Understanding the Livelihoods of Former Insurgents: Aceh, Indonesia

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Preface

The reintegration of former combatants into civilian life is essential to ensure durable peace and stability when war ends. After the signing of the 2005 Helsinki peace agreement that brought to an end the thirty year-long armed conflict between the Government of Indonesia and the Free Aceh Movement (GAM), a range of programs were implemented, aimed at "reintegrating" former combatants. Assistance by government and donors valued at approximately US$ 40 million was delivered to ex-GAM combatants, political prisoners and other former conflict actors. Six years into the peace process, most ex-combatants are employed and have returned to the occupations they held before joining the war – mainly farming and agricultural wage labor. However, the reach of assistance in the field has been uneven, and many ex-combatants claim not having received any form of assistance. Despite overall high employment levels, ex-combatants on the average have lower incomes than the civilian population.

This paper aims at deepening our understanding of the mechanisms of economic reintegration in general, as well as contributing to discussions among donor agencies and policy-makers as to how to consolidate the gains of peace in Aceh. It does not evaluate the impact of reintegration programs in Aceh. Instead, it looks into other factors that may have contributed to the current economic status of former combatants, by examining why certain groups of ex-combatants are better-off economically than others. In particular, this paper argues that substantial differences in the impacts of war on the population at large across areas shaped livelihood opportunities and economic strategies of ex-combatants after the peace agreement. The study draws from the results of a large survey of 1,075 former combatants, 756 village heads and 3,046 civilians, commissioned by the World Bank in July and August 2008.

Adrian Morel

Conflict and Development Team

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The paper has benefited from the support of many individuals and institutions. From its inception, the project has been supported by Patrick Barron, who provided critical backing for the project but also vital conceptual inputs and invaluable feedback at each stage of the project. Scott Guggenheim was also instrumental in his support the project and for his feedback from the beginning to the completion of the project. Throughout the course of the project, important institutional support has been provided by Victor Bottini and Susan Wong. The surveys were developed in collaboration with Macartan Humphreys, Laura Paler, and Jeremy Weinstein with additional inputs from Makiko Watanabe and Adrian Morel who were instrumental for the effective implementation and management of the survey under challenging conditions. In their roles as managers, Adrian Morel, Rob Wrobel, Dave McRae, and Renaud Rodier were key reasons for the successful implementation of the project. The surveys themselves were carried out by survey firm Nielson. Special thanks are due to Marzi Afriko, Zejd Muhamad, Imron Rasyid, and Nurul Hidayah who comprised the research team that helped to carry out the qualitative fieldwork and were instrumental in the initial analysis of the qualitative data.

Muslahuddin Daud and Teuku Zukhradi Setiawan were instrumental in arranging meetings with key individuals as well as providing useful feedback. Andi Yoga Tama, Ambar Mawardi, Inge Tan, Sri Kusumastuti Rahayu, and Siti Rahmah provided excellent logistical support. The project benefited from the feedback from the Harvard-MIT-Yale Conference on Civil War (2007), the World Bank's Conflict and Development team Brownbag Seminar Series, and the Center for Peace and Conflict Resolution Studies. Jesse Grayman, David Lynch, and Sandra Sequeira provided useful feedback on the project. The author would like to thank Alexander Marc and Marcelo Fabre for excellent comments on the paper.

Finally, the author would like to acknowledge the time and thoughts shared by the numerous respondents in both the quantitative and qualitative portions of the project. Respondents cannot be individually acknowledged and are kept anonymous due to the sensitive nature of the topics covered in this paper.

Although the paper was made possible by the contributions of the aforementioned individuals and organizations, any mistakes in the paper are due to the author. Furthermore, the views expressed in this paper should be attributed only to the author and do not reflect the views of the World Bank.

Executive Summary

This paper seeks to understand the nature and determinants of the livelihood outcomes of former insurgents in Aceh, Indonesia. In August 2005, the Free Aceh Movement (GAM) and the Indonesian government signed a Memorandum of Understanding (MoU) ending almost three decades of war. Among the priorities stipulated in the MoU and underscored by policymakers in Aceh was the reintegration of ex-combatants into civil society and the productive economy to prevent a revival of the conflict. Despite the importance of economic reintegration of former combatants to post-war contexts, our understanding of economic reintegration remains undeveloped, both in general and in Aceh. Based on extensive fieldwork from 2006 to 2008 and a unique quantitative dataset of ex-combatant and civilian respondents, this paper aims to improve our understanding of post-conflict reintegration in Aceh as well as in post-war contexts in general.

This policy paper asks two main questions: (1) What is the current economic state of former combatants in Aceh? and (2) Why are some ex-combatants more economically successful than others? In addressing these two questions, the paper employs statistical analyses to characterize the current conditions of former combatants and extensive fieldwork in nine purposively selected villages to qualitatively explore the mechanisms that explain variation in ex-combatants' economic outcomes. The analytical framework developed from this research and associated hypotheses were then tested on a statistically representative dataset of 1,075 former combatants, 3,046 civilians, and 756 village heads. This dataset, called the Aceh Reintegration and Livelihood Survey (ARLS), was commissioned by the World Bank to examine both the livelihoods of former combatants as well as the impact of the BRA-KDP reintegration program.

Main Findings

After returning from the war in 2005, ex-combatant men found themselves with significantly fewer assets, more injuries, and lower educational attainment on average than civilian men. On average, ex-combatants fought for 6.3 years, during which time they forewent earnings opportunities and often put their existing assets at risk of confiscation and damage. This led former combatants to have roughly Rp. 6.4 million (roughly US$ 650) or 39 percent fewer assets than civilians in 2005 when the war ended. Participation in the fighting also placed ex-combatants at higher risk of injury and led to lower educational attainment, particularly among younger combatants.

In 2008, three years after the war ended, former combatants aged 22 to 30 had a significantly higher rate of employment and income level than their civilian counterparts. There were no significant differences in income or employment between ex-combatants and civilian men aged 31 and above. The higher rate of employment and incomes of young, male ex-combatants appears to be due to the greater ability of young civilian men to rely on their families for support. Young ex-combatants' households had fewer assets in 2005, thus necessitating higher levels of labor market participation than their civilian counterparts.

Although former combatants in the 22 to 30 age group have better employment and income figures than their civilian counterparts, former combatants continue to have significantly less wealth than civilians across all age groups with the disparity in assets between civilians and ex-combatants persisting through 2008.

Those ex-combatants with fewer assets and lower educational levels appear to have fewer choices available to them and are associated with lower incomes. Among the most pressing concerns that shaped ex-combatants' decisions after the war was the lack of capital and liquidity that could help them to meet their consumption needs. Thus, former combatants were significantly more likely to be engaged in short-term economic activities that could provide needed liquidity, but which yield lower incomes in the long run. Among former combatants, those who returned from fighting in 2005 with fewer assets had significantly lower incomes in 2008 than their comrades with more assets. In terms of human capital, while education is associated with higher incomes among civilians in the long run, this association does not exist among ex-combatants in the short period after the signing of the MoU.

Asset levels in 2005 are correlated with higher incomes and longer-term economic activities (requiring more than six months to yield a return) for both civilian and ex-combatant men in 2008. This would suggest that initial post-war capital endowments allow some civilians and ex-combatants to engage in longer-term economic activities, which have a higher long-term income potential.

Along a similar vein, expanding access to capital via bank loans and informal loans is associated with longer-term economic activities. However, receiving bank loans is not necessarily associated with higher incomes. For ex-combatant household heads, bank loans are positively correlated with higher incomes while bank loans are associated with lower incomes for ex-combatant non-heads of households. This suggests that civilians and ex-combatant household heads utilize bank loans for activities that generate increased incomes while non-household head ex-combatants may be using loans more for consumption. This finding is further buttressed with the result that civilians and ex-combatant household heads who have borrowed from banks are significantly more likely to be engaged in long-term economic activities than non-household head ex-combatants**.** Ex-combatants who receive informal loans have higher incomes, suggesting that informal loans are well allocated for income-generation. It may be that this effect is being weakened due to the potential that informal loans may be a source of social insurance by which communities support community members in need. Indeed, among non-household heads, poorer individuals are more likely to borrow informally, which suggests that informal loans serve this insurance function in Aceh.

Counterinsurgency violence during the war affects the ability of communities to provide assistance and help to former combatants in the post-conflict period. The war profoundly impacted many of Aceh's communities. In some, civilians were largely spared from counterinsurgency violence while combatants suffered from greater destruction of their property. In other communities, where government forces were unable to identify insurgents, GAM combatants were able to hide among the civilian population. This led to worse post-war

conditions for civilians and better outcomes among ex-combatants relative to ex-combatants in communities where violence was applied selectively. After the war, civilians in areas with a large ex-GAM presence were less able to provide assistance to former combatants to help them restart their economic activities. Because communities in Aceh are traditionally a source of informal loans for community members in need of capital, damage to civilian assets made informal loans less available for former combatants.

Despite the conventional wisdom that former combatants are on average doing better than non-combatants due to the rise to political power of former GAM members, connections to the former GAM power structure do not appear to be especially beneficial for most former combatants. They appear to only benefit a narrow group of former officers. Ex-combatants at the officer level tend to have higher incomes, while rank-and-file ex-combatants do not appear to have benefited significantly from their connections to KPA (the former combatants' organization) or the election of former GAM members into district and provincial government positions. While it is possible that the situation has changed since the data were collected in August 2008, it is likely that many rank-and-file ex-combatants have not benefited significantly from the patronage networks that have built a pathway to wealth for better-connected former GAM members. Based on qualitative fieldwork, there are indications that this disparity may already be causing resentment among rank-and-file ex-combatants toward former GAM elites.

Recommendations

a. Targeting

In contrast to the common view that many former combatants are benefiting economically from the rise to governmental power of former GAM affiliates, this paper has found that the number of such combatants is limited to a narrow subset, namely the former officers. The vast majority of former combatants have significantly fewer assets than their civilian counterparts. This has been mitigated in part by the fact that young former combatants are more likely to work resulting in higher incomes than their civilian counterparts. **Because of the persistence of the disparity between former combatants' and civilians' assets, it is important that the government, the international community, and local NGOs continue to examine how to buttress the economic outcomes of former combatants.** Special attention should be paid to rank-and-file ex-combatants in the interior hinterlands where access to power structures is more limited.

While it is important to continue to pay special attention to the livelihoods of former combatants, this need not necessarily imply transfers to former combatants. Because civilians in villages with large numbers of former combatants are also likely to have experienced welfare losses during the war, civilians in former GAM strongholds also have acute development needs. Furthermore, because informal mechanisms of social insurance appear to be able to handle the needs of civilians and ex-combatants in areas that experienced the war less intensely than in areas of heavy fighting and strong GAM presence, **future development and economic reintegration efforts should jointly target civilians and ex-combatants in villages that experienced heavy fighting.** Broad targeting would also help to strengthen the role of communities as sources of

social insurance and capital for poor individuals, including many ex-combatants. Assisting villages that experienced selective violence against ex-combatants may not be as efficient since those villages are better able and indeed more likely to assist ex-combatants to restart their economic activities.

b. Interventions

Nearly five years after the signing of the Helsinki Memorandum of Understanding, former combatants have mostly met their basic economic needs. Despite this progress, many ex-combatants have yet to transition beyond short-term economic activities that have low barriers to entry, but yield smaller returns. **It is thus necessary for policymakers to continue support the transition from short-term activities to investment in longer-term activities.**

One of the key findings of the paper is that access to capital remains a constraint on the income-generating activities of both civilians and former combatants. Greater access to capital is correlated strongly with longer economic activities. **The government and international community should continue to work to expand access to capital particularly to underserved regions that have experienced heavy fighting that decimated their capital endowments.**

Given the growing disparity and accompanying resentment between well-connected former GAM members and rank-and-file former GAM fighters, **it is important to ensure that assistance is delivered through mechanisms that can directly deliver benefits to rank-and-file ex-combatants rather than via existing power structures.** Similarly, in villages that were heavily affected by the fighting, it is important that interventions be designed to prevent exacerbating disparities between civilian and ex-combatants, to avoid generating tensions between them.

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1. INTRODUCTION AND OBJECTIVES

From 1976 until 2005, the Free Aceh Movement (*Gerakan Aceh Merdeka*—GAM) mounted an armed insurgency seeking independence for the province of Aceh from Indonesian. In August 2005, a peace agreement known as the Helsinki Memorandum of Understanding (MoU) brought an end to the war that had claimed thousands of lives. Among the key provisions of the accord, the Indonesian government, GAM, and outside observers agreed that former combatants would need satisfactory livelihoods to help ensure that they would not take up arms again. Since past agreements had broken down into renewed violence, hopes for a sustained peace rested as much on its successful implementation as on the actual terms of the agreement. Towards this end, international organizations have worked with the government to develop projects promoting the livelihoods of former combatants.[1] Although international organizations have accumulated invaluable knowledge and experience in addressing the problems of economic reintegration, there are still large gaps in our understanding of what leads to different livelihood outcomes among former combatants in various contexts.

The objectives of this paper are to deepen our understanding of economic reintegration in general as well as to contribute to the ongoing discussions among policymakers on how to consolidate the gains in peace in Aceh. This paper is organized around two main research questions: (1) What is the current economic state of former combatants in Aceh? and (2) Why are some ex-combatants more economically successful than others?

