continued to work on civil war recurrence estimates, resulting in two versions of a paper, one dated June 2006, and a revised version dated August 2006. Here they draw on the same data set as the one used for the 2003 World Bank study – an updated version of the COW data set as revised by Kristian S. Gleditsch of Essex University. The battle deaths threshold for civil war is identical in Collier and associates’ 2002, 2003 and 2006 writings, that is, 1,000 per year. In methodological terms, however, the authors now change their approach:

The approach adopted in previous empirical analyses of the causes of conflict was that of logit analysis or its variants. Such an approach cannot investigate in any depth either the distinctive structure of post-conflict risks or how they evolve as a result of policy choices. In this paper our approach is to estimate a hazard function of the risk of conflict reversion on a sample confined to post-conflict countries. As the authors explain, they restrict the number of cases studied to countries identified as ‘post-conflict’, but they do not make clear from what time period the cases are drawn.

Based on the changes in methodology and data in the 2006 study, Collier and his associates now find a recurrence rate of 20.6 per cent for the first four years after the previous war ended. In the revised version of the same paper two months later, this figure comes out at 23 per cent. Either way, this is a far cry from the 50 and 44 per cent figures earlier arrived at as the risk of recurrent war within the first five post-war years, and which became the basis for the widely used ‘nearly 50 per cent’ estimate.

The 2006 paper is mostly concerned with identifying the relative importance of various parameters that may affect the risk of recurrent war, such as economic growth, presence of peacekeepers and democratic measures. In terms of the risk of civil war resumption over time, the authors mention the short-term risk (21–23 per cent over the first four years) only in passing. They focus instead on a
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longer time span, choosing the first ten years after the war ended. For this post-war decade they identify a risk of recurrence that is closer to their original 2003 estimate that had been applied to the first five years. The estimate for the ten-year risk is given as 34.4 per cent (in the June 2006 version)\textsuperscript{23} and 40 per cent (in the August version).\textsuperscript{24}

Strikingly, the authors use the higher-end figures in presentations to a policy-making audience. When presenting the results to the newly-established UN Peacebuilding Commission in October 2006, Collier cited the 40 per cent risk over ten years, rather than the 34 per cent estimate of the earlier paper, according to the official meeting report, and there was no mention at all of the much lower 20.6 per cent risk of recidivism over the first four years.\textsuperscript{25}

There is, of course, nothing unusual about research results changing as methods are refined, new variables included, or data sets altered. The remarkable feature about the research of Collier and associates on the recurrence of civil wars is the absolute lack of discussion – or even recognition – of changing results and their implications. The authors now find the risk of recurrence is about half what they had previously found – 20.6 or 23 per cent during the first four years in the 2006 paper as opposed to 44 or 50 per cent during the first five years as found in the research of 2002–03. But is this due to changes in methodology and data or to other factors? More generally, what does this mean except that the research findings are unstable and must be treated with great caution?

Implications for Policy

Change in conclusions of this kind has both ethical and policy implications. Failure to acknowledge the fragility of findings reinforces the bureaucratically-shaped inclination of policymakers to ask for formulaic solutions. This is evident also in the new field of peacebuilding, where pressure for standardization of policy measures has been rapidly building, above all in the new Peacebuilding Commission. Conclusions based on sophisticated statistical methods convey certainty and factual ‘truth’ even though this may be false security, as the changing estimates of recidivism clearly demonstrate. Policymakers may not wish to know the finer points of methodology, but they do need proper caveats about the soundness and durability of a given formula. When similar methods produce different answers, additional work is needed before the results are proclaimed to policymakers.

In a field where even similar methods produce different answers, which ones should be presented to policymakers? To present all might create confusion; to present only some reflects a policy judgement – whether intended or not – on the part of the researchers. In this case, there was a clear tendency to use higher-end rather than lower-end estimates of recidivism. This might well have had the effect of focusing the attention of the UN and the international aid community on the need for decisive peacebuilding efforts. An average risk of 40–50 per cent for post-civil war countries to plunge back into war within five, or even ten, years would suggest heavy preventive measures and sets the framework for a strong and coordinated peacebuilding programme. This is also the
conclusion of the 2006 paper of Collier and associates, which clearly addresses the new Peacebuilding Commission: ‘The international community is correct to focus explicitly on post-conflict situations as warranting distinctive engagement’.26 But when the same type of research produced different conclusions, it is important to ask whether the results shaped the policy recommendations, or the other way around.

Statistical research of this kind feeds into a larger and more controversial debate over the need for intrusive peacekeeping operations, or – in a more extreme form – ‘shared sovereignty’ as Stephen Krasner has called for.27 Addressing the problems of failed, failing and abusive states, Krasner argues, requires sustained, international semi-trusteeship in various sectors of public policy, an abridgement of formal sovereignty that is to be legitimized by treaty. In a speech to aid agencies in Berlin in September 2006, Collier explicitly invoked the emerging doctrine of shared sovereignty in post-conflict situations and – pointedly – referred to his research findings on recurrent conflicts as conclusive evidence of the need for intrusive peace operations. As he put it, his conclusions and policy recommendations were based on ‘hard science’.28

As noted above, however, on closer examination the statistical findings were found to be unstable and ambiguous. If the researchers had used the lower-end estimates of recidivism, the policy implication would point to a somewhat different framework for peacebuilding. If the chance of recurrent conflict is only around 20 per cent during the first four years, and a little over one-third for the whole decade (June 2006 version of Collier and associates’ paper), that suggests a ‘light – or lighter – footprint’ model for international peacebuilding. In other words, if three out of four post-civil war countries are likely to remain peaceful during the first five years, and nearly two out of three during the first decade, it would seem to warrant less intrusive and more targeted – although still ‘distinctive’ – international engagement. A more targeted approach could mean assisting those types of country that have a higher risk of recurrence than others. The literature suggests, for instance, that high-risk countries include those that have a low aggregate income and economic growth,29 and countries where the civil war ended with a negotiated settlement and not a military victory.30 The lower-end estimates would seem to justify a more differentiated policy according to types of post-war situations, and, perhaps, a less intrusive international role overall, as argued, in particular, by critics of the shared sovereignty concept. The dispute over risk estimates is therefore not simply a case of the glass being half full or half empty.

