

Ride on the Peace Train

Does Peacekeeping Help to Stay on Board?

– Very first draft, comments most welcome –

Tobias Hofmann
College of William & Mary

thofmann@wm.edu

Lena M. Schaffer
ETH Zurich

schaffer@ir.gess.ethz.ch

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*For out on the edge of darkness
There runs the peace train
Peace train take this country
Come take me home again*

Cat Stevens

1 Introduction

Civil war is one of the worst diseases afflicting humankind, bringing death and despair to millions. For instance, the American Civil War claimed the lives of more than 600,000 Americans or about two percent of the then American population, compared to 0.3 % or 400,000 American soldiers, who lost their lives on World War II battle fields. Overall, more Americans died in the Civil War than in any other war to follow (McPherson 2003). However, in April 1865, Americans could look into a brighter and better future of lasting civil peace and prosperity. The civil peace train took their country and they have stayed on board ever since. Unfortunately, almost half the countries emerging from civil turmoil and brutal bloodshed in the half-century after World War II have not been as lucky. Out of the 114 spells of post-conflict civil peace that we analyze in this paper, only 67 are not right-censored, i.e. survived at least until December 31, 1999. The hopes for a brighter and better future of the people in 47 countries with recent civil war experience were disappointed. Instead of leaving the horrors of civil war behind for good, they drifted back into civil war after brief – or sometimes not so brief – spells of civil peace. Why did it happen and what can be done to prevent the tragic recurrence of civil war?

In recent years, an ever expanding political, economic, sociological, and even anthropological literature has tried to give convincing answers to these questions, citing numerous political-institutional, economic, and societal factors, as well as factors related to the recently resolved conflict (e.g. death toll, duration, termination by one-party

victory or power-sharing agreement, etc.) as the root causes that need to be blamed for the recurrence of civil war. In this paper, however, we are interested in the international aspects of post-civil conflict peace, i.e. we analyze the effects of third-party peacekeeping on the duration of civil peace spells. Do peacekeepers actually keep the peace? Several recent studies have addressed this question (cf. Doyle and Sambanis 2000, Walter 2002, Fortna 2003, 2004, Mukherjee 2006, among others). However, the results of these studies have been inconclusive to say the least. While Bailey (2002), Dubey (2002), Mukherjee (2006) and Falch (2006) do not find any significant effects of peacekeeping on the length of post-conflict peace at all, Hartzell et al. (2001), Fortna (2003), and Quinn et al. (2007) find strong support for their peacekeeping hypotheses. Last but not least, Doyle and Sambanis (2000) and Fortna (2004) report effects of peacekeeping that are conditional on its type, i.e. that some kinds of peace keeping (multilateral versus unilateral, United Nations versus non-United Nations administered, traditional versus non-traditional, or robust versus soft/weak operations) seem to work better than others.

Trying to make sense of these contradicting findings, we take up a claim by Fortna (2003, 2004) that most of the recent work on peacekeeping – including her own work – neglects the possibility of model misspecification and selection bias. We argue in this paper that to evaluate the success or failures of peacekeeping missions, one has to account for the non-random selection of peacekeeping missions into the sample of post-conflict civil peace spells to avoid biased results. Peacekeeping missions are not deployed randomly into post-conflict societies. Instead, conditions that lead to their deployment are hypothesized to also have an effect on the survival of peace spells and vice versa. As a consequence, one has to ask whether peacekeepers only intervene where civil peace can actually be kept. Our proposition is therefore to use a new estimator developed by Boehmke et al. (2006), which makes it possible to model the selection of peacekeeping forces into the sample and the duration of peace simultaneously.¹

¹ For a related estimator see Kachi 2007. Her estimator will allow us to simultaneously analyze the duration of peacekeeping operations and civil peace spells in a future research paper.

The remainder of this paper is structured as follows. First, we review the factors that determine the length of post-civil conflict peace spells and the return to civil war. In particular, we examine the role that peacekeeping missions play in post-conflict situations and their hypothesized lasting pacifying effects. The next section examines the incentives of potential peacekeepers to put their lives at risk for the civil peace of others. We try to answer the question why political leaders select to send peacekeepers to some countries, but not to others. We argue that this decision and the length of peace spells are not independent. We first illustrate this by estimating Weibull and Cox duration model on the length of civil peace spells. Then, we re-estimate this model as a Full-Information Maximum Likelihood (FIML) selection duration model that takes into account where peacekeepers get sent, identifying the bias that the non-random selection of peacekeeping mission induces, when analyzing the effects of peacekeeping on the survival of post-conflict civil peace without taking the selection equation into account. In the final section of our paper, we summarize our findings and discuss some alternative routes for future research on peacekeeping and peace spells.

2 Literature Review and Theory

I hear that sometimes Satan comes as a man of peace

Bob Dylan

In this paper, we inquire what factors determine the duration of peace following an instance of civil war. As mentioned above already, civil wars are one of the biggest problems facing the international community. Experienced largely by the world's poorest countries, instances of war effectively hamper or prevent the economic development of these countries. Even worse so, societies that have managed to reach civil peace have a high propensity to fall back into even deadlier fighting. For these nations, peace is never

here to stay, but is an interval between wars. Therefore, research directed at understanding the factors that help these societies to end the deadly spiral of war is of great practical relevance.

Two strands of literature are reviewed in this following section. Both of these strands focus on the role of peacekeeping in the context of civil wars. The first relates the role of peacekeeping to our general interest on the duration of peace after civil wars, but also stresses the importance of other factors. The second strand of literature is concerned with the selection of peacekeeping forces and why they are deployed in certain conflicts and not in others. After briefly reviewing both literatures, we present our two hypotheses concerning the relationship at hand.