Although reintegration of ex-combatants involves a range of intertwined social, political, military, and economic issues, this paper examines primarily the economic facets of reintegration to allow for a focused examination of a particular aspect of reintegration that is of interest to policymakers and scholars alike. This focus on economic reintegration is not to ignore other vital aspects of reintegration, but, rather, it allows for the setting of more manageable bounds on a wide-ranging and complicated topic. Indeed, this paper will highlight the importance of social bonds, political reconciliation, and persistent security issues to the economic outcomes of former combatants.

1.1 Overview of Methods

To address the primary research questions, this paper employs both qualitative and statistical methods. This research project is part of a larger research initiative that generated a unique statistically representative survey of 1,075 former combatants, 756 village heads, and 3,046 civilians. The survey, called the Aceh Reintegration and Livelihood Survey (ARLS), was enumerated in July and August 2008 by the survey firm Nielson and was commissioned and supervised by the World Bank's Conflict and Development team.[2] In addition to the survey, this paper relies on a series of 30 focus group discussions and over 100 in-depth interviews with former insurgents,

[1] It is important to note the caveat that the provision of economic opportunities to former insurgents does not guarantee that violence does not emerge anew.

[2] The ARLS includes an evaluation of the BRA-KDP reintegration program conducted by Patrick Barron, Macartan Humphreys, Laura Paler, and Jeremy Weinstein and this study of former combatants' livelihood outcomes. The ARLS was coordinated under the overall leadership of the World Bank's Patrick Barron.

former militia members, civilians, businesses, and government officials carried out by our research team from 2006 to 2008. These interviews and focus group discussions were carried out at the provincial, district, and village levels to examine the interconnections between actors at each level.

Given the relative lack of knowledge of a well-developed literature on economic reintegration, the qualitative portion is used to generate an analytical framework for understanding the potential sources of economic variation among former combatants. After developing this framework and generating testable hypotheses, the paper will assess the hypotheses using the survey data. The empirical portion of the paper will assess the plausibility of the hypotheses generated by this framework as well as other hypotheses in the literature about the behavior of former combatants. While the paper will assess the plausibility of the framework, it will not seek to do theory testing as such (in the sense of causal inference), but rather the focus will be on explaining variation among various economic outcomes of ex-combatants and civilians.

It is important to mention here that this paper will not evaluate the impact of reintegration programs in Aceh. To properly evaluate the impact of reintegration programs on economic outcomes, it is necessary to utilize experimental or quasi-experimental methods that can account for selection bias into the programs that are being evaluated. For example, establishing a simple positive statistical correlation between reintegration assistance and ex-combatant incomes does not account for the potential effect that the program may be captured by elites that are better positioned to access program benefits. Similarly, a negative statistical correlation between reintegration assistance and incomes may be an artifact of effective targeting schemes aimed at more needy recipients rather than an ineffective reintegration program. As evaluating reintegration programs is outside of the scope of this paper, this paper will focus on exploring factors that are correlated with various economic outcomes in order to inform reintegration policy and programs. Fortunately a proper quasi-experimental evaluation of one government-run reintegration program (BRA-KDP) in Aceh has been carried out using the data from the ARLS dataset.[3]

1.2 Overview of Paper

This paper documents significant differences in the impacts the war in Aceh had on ex-combatants and civilians and how these differences shaped the post-war decision-making processes of their households. Because of the overwhelming percentage of the ex-combatant population in rural areas (over 90 percent[4]), particular attention is paid to the agricultural sector. The second section provides summary statistics of former combatants' household and individual characteristics, and economic conditions. In order to place the economic conditions of former combatants in context, the section will include a comparison of former combatants with civilians. After the end of the war, ex-combatants were found to have fewer assets, more injuries, and lower educational attainment than civilians.

[3] See Barron, Humphreys, Paler, and Weinstein (2009) for an evaluation of the BRA-KDP program.
[4] World Bank, (2006, p. 17)

After providing an overview of the economic welfare of former combatants and civilians, an analytical framework is developed in the third section that will be used to understand the variation in economic outcomes of former combatants. The framework will draw connections between the varying degree to which war affects individuals and communities to the post-war decisions and processes that lead to differences in ex-combatants' economic outcomes. In the fourth section, field data from nine village case studies from three districts in Aceh will be marshaled to place the analytical framework in the context of Aceh. In particular, the framework and field data suggest that the more limited physical and human capital endowments constrained the choices of former combatants since they had to maintain enough liquidity to meet their consumption needs rather than being able to invest in more productive activities.

The fifth section will outline various hypotheses that emerge from the analytical framework as well as from the qualitative data and section six will assess the various hypotheses on the statistical evidence from the ARLS data. Thus, section six will provide a broad assessment of the observable implications of the analytical framework developed in sections three and four. In particular, ex-combatants with fewer assets and a lack of access to capital were more likely to have lower incomes and to engage in quickly maturing, but lower return, economic activities. The war also had a profound impact on many of Aceh's communities. In some communities, civilians were largely spared from counterinsurgency violence while combatants suffered from greater destruction of their property. In other communities where government forces were unable to identify insurgents, GAM combatants were able to hide among the civilian population. This led to worse post-war conditions for civilians and better outcomes among ex-combatants relative to ex-combatants in communities with selective violence against combatants. Civilians in areas with a large GAM presence were less able to provide assistance to former combatants so that they could restart their economic activities. Because communities in Aceh are traditionally a source of informal loans for community members in need of capital, damage to civilian assets made informal loans less available for former combatants. The paper will conclude with an examination of the implications of the findings for reintegration and development policy in Aceh as well as for other post-war contexts elsewhere.

2. BACKGROUND

2.1 The War in Brief

Since 1873, Aceh has periodically experienced armed rebellions between local insurgents and the Dutch government and, later, the Indonesian government. The most recent insurgency (1976 – 2005) began after Hasan di Tiro, grandson of the famous anti-Dutch leader Teungku Cik di Tiro, founded the separatist Free Aceh Movement (GAM-*Gerakan Aceh Merdeka*).[5] Aiming to achieve an independent state controlled by ethnic Acehnese and to control the natural gas reserves in the province, GAM employed guerilla warfare to force the Indonesian government to relinquish the territory.[6] When the movement began in 1976 GAM's ranks consisted of a cadre of between 70 and 200 largely well-educated members, led by Hasan di Tiro.[7] From 1976 until 1998, GAM went through two waves of active guerilla campaigns and military setbacks. During this period, the organization morphed from a small, untrained organization to a large well-organized movement of trained guerilla fighters.

In 1998, the chaos following the ouster of President Suharto was viewed as an opportunity to revive the separatist movement.[8] The counterinsurgency violence and human right abuses by government forces during the DOM period gave rise to a new generation of insurgents in the existing GAM strongholds along the east coast.[9] In addition, GAM expanded its recruitment and military operations into the central highland and west coast districts during this time. This expansion out of the largely homogeneously ethnic Acehnese east coast into the more diverse central and western districts served to increase GAM's non-Acehnese ranks. According to some accounts, while this expansion increased the number of TNA fighters, it also changed its composition to include some who were less motivated by ethnic Acehnese nationalism and brought in a more opportunistic profile of recruits in the new areas.[10] With an expanded fighting force, GAM resumed its armed insurgency. The government responded with an integrated counterinsurgency strategy that combined increased military force with non-military concessions including development aid to civilians and peace negotiations with the GAM leadership. In July 2001, President Megawati Sukarnoputri signed a law that granted special autonomy status to Aceh, which allotted 70 percent of gas and oil revenues to the local government and stipulated more direct elections of the governor, district administrators and mayors.[11]

In November 2002, GAM and the government agreed to a Cessation of Hostilities Agreement (CoHA), which was ostensibly adopted to allow peace talks to make progress. With mutual distrust of the intentions of their counterparts, GAM and the government made little progress toward a lasting peace. After little progress in pacifying TNA forces and a failure to reach a peace agreement, the government declared martial law (*Darurat Militer*) on May 19, 2003 and launched

[5] GAM has also been known as Aceh Merdeka (Free Aceh) and the National Liberation Front of Aceh (ASNLF—Aceh Sumatra National Liberation Front). This paper will use the term GAM.
[6] Kell (1995); Aspinall (2009a)
[7] Schulze (2004, p. 4); Kell (1995, p. 65)
[8] Aspinall (2009a, pp. 121-2)
[9] Schulze (2004, p. 16)
[10] Schulze (2004, pp. 16-17); (2009a, pp. 164-6)
[11] See Special Autonomy Law on Nanggroe Aceh Darussalam Law No. 18 / 2001.

a military offensive called *Operasi Terpadu*. During this period, the number of troops stationed in the province rose to 30,000 military soldiers and between 13,000 and 15,000 police officers and paramilitary police troops (*brimob*).[12] The increased government forces had three primary aims: (1) to separate GAM from civilian population centers with the establishment of a large network of garrison; (2) to pursue GAM insurgents deep into their jungle strongholds; and (3) to prevent the smuggling of arms by more effectively sealing the seaways.[13] The surge in government troops reestablished government control over many areas that had a heavy insurgent presence. On May 13, 2004, Aceh's status was downgraded to a civil emergency (*Darurat Sipil*). Although civilian rule was reestablished, the existing troop levels remained unchanged along with the restrictions imposed on civilians during the period of martial law.[14]

On December 26, 2004, a massive tsunami, triggered by a powerful earthquake, struck the province and killed over 150,000 inhabitants of Aceh. In the wake of the disaster, peace talks were revived and eventually resulted in a peace agreement on August 15, 2005 known as the Helsinki Memorandum of Understanding (MoU). By the time the MoU was signed, the war had taken a heavy toll on the civilian population, the insurgents, and the government. Over its duration, the war had claimed an estimated 30,000 lives and during the period of martial law and the civil emergency, the rebel forces sustained heavy losses.[15] While government forces were accused of the killing, torturing, and sexual assaulting of civilians and insurgents,[16] GAM forces themselves were also accused of their own abuses, including killing civilians, kidnappings, extortion, ethnic cleansing of Javanese, and widespread burnings of schools.[17]

As part of the MoU, GAM agreed to disarm and demobilize, while the government agreed to cede greater control over local governance to local authorities and allow the formation of local parties to contest elections in Aceh. Among the key provisions of the MoU is that the government was to be required to "assist persons who have participated in GAM activities to facilitate their reintegration into civil society."[18] Since the signing of the MoU, the peace has held and all non-organic troops (i.e. those who were not permanently based in Aceh) were withdrawn. The elections for the governor and district heads in December 2006 and 2007 and for the local legislature in April 2009 were associated with only smaller incidents of violence, which did not threaten to derail the continued peace process.[19]

2.2 Who are the Former Combatants?

Before delving into the factors that explain the economic outcomes of former combatants, it is useful to take stock of what the population of former combatants looks like. That is, who are the ex-combatants? What are their current economic conditions? How do they compare with their civilian counterparts? This section will provide background information of former combatants based on the ARLS data.

[12] Schulze (2006, pp. 247-8)
[13] Schulze (2006, p. 247)
[14] Human Rights Watch (2004, pp. 9-11)
[15] Multistakeholder Review (2009, p. 100); ICG (2005, p. 1)
[16] Human Rights Watch (2004)
[17] Schulze (2006, p. 244)
[18] See Memorandum of Understanding, Section 3.2.3.
[19] Center for Peace and Conflict Resolution Studies (2009a); Clark & Palmer (2008)

GAM drew support from tens of thousands of Aceh's 4.2 million residents in varying capacities. The number of Aceh's residents who joined the Free Aceh Movement in a military capacity, however, is far fewer. Depending on the criteria used to define who is a former combatant, the estimated number of former combatants can vary significantly. In this study, former combatant is defined as the following:

> Any person who was a member of the military wing of GAM, known as TNA (i.e. had a commander in TNA or was in the military structure), for at least one month between 1998 and 2005.

Civilians are defined as any non-military person falling outside of this definition and can include members of GAM who were not involved in its military wing. Under this definition, the total number of former combatants is estimated to be 14,333 of which 95.3 percent are male.[20] Female combatants, known in Aceh as *inong balee*, comprise 4.7 percent (roughly 680) of all former combatants. Because of the overwhelming percentage of males among the ex-combatant population, much of the statistical analysis in this paper focuses on male ex-combatants and civilians. The small number of observations of females renders statistical analysis difficult to interpret.

Reflecting the relatively strong support for GAM where the insurgency has the longest history, roughly two thirds of former combatants (roughly 9,400) reside in the districts along the east coast of Aceh Province. The west coast districts are home to thirty percent (approximately 4,310) of former combatants, while only 4.4 percent (roughly 630) reside in the central highland districts.

Table 1: Population of Former TNA

	Male + Female	Male	Female
Population	14,333	13,653	680
Province	100.0%	95.3%	4.7%
East Coast	65.6%	65.7%	62.7%
West Coast	30.0%	29.7%	37.3%
Central Highlands	4.4%	4.6%	0.0%

While former combatants range in age from 18 to 70, the vast majority of them are between the ages of 22 and 40. The mean age of male former combatants is 34.5 years, compared with female former combatants who average 30.4 years.