Implications for Research

The evolution of the recurrence figure also points to some basic principles in the production and use of research findings within the scholarly community. Foremost among these is the responsibility of researchers to clearly present the methods and data used in order to permit evaluation and verification by others. Closely related is the desirability of comparing and explaining previous findings that diverge. Such responsibilities lie at the core of the scientific method and ethos.
In the work by Collier and associates, there is little explanation for the variations in findings. Moreover, they do not contextualize their research in relation to other work on recidivism of violent conflict. In particular, they do not make explicit that – unlike some other researchers – they do not require a ‘same-side, same-issue’ dimension of conflict. In their work, a war can erupt in any part of the country, involving any parties and qualify as recurrence as long as the violence conforms to their threshold of ‘war’. In other words, they are interested in the frailty of countries rather than the recurrence (or not) of a particular conflict. This is fine, except it should be noted that imposing a restriction of same-side or same-issue would produce a much lower recurrence figure. Walter, for instance, finds a recidivisim rate of 24 per cent for the 1945–96 period when imposing the ‘same war’ restriction, as compared to 36 per cent when relaxing this limitation. Collier and associates do not mention this dimension at all.

More generally, the basic point of this story is that findings should be interpreted with great caution in areas where little work has been done, and, as in this case, where one set of authors has dominated the production and distribution of policy-relevant knowledge. Because there is a tendency for different data sets to produce different findings, a great deal of caution should be exercised when drawing conclusions. Sambanis, for instance, has demonstrated that different data sets on civil wars produce quite different results. This volatility is one reason why some analysts argue for a standardization of the use of data sets in civil war studies. When the same team, working from the same basic data set but using different statistical methods, arrive at three different sets of conclusions, this suggests a fundamental fragility in the findings that needs to be acknowledged, examined and explained.

In sum, it matters how likely it is that a civil war, once ended, will break out again. Yet estimates of recurrence are fragile and easily affected by changes in definitions, data, time periods studied and method of analysis. If different estimates are arrived at we need to understand why this is so, what the changes imply and which estimates, and in what form, are presented to policymakers.

NOTES
2. Ibid., p.17.
4. Ibid., p.83.
(para 5.4). The Commission acknowledges the assistance of Collier and others in the preparation of the report.


12. In the Greed and Grievance paper (ibid.), Collier and Hoeffler list Yemen as three separate countries, which gives N=51 as the number of countries. Yet since the two separate states of North Yemen (Yemen Arab Republic) and South Yemen (Peoples Democratic Republic of Yemen) were unified in 1990, it arguably makes more sense to analyse this country as one country, and not three. We therefore set N=49. Using N=51, however, would only have made a marginal difference to the results.

13. Out of the 79 civil wars listed in Table 1 of Collier and Hoeffler’s 2002 paper (see n.11 above), nine were still ongoing at the end of the period covered by the data (December 1999). Of the 70 terminated civil wars, in 40 cases, or 57 per cent, there was no second war at all for the rest of the 40-year period covered by the data set. In 14 cases (20 per cent) there was another war after the first five years of peace had passed since the end of the previous conflict. In this category, sometimes several decades passed before a new war broke out. In only 16 cases did war resume within the first five-year period, or 23 per cent of the total.


15. Ibid., p.371.

16. Like the JCR article by the same authors, the Greed and Grievance paper analyses how the incidence of a previous civil war, as one of many factors, influences the likelihood of civil war onset. But unlike the JCR article it does not provide a numerical estimate for recurrence risk in post-civil war countries. It is worth noting, however, that in the Greed and Grievance paper, on which the Breaking the Conflict Trap 44 per cent recurrence rate is based, Collier and Hoeffler briefly address the issue of recurrence of civil war during the 53-year period from 1945–99, stating that ‘in our sample, the conflict episodes were twice as likely in countries which had had a previous conflict since 1945 as in those that had been peaceful’ (p.10). They do not explain how they arrived at this conclusion. Yet while this ‘twice as likely’ statement suggests a similarity to the 50 per cent recurrence risk provided in the JCR article, no five-year limit is mentioned in the Greed and Grievance paper. And while the ‘peace duration’ variable is not mentioned in the conclusion to the Greed and Grievance paper where the factors to explain civil war are highlighted, it is included in the ‘non-technical summary’ of the paper: ‘If a country experienced a conflict recently the risk of recurrent conflict is high, however, this risk falls proportionately to the length of the peace period’ (p.1). Again, the basis for this finding is unclear. No estimates are provided in the paper suggesting how high, exactly, the said ‘risk of recurrent conflict’ for post-war states in fact is, nor is it clear what period is implied by the term ‘recently’.


22. Collier et al. 2006, August (see n.18 above), p.9


29. See e.g. Collier et al. 2003 (n.3 above).