2.1 Duration of Post-Conflict Peace

A society that has escaped the tragedy of war clearly does want to look into a brighter and better future, but there is no *tabula rasa*. Wars leave scars and the very conditions that led to civil war in the first place might lead to another one rather sooner than later. Therefore, more than for most social science models, any theoretical consideration concerning the duration of post-conflict peace cannot be conceived of as a function of what can be observed at time t but has to be a function of conditions present at various points in the past. To predict whether war will break out again after a peace spell, it is not only important to know what has led to a victory or a peace agreement, but it is at least as important to know what happened during the war as well as to understand the initial conditions that lead to the peace spell-proceeding civil war.

That said, researchers, who intend to explain either the duration of peace or the recurrence of civil war, always have to account for the previous civil war as a reference point. The structural conditions that lead to the original war, the characteristics of this particular war, and the way it came to an end hold the information that is necessary to

predict whether war is to recur or peace is here to stay. We will discuss each of these factors in turns and how we assume them to impact on the duration of peace. After that, we consider the influence of peacekeeping forces in the context of post-conflict peace spells.

Structural Conditions: For a country to not fall back into conflict, it is important to know which risk factors have been found to increase the likelihood of civil conflict (Quinn et al. 2007). There is a vast literature that has detected numerous structural conditions that seem to enhance the likelihood of conflict.

A consistent finding throughout the literature is that the *level of economic development* of a country is as a significant predictor of civil war onset (Fearon and Laitin 2003, DeSoysa 1999, Collier and Hoeffler 1998, 2004). Be it modeled as state capacity (Fearon and Laitin 2003) or as an indicator for the opportunity costs to participate in a rebellion (Collier and Hoeffler 1998), the higher the economic development of a country, the higher are its chances for peace. We therefore assume that (post-conflict) economic development enhances the duration of peace.

Behind the motivation to intervene in civil wars, but also to monitor ceasefires and peace agreements, is the belief that democratic institution can serve as a stabilizing force and can bring lasting peace. An important theoretical argument for the democracy-conflict nexus is that democratic institutions can help to create a forum for non-violent bargaining between parties. This helps minority groups to be included in the political process and decision-making. Also, institutional constraints on executive power in democracies prevent the executive from excluding political rivals or ethnic minorities. According to Mukherjee (2006: 409), this signals “to potential electoral losers, minorities, and insurgent groups that they cannot be excluded from power in the future, therein reducing their incentives to rebel”.

Empirically, however, findings have not been unambiguous as to whether *democracy* and *democratic institutions* actually do stabilize post-conflict peace. Although

never directly disputed to have a very general positive impact, e.g. Hegre et al. (2001), Schaffer (2004), and others have found an inverted u-shaped relationship between the level of democracy and the probability of war. At medium levels of democracy, they argue, the instability is highest. However, in the context of post-conflict civil peace, we assume that efforts to build democratic institution exert a positive influence.

Characteristics of the War: Other factors that are supposed to determine the longevity of peace after a civil war are directly linked to the characteristics of the previous war. Scholars have found that higher *death tolls* in the previous war significantly shorten the duration of post-conflict peace and led to the recurrence of war (Doyle and Sambanis 2000, Dubey 2002). There are two theoretically different chains of argument for this. The one proposed by Quinn et al. (2007) states that the high casualty rates leave both government and rebels with a recruitment problem because of the higher probability of becoming a casualty themselves. A second argument is tied in with the memory of the survivors. People react to the loss a close relative or friend with hatred and distrust. Therefore, a “revenge hypothesis” predicts that this eradicates the basis for reconciliation and makes the recurrence of war more likely. We therefore assume that a higher death toll is linked to a shorter duration of peace.

Furthermore, the *duration of the previous war* is also found to have an impact on peace duration. Here, however, it is expected to lead to longer instances of peace. Whereas some simply claim that the experience of long war increases the war weariness in a country (Fortna 2004, Hartzell and Hoodie 2005), Quinn et al. (2007) argue – in line with their formal model of civil war recurrence – that the length of the previous war does affect the choice of the protagonists to return to war. The rationale behind this argument is that the previous war is used as a measure for the time required for achieving victory. A previous long war, which seems to inflate the time required to win, has to be compensated by larger benefits from the potential new war for the new civil war to be actually started (Quinn et al. 2007: 178). Accordingly, we hypothesize that the longer the previous war has been, the longer the peace will be kept.

A final characteristic of civil wars that is supposed to have an impact on post-war stability is the *issue at stake* in a conflict. Hartzell et al. (2001) point to identity conflicts, which are dominated by ethnic, religious, or racial questions, and pitch them against what they call politico-economic conflicts, which involve ideological issues and socioeconomic interests (Gurr 1990). However, there is no conclusive evidence. While Licklider (1995) and Doyle and Sambanis (2000) finding that identity wars decrease the duration of peace significantly compared to non-identity wars, other authors (Hartzell et al. 2001, Dubey 2002, Fortna 2004) do not find such a significant difference. In our paper we therefore check the influence of ethnicity, but have no strong priors as to whether it is linked to a recurrence of war or not.

Characteristics of the Settlement: Although scholarly attention has been drawn towards studying the impact of civil war settlements on the duration of peace, results from empirical studies are mostly inconclusive. Whether military victories or negotiated agreements translate into a lower risk for a country to fall back into violent turmoil has not been established once and for all.

That a *decisive military victory* leads to a more stable peace has been found in various studies (e.g. Licklider 1995, Dubey 2002, Hartzell 2007, Fortna 2002, 2004) and can be seen as one of the most consistent results of the literature on the durability of civil peace. However, there are other authors (Doyle and Sambanis 2000, Walter 2004), who do not find a statistically significant effect of the outcome of the previous war on the longevity of peace. Distinguishing between formally negotiated agreements to end a war and informal ones seems to make a difference. Formal peace settlements are more stable. Political commitment can therefore be seen as a factor that contributes to lasting peace (Hoddie and Hartzell 2003). Quinn et al. (2007) have further decomposed these outcomes into rebel victory, government victory, and negotiated agreements with and without peacekeeping forces. They find that rebel victories enhance the chances for a longer lasting peace. Furthermore, they conclude, that “supporting settlements with international

peacekeeping operations does establish a peace that is more durable than the peace that follows government victory” (Quinn et al. 2007: 189).