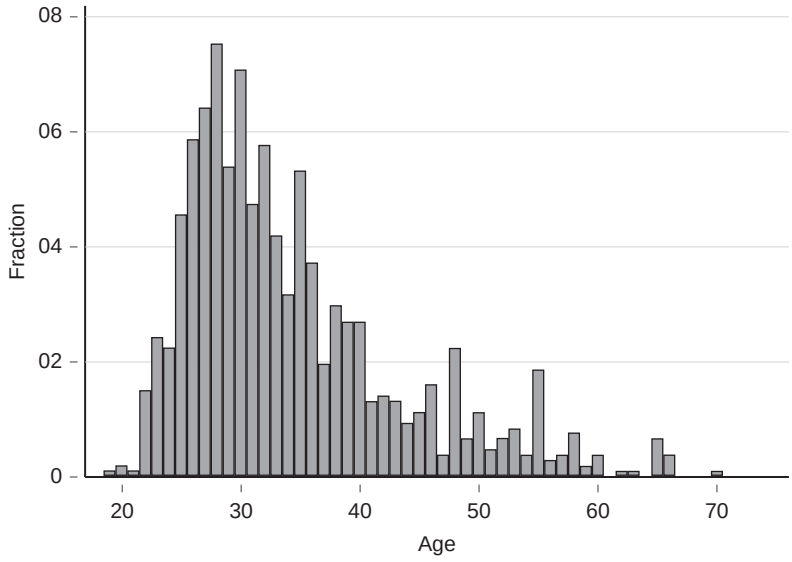
[20] The MoU noted that there were officially only 3,000 former GAM combatants, a number initially provided by the GAM leadership. The stated number was far lower than the actual number of GAM fighters, likely due to a reluctance by GAM leaders to provide accurate information about the strength of GAM forces in case of a breakdown in the peace process. This lower number, however, meant that any official reintegration assistance provided by the Government was estimated based on the 3,000 number rather than the much larger numbers we estimated. This led to the dilution of reintegration resources made available to former GAM fighters.

Table 2: Mean Age of TNA

	Male + Female	Male	Female
Age			
Mean (years)	34.3	34.5	30.4
Proportion (18-30)	43.8%	42.2%	68.6%
Proportion (31-40)	37.6%	38.0%	25.5%
Proportion (41-50)	12.1%	12.5%	3.9%
Proportion (51+)	6.4%	7.3%	2.0%

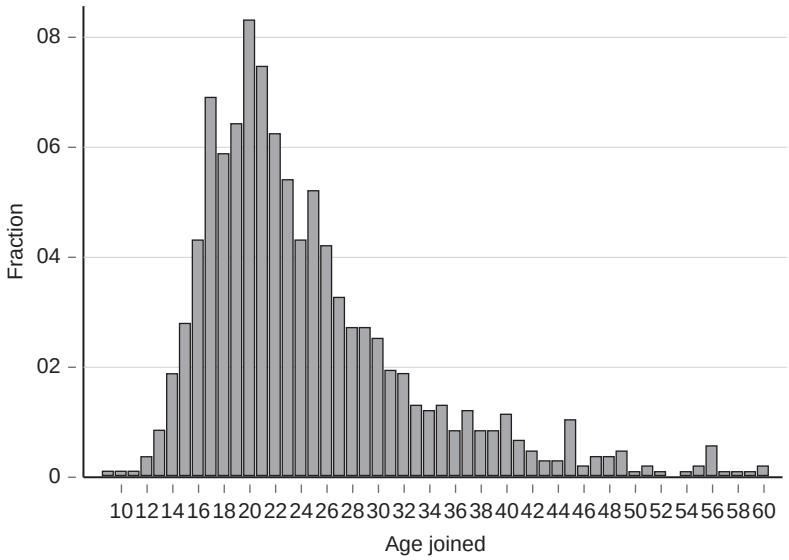
The mean of the male former combatants is skewed higher due to the presence of older former male combatants (Figure 1).

Figure 1: Age Profile of Ex-Combatants



The bulk of former combatants are in the early and middle phases of their economically productive lives. On average, ex-combatants fought for 6.3 years during which time they were largely unable to work and accumulate assets, productive skills or education. A look at a histogram of the ages at which combatants were recruited into the TNA forces shows a significant portion of combatants who joined during the ages when civilians in their cohort were able to attend school (Figure 2).

Figure 2: Age Joined TNA



For combatants who joined during their school age years, their experience in combat meant that they lost the opportunity to attend school. Not surprisingly for males aged 26 at the time of the survey, only 14.2 percent of former combatants had completed high school, compared with 57.3 percent of civilians, while 44.2 percent of ex-combatants and 82.8 percent of civilians had completed middle school. The differences between ex-combatants and civilians are much smaller for primary school, with 87.6 percent of ex-combatants and 96.5 percent of civilians having completed their primary educations.

Experience as a combatant also carries a significantly higher risk of incurring an injury than remaining a civilian. 14.6 percent of ex-combatants reported suffering a conflict related injury, while 3.8 percent of civilians reported sustaining such injuries at some point during the war. Thus, combat experience has a deleterious effect on an individual's human capital through both lower educational attainment and, if the injuries persisted, could result in weakened physical constitution.

2.3 Current Economic Conditions of Ex-Combatants

In the years since the 2005 peace accord, former combatants have returned to their former villages or found new communities in which to settle. While some have found employment working for others, others have started their own income generating activities. What are the current economic conditions of former combatants? This subsection provides a picture of the ex-combatants' economic circumstances. Comparisons of ex-combatants' assets, incomes and educational attainment with civilians can place their welfare in context to determine whether there are advantages or disadvantages of combat experience for post-war outcomes.

Before beginning, it is useful to define specifically what is meant by economic reintegration. Successful economic reintegration refers to a condition in which former combatants' basic needs are provided for (i.e. there is sufficient economic welfare in absolute terms), their welfare is at least on par with civilians (i.e. sufficient relative welfare), former combatants and civilians engage in mutually beneficial economic activities (i.e. they are sufficiently integrated), and their economic condition is sufficiently satisfactory such that economic motivators for armed insurrection have been neutralized.

Given limitations of the data, it is difficult to assess the latter two aspects of economic reintegration. This study will, therefore, focus on assessing the material welfare of former combatants in both absolute and relative terms. In material terms, how successful are former combatants in reintegrating economically since returning from combat? We can begin to answer this question by examining simple differences in the means of key measures of economic outcomes as shown in Table 3 below. In this section, the examination of these summary statistics will elicit several puzzles that can help to probe the underlying mechanisms that drive the variation in outcomes. In subsequent sections each of these puzzles will be examined more systematically.

Table 3: Economic Characteristics (Males 18-65)

	Ex-TNA	Civilian	Difference	Significance
Assets (2005) (Rp.)				
All	10,100,000	16,500,000	-6,380,000	***
Ages (22-30)	10,300,000	18,500,000	-8,260,000	***
Ages (31-40)	8,960,000	14,200,000	-5,190,000	***
Ages (41-65)	12,000,000	16,500,000	-4,500,000	***
Assets (2008) (Rp.)				
All	17,500,000	25,100,000	-7,570,000	***
Ages (22-30)	17,100,000	26,500,000	-9,350,000	***
Ages (31-40)	16,700,000	21,800,000	-5,130,000	***
Ages (41-65)	19,900,000	26,000,000	-6,110,000	***
Land (m^2)				
All	7,530	8,550	-1,020	
Ages (22-30)	7,070	8,570	-1,500	
Ages (31-40)	7,300	8,960	-1,660	
Ages (41-65)	8,910	8,350	560	
Full-Time Employment				
All	85.1%	78.3%	6.8%	***
Ages (22-30)	79.8%	60.2%	19.6%	***
Ages (31-40)	89.1%	87.7%	1.4%	
Ages (41-65)	88.1%	85.5%	2.6%	
Annualized Income (Rp.)				
All	12,700,000	13,500,000	832,842	
Ages (22-30)	12,900,000	7,470,000	5,450,000	***
Ages (31-40)	13,400,000	13,800,000	-429,000	
Ages (41-65)	15,400,000	15,600,000	-267,000	

*Notes: *** significant at p<0.01 ** significant at p<0.05 * significant at p<0.10. Assets are based on an inventory of household assets weighted by typical prices in 2008. Data: ARLS*

Among the most important measures of economic wellbeing are household assets, employment, and individual incomes. To obtain a measure of household assets, an inventory of major household assets was taken both at the time of the survey in 2008 and retrospectively relying on the memory of respondents about the presence of key household assets in August 2005 (at the signing of the MoU) and in 1998 (when President Suharto resigned before the vast majority of GAM's ranks were filled). An index of assets using prices of the most common assets was created to gain a measure of the total assets in Rupiah. While it is an imperfect measure due to unaccounted variation in the value of assets and errors that stem from memory, the index of assets can provide a reasonable estimate of the differences in household assets between groups. The difference in means of assets reveals that households of former combatants who returned from the war in 2005 were significantly less wealthy (roughly Rp. 6.4 million less) than those of their civilian counterparts. Three years later, this disparity in assets has persisted with former combatants possessing approximately Rp. 7.6 million fewer fixed assets. While income levels between former combatants and civilians are roughly comparable overall, former combatants aged 22 to 30 have a higher annual income (roughly Rp. 5.5 million or US$ 550 more) than their civilian counterparts in the same age group. Full-time employment rates for former combatants are higher by 6.8 percentage points than for their civilian counterparts. This result appears to be driven in part by the fact that former combatants aged 22 to 30 have a 19.6 percentage point higher employment rate than civilians. Among men in the age group 22 to 30 who are employed, ex-combatants have a Rp. 2.7 million higher average income than their civilian counterparts.

Although there are significant differences between male former combatants and male civilians in key measures such as incomes, assets and educational attainment, it is not clear to what extent these differences are a result of combatant's experiences of war or whether they are artifacts of a poorer, less educated profile that was attracted to joining GAM. To what extent are the differences between former combatants and civilians due to divergent experiences during the war and to what extent is it due to systematic pre-war differences in assets between the two groups? We can account for pre-war observable differences in individual, household, and village characteristics (i.e. assets in 1998, age, education, whether the village is hilly, number of members of household in 1998, and the district) to obtain a conditional difference in means between former combatant and civilian men. That is, by accounting for the pre-war characteristics of individuals, it is possible to improve confidence in the extent to which difference between ex-combatants and civilians can be attributed to differences in war-time experiences. Table 4 presents the conditional differences between ex-combatants and civilians in the mean values of assets in 2005, assets in 2008, education, land area, full-time employment rates, and annualized incomes.[21] These differences are conditional on the aforementioned pre-war characteristics:

[21] We can estimate this conditional difference in means using an ordinary least squares (OLS) estimator on the following equation to determine the correlation between combatant status and various outcome measures: $y_i = \alpha_{0,i} + \alpha_{1,i} combatant + \bar{X}_i \cdot A_i + u_i$ In the equation above, yi refers to the outcome measures such as assets in 2005, assets in 2008, educational attainment, land area of the household, full-time employment, and annualized income. X is the vector of pre-conflict covariates (i.e. assets in 1998, age, education, whether the village is hilly, number of members of household in 1998, and the district) and A is the matrix of coefficients. The coefficient a1,I refers to the difference in means between combatant and civilians, controlling for the pre-conflict covariates in vector X.

Table 4: Conditional Differences-in-Means between Combatants and Civilians

	All	HH Heads	Not HH Heads
Assets (2005) (Rp.)	-1,971,000**	-2,386,000**	-559,000
Assets (2008) (Rp.)	-2,940,000***	-3,036,000***	-2,840,000
Education			
Primary	-0.9%	-0.9%	-2.6%
Middle	-13.2%***	-7.2%**	-24.0%
High +	-20.7%***	-11.6%***	-39.5%
Land (m^2)	2220	1,645	-361
Full-Time Employment	5.2%**	-3.6%**	6.0%
Annualized Income (Rp.)	2,770,000***	788,000	3,410,000***

*Notes: *** significant at p<0.01 ** significant at p<0.05 * significant at p<0.10. Assets are based on an inventory of household assets weighted by typical prices. All models are OLS regressions. Data: ARLS*

The results confirm the initial findings from the unconditional differences in means from Table 3. As expected, the differences are not as pronounced after controlling for various pre-conflict factors, but the basic differences remain. That is, controlling for pre-conflict observables, ex-combatants are likely to have fewer assets in 2005 and 2008, worse educational attainment, but higher incomes and employment rates than civilians. Some of these differences between ex-combatants and civilians may be accounted for in part by divergent war-time experiences.[22]

[22] These conditional differences-in-means estimates tell us the differences between combatants and civilians, controlling for pre-conflict observables, but do not account for potential selection bias due to unobservable variables related to systematic differences in the type of individual that chooses to join GAM.

3. ANALYTICAL FRAMEWORK

Recent scholarship has improved our understanding of the effects of civil wars on individuals and communities after wars have ended.[23] At the aggregate level, scholars have drawn linkages between civil wars and poor economic performance.[24] To gain a better understanding of the causal processes that link wars to economic outcomes, particularly for ex-combatants, scholars have turned to micro-level evidence. In the microeconomic literature, the strongest findings come from natural experiments that demonstrate the negative effects of becoming a combatant in war through foregone opportunities for skills and education.[25] While such studies have helped to identify some key pathways by which war can hinder post-war economic outcomes of former combatants, less clear is how to reintegrate former combatants into the civilian economy. Where impact evaluations of reintegration programs have been carried out, evidence suggests that such programs have only mixed welfare effects.[26]

Thus, while these studies represent important progress in our understanding of the effects of war on ex-combatants and their reintegration processes, there is still little theoretical or empirical understanding of how civil wars are linked to post-war economic outcomes. In this section, an analytical framework is developed based on insights from the existing literatures on civil wars and development economics to explain variation in the post-war outcomes of former combatants.

In the standard neoclassical economic framework, household production and income are determined by capital, health, skills, technology, and the risk preferences of economic agents.[27] For this reason, economists have focused on access to capital, health,[28] education,[29] and the means of mitigating risk[30] to understand the determinants of variation in welfare outcomes. In developing country contexts, educational infrastructure, capital markets, and insurance markets are often limited. In the context of war, these limitations are often further exacerbated and may be felt even more acutely by combatants and their households. By combining recent insights from the civil war literature that characterize how individuals, households, and communities experience violence with the insights from the development economics literature, a theoretical framework that can help us to understand the post-war challenges that former combatants face

[23] For an excellent survey of the economic dimensions of civil war, see Blattman and Miguel (2009).
[24] Cerra and Saxena (2008) show that GDP drops significantly after countries experience a civil war.
[25] See Blattman and Annan (2009) for evidence based on forced conscription of child soldiers in Uganda. See also Angrist (1990) for evidence based on the Vietnam War draft lottery.
[26] The literature on the evaluation of reintegration programs is not yet well developed with few rigorous studies that use statistically representative data and account for selection biases for program participants. Humphreys and Weinstein (2007) find little difference between reintegration program participants and non-participants in Sierra Leone. In an evaluation of a reintegration program in Aceh, Barron, Humphreys, Paler, and Weinstein (2009) find a significant decrease in the number of poor households in villages that received money for the reintegration program. The latter study examined a reintegration program that did not provide benefits exclusively for former combatants only, but rather to a broader set of 'conflict victims' including civilians acutely affected by the war.
[27] See Banerjee and Duflo (2004) for a review of the determinants of income at both the macro- and micro-levels.
[28] See Thomas and Frankenberg (2002) for a survey of evidence on the returns to health. Correlations between health and incomes are well documented, but there is only limited evidence for a causal link between health and incomes.
[29] See Psacharopoulos and Patrinos (2004) for evidence across numerous developing countries on the positive returns to incomes of education. Duflo (2001) on the positive effects of schooling and education on wages in Indonesia.
[30] See Townsend (1994) for evidence on the extent to which informal village sources of insurance are able to insure poor farmers in India from shocks to individual incomes. Rosenzweig and Wolpin (1993) show that poor farmers insure against individual income shocks by maintaining assets that have both a productive and consumptive purpose.

is developed. The section begins by considering how war affects households and communities before examining how households behave after war.

3.1 The Effects of War on Households

When an individual joins an insurgency, the transformation from civilian to combatant entails significant changes in his or her economic condition. First, joining an insurgency can often increase an individual's risk of being killed or injured.[31] Second, there is an opportunity cost of becoming a combatant since it entails foregoing civilian sources of income or opportunities to gain skills or education. By allocating time to fighting, one has less time to pursue economically productive or educational activities. If combatants are not well compensated during war (through wage or loot), they are less able to accumulate assets. Third, counterinsurgency strategies often aim to punish combatants and rebel collaborators by harming members of their households or destroying their property. If militaries can identify combatants' households, their assets may be seized and their families may be prevented from working.

3.2 The Effects of War on Communities

The ways communities experience violence during civil wars affect the willingness or ability of their members to assist former combatants after returning from fighting. Recent work by Kalyvas (2006) suggests that the level of violence experienced during a civil war depends on the degree to which an area is controlled by insurgents or the government. According to this theory, areas that are in zones of dominant control of either side experience low levels of selective violence, but the areas of asymmetrically mixed control are most likely to experience high levels of indiscriminate violence.[32] In those areas, because the government is less able to selectively identify insurgents in areas of greater insurgent control, the government's counterinsurgency strategy should be more prone to resort to indiscriminate violence. That is, in areas of stronger government control, combatant households are more likely to be targeted by selective violence, whereas in areas of stronger, but incomplete insurgent control, their communities will share the burden of indiscriminate counterinsurgency violence. In such areas of mixed control, combatants can deflect violence onto civilians by hiding among the civilian population and punishing those who help the government to identify insurgents.[33]

Whether violence is indiscriminate or selective has important implications for the relative differences in assets between former combatants and civilians in their communities as well as the ability of civilians to provide assistance for former combatants after wars end. In areas where violence has been selectively applied by the government, combatants are likely to be singled out for violence. Civilians in these areas have a much lower exposure to the violence and can go about their economic activities and accumulate assets and skills. This creates large disparities in assets and skills between combatants and civilians. From the perspective of the government,

[31] It is also possible that one's risk of being injured or killed may decrease from joining an insurgency, although this does not appear to be the case in Aceh.
[32] In Aceh, the only areas that were under full control of the insurgents were in the unpopulated jungles. In the populated areas of Aceh, the government was able to maintain a presence even in areas where insurgents had the strongest control. Thus, areas of the strongest insurgent control were still areas of mixed control.
[33] Kalyvas (2006, pp. 158-60)

selective violence is more strategic than indiscriminate violence since the latter may drive communities toward supporting insurgents whereas the former can create disincentives to join or support insurgents. More specific information, which is often obtained through denunciation, is more likely in areas of stronger government control than in areas where rebels have a stronger presence.[34]

Where rebels have a stronger presence, government forces have a more difficult time distinguishing combatants from civilians, which leads them to be more likely to resort to indiscriminate violence against insurgent strongholds. Thus, in areas where governments have resorted to indiscriminate violence due to difficulties in identifying combatants, combatants and civilians alike will have suffered damage to assets and opportunities to accumulate assets. There will, therefore, be smaller differences in assets between ex-combatant and civilian households as they will both have fewer resources to resume their economic activities after war. Furthermore, because of the high stakes of being identified by the government, insurgents may deter civilians from providing intelligence to the government with the threat and occasional use of force (Kalyvas, 2006, p. 190).

3.3 Household Economic Strategies after War

During civil wars, violence can leave a profound impact on households and communities. As outlined above, in the absence of lucrative means to profit from war, former combatants may (1) have lost opportunities to accumulate assets, (2) have lost existing assets due to counterinsurgent raids, (3) possess poorer education levels and skills, or (4) have suffered injuries. Their communities may have also suffered from lost opportunities to accumulate assets and from damage to assets during counterinsurgent raids where government forces have not been able to distinguish insurgents from civilians.

After civil wars have ended, the violence experienced by former combatant and civilian households and their communities will define many of the constraints and opportunities for former combatants' economic activity. First, the loss of assets and opportunities to accumulate assets leads to a lower initial endowment of assets with which to engage in economic activities. Because developing contexts in general are often characterized by imperfect credit markets,[35] lower endowments of assets will limit the types of economic activities of former combatants. They may, therefore, not be able to engage in high yield activities with higher capital requirements.

Second, ex-combatant households' lack of assets likely means that they are less liquid than their civilian counterparts. This may mean that they may be more likely to take on activities that preserve liquidity rather than commit existing resources to more activities that generate higher returns but mature more slowly.

[34] Kalyvas (2006, p. 203)
[35] See Banerjee and Duflo (2004, p. 479), who suggest that in developing countries, "a substantial fraction of borrowing takes place at very high interest rates."

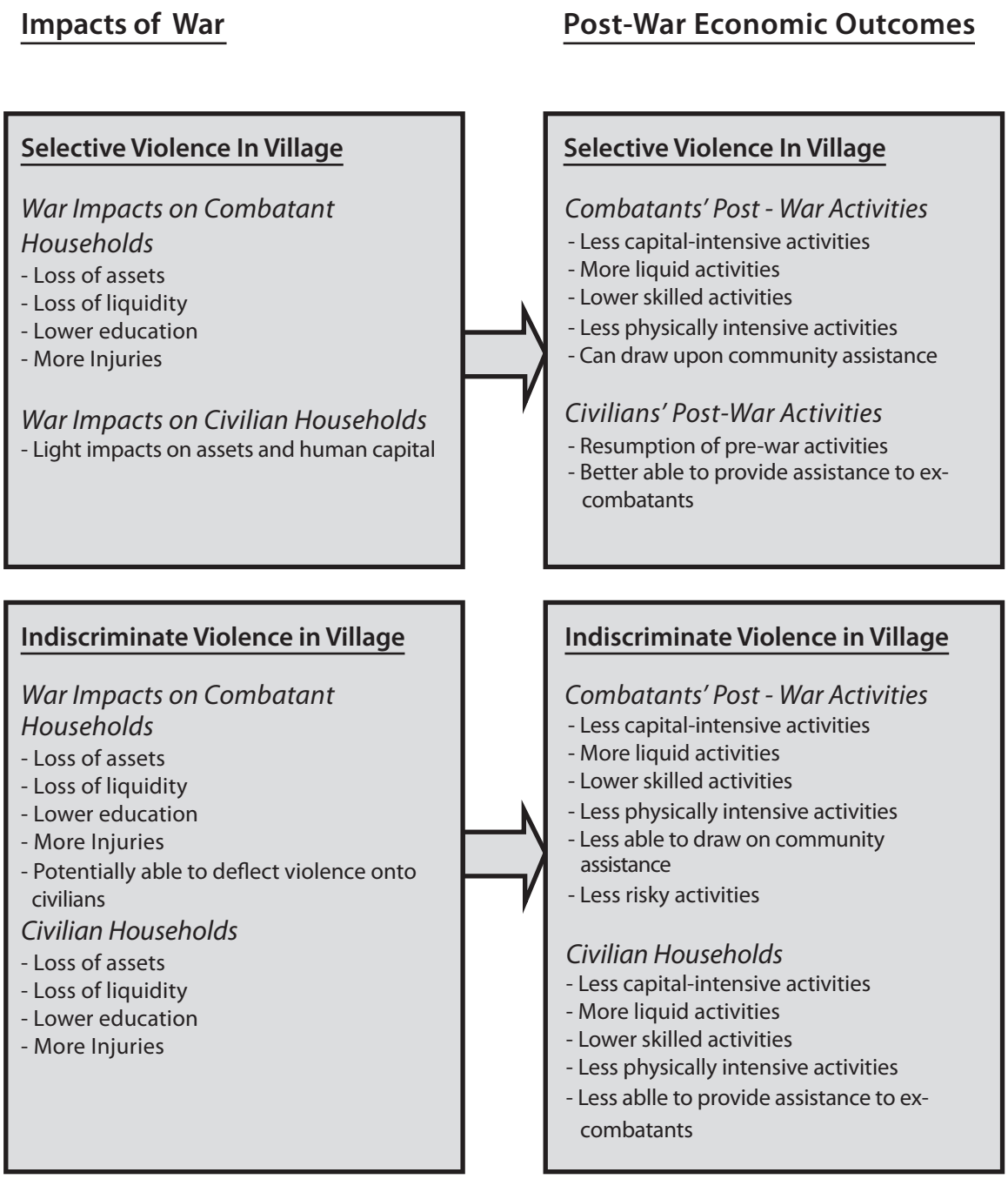
Third, violence experienced by civilians in the communities to which former combatants return may limit the assistance they can garner from civilians to reintegrate. In many developing countries where insurance and capital markets are lacking, households rely on their communities and other social networks to buffer themselves from idiosyncratic shocks such as illness or crop failure.[36] Affected households can receive assistance from their communities until they recover sufficiently. However, when communities as a whole are affected by negative shocks, households cannot turn to others in the community for assistance. In the context of war, counterinsurgency violence that is selective can be characterized as idiosyncratic, while indiscriminate violence can be characterized as affecting entire communities.

3.4 Summary of Framework

The framework developed in this section combines insights from the civil war literature on how violence is experienced by combatants and civilians with insights from the development literature on the mitigation of risks. In particular, communities in which government forces are able to readily identify combatants and their households are likely to have acute damage to combatant households' assets. In such communities, civilians are more likely to be spared acute violence, although they may incur some collateral violence. In contrast, governments are likely to have more difficulty in identifying insurgents in communities with a stronger insurgent presence since insurgents can punish civilians who identify them to government forces. This lack of intelligence can cause governments to resort to more indiscriminate violence against civilians. In such cases, combatants may benefit from being able to deflect counterinsurgency violence away from themselves on to civilians. In these communities, civilians and ex-combatants will have more similar starting assets after the end of wars. Widespread violence against civilians and a larger insurgent presence may also make it more difficult for civilians to provide post-war assistance to ex-combatants. The impacts of war on civilians and combatants and the implications for post-war economic outcomes are summarized in Figure 3.

[36] Rosenzweig and Binswanger (1993).

Figure 3: Model of Post-War Economic Impacts



4. VIOLENCE AND THE ECONOMY IN ACEH

The underlying theme of the framework developed above is that systematic variation in violence during war leads to differences in economic resources and behavior among former combatants. Thus, it is possible to draw linkages between war-time violence and post-war economic behavior and outcomes. How does this framework correspond to observed economic decisions and outcomes of former combatants in post-war Aceh? This section presents qualitative evidence tracing the individual post-war decisions of former combatants as well as their interactions with their communities in nine villages in three districts in Aceh. From July 2006 to January 2007 and again from June to July 2008, a team of researchers[37] carried out a series of semi-structured interviews to identify mechanisms by which to explain variation in the economic behavior and outcomes of former combatants.