We base our assumptions on the majority finding, i.e. that a decisive victory provides for a more stable post-conflict situation since we believe that the important difference lies in the structural part. Both, government or rebels have to deal with the risk factors described above. Winners are supposed to have a better opportunity to alter these conditions after a military victory since their political clout is higher. We therefore expect that if a war ends with a victory, peace is more likely to be kept than if a war ends in a truce or a stalemate.

External Influences: The final factors that we deem necessary to explain the duration of post-conflict civil peace are those, which lie outside the war-torn countries’ sphere of influence. One such external factor – at least for part of the time period under consideration in our study – is the *bipolar international system* during the Cold War. In line with others (Hartzell et al. 2001, Fortna 2004), we argue that settlements during the Cold War were less stable than after 1990. The rationale behind this is that when civil wars in third nations were still fought as proxy wars, the superpowers actively channeled arms and aid to the side they favored, thereby holding civil wars at a deadly equilibrium and making peace harder to achieve and keep.

There are two major reasons why third-party enforcement of ceasefires should promote the durability of peace. First, there is the issue of mistrust. *Peacekeeping* forces can help guarantee security to the weaker parties in a post-conflict situation. Walter (2002: 3) stresses that “when groups obtain third-party security guarantees for the treacherous demobilization period that follows the signing of an agreement [...] they will implement their settlement”. Second, in civil wars – even more than in other wars – information is vital. As we know from game theory, uncertainty and the lack of adequate information can have devastating consequences, even leading a country to renewed war, when cooperation really would have been the optimal outcome. Peacekeepers can provide

each of the formerly warring parties with impartial information on – among other things – the process of demobilization and thereby help them to overcome the prisoners' dilemma they face (Quinn et al. 2007). Also, if informational asymmetries cannot be used for the purpose of propaganda, lasting cooperation is more likely to arise out of the gains in mutual trust (Mukherjee 2006).

Notwithstanding their general influence on the duration of war, the central point of this paper concerns our conjecture that the selection of peacekeeping missions into the sample is non-random and biasing results if not accounted for. Therefore, the next subsection further elaborates on our theoretical propositions concerning the sampling of peacekeeping missions and how this might affect the (inconclusive) results that other authors have reported.

2.2 Selection of Peacekeeping Missions

In this paper, we depart from the complaint raised by Fortna (2004) that previous research has been mostly concerned with the successes or failures of peacekeeping missions without taking a closer look on, *first*, how these instances compare to similar cases where no mission was sent to, and *second*, how these peacekeeping missions are decided upon. We claim therefore that previous research has neglected the selection effect of peacekeeping. It generates problems for our model and the models of other researchers, if factors that influence the dependent variable (duration of post-conflict civil peace spells) are also critical for the event in question (peacekeeping) to come about. To explain duration, the selection of peacekeeping forces into the sample has to be explicitly addressed. In the following, we briefly review literature concerning the factors that explain an intervention in post-conflict societies by third actors. We then elaborate on our

propositions that there are two logics of selection present for different interventions that exhibit differing effects on the duration of peace.

What determines where peacekeepers get sent?² Trying to come up with a single model or equation for such diverse decision-making processes clearly is a daunting task and we do not presume that we are able to achieve this. In addition, relatively little comparative scholarly work has been done on the determinants of where peacekeepers are deployed. A remarkable exception is a recent study by Gilligan and Stedman (2003), who quantitatively examine all civil wars after the Cold War era. They find that the UN lives up to its humanitarian mission by stepping into the deadliest conflicts. However, they also find distinct biases to certain regimes and regions. In estimating their model, they include variables measuring structural factors of the country, distinct characteristics of the war and area dummies.

Furthermore, as mentioned above, in order to model the selection of peacekeeping missions into the sample, we assume differing logics of decision-making to apply to missions carried out by the UN versus those carried out by others. The debate, whether the UN acts or should act as a truly international body giving help to where it is needed – as laid out in the UN Charter – or whether it is states' self-interest that also drives the UN (cf. Neack 1995), is of fundamental interest here. First and foremost, the idea and assertion of neutrality has always been a fundamental cornerstone of UN peacekeeping. During the Cold War, this assertion helped to circumvent the deadlock between the superpowers and allowed the UN to fulfill its Charter obligations concerning the maintenance of international peace (Higgins 1993; United Nations 1990). Peacekeeping forces by states, however, are not considered to be neutral arbiters by all means. The rationale behind this argument is the obvious finding that peacekeeping involves costs. Governments are assumed to minimize potential costs and act only in cases where there are potential benefits to be gained, i.e. where their own self-interest lies in. Therefore, we

² For our study, normative considerations do not play a role. We do not want to judge the UN or any nation sending peacekeepers for having sent troops in one case, but not another. This paper looks at the evidence from a positive perspective.

expect that the same factors going into the selection equations are of different importance for the two kinds of peacekeeping – UN versus non-UN administered peacekeeping.

We assume that if (national) interests are touched upon, peacekeeping forces are deployed by the states. Such national interests could be in the form of natural resources or colonial ties. We would therefore expect that a higher natural resource deposit in the country would increase the probability of peacekeeping forces being deployed by non-UN actors. In contrast, natural resources should not increase the likelihood that a UN mission is sent.

Due to the focus on humanitarian issues laid out in the UN Charter, the likelihood of the UN sending a peacekeeping mission should increase with the number of casualties in a civil war as well as with the duration of the previous war. In their study, Gilligan and Stedman (2001: 38) show that “one of the best predictors of UN interventions is the number of deaths in a conflict”. Contrariwise, we assume that the number of casualties is not significantly linked to an increase or decrease in the likelihood that non-UN actors send peacekeeping forces. These are our main theoretical expectations concerning the selection equation.