4.1 Comparative Framework

In order to account for the unique war-time experiences of the three regions of Aceh the team chose to study a district from the east coast, west coast, and central highlands. In each region, a district that had a large number of former combatants and significant variation in the amount of violence were selected. Based on these criteria, the distrits of Bireuen, Aceh Selatan, and Bener Meriah in the east coast, west coast, and central highlands regions, respectively were chosen for the study. In each of these districts, villages were chosen to maximize variation in the intensity of violence experienced (according to the number of deaths and homes damaged) during the war, conditional on the presence of a minimum of four former combatants. This information was obtained in each district by consulting with local reintegration officials and NGO workers.

In each of the selected villages, at least six interviews and five focus group discussions were conducted from a wide cross-section of former combatants and civilians. Semi-structured focus group discussions (FGDs) were conducted with ex-combatant men above and below the age of thirty to examine the differences across different phases of life as well as civilian men above and below the age of thirty. These FGDs were designed to provide a broad picture of former combatants' perspectives and identify common war-time and post-war experiences among these key groups. A fifth focus group discussion among female civilians provided alternative perspectives that could be used to triangulate the experiences in the village. In addition to the focus group discussions, in-depth one-on-one interviews were conducted with former combatants who were relatively successful and those who were relatively less successful in their economic activities. Similar interviews were conducted of relatively successful and unsuccessful civilian men. In essence, these interviews were used to construct personal histories of individuals, which could help to identify the processes by which some ex-combatants and civilians were successful while others were not. The study placed a particular emphasis on men since over 95 percent of former combatants are male. In each village, village authorities were interviewed in order

[37] The team consisted of Yuhki Tajima (lead), Marzi Afriko, Zejd Muhamad, Imron Rasyid, and Nurul Hidayat.

to gain a broad overview of the village history during and after the war. Local entrepreneurs were interviewed to provide an additional perspective of local economic conditions. In addition to informants at the village-level, officials from the former combatants organization (KPA), the military, NGOs, and business associations were also interviewed at the provincial and district levels.

4.2 The East Coast: Bireuen District

GAM has long had its strongest presence in the east coast, which stretches from Banda Aceh on the tip of Sumatra to the border with North Sumatra. When the Acehnese insurgency began in 1976, it drew its recruits from the overwhelmingly ethnic Acehnese population and operated in the natural gas-rich east coast. With large numbers of GAM fighters in the east coast, the clashes and the government forces' counterinsurgency activities were most heavily concentrated in this region. In this region, what were the patterns of violence experienced by combatants and civilians during the war? How did patterns of violence in the east coast affect the post-war decisions and outcomes of former combatants?

To understand the logic by which violence occurred during the war it is important to understand the terrain where GAM and government forces fought. In essence, the east coast can be divided into two geographic regions: (1) the flatlands and coastal areas, which are traced out by the Banda Aceh-Medan highway, and (2) the interior hilly areas that rise above the flatlands towards the south. For a guerilla insurgency to be sustainable, its fighters must be able to take refuge in the land and blend in easily among the civilian population.[38] The jungle-covered hills of Bireuen provided the treacherous terrain in which to take refuge and launch attacks on the military while also allowing access to a supportive local population. For this reason, GAM cultivated the hilly interior as a base of operations from which to maintain its insurgency in the district. In contrast, the flatlands play to the strengths of government forces, which can take advantage of easier road access, a lack of hiding places, and more pliant civilians. The flatlands are generally, but not always, dominated by the government since state facilities are usually more densely concentrated in these areas.

In Bireuen district, villages in the flatland areas that have few former combatants can be found within walking distance of hillside villages with large numbers of former GAM combatants. This reveals how stark the transition from government controlled villages to villages of more contested control can be. The difference in support for GAM had profound implications for the war-time experiences of these communities. Generally, villages in Bireuen that were reliably in government control experienced violence selectively against GAM-affiliated households whereas villages in areas of more contested control experienced more widespread violence between GAM and government forces.[39]

To better understand the logic of violence in Bireuen and to characterize the processes by which war-time experiences led to different post-war economic outcomes, it is useful to examine the cases of four purposively selected villages. Two of the villages experienced relatively intense

[38] Fearon and Laitin (2003) find a strong cross-country correlation between rough terrain and risk of civil war.
[39] Schulze (2006, pp. 255-6)

violence and the other two experienced relatively light violence. Because Bireuen district also sustained heavy damage from the massive earthquake and tsunami in 2004, two of the villages were selected for study that experienced heavy damage from the earthquake or tsunami and two were selected that did not experience damage from the natural disaster. To protect the identities of various respondents, the actual names of the villages have been relabeled as a letter. In particular, Villages A and C experienced widespread violence, while Villages B and D experienced selective violence. Villages C and D experienced little damage from the tsunami or earthquake, while Village A, an inland village, experienced significant damage to houses from the earthquake and Village B, located on the coast, experienced heavy damage from the tsunami. Although village cases were selected based on their exposure to violence and tsunami/earthquake damage *ex ante*, there was no significant impact of the tsunami or earthquake on the reintegration processes in the four villages. It appears that this is in part due to the fact that most GAM fighters were located deep in the hilly interior away from the tsunami-affected areas. The four villages and their two selection criteria are presented in the table below:

Table 5: Selection of Villages in Bireuen District

	Widespread Violence	Selective Violence
Tsunami/Earthquake Damage	Village A	Village B
No Tsunami/Earthquake Damage	Village C	Village D

4.2.1 Villages with Widespread Violence

War-Time Experiences

Violence in Villages A and C was experienced broadly by combatants and civilians alike. Much of this can be traced back to the particular geographic features of the two villages. Consistent with patterns of violence in other parts of Bireuen and Aceh, the two villages that were studied that experienced heavy violence are located in the foothills of the interior whereas the two villages that experienced less violence are located in the flat, low-lying areas closer to the coast. Villages A and C are both organized around the cultivation of plantation agriculture such as betel nut, cacao, and cloves. A small portion of Village C also juts out onto the flatlands where some of the villagers are able to cultivate rice.

When the war began anew in 1999, the violence affected the four villages differently. In Villages A and C, the large numbers of combatants quickly led to military operations that aimed to identify and neutralize them. Some GAM households could be identified by the persistent absence of adult males who left to live with their comrades in the jungle. When the military became suspicious that a villager was a GAM fighter, they would attempt to capture or kill the suspected insurgent. When they were unable to capture the insurgents, the military would frequently interrogate and harass their families and ransack their property.

Because GAM had a strong presence in Villages A and C and enjoyed the support of much of the local population, villagers were reluctant to identify GAM fighters, whether out of loyalty or fear. Thus, many of the combatants were able to blend in with the local population and avoid

being identified by the military. The inability of the military to obtain good information on which villagers were combatants, however, resulted in violence against civilians in addition to combatants in Villages A and C.[40]

The heavy insurgent presence around Villages A and C led to the establishment of military posts in the two villages to discourage insurgent activities. Essentially the posts aimed to deny GAM combatants the ability to access food and supplies from villages on the periphery of the jungles in which they hid as well as to provide a forward base from which to pursue the guerillas into the forest. Although GAM combatants depended on sympathetic villagers to smuggle food to them, the heavy troop presence made this task difficult.[41]

The establishment of the posts had significant negative effects on daily life in the two villages. First, the posts led to a strict curfew that limited the hours of the day during which villagers could work. With a large portion of the villagers engaged in smallholder plantation agriculture on land deep into the hills, the curfew prevented many from being able to tend to their plots. Second, villagers were required to check in at the military post for permission to go to their plantations. At times they were not allowed to go to their land and when they were able to go, they often became subject to suspicions of assisting GAM. To avoid attracting suspicion, which could lead to harassment or violence, many villagers, especially men, either stopped working or limited their plantation activities to the immediate area around the village.[42] Third, frequent clashes between GAM and the military occurred in the surrounding hills, during which time villagers were barred from entering the hills altogether (although many were simply too afraid to enter the hills themselves). One of the leaders of Village C stated, “How could we go to the hills? Every day there would be gunfire. Just as we wanted to go to the hills [to work on our plantations], we would be told to go home by the military. Moreover, after there was another military post in [the adjacent village up the hill], we became even more scared.”[43]

Thus, after the military posts were established much of the land deeper into the hills was left to become fallow, which in turn depressed the economic output of the village. In the face of the military’s repressive policies in the hills, villagers had little alternative to their hillside economic activities since all of the village’s land was located in the hills. A limited number of families with plantations immediately adjacent to the village were able to continue to earn income from farming. Some left the village for safer areas and many sold their assets to maintain their basic consumption needs.[44]

The situation in Village C was slightly less dire. Because Village C was only partly in the foothills, villagers were able to shift some of their activities from plantation work in the hills to rice production in the flat land areas.[45] However, because the flat land areas were scarce, the shift to rice production was insufficient to make up for the loss of their hillside plantations. A civilian man from Village C stated, “Our village was targeted [by the military] because it was a [GAM

[40] Interview with a village leader, Village A, November 27, 2006.
[41] Interview with a village leader, Village A, November 27, 2006; Interview with ex-GAM combatant, Village C, November 22, 2006.
[42] Interview with ex-GAM combatant, Village A, November 27, 2006.
[43] Interview with a village leader, Village C, November 21, 2006.
[44] Interview with a village leader, Village C, November 21, 2006.
[45] Interview with a village leader, Village C, November 21, 2006.

stronghold]. When we wanted to go to work on our plantations we had to report to the [military] post. Although we could go to the rice fields continuously, we were sometimes not allowed to go to the plantations."[46]

Post-War Household Strategies

Loss of Assets

The signing of the 2005 Memorandum of Understanding that ended the war did not lead to an immediate return of former insurgents to their villages. After six years of fighting and the failure of past ceasefires and negotiations, many GAM combatants were apprehensive about emerging from the relative safety of their jungle hiding places. Gradually, as they observed the withdrawal of government troops, former combatants returned to their home villages.[47]

Combatants who returned to their families in Villages A and C found that the counterinsurgency operations had left their homes burned down or stripped of assets. In order to have enough to eat, their families had sold many of their assets. Their communities had also suffered significant damage and had lost much of their assets and savings.[48] Thus, the euphoria of a peaceful return home was quickly replaced by the pressing problem of providing for their households' needs.

Support from Civilians

Because the war had a significant impact on civilians in the two villages, civilians were unable to provide assistance for the relatively large population of ex-combatants that had returned to their communities. Since civilians faced their own difficulties after having their economic activities curtailed by the war, returning combatants were generally unable to rely heavily on their civilian neighbors.

Immediate Liquidity Needs

Faced with few assets and little education, former combatants had to determine the best strategy to meet their immediate consumption needs while improving their future income streams. To fulfill their immediate consumption needs, ex-combatants sought out activities that could quickly earn them cash. The most common activities were menial wage labor in agriculture or construction as well as illegal logging. As one former combatant in Village A explained, "Cutting trees gets us money immediately, whereas for farming one must wait for three months and then maybe you get a profit."[49]

While wage labor and illegal logging helped ex-combatants to generate cash quickly, these activities were a poor source of income and required difficult physical labor. Logging was slightly more lucrative than other menial jobs, but became increasingly difficult as they had to go

[46] Interview with civilian, November 20, 2006.
[47] FGD ex-GAM combatants, Village A, November 27. 2006
[48] Interview with village leader, Village A, November 27, 2006.
[49] Interview with ex-GAM combatant, Village A, November 27, 2006.

deeper into the forest over time as the closer trees were cut down. Although logging was seen as an occupation of last resort for most villagers due to the difficult nature of it and the risks of confiscation by the police, a large portion of ex-combatants were involved in it.[50]

Once their immediate liquidity needs were met, former combatants began to shift to activities with which they could generate an income within a short period of time using minimal amounts of capital. In Village A, former combatants planted dry rice, banana trees, chili peppers, and vegetables, while former combatants in Village C planted wet rice, since these crops each matured to production relatively quickly.[51]

In general slowly maturing crops, such as cacao, betel nut, nutmeg, clove, and palm oil tend to be more profitable than quickly maturing crops such as rice and vegetables since the former are oriented more towards export markets than the latter, which are oriented for domestic consumption. Thus, most of our respondents expressed a strong preference to switch to cultivating more lucrative, slowly-maturing crops than quickly-maturing crops. But most former combatants were unable to cultivate the more profitable slowly-maturing crops since they had been away from the village for several years during the fighting. Even former combatants who had previously had productive slowly-maturing crops returned to find that their plantations had become largely overgrown by the jungle. Some were able to salvage some of the produce from existing crops among the thicket, although they did not yield nearly the production they had before the war.

Transitioning to Longer-Term Activities

Some former combatants began to transition to more profitable economic activities soon after returning to the village. A handful of former combatants were able to engage in capital-intensive activities since they had access to capital from informal sources. For example, an ex-combatant in Village C in his mid-twenties started his kiosk business using the dowry he received after marrying shortly after returning from the jungle. In general, however, there is little access to formal sources of capital in Aceh. As a result, poor individuals turn to informal financiers with steep repayment terms, relatives or fellow villagers for small loans. But in Villages A and C, even this informal source of capital was limited as civilians in the two villages themselves did not have sufficient funds to loan to large numbers of returning combatants.

For former combatants who lacked access to capital, the standard approach to building a portfolio of economic activities was to begin with quickly maturing crops and intersperse plant seedlings of slowly maturing crops among them. While they waited for the slower, more profitable crops to mature, they cultivated less profitable but quickly maturing crops to ensure a steady flow of

[50] Small-scale illegal logging involves three tasks: cutting, hauling, and selling. In a small operation, an individual who owns a chainsaw will locate a suitable tree in the jungle, cut it down, and cut it into long boards of lumber. Ideally, the trees are located near an accessible, but quiet road or a stream on which the lumber can be floated down to a loading point. However, since many of the more readily accessible trees have been cut down already, many of the trees are located deep into the jungle. As a result, the people who own the chainsaws may pay others to haul lumber by hand down from the hills. Hauling constitutes the most common job related to illegal logging in which former combatants are engaged. Once it has been hauled to a collection point in the village, a broker will buy it or a pick-up truck is hired to transport the lumber to buyers. Often, police will stop the trucks as they are being loaded or while they are in transit and will threaten to confiscate the lumber unless they are paid a bribe. The lumber is of generally poor quality and is destined for local markets, unlike the larger operations that are aimed at exports. Interview with ex-GAM combatant, Village A, November 27, 2006.

[51] Interview with ex-GAM combatant, Village A, November 27, 2006.

income. A former combatant in Village A explained his strategy as follows: "I harvested what was left [of the betel nuts] and sold them. Then I planted rice first because it can be used for food, then beans on the side because they mature quickly, then I planted longer term crops like betel nut and cacao."[52] In this way, this ex-combatant was able to build both short-run and long-run sources of income.

4.2.2 Villages with Selective Violence

War-Time Experiences

In contrast to Villages A and C, Villages B and D experienced violence that was targeted more effectively against combatants. The two villages are located in areas dominated by government forces where combatants could be exposed easily by the more open terrain and the weaker support among civilians. Village B is located directly on the shore of the Malacca Strait where the vast majority of the residents are involved in fishing or boat-making. Village D is located in a low-lying area along the Banda Aceh-Medan highway where the most significant industry is rice farming.

Why was counterinsurgency violence more narrowly targeted against combatants in the low-lying communities than in the hillside villages? First, while hillside villages were close to the thick jungles in which insurgents hid, the low-lying villages were farther away, making it more difficult for insurgents to travel to them. It was impractical for combatants to rely on civilians in villages far from their hideouts for supplies. Second, the open terrain in the flatlands and the main economic activities in these communities were more easily monitored by government forces for insurgent activities. Whereas combatants could hide easily among civilians engaged in plantation agriculture in the hills, insurgent activity was more noticeable along the shore and in the rice fields where most of the population of Villages B and D worked. Third, the low-lying areas had a larger presence of government offices that employed a larger portion of the population than in the hilly interior. This was especially the case in communities along the Banda Aceh-Medan Highway, such as Village D, where government offices were more densely clustered. With more of the population relying on government salaries, the local population was less supportive of the insurgency and government forces were better able to acquire information about insurgent activities.

For the most part, the military was able to maintain control over Villages B and D with minimal resources. The government's counterinsurgency efforts largely consisted of the interrogation and harassment of combatant households. Village B was a site of a raid on a small weapons assembly that supplied insurgents with homemade guns in other parts of Aceh. The weapons assembly was located in Village B in an erstwhile boat-making workshop.[53] Because support in Village B was limited, its residents were subject to less scrutiny by government forces, allowing the workshop to assemble weapons undetected. After the assembly was discovered, the military carried out a raid on the location and set up a small temporary post in the village. During this period, government forces enforced a sunset curfew on villagers, curtailing their working hours[54].

[52] Interview with ex-GAM combatant, Village A, November 27, 2006.
[53] Interview with village leader, Village B, November 26, 2006.
[54] Interview with village leader, Village D, November 22, 2006.

One civilian fisherman in Village B explained the impact of the post on the village as follows: "How could we catch many [fish], usually we would go to the sea at 5am, but during the war, we could only head out at 8am and we would have to report to the post before then. Then we would have to return by 4pm. Those who were late or did not report were not allowed to go fishing for a full week and had to pay a fine to the soldiers."[55]

Post-War Household Strategies

Loss of Assets

After former insurgents from Villages B and D returned, they found their villages had largely avoided the heavier damage that Villages A and C had experienced. While ex-combatant homes had been ransacked numerous times, civilians in their villages were largely spared from collateral violence and acute economic hardship from prolonged curfews. Thus, ex-combatants in Villages A and C had the advantage of a less affected community with greater wherewithal to assist returning combatants.

Support from Civilians

The relative economic health of the civilians in Villages B and D represents an additional resource for former combatants returning to those villages. In Aceh, as in many rural contexts in developing countries, close-knit communities serve a vital role as a source of social insurance. When a household meets with difficult times, say due to illness or crop failure, it can rely on members of the village to provide food and other basic needs until its fortunes recover. Villagers have an incentive to assist fellow villagers in duress since they can count on help when they may require assistance. This system of mutual help breaks down when the entire village is affected by a negative shock (called a co-variant risk) as in Villages A and C where the effects of the war were widely shared by the whole village. But in Villages B and D, the more narrowly targeted effects of the war left a wider gap between the welfare of former combatants and civilians. Former combatants could rely on civilians in Villages B and D for assistance in resettling into their village and restarting economic activities. Since there were only a small number of former combatants in Villages B and D, there were fewer returning villagers that required assistance. In Village D, shortly after ex-combatants returned to their village, some were able to borrow cash from fellow villagers to plant quickly maturing capital-intensive crops such as chili peppers.

The relatively light damage sustained by Villages B and D also allowed the villages to resume normal activity more quickly following the end of the war. Existing sources of informal credit in these villages provided an option, albeit sometimes at high interest rates, by which cash poor former combatants could access capital and earn an income without having to wait for extended periods before building up capital. In contrast to the former combatants in Villages A and C, those in Village B could borrow gas and a fishing boat from the village fish dealers (*toke bangku*)

[55] Interview with civilian fisherman, Village D, November 23, 2006.

to fish for lucrative fish such as tuna. This provided former combatants an economic activity with which they could quickly generate cash income.[56] Although it is possible that the differences in the availability in capital could have been an artifact of greater pre-war access to capital in Villages B and D, the war-time experiences of Villages A and C should not be discounted.

Patronage

The ex-combatants in Villages B and D also differed from those in Villages A and C in their involvement with post-war political activities. Ex-combatants in Villages B and D were more deeply involved in the former combatants' organization, called KPA. Although it is difficult to infer from a comparison of just four cases, it is possible that this difference arose from the fact that the KPA offices were located in more central locations near the main highway rather than in the hillside hinterlands where GAM was more concentrated during the war. In 2006, ex-combatants in Village D gathered nightly at the local KPA office and met with local citizens to solve some of their problems. At the time, Aceh had not yet held the elections that would later put many former GAM members in political office. Despite this lack of formal political power, former GAM members were consulted by civilians to help resolve local disputes.

In late 2006 and 2007, former GAM members won the governorship and nine of 21 district headships (including Bireuen district) in the first elections since the Memorandum of Understanding allowed for independent candidates to run for election to executive positions in the province. GAM's rise to power had a more significant impact on ex-combatants in the more centrally located Villages B and D than in interior Villages A and C. In the post-conflict context, former combatants along the coastal highway have greater access to the government tenders for development projects and local contracting businesses. Thus, membership in KPA in more central locations can be more readily parlayed into income-generation activities (such as construction contracts, brokering fees, and payouts for protection rackets) than in the interior foothills that lack similar access to development projects.

In a follow-up visit in July 2008, all of the ex-combatants in Village D were found to have stopped their agricultural activities and had shifted to working as contractors for a major road and pier construction project near their village. The project was won through a bid by a construction company with the lobbying help of one of the former leaders of GAM living in a nearby village. According to multiple sources in the district- and province-level contractor associations, lobbying support from a former senior GAM official has become almost a necessity to winning a government tender for a construction project.[57] As a result of the demand for lobbying services

[56] While the high interest rates charged by dealers for working capital can reduce the profitability of fishermen, it is important to recognize that the dealers represent an important source of capital in a capital-poor environment. Those who utilize dealers as sources of capital are likely to have little access to formal credit through banks since they require collateral or formal employment to receive loans. The cost of monitoring poor borrowers also raises the costs of borrowing from the formal sector thus further diminishing the availability of formal credit. Dealers of fish and agricultural products can better provide capital to poor villagers since they are in a better position to monitor borrowers as they are often members of the same community. Banerjee and Duflo (2004, pp. 480-1) interpret high interest rates on informal sources of credit in developing countries as reflecting high returns to capital.

[57] Interview with construction association official, June 20, 2008.

and the large budgets allocated through the tender process, some in the GAM elite have made relatively large sums of money. One local GAM leader near Village D received a new sport utility vehicle after the tender on a construction project was awarded to an affiliated contracting business.

4.3 The West Coast: Aceh Selatan District

The west coast, which stretches from Banda Aceh to Aceh Selatan, had its own history of insurgency with a more heterogeneous ethnic mix. Although the war had been fought in the east coast since 1976, it only spread widely into the west coast in 1999 when GAM began to recruit and train locals. As such, the insurgency and its combatants were younger on average along the west coast than in GAM's traditional base in the east coast (Schulze, 2004, pp. 16-7). Despite the differences in context, the similar geography of the west coast to the east coast ensured that many of the dynamics of the war would be similar. As in the east coast, the topography of the west coast defined the strategic problem of the insurgents and government with its hills and flatlands. Insurgents chose to use the hills as their base of operations since it offered the safest cover. The government dominated the flat lands militarily where they also enjoyed the strongest pro-government sentiment.

To gain an understanding of the economic reintegration of former combatants in the west coast, the case of Aceh Selatan was selected as it had a large number of former combatants and significant variation in the level of violence. Three villages were examined in detail, two of which were located in the hills and experienced relatively high levels of violence and the third was located in the flat lands. A village that experienced widespread violence in the flat lands was not found, perhaps due to the weak GAM presence in the flat lands. The study villages are labeled with the letters in the following matrix:

Table 6: Selection of Villages in Aceh Selatan District

	Hilly Terrain	Flat Terrain
Widespread Violence	Village E	—
Selective Violence	Village F	Village G

Although the Free Aceh Movement is identified largely with the ethnic Acehnese, which constitute a vast majority of their fighters, in Aceh Selatan GAM recruited across all three of the major ethnic groups in the district (Acehnese, Kluet, and Aneuk Jamee) (Rasyid & Afriko, 2009, pp. 7-8). The insurgency was cast as a struggle for independence for all of Aceh's ethnic groups that could claim native status against a repressive and exploitative state. How did different parts of Aceh Selatan experience violence differently? This subsection examines the experience of the three study villages in war-time violence and the post-war reintegration of former combatants.

4.3.1 Villages with Widespread Violence

War-Time Experiences

Like the villages in the hills of Bireuen district on the east coast, the hillside villages of Aceh Selatan became the site of heavy insurgent activity when it spread to the east coast. The hills offered the insurgents the same thick jungle cover in which to hide and a relatively supportive civilian population in which to blend.

The residents of Village E reside in a small valley carved out by a river, which is reachable by car only through a narrow road along the river. The flat land in the valley is used primarily for homes and small plots of rice, which the local villagers cultivate for their own consumption. Prior to the breakout of war in 1999 in the district, the bulk of the villagers' cash income was generated from their plantations in the surrounding hills, which produced coffee and nutmeg. Many of these plantations were located deep into the hills and could only be reached in over one hour by foot.

The case of Village E is an example of a village that was completely devastated by counterinsurgency violence. The nearby hills were used by GAM as a training ground and a base of operations in part because they could easily monitor the only access road to the village. The village became the target of widespread violence by government forces after it was discovered that the nearby hills were being used by GAM for military training. After a couple of counterinsurgency operations were unable to identify and apprehend GAM members, the military concluded that many of the villagers were either GAM members or their sympathizers. In an escalation of tactics, a third operation involving a large number of troops and three armored vehicles was launched to take control of the village. Violence experienced by the villagers in the first two operations led them to flee the village immediately. During the chaotic exodus, while most of the villagers escaped into the hills, more than two dozen were shot dead. One respondent said, "It wasn't just people, they shot water buffalos and goats."[58] With the villagers watching from the hills, the soldiers burned down all of the houses in the village.[59]

With no homes to return to and fear of the military, the villagers lived behind GAM lines deep in the hills for two years. During this time, the displaced population faced hunger and sickness, which claimed the life of one child. The villagers survived by planting dry rice and vegetables as well as scavenging for what the jungle could provide.[60] Over time, the military urged the refugees to return from the hills, but only a few families came down initially. After receiving assurances that the first families were safe, the others eventually followed. Upon returning from the hills, men under age 40 were questioned and detained for several months. The women, children and elderly moved in with relatives in nearby villages or into refugee barracks.[61]

[58] From FGD, civilian men A, Village E, January 13, 2007.
[59] FGD, civilian men A, Village E, January 13, 2007; Interview, former village leader, Village E, January 13, 2007.
[60] FGD, civilian men B, Village E, January 14, 2007
[61] Interview, civilian man, Village E, January 14, 2007

While no longer facing the elements, the refugees now had to contend with the dim prospect of generating a sufficient income. With many of the younger men detained or in the jungle, women became the main breadwinners for their households, but were faced with a depressed local economy and limited opportunities for women. Agricultural wage labor became their main source of income, for which they were paid a daily wage of between Rp. 5,000 (US$ 0.50) and Rp.10,000 (US$ 1). On occasion, the military permitted them to go to their plantations that had been left behind to harvest what product remained.[62]

Post-War Household Strategies

Loss of Assets

Former combatants in Village E shared many of the same basic economic conditions as their fellow civilian residents. Their homes had been destroyed, they had lived for at least two years in the jungles, and their plantations had been left neglected. Because the destruction of property was due to counterinsurgency violence, the government's agency for reintegration agreed to replace the homes of civilians and ex-combatants in the village.