Theoretical expectations for most of the other independent variables in the selection model do not change significantly from the ones in the duration model and can therefore be summarized as follows. Alongside with Fortna (2004) and Gilligan and Stedman (2003) we hypothesize that a significant victory by one of the sides will significantly decrease the likelihood of a peacekeeping mission, as well as a higher level of democracy and economic development.

Theoretically, there may be many more variables explaining the deployment of peacekeeping mission. However, the variables above are considered to present a tested and parsimonious model of factors influencing the UN’s or a country’s decision. Following the lead of Fortna (2004), we emphasize factors that – on the one hand – help explain decisions made by the international community and such that – on the other hand

– are also likely to have an impact on the duration of post-conflict civil peace. We stress this point because we are convinced that such a specification will profit most from our methodological approach that should overcome the biases present in previous studies.

Summarizing the theoretical discussion above and putting our claims in the nutshell of two general hypotheses, we expect to find in our empirical analysis:

Hypothesis 1: *Peacekeeping decreases the likelihood of failure of peace spells in countries that have emerged from civil war.*

Hypothesis 2: *Ignoring the non-random selection of peacekeeping leads to biased finding with respect to hypothesis 1.*

These two hypotheses are econometrically tested in the following section of our paper.

3 Data, Method, and Analysis

This section proceeds in three major steps. After a very general description of our data and our two dependent variables, we, first, test the hypothesis of the peace-supporting effects of peacekeeping operations with traditional Weibull and Cox semi-parametric proportional hazard duration models. Although our substantive interest lies in the modeling of the duration of peace after a civil war, for reasons already mentioned in the theoretical section above, we also have to account for the binary outcome process of selection into the sample of post-conflict peacekeeping in a second step. In a third step, we combine the models from the two preceding steps by applying a simultaneously estimated duration model with selection (DURSEL) (Boehmke et al. 2006) to our data. In other words, we examine our previous results in light of the selection that potential peacekeepers have to make and show the magnitude of the selection bias by illustrating

the differences in predicted survival rates when one takes the selection equation into account in this final step.

For each of the tree models that we estimate below – Weibull/Cox, Logit, and DURSEL – we, first, introduce the statistical method that we employ to test our hypotheses. Second, we briefly describe the variables we use in the respective analysis and, finally, discuss our findings.

3.1 Data and Dependent Variables

To test our hypotheses, we use data on 114 peace spells after civil wars during the 1945-2000 period.³ We only examine cases where peace has actually been achieved. We are not comparing wars in which peacekeepers were deployed during the fighting. Also, we focus exclusively on civil wars. The effect of peacekeepers on post-conflict interstate war has been analyzed by others (cf. Haas 1986, Wilkenfeld and Brecher 1984, and Diehl et al. 1996). The data are adapted from a dataset put together by Doyle and Sambanis (2000) and expanded and modified by Fortna (2003, 2004), Gilligan and Stedman (2003), and Mukherjee (2006). Accordingly, we follow Doyle and Sambanis' definition in identifying civil wars. Violent conflict is considered to be a civil war if it “causes more than 1,000 battle deaths overall in at least a single year; challenges the sovereignty of an internationally recognized state; occurs within the recognized boundary of the state; includes rebels with the ability to mount organized armed opposition to the state; and has parties concerned with the prospect of living together in the same political unit after the end of the civil war” (Doyle and Sambanis 2000: 783).

Our main dependent variable of interest is *peace time*. It measures the time between the termination of fighting and the start of another war between the same parties or the end of our study. That is, if civil war between the parties has not reoccurred by

³These 114 cases are listed in the appendix.

December 31, 1999, these cases are considered right-censored. Also, if there is another civil war in the same country, but between substantially different parties, the peace between the original parties is not coded as having failed (Dubey 2002). A current example for such a case is the Darfur crisis in Sudan. The outbreak of violent conflict in the Darfur region cannot be considered as the end of the peace agreement between the former North-South civil war parties. As mentioned in the introduction and shown in table 1 below, 47 out of the analyzed 114 cases of post-conflict civil peace fail with the eruption of another war. The average post-conflict civil peace spell in our data lasts 13.9 years before peace breaks down or right-censoring occurs. The shortest peace spells are 51 and 52 days, in Georgia and Liberia, respectively. The longest non-lasting peace is 27.4 years in Rwanda, where it took the conflict parties from January 1964 to October 1990 to go to war once again. The longest peace spell can still be observed in Paraguay, where civil peace has been going strong for more than 50 years. The same holds true for Costa Rica, Greece, and Taiwan, which have stayed on board the peace train for similar amounts of time.

Peacekeeping is our second dependent variable. It is coded using both binary variables for the deployment of a peacekeeping mission and different categories of such missions. The different categories are observing, traditional, multidimensional, or enforcement orientated peacekeeping, as well as UN and non-UN missions. Of the 114 peace spells examined here, international peacekeepers were sent to keep the peace after 40 civil wars. 30 of these peacekeeping missions were UN administered. Interestingly, only seven of the 40 peacekeeping missions took place during the Cold War period. Also, in light of our first hypothesis, it is interesting to note that 24 peacekeeping missions are associated with lasting peace spells, while 16 are not.

Table 1: Dependent Variables

	Total	Peacekeeping		Cold War	
		Yes	no	yes	no
Peace time ⁴	13.9	6.6	17.8	22.2	4.6
...if more war	6.2	4.2	7.2	9.2	2.1

	Total	More war		Cold War	
		Yes	no	yes	no
Peacekeeping	40 35.1%	16 14.0%	24 21.1%	7 6.1%	33 29.0%
No peacekeeping	74 64.9%	31 27.2%	43 37.7%	53 46.5%	21 18.4%
UN peacekeeping	30 26.3%	13 11.4%	17 14.9%	5 4.4%	25 21.9%
No UN peacekeeping	84 73.7%	34 29.8%	50 43.9%	55 48.3%	29 25.4%
Total	114	47 41.2%	67 58.8%	60 52.6%	54 47.4%

3.2 Weibull/Cox Survival Model

Our substantive interest in writing this paper focuses on the question whether peacekeeping by third parties helps post-conflict societies to break the conflict trap (Collier et al. 2003). Is there a negative impact of peacekeeping missions on the recurrence of war? Do other factors matter more than peacekeeping for lasting peace? To answer these questions, we look at the duration of peace spells from the end of a civil war to a renewed outbreak of violence or our censoring date. Our dependent variable in this analysis is the variable *peace time* introduced above.

With respect to our covariates, we try to cover as many of the theoretical arguments on the duration of civil peace spells discussed in the theoretical section above. First and foremost, we use three different peacekeeping indicators to analyze the effects of third party enforcement on the length of post-conflict peace spells. All three different indicators are dummy variables. While the first one distinguishes between no peacekeeping and any peacekeeping operation, the second and the third dummy look specifically at UN

⁴ Average duration of civil peace spells in years.

and non-UN peacekeeping missions. This allows us to analyze whether all peacekeeping operations are or are not the same when it comes to their effectiveness in keeping the peace.

To control for the effect of other factors, we include variables that intend to capture structural conditions or country characteristics as well as independent variables on the recent civil war and the way it ended. Also, we test for the effects the period of the Cold War had on post-conflict civil peace spells. Which variables do we actually use? First, to account for the prior political-institutional history of the country, we measure its degree of democracy as the average Polity score over the five years before the war (*democracy*). To test for the effects of economic development and natural resource dependence or lootable income, we proxy *development* with the average yearly per capita electricity consumption and natural resource dependence using primary *commodity exports* as a percentage of GDP. Second, for the characteristics of the recent civil war, we look at the number of parties involved (*fractions*), i.e. we include a dummy variable, which marks whether the war involved more than two fractions. In addition, we suspect that the type of war could make a difference. Therefore we include a further dummy variable, which distinguishes ethnic, religious, and identity conflicts from ideological, revolutionary, or other wars (*identity war*). Two more war related covariates are the cost of the civil war measured in the number of people – combatants and civilians – who were killed during the war (*death toll*) and the duration of the war in months (*war time*). Last, but not least, a dummy variables capture whether the fighting ended with a *victory* by one side. All these variables come from the extended Doyle and Sambanis (2000) dataset discussed above.

Table 2: Weibull Duration Models of Civil Peace⁵

Models:	(1)	(2)	(3)	(4)	Cold War	
					<i>Yes</i>	<i>No</i>
Peacekeeping	0.934 (0.803)	1.277* (0.775)			-0.287 (1.636)	1.807 (1.352)
UN peacekeeping			0.431 (0.770)			
non-UN peace'ing				0.959 (1.065)		
Democracy	0.052 (0.063)	0.045 (0.057)	0.053 (0.062)	0.031 (0.065)	0.071 (0.085)	-0.026 (0.094)
Development	0.001* (0.001)	0.001** (0.000)	0.001** (0.001)	0.001* (0.001)	0.002** (0.001)	0.001** (0.000)
Commodity exp.	-3.356 (2.920)	-2.883 (2.420)	-3.238 (3.434)	-3.722 (2.806)	1.399 (4.739)	-4.485 (4.153)
Identity war	-0.599 (0.692)	-0.553 (0.587)	-0.720 (0.679)	-0.576 (0.689)	-0.728 (0.905)	-0.615 (1.014)
Fractions	-0.381 (0.675)	-0.678 (0.604)	-0.340 (0.700)	-0.418 (0.707)	-0.210 (0.891)	-1.032 (1.170)
War time	0.004 (0.004)	0.007 (0.004)	0.003 (0.004)	0.005 (0.005)	-0.003 (0.008)	0.006 (0.005)
Death toll	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	-0.000 (0.000)
Victory	3.128*** (0.902)	2.679*** (0.839)	2.726*** (0.814)	2.943*** (0.783)	2.712** (1.363)	1.611 (1.449)
post-Cold War		-1.311* (0.716)				
Constant	7.692*** (1.283)	8.182*** (1.226)	8.171*** (1.182)	7.987*** (1.112)	7.334*** (2.085)	7.913*** (1.837)
ln ρ	- 0.498*** (0.111)	- 0.403*** (0.104)	- 0.507*** (0.110)	- 0.509*** (0.109)	-0.291** (0.144)	-0.368** (0.183)
Observations	85	85	85	85	46	39
Log Likelihood	-98.50	-96.93	-99.09	-98.77	-50.09	-42.89

Accelerated Failure Time Weibull model with two-tailed t-tests. Robust standard errors using the Huber and White heteroskedasticity-consistent covariance matrix as well as clustering on countries (assuming that observations between countries are independent, but not necessarily within countries) in parentheses. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$.

So, what do we find when analyzing our data on the duration of civil peace spells using an accelerated failure time Weibull model? Peacekeeping does not seem to matter much. Even

⁵ The results from the Cox semi-parametric model are not reported, but available on request. Even though the flexible Cox model has the advantage that it does not specify the particular distribution of the underlying survival rate, graphical inspection and Wald tests point us to the Weibull model. In fact, a comparison of the coefficients from the Weibull model and the hazard rates from the Cox model reveal no substantial differences between the estimates from the two models.

though five out of six peacekeeping coefficients have the correct algebraic sign⁶, peacekeeping has only a significant positive effect on peace time in model 2, where we control for the Cold War. On the other hand, economic development and the outcome of the civil war clearly make a difference. Peace spells in developed countries and after civil wars that ended with a victory of one of the fighting parties last significantly longer. However, in the post-Cold War period, the influence of victories on peace time has vanished, while civil peace spells during the Cold War were on average significantly longer lived than in the decade after the fall of the Berlin Wall. Given that our dataset covers only one post-Cold War decade, but the whole Cold War, this finding might seem not too surprising.