After five or six years of war, however, ex-combatants were unable to salvage the plantation crops they had prior to joining the war effort. Instead, they began to take on work in low-skilled wage labor, illegal logging or agricultural crops with short maturation periods. Each of these activities is oriented toward providing short-term liquidity rather than longer-term, but higher return yields. After returning from the war, former combatants who were already the heads of their households worked immediately, whereas younger former combatants without their own families were able to rest and receive support from their families.[63]

Support from Civilians

Since civilians had been away from their plantations for less time, their nutmeg and coffee plants were more salvageable and could immediately be harvested and provide much needed cash. Still, having lost most of their assets in the war and being unable to work their own plantations for over two years meant that civilians were themselves far below their pre-war level of prosperity. Thus, civilians were limited in the resources that they could use to help returning former combatants since they themselves were rebuilding from very few resources.[64]

Patronage

Since the election of former GAM members to the district and province level elected office, form GAM members have gained influence over many of the key district and provincial government contracting decisions. According to an official in the local construction association in Aceh Selatan, many construction companies employ former GAM officers to help them lobby government construction contracts. Furthermore, once projects have begun construction, lower ranking former combatants ask to either be sub-contracted for procuring supplies or demand

[62] FGD, civilian women, Village E, January 13, 2007
[63] FGD, ex-GAM combatants A, Village E, January 13, 2007.
[64] FGD, ex-GAM combatants A, Village E, January 13, 2007.

payments of between 2 to 5 percent to ensure the security.[65] Stories of similar protection rackets are common throughout the province since the end of the war.[66]

4.3.2 Villages with Selective Violence

War-Time Experiences

Like Village E, Village F was located in an area adjacent to the hills of Aceh Selatan where insurgents could effectively take refuge and stage their attacks. But in contrast to Village E where violence was indiscriminate, in Village F counterinsurgency violence was applied selectively. In Village F government forces were able to obtain more accurate information from villagers about local insurgents, which could be used to target insurgents and their households. Local GAM combatants inferred that the sources who revealed their identities were likely local villagers that were employed in government positions. Although Village F was located on the Aceh Selatan foothills, it was still close enough to the main highway that provided access to the district bureaucracies to be home to a significant number of civil servants. Because government workers were viewed by GAM as potential spies, civil servants and village officials (i.e. village headmen and village secretaries) became targets of insurgent violence. Thus, Village F had developed significant horizontal tensions among villagers in addition to the vertical violence.[67]

After the declaration of the military emergency (*darurat militer*) by the government in 2003, the counterinsurgency campaign in the subdistrict intensified. This caused an exodus of all of the village's civilians to villages along the main highway, which were spared from the violence since they were firmly in government control. For approximately six months villagers remained in areas of government control. During this time, villagers were unable to attend to their plantations in the hills. After the refugees returned to their homes, they found that about a dozen GAM-affiliated houses had been burned to the ground. In retaliation for allegedly providing information to the government, the village head (*geucik* which is the Acehnese equivalent of the Indonesian *kepala desa*) and a local leader (*imeum mukim*) were both killed by insurgents. Throughout this period, it was not uncommon for civil servants to be extorted and even kidnapped by GAM in order to raise cash for their logistical needs.[68]

Although many villagers returned to their homes, it did not lead to a resumption of peacetime conditions. The majority of the villagers derived their income from nutmeg and to a lesser extent cloves, cacao, and betel nut. Each of these plants can survive, albeit at lower productivity, despite months of neglect. Because of the ongoing insurgent activity in the hills, however, the villagers were only occasionally allowed to briefly harvest the plantation products and many of their crops were lost or declined. Prior to going to their plantations, the villagers were obliged to obtain permission at the military post where they were often forced to pay the soldiers part of the revenues. In sum, while all members of the village were impacted negatively from fleeing the fighting and the burdens of a military post, the counterinsurgency violence impacted insurgents more acutely through the damage they sustained to their homes.[69]

[65] Interview with contracting association official, June 20, 2008.
[66] See Aspinall (2009b) for a good account of rent-seeking behavior by former combatants
[67] Interview, village leader, Village F, January 11, 2007.
[68] Interview, village leader, Village F, January 11, 2007; FGD, civilian men A, Village F, January 12, 2007.
[69] Interview, village leader, Village F, January 11, 2007; FGD, civilian men A, Village F, January 12, 2007.

In contrast to Village F, Village G was located in a broad basin of flat land where rice cultivation constituted the most significant part of the economy. Although the village abuts the nearby hills, there has been only limited cultivation of the hills for plantation agriculture. As in the rest of Aceh, the hills were used by GAM for their base of operations. After an ambush on members of the military near the village, the military launched an operation to identify GAM members and take control of the village. In anticipation of the operation, almost all of the men fled the village into the hills where they waited for fifteen days. The women and children gathered in the mosque and some homes in fear of the occupying soldiers. During this time, six homes of GAM members were burned to the ground. With little to eat and assurances for their security, most of the men returned to the village where they were interrogated to identify the identities of GAM combatants.[70] Some of the men were beaten during the interrogations and five women were allegedly raped.[71] Some of the civilian respondents stated that this violence made the locals more sympathetic towards GAM and pushed more men to join their ranks. After a military post was established, armed violence was largely limited to the hills away from the village. In the village, however, tensions were high between members of the village and occupying soldiers as well as between GAM sympathizers and civil servants living in the village.[72]

The war took a toll on the villagers' economic circumstances. After the post was established, the military imposed a curfew on the time of the day at which villagers could tend to their rice paddies, limiting their productivity. The rice that they harvested was then stored at the military post, which was rationalized based on the fear that it could be used to supply the insurgents. Under this policy, villagers could only retrieve two days of rice at a time. This allowed soldiers to have unmitigated access to their valuable rice stores. In addition, villagers who were involved in plantation agriculture were obliged to give soldiers goods bought with proceeds from each harvest to avoid confiscation of their entire production.[73] One civilian man stated, "If you want to sell chili peppers, we had to give something to the post. When we came home, we had to buy a box of Surya cigarettes or whatever [the soldiers] asked for…It was obligatory since if we didn't, we could be [beaten] swollen (*bengkak-bengkak*)."[74]

After two years of fighting in the hills and intense counterinsurgency pressure against their families, roughly forty of the fifty GAM combatants stationed nearby surrendered to the military. The remaining ten combatants returned after the MoU was signed. Of the forty combatants who surrendered, the officers were detained by the military while the rank-and-file were soon released or 're-educated'. After the war ended, many of the former combatants who had surrendered were entitled to and received two tranches of money from the government of Rp. 8 million (about US$ 800) and Rp. 2.5 million (about US$ 250).[75]

[70] FGD, ex-GAM combatants, Village G, January 15, 2007.
[71] FGD, civilian women, Village G, January 16, 2007.
[72] FGD, civilian men A, January 15, 2007.
[73] Interview, village leader, Village G, January 15, 2007.
[74] Interview, civilian man, Village G, January 15, 2007.
[75] FGD, ex-GAM combatants, Village G, January 15, 2007.

Post-War Household Strategies

Loss of Assets

When former insurgents returned from the jungles, combatants from Village E and F returned to markedly different conditions. Former combatants and civilians from Village E found that their village had been completely burned down and their plantations neglected. In Village F, however, although the war had been harmful for the whole village, civilian homes had survived while ex-combatants' homes had been burned. Furthermore, ex-combatants' plantations had grown over, while civilians' plantations were in largely recoverable condition since they had been abandoned for only half a year.[76]

Support from Civilians

Thus, while the proximity to strategically positioned hills led to a heavy insurgent presence in both Villages E and F, the lack of informants in the former led to indiscriminate violence while the presence of informants in the latter led to more selectively applied violence. These differences in the experiences of civilians had significant implications for former combatants returning to their villages. Although former combatants returning to Village E found it difficult borrow from civilians, some former combatants returning to Village F were able to obtain capital to restart their economic activities by borrowing from their family or friends. That is, the fact that violence was selectively applied against combatants and their families actually enabled them to have better opportunities to borrow from civilians following the end of the war. For the most part ex-combatants initially worked on quickly maturing economic activities with the aim of eventually switching into longer-term activities that tend to be more lucrative.[77]

Immediate Liquidity Needs

In Village G, the ten former combatants who returned only after the signing of the MoU returned to homes that had been destroyed and to land that had been left uncultivated. With little cash, these ex-combatants began to work in construction or agricultural wage labor activities and in the hauling of timber from the jungle using the nearby streams. Some were able to borrow money from friends and local traders.[78] At the same time, some of these former combatants also began to cultivate rice, the main driver of the village economy. With ample irrigation and land as well as the relatively low capital requirements of rice production, former combatants were quickly able to restart their rice farming. But because they had lost many of their assets during the war, they sought out cash generating activities such as wage labor or illegal logging, which prevented them from farming as intensively as they optimally would have.[79]

[76] FGD, ex-GAM combatants A, Village G, January 15, 2007.
[77] FGD, ex-GAM combatants B, Village F, January 11, 2007.
[78] Interview, ex-GAM combatant A, Village G, January 15, 2007.
[79] FGD, ex-GAM combatants A, Village G, January 15, 2007.

The widespread practice of illegal logging was abetted by the former combatants' organization KPA who deterred police enforcement of logging by exploiting their reluctance to instigate confrontations that could undermine the implementation of the MoU. As a result of decreased law enforcement, illegal logging became increasingly attractive to former combatants and civilians alike. In fact, according to a village leader in Village G, former combatants affiliated with KPA were paid by illegal loggers to accompany the timber to distribution sites.[80]

In contrast to former combatants who had returned after the MoU, former combatants who had surrendered prior to the MoU had received an allotment of cash.[81] These former combatants were less constrained in their need for cash and therefore were less likely to be working in the physically demanding role as wage laborers and loggers to meet their consumption needs. Instead, they were able to use their capital for other forms of income generation to meet their consumption needs.[82]

4.4 The Central Highlands: Bener Meriah District

In the central highland districts of Aceh, the war exhibited an ethnic dimension that was largely absent in the east and west coast districts. The central highlands were the home of the ethnic Gayo, ethnic Javanese migrants who had lived for generations in the coffee-producing areas of Aceh Tengah and Bener Meriah, and a significant number of ethnic Acehnese. When the GAM insurgency began to spread its operations and recruitment into the Acehnese parts of the central districts, one of their goals was to drive out the ethnic Javanese from Aceh. While the other ethnic groups in Aceh could lay claim to some indigenous status, the ethnic Javanese were symbols of what the insurgents saw as the Indonesian government's policy of Javanese imperialism. Thus, GAM raids against ethnic Javanese settlements were not uncommon in the region. In response to the threat of GAM attacks, ethnic Javanese villages began to organize self-defense militias. These militias became better organized after the military began coordinating with them and utilized their specific information about the identities of insurgents in nearby villages. With the threat of attacks by GAM insurgents, the militias provided information about the identities, locations, and homes of GAM operatives. While the ethnic Javanese were in conflict with the largely Acehnese GAM, some of the ethnic Gayo joined GAM while others joined or formed militias. Overall the smaller numbers of ethnic Acehnese and the presence of militias prevented GAM from establishing a strong presence in the central highlands.[83]

With the important role of an ethnic militia in the central highlands, the violence yielded different problems for reintegration than in the areas that lacked an intercommunal dimension. After the peace agreement between the government and GAM, the military was withdrawn

[80] Interview, village leader, Village G, January 15, 2007.
[81] Officially, ex-GAM combatants who returned after the MoU were allocated Rp. 25 million (about US$ 2,500). Because the number of former combatants that was officially recognized was 3,000, which was far lower than the actual number of former combatants (14,333 in our estimate), the compensation amount that was received per ex-combatant was actually far lower. It was even lower for many former combatants since the process of dispersal was funneled through the KPA leadership who could choose the amounts to disperse.
[82] Interview, village leader, Village G, January 15, 2007.
[83] Interview, ex-militia member A, Village J, December 6, 2006.

without major incident. However, the MoU did not stipulate any agreement between GAM and militia members. In the year following the signing of the MoU, former GAM and militia members remained wary of reprisals. In Bener Meriah, where the Acehnese population was much smaller than in the east coast, former GAM combatants chose to live in villages with larger GAM numbers out of fear of militia attacks.[84] Only after a year of small, confidence-building steps did many former insurgents (and militia members) feel confident enough in their security to travel and work in areas dominated by their former adversaries. Former GAM and militia members began to build mutual trust through informal socializing such as drinking coffee with each other or sharing cigarettes. Gradually, their conversations broached more serious topics of local security so that by 2009, local GAM and militia leaders coordinated on post-war security threats.[85]

As in the other districts, villages were selected based on the variation in how widely counterinsurgency violence was experienced in order to explore the impacts of war-time violence on ex-combatants. Only two village cases in Bener Meriah were studied since there were fewer villages that were home to former GAM combatants. The GAM combatants in the district were largely concentrated in select villages. Village H was the home of a large number of insurgets where there had been heavy fighting with the military. Village I experienced little direct fighting, but rather, selectively applied counterinsurgency violence. After the war, many former combatants from Village H returned to their village. In contrast, Village I was the original home to only four former combatants, but hosted 27 former combatants after the war had ended. These combatants had fought together during the war and remained together in Village I for the first year after the war out of fears of reprisals by members of the militia in the district.