One more finding to note is the rejection of the null hypothesis that the shape parameter $\rho = 1$ (or natural logarithm of $\rho = 0$). This strongly implies duration dependence, i.e. that the underlying hazard rate is not flat. The probability that there is civil peace at time t significantly depends on whether there was civil peace at time $t-1$. This is not only an interesting and important finding in itself, but will give us an additional clue whether the selection of peacekeeping missions is ignorable or not. If it is ignored even though we may not, this cannot not only bias the estimates of error term and the parameters in unknown directions, but also falsely indicate the duration dependence of peace spells when there actually is none. While the stand-alone duration model reports a significant ρ , it might turn out to be insignificant after all once we control for the selection mechanism in subsection 3.4.

3.3 Selection Model

Having analyzed the effects of peacekeeping on the duration of post-conflict civil peace spells ignoring the non-random distribution of peacekeeping missions, we now turn to

⁶ Positive coefficients of a accelerated failure time model imply that the respective independent variable increases the duration of civil peace (Box-Steffensmeier and Jones 2004).

modeling and testing the selection equation. Why do peacekeepers try to keep civil peace in some post-conflict situations and not in others? Why are they sent to some countries and not to others? Why has there been variation in the probability of peace keeping missions over time?

While it is important to specify the stand-alone selection model as good as possible, sound specification of the probability to take peacekeeping action becomes vital when estimating the selection and duration equations simultaneously in the next step of our empirical analysis. Therefore, we want to get it right the first time. For that we build on the selection models put forward by Gilligan and Stedman (2003) and Fortna (2004), including variables on the civil war that came to an end and the way it ended, as well as political-institutional, economic, and societal indicators in our logistic regression. In fact, we use the same covariates as in the duration model in subsection 3.2 above.

The logistic regression results are reported in table 3 below. The dependent variable is a binary indicator of whether a peacekeeping mission was deployed after a civil war. While a negative coefficient indicate that the respective covariate makes peacekeeping less likely, positive coefficients indicate a positive association with peacekeeping.

Table 3: Where Do they Keep the Peace?

Models:	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cold War	
						<i>yes</i>	<i>no</i>
Dep. Variables	All peacekeeping			Peacekeeping <i>UN non-UN</i>		All peacekeeping	
Democracy	-0.05 (0.051)	-0.05 (0.051)	-0.03 (0.055)	-0.12 (0.076)	0.08* (0.043)	-0.09 (0.142)	0.02 (0.076)
Development	0.00 (0.000)	-0.00 (0.000)	-0.00 (0.000)	0.00 (0.000)	0.00 (0.000)	0.00 (0.001)	-0.00 (0.000)
Commodity exp.	-1.25 (2.685)	-0.87 (2.497)	-2.97 (2.925)	-8.17** (3.873)	0.38 (2.700)	-6.86 (7.770)	-1.47 (4.050)
Identity war	0.23 (0.472)	0.44 (0.475)	0.55 (0.579)	0.21 (0.614)	-0.03 (0.563)	0.29 (1.140)	0.51 (0.787)
Fractions	0.91 (0.611)	0.88 (0.611)	1.50** (0.703)	0.99 (0.708)	0.66 (0.706)	1.20 (1.354)	1.85* (0.950)
War time	-0.00 (0.003)	-0.00* (0.003)	-0.01** (0.004)	-0.00 (0.004)	-0.01* (0.004)	-0.02** (0.012)	-0.01 (0.004)
Death toll	-0.00 (0.000)	-0.00 (0.000)	-0.00 (0.000)	0.00 (0.000)	-0.00 (0.000)	-0.00 (0.000)	-0.00 (0.000)
Victory	- 3.32*** (0.640)	- 3.66*** (0.671)	- 3.06*** (0.678)	- 3.89*** (0.727)	-1.79** (0.714)	- 4.82*** (1.524)	- 2.47*** (0.907)
More war post-Cold War		-1.03* (0.624)	- 2.76*** (0.785)				
Constant	0.97 (0.883)	1.55 (0.980)	-0.77 (1.287)	1.57 (0.980)	-1.26 (1.037)	1.85 (2.448)	0.90 (1.436)
Observations	109	109	109	109	109	58	51
Pseudo R ²	0.35	0.38	0.48	0.40	0.19	0.53	0.25
Log Likelihood	-46.31	-44.81	-37.29	-38.80	-44.38	-10.07	-24.94

Logistic regressions with two-tailed t-tests. Robust standard errors using the Huber and White heteroskedasticity-consistent covariance matrix as well as clustering on countries (assuming that observations between countries are independent, but not necessarily within countries) in parentheses. *** = p 0.01, ** = p < 0.05, * = p < 0.1.

Most obvious and also very intuitive finding is that peacekeepers do not get sent to where a civil war has ended with a clear victory of one of the fighting party involved in the war. Has a conflict been settled this way, foreign political leaders most probably do not perceive the need for peacekeeping. When we remind ourselves of the findings reported in table 2, this perception actually seems to be very reasonable. After all, post-victory peace spells last significantly longer than those that follow less decisive conflict

settlements – with or without peacekeepers trying to keep the civil peace. What else is worth mentioning? Controlling for the influence of all other covariates, peacekeeping seems to be less probable after the Cold War. Also, decision makers seem to use foresight when it comes to sending peacekeepers to a country that has just boarded the civil peace train. The reoccurrence of civil war and peacekeeping missions are negatively correlated at least. This finding adds grist to the mill for our claim that the decision to commit peacekeepers and the duration of peace are not independent, but have to be estimated simultaneously with a selection duration model.

Two more interesting results can be teased out of our data when distinguishing between UN and non-UN peacekeeping decisions on the one hand and Cold War and post-Cold War decisions on the other. It seems that the peacekeepers of the UN tend to get send to or stuck with the harder peacekeeping cases compared to their non-UN counterparts. As theoretically expected, we see a negative sign on the coefficient for commodity exports (as proxy for richness of natural resources) for the UN, whereas a higher percentage of primary commodity exports increases the likelihood of non-UN peacekeeping (although the coefficient does not reach statistical significance). Also, peacekeepers seem to have become more ambitious in the post-Cold War period, getting dispatched after conflicts that lasted longer and involved more fighting parties than during the Cold War. However, this might not only be due to a change in ambition, but also a change in civil wars since 1990.

3.4 Duration Model with Selection

Having analyzed the selection and duration equations separately above, we now turn to analyze them simultaneously in order to test hypothesis 2 and to account for non-random sample selection caused by the decision to participate in peacekeeping operations or not. As mentioned above, for this we employ the FIML Weibull selection duration model developed by Boehmke et al. (2006). It simultaneously estimates the selection outcome

(peacekeeping) and the duration outcome (length of post-conflict civil peace). This procedure is analogous to the Heckman selection model (Heckman 1979) for OLS and performs in Monte Carlo tests better than the alternative, i.e. ignoring the selection bias (Boehmke et al. 2006). In fact, ignoring the bias introduced by the non-random selection of peacekeeping missions, cannot only bias the estimates of the error term and the parameters in unknown directions, but falsely indicate the duration dependence of peace spells when there actually is none.

Table 4 presents the results of our simultaneously estimated selection duration model. Both, the selection and the duration equation are specified similarly to the respective equations in our non-simultaneously estimated models above. Also, the interpretation of the reported coefficients is analogous to the interpretation of the coefficients from the simple Logit and accelerated failure time Weibull models.

Table 4: Duration of civil peace spells revisited (continues on next page)

Models:	(14)	(15)	(16)	(17)	(18)	(19)
					Cold War	
					yes	no
<i>Selection</i>						
Dep. Variables	All peacekeeping		Peacekeeping		All peacekeeping	
			UN	non-UN		
Democracy	-0.027 (0.026)	-0.024 (0.036)	-0.065 (0.045)	0.036 (0.023)	0.012 (0.058)	Does not converge
Development	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	
Commodity exp.	-0.930 (1.594)	-1.878 (2.198)	- (1.928)	0.113 (1.426)	-0.926 (4.297)	
Identity war	0.131 (0.228)	0.438 (0.304)	0.205 (0.318)	0.025 (0.234)	0.295 (0.593)	
Fractions	0.602* (0.327)	0.845** (0.380)	0.740** (0.344)	0.471 (0.318)	1.199* (0.628)	
War time	-0.002 (0.002)	-0.005** (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.004 (0.003)	
Death toll	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	
Victory	- 2.072*** (0.377)	- 1.939*** (0.409)	- 2.201*** (0.360)	-0.778** (0.315)	- 1.800*** (0.591)	
post-Cold War		1.748*** (0.508)				
Constant	1.153** (0.530)	0.157 (0.704)	1.261** (0.534)	-0.501 (0.462)	1.322 (1.087)	
Observations	109	109	109	109	51	

Table 4 (continued)

Models:	(14)	(15)	(16)	(17)	(18)	(19)
					Cold War	
					yes	no
<i>Duration</i>						
Dep. Variable			Peace time			
Democracy	-0.030 (0.068)	-0.030 (0.067)	-0.017 (0.076)	0.059 (0.201)	0.065 (0.107)	Does not converge
Development	0.002*** (0.001)	0.002*** (0.001)	0.002** (0.001)	0.002* (0.001)	0.002** (0.001)	
Commodity exp.	-3.655 (4.678)	-3.307 (4.554)	-3.880 (6.309)	-17.910 (22.041)	-4.358 (4.754)	
Identity war	- 2.572*** (0.935)	- 2.551*** (0.902)	-1.765* (0.997)	-3.510 (2.600)	-2.387* (1.253)	
Fractions	-0.450 (0.982)	-0.530 (0.944)	-0.645 (1.514)	2.362 (2.394)	0.561 (0.767)	
War time	0.005 (0.006)	0.005 (0.005)	0.007 (0.006)	-0.013 (0.016)	0.014 (0.009)	
Death toll	-0.000* (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	
Victory	0.377 (0.835)	0.415 (0.864)	0.021 (1.231)	2.347 (1.772)	2.121*** (0.792)	
Constant	10.195** * (1.494)	10.234** * (1.438)	9.486*** (1.777)	11.379** * (3.356)	7.917*** (2.288)	
α	1.000*** (0.000)	1.000*** (0.000)	1.000*** (0.000)	1.000*** (0.000)	1.000*** (0.000)	
$\ln \rho$	-0.396** (0.172)	-0.371** (0.168)	-0.215 (0.172)	-0.395 (0.576)	-0.334 (0.291)	
Observations	109	109	109	109	51	
Log Likelihood	-192.1	-182.6	-156.9	-93.42	-119.9	

Accelerated Failure Time Weibull model with two-tailed t-tests. Robust standard errors using the Huber and White heteroskedasticity-consistent covariance matrix as well as clustering on countries (assuming that observations between countries are independent, but not necessarily within countries) in parentheses. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$.

At first glance, the results for the selection equation do not look too different from the one reported in table 3. On closer inspection, however, one can notice at least four differences. First, the estimated coefficients are smaller almost across the board. Second, the fractions variable turns significant in all models except for one (model 17). It seems that the number of fighting parties does increase the likelihood of peacekeeping not only when we control for the Cold War. Third, the victory coefficients are substantially

smaller, indicating a non-ignorable bias in the Logit model, when we do not simultaneously estimate the duration equation. This is a clear sign of bias in the stand-alone Weibull model and an accolade for our modeling approach. Finally and most surprisingly, the algebraic sign of the post-Cold War variable has changed. The likelihood that political leaders commit peacekeepers to post-civil war countries has, in fact, increased after the Cold War and not decreased.

What about our real equation of interest? What determines the length of post-conflict civil peace spells? Well, economic development does indeed keep civil peace alive. However, the positive effects of civil war settlement by victory wash out almost completely when we take the selection of peacekeeping missions into account. This is another unmistakable sign for the bias in the naïve duration model. It seems that societies could only count on longer rides on the peace train after decisive civil wars during the Cold War. Last, but not least, identity wars make a difference – to the worse. Ethnic, religious, and identity conflicts have a significant propensity to break out again after they seemed to be settled.

The ancillary parameters reported by the FIML selection duration model provide additional vital information about the importance of the selection equation. The parameter α reflects the correlation between the error components of the two models with the null hypothesis that the non-random sample selection is ignorable. The positive and statistically significant α indicates that – as stated in our second hypothesis – there is indeed selection bias that cannot be ignored. The decision to participate in peacekeeping creates non-random sample selection in the analysis of its effects on the duration of post-conflict civil peace. The positive correlation is consistent with our first hypothesis regarding the negative effect of peacekeeping on the likelihood of failure of peace spells in countries that have emerged from civil war. In more formal terms: the higher the log odds that a peacekeeping mission materializes, the higher the expected mean peace duration.

Before we turn to the conclusion, it is worth mentioning one more finding that supports our claim that estimating a naïve duration model to test the effects of peacekeeping on peace spells leads to biased results. In subsection 3.2, we discussed the fact that table 2 implies duration dependence, i.e. that the underlying hazard rate is not flat, but we also noted that ignoring the selection of peacekeeping missions can falsely indicate the duration dependence of peace spells when there actually is none. It turns out that the ρ s reported in table 4 are much smaller and only two of the five are still significant. Not only might duration dependence in peace spells be overestimated when analyzed without the FIML selection duration model, but duration dependence might not be present at all.

4 Conclusion and Outlook

This paper illustrates the importance of taking into account the decision to deploy peacekeeping forces when evaluating whether peacekeeping has an effect on the duration of peace. Our findings support both hypotheses posited in the theoretical part. First, it is found that peacekeeping actually decreases the likelihood of a failure of peace spells in countries that have escaped civil war. Comparing the results from the Weibull duration model and the Logit selection model with the simultaneously estimated FIML Duration Selection model, our second hypothesis is confirmed. An interesting finding in this respect is that for the ancilliary parameter ρ the hypothesis of duration independence ($\rho = 1$) cannot be rejected as soon as we control for the selection process.

The most important general finding that appears from our study is that the consequences of sample selection for duration analysis should be paid more attention. An outlook on future research would include the addition of better and more detailed indicators of peacekeeping and peace settlement; the testing of interaction effects as well as regional control dummies.

After all, our empirical findings render it obvious that when Bob Dylan sings about Satan coming as a man of peace, he is definitely not singing about peacekeepers.

5 Literature

{process?\${endnote_failure#199}}

6 Appendix

Country	Ceasefire	More war	Country	Ceasefire	More war
Paraguay	1947	0	Yemen	1986	0
India	1948	1	Indonesia	1986	1
Costa Rica	1948	0	Sri Lanka	1987	1
Yemen	1948	1	Burundi	1988	1
Greece	1949	0	Namibia	1989	0
China	1949	0	Nicaragua	1989	0
Indonesia	1951	0	Sri Lanka	1989	0
China	1951	0	Romania	1989	0
Burma	1952	1	Somalia	1991	1
Bolivia	1952	0	Iraq	1991	0
Philippines	1952	0	Lebanon	1991	0
Indonesia	1953	1	Eritrean	1991	0
Guatemala	1954	1	Ethiopia	1991	0
Argentina	1955	0	Angola	1991	1
Lebanon	1958	1	Morocco	1991	0
Cuba	1959	0	Cambodia	1991	1
Malaysia	1959	0	Yugoslavia	1992	1
Iraq	1959	0	Afghanistan	1992	1
Indonesia	1961	0	Mozambique	1992	0
Algeria	1962	0	El Salvador	1992	0
Colombia	1963	0	Liberia	1993	1
Rwanda	1964	1	Georgia	1993	1
Cyprus	1964	1	Rwanda	1993	1
Dominican R.	1965	0	Israel	1993	1
Congo	1965	1	Philippines	1993	1
Uganda	1966	0	India	1994	0
Congo	1967	1	Bangladesh	1994	0
China	1969	0	Mexico	1994	0
Burundi	1969	1	Yugoslavia	1994	1
Nigeria	1970	0	Georgia	1994	0
Iraq	1970	1	South Africa	1994	0
Yemen	1970	1	Georgia	1994	0
Sri Lanka	1971	1	Azerbaijan	1994	0
Jordan	1971	0	Guatemala	1994	0
Pakistan	1971	0	Yemen	1994	0
Sudan	1972	1	Rwanda	1994	1
Burundi	1972	1	Chad	1994	0

Country	Ceasefire	More war	Country	Ceasefire	More war
Cyprus	1974	0	N. Ireland	1994	0
Cambodia	1975	1	Haiti	1994	0
Vietnam	1975	0	Tajikistan	1994	0
Iraq	1975	1	Moldova	1994	0
Laos	1975	0	Angola	1994	1
Pakistan	1976	0	Djibouti	1994	0
Lebanon	1978	1	Mali	1995	0
Iran	1979	1	Burma	1995	0
Uganda	1979	1	Yugoslavia	1995	0
Congo	1979	0	Yugoslavia	1995	0
Nicaragua	1979	1	Congo	1996	1
Chad	1979	1	Russia	1996	1
Zimbabwe	1979	1	Philippines	1996	1
Burma	1982	1	Liberia	1996	0
Iran	1982	0	Sierra Leone	1996	1
Thailand	1984	0	Central Africa	1997	0
Zimbabwe	1984	0	Congo	1997	1
Ethiopia	1985	0	Papua New G.	1997	0
Nigeria	1985	0	Cambodia	1998	0
Uganda	1986	0	Sierra Leone	1999	1