Table 7: Selection of Villages in Bener Meriah District

Widespread Violence	Village H
Selective Violence	Village I

To get a holistic picture of GAM villages in Bener Meriah, it is important to examine them in the context of neighboring militia villages. Thus, neighboring villages that were home to large numbers of militia members were examined in tandem. In addition to the two villages with former GAM combatants, parallel interviews and FGDs were conducted in nearby villages dominated by militias, which are referred to as Villages J and K. These materials will be referenced to supplement the case materials in Villages H and I as a picture of ex-GAM experiences would be incomplete without proper consideration of how militia members interacted with GAM combatants before and after the war.

[84] Interview, ex-GAM combatant A, Village I, December 6, 2006.
[85] Interview, ex-militia member, Village K, June 27, 2008; FGD, ex-militia members and ex-GAM, Bener Meriah District, June 27, 2008.

4.4.1 Pro-GAM Villages

War-Time Experiences

In 1998, GAM began recruiting insurgents in Bener Meriah including in Villages H and I. GAM's recruiting efforts were successful in persuading dozens of men to join in the majority ethnic Gayo Village H.[86] The presence of GAM in the village led to the establishment of a military post a year later and military operations aimed at identifying and apprehending GAM combatants. In the operations, several GAM houses were identified and destroyed. In 2001, after a GAM ambush on the post left several soldiers dead and more wounded, the post was abandoned for several days. Anticipating the likely retaliatory response by the military, most of the inhabitants of the village fled to their relatives' homes in nearby villages. The military arrived with a large force, burning down roughly 80 percent of the buildings in the once vibrant coffee-producing village. Several days later, some villagers returned to the village to assess the damage and rebuild their homes. But, for the most part, the village remained largely empty until 2002. Those who had return who had coffee plantations near the village were able to resume their activities. Villagers were prohibited from accessing their plantations if they were not sufficiently close to the village.[87] It is useful to consider the violence in GAM-dominated villages in the Central Highlands in conjunction with violence in nearby militia-dominated villages. After the GAM ambush in Village H, the military also retreated from a neighboring village, which was less supportive of GAM. Although many villagers fled, a portion of the inhabitants remained. Before the military retook control of the village, a GAM officer met with one of the village leaders and demanded a payment equivalent to a few thousand dollars from the villager. The GAM officer threatened to burn the entire village down if a payment was not made after which the money was collected from the villagers, placating the GAM officer. After the military retook control of the area, some villagers formed a self-defense force (also known as a militia) in which members would take turns watching for insurgent activity. The military quickly co-opted the militia and took advantage of their knowledge of the local hills to locate GAM's hideouts and used their knowledge of members of the local villages to identify members of GAM.[88]

Among the group of GAM fighting alongside GAM from Village H were four insurgents that came from Village I, a small, mainly Gayo village several kilometers from Village H. Unlike Village H, there was little armed contact between insurgent and government forces in the immediate vicinity of the village. There was sporadic fighting in the hills nearby, which, by 2001 had made civilians in Village I wary of looking after their coffee plantations deep into the hills. The fighting led to the establishment of a military post in the village and interrogation of villagers that aimed to identify GAM supporters. During these operations, several GAM-related homes were burned down and some villagers were beaten.[89] The presence of the post and the fighting in the hills dampened the economic activities of the villagers in Village I. Although villagers were able to tend to their coffee plantations, they were only able to do so in short periods during the day,

[86] Interview, ex-GAM combatant A, Village H, December 5, 2006.
[87] Interview, village leader, Village H, December 4, 2006; FGD, ex-GAM combatants B, Village H, December 4, 2006; Interview, ex-GAM combatant A, Village H, December 5, 2006.
[88] Interview, militia member, Village J, December 5, 2006.
[89] FGD, ex-GAM combatants A, Village I, December 6, 2006.

having to return to the village before 6pm. In addition, as a way to minimize the ability of villagers to supply GAM members with food at night, men were required to gather at the post to stand guard throughout night. While this helped the military to keep track of the whereabouts of men throughout the night, it further compressed the working hours since men were too tired to work in the early morning.[90]

The war had similarly negative economic effects in militia-villages. After violence became commonplace in the nearby hills, it was the women, not men, in militia villages who dared to enter the hills to tend to their plantations. Men in the militia-dominated villages were afraid of confronting GAM combatants and of being suspected by the military of being GAM. By contrast, women were not suspected of being members of either group and would enter the hills in groups.[91]

Post-War Household Strategies

Insecurity and Labor Immobility

When the MoU brought an end to the war, GAM combatants in Bener Meriah surveyed their circumstances for demobilizing and reintegrating into civilian life. Their most immediate concern remained their safety. Even after it appeared that the military was living up to the terms of the peace agreement, former insurgents remained wary of returning to their villages due to the presence of ex-militia nearby who were feared to still harbor vengeful feelings. One former GAM combatant described informal reconciliatory overtures with local militia members in late-2006 as fraught with distrust and caution: "We have begun to share cigarettes with militia members and they tell us, 'We were forced to work with the military' but we are still more afraid of the militia than the military since they know who we are."[92] Because of lingering security concerns, until late 2007, former GAM combatants remained concentrated in large groups in certain villages since they believed there was greater safety in numbers.[93] While most of the ex-combatants originally from Village H returned there, the remainder largely resettled in Village I for over a year. The former were mostly older ex-combatants in their thirties and forties who already had families living in Village H, while the latter were younger ex-combatants in their twenties who had not yet married.[94]

The younger ex-combatants in Village I had markedly different circumstances from their comrades in Village H. For the most part, the ex-combatants in Village I viewed the village as a temporary safe haven from which to observe the post-war circumstances. Few of the younger ex-combatants initially took up economic activities that would require them to stay in the village for an extended period. Instead, they engaged mostly in wage labor and occupied their remaining time in the political activities of the local KPA (former GAM association) branch.[95]

[90] FGD, ex-GAM combatants B, Village I, December 5, 2006.
[91] FGD, militia members, Village K, December, 4, 2006.
[92] Interview, ex-combatant A, Village I, December 6, 2006.
[93] FGD, ex-combatants B, Village I, December 6, 2006.
[94] FGD, ex-combatants A, Village H, December 5, 2006; FGD, ex-combatants A, Village I, December 6, 2006.
[95] FGD, ex-combatants A, Village I, December 6, 2006.

Until the latter half of 2007, mutual suspicion among former combatants and militia caused former combatants in both villages to avoid working in areas where they might meet former militia in the hills. This essentially limited the available lands on which they could work and delayed the younger ex-combatants in Village I from establishing roots for a longer time horizon. In the years since the end of the war, there has been a dramatic shift in the security environment in the central highlands. During our first visit to Bener Meriah in December 2006, former combatants described fear of reprisals as the main reason they remained in the village.[96] In a follow-up visit in July 2008, a substantial change was found to have occurred in late 2007 when local GAM and militia members began to reach out to one another informally to decrease the tension.[97] Eventually, the interactions led to greater trust and substantive informal discussions about mutual security concerns. This newfound trust encouraged former GAM and militia members to finally shed the limitations on where they felt comfortable working.

Loss of Assets and Meeting Immediate Liquidity Needs

Most of the younger ex-combatants, who were still in their twenties, had never owned their own coffee plantations or had their own economic activities prior to joining GAM. Although older ex-combatants' homes had been destroyed or ransacked, many could return to their coffee plantations that had become overgrown by jungle, but could be partly salvaged. Thus, the older former combatants in Village H were able to harvest modest sums of coffee beans and generate some cash income. The coffee income was not enough to meet their households' needs and many former combatants also began working in low-skilled wage labor, hauling illegal lumber from the jungle, and borrowing from family members. At the same time, ex-combatants began to plant quickly maturing crops such as vegetables to generate some short-term income and cleared their coffee plantations of jungle overgrowth.[98]

Three years after the MoU, most of the former combatants in Village H continued to restore their coffee plantations, but their recovery lagged behind that of civilians. In Village I, only a small handful of former combatants remained while most had moved back to their original villages or on to the larger cities to search for higher paying jobs, indicating an improved perception of security among former GAM combatants.

Patronage

One sign of improved relations locally between former GAM and former militia members can be witnessed in a local construction association in Bener Meriah. The association, led by a former GAM member, helps issue contracting licenses and coordinates government construction tenders with local contracting firms. The association has members who are both ex-GAM and the ex-militia members who frequently cooperate with each other to win government contracts from the district head, a former leader of the militias.[99]

[96] FGD, ex-GAM combatants A, Village I, December 6, 2006.
[97] Interview, ex-GAM combatant C, Village I, June 28, 2008.
[98] FGD, ex-combatants A, Village H, December 5, 2006.
[99] Interview with construction association official, June 27, 2008.

5. HYPOTHESES FROM THE CASES AND THE ANALYTICAL FRAMEWORK

Thus far, this paper has developed an analytical framework has drawn from the broader literature on civil war violence and its consequences for post-war household welfare. The paper then explored nine villages that represent a range of wartime and post-war experiences in the west coast, east coast, and central highlands of Aceh. Through these cases, three themes have emerged that may potentially help to explain variation in post-war economic outcomes: (1) the importance of immediate liquidity needs of former combatants; (2) the impact of wartime violence on post-war economic outcomes; and (3) the effect of the rise to political power of former GAM insurgents on economic outcomes. In this section, the analytical framework is first reconciled with the themes from the Acehnese cases and hypotheses are then generated for statistical testing in Section 6.

5.1 Liquidity

As the economic development literature indicates, poor households' production decisions are affected by their immediate consumption needs and susceptibility to economic risk due to imperfect capital and insurance markets (Rosenzweig & Wolpin, 1993). Thus poor households will be more inclined to meet their immediate consumption needs through activities that can quickly generate liquidity than they might otherwise be if they had access to more capital. As noted earlier, when former combatants returned from the war and found their households with significantly fewer assets than civilians, they were faced with the challenge of meeting their immediate consumption needs. Thus, in the case studies, many of the former combatants that were interviewed indicated that they were forced to take on less rewarding and more grueling wage labor than civilians who had more of a buffer of liquidity.

In villages where former combatants were more selectively targeted during counterinsurgency raids, former combatants will likely have a greater need for activities that can quickly generate cash than civilians. But in villages in which civilians also experienced counterinsurgency violence, civilians were more likely to focus on activities that could generate liquidity quickly. With greater capital resources, former combatants and civilians could invest in activities that mature over longer periods, but which are more lucrative than short-term economic activities. Over time, ex-combatants and civilians could move up the liquidity ladder from short-term to long-term economic activities. For example, cash-constrained ex-combatants in rural areas would begin with activities such as low-skilled wage labor, illegal logging, or rice and vegetable production and gradually transition to longer-term cash crops such as betel nut, cacao, or coffee. This process of post-war economic recovery implies the following hypotheses that can be tested on the ARLS dataset:

> Liquidity Hypothesis 1: Former combatants with fewer assets immediately after returning from the war should be involved in shorter-term economic activities.
>
> Liquidity Hypothesis 2: Former combatants who have greater access to capital are better able to meet their immediate need for liquidity and can therefore invest in longer-term economic activities, which are associated with greater returns.

5.2 Violence

As the analytical framework suggests, the way that violence impacts ex-combatants and civilians can have a profound impact on their post-war economic outcomes. On the one hand, the degree of involvement of ex-combatants in fighting may have significant effects on their ability to find work through the effect of the war on their education, skills, and physical constitution. The longer their involvement, especially in their formative early years, the more likely combatants are to have lower educational levels and less marketable skills. Similarly, ex-combatants who were injured during the war may be less physically or psychologically fit to work after returning from war. Because civilians in some communities were more exposed to violence during the war than others, there was significant variation in the capacity of communities to provide material support for returning ex-combatants after the war. That is, communities that experienced widespread violence should be less able to provide material aid to former combatants.

The connection between war-time violence and post-war economic outcomes implies the following hypotheses which can be assessed against the ARLS data:

> Violence Hypothesis 1: Former combatants who fought longer will have lower educational attainment, lower assets, and lower incomes.
>
> Violence Hypothesis 2: Former combatants who were injured will have lower incomes
>
> Violence Hypothesis 3: Former combatants who returned to villages that experienced selective violence will have fewer initial assets than former combatants in villages that experienced indiscriminate violence.
>
> Violence Hypothesis 4: Former combatants in communities that have experienced heavier violence are less able to access capital.

5.3 Patronage

When wars are ended through political settlement, often armed groups will be offered a so-called peace dividend, either in the form of direct benefits awarded to them or informally through opportunities in peace time economies, to induce them from taking up arms again (Willibald, 2006, p. 324; Knight & Ozerdem, 2004, p. 506). In the cases examined, there have been indications that well-connected former combatants have benefited through the strategic positions that former combatants occupied. In one perspective patronage can therefore be viewed as an alternative means by which ex-combatants can improve their economic circumstances. In Aceh, many business owners, government officials, and former combatants themselves have observed that close connections to the KPA (ex-GAM) leadership can lead to lucrative benefits from patronage contracts with the provincial and district governments, especially since the election of former GAM members to key government positions (Aspinall, 2009b). In this way, the social capital gained by former combatants during the war may prove beneficial after the war.

> Patronage Hypothesis: Former combatants with greater connections to KPA leadership will have higher incomes.

6. EVIDENCE

The essential aim of this paper is to explain variation in the incomes of former combatants in order to inform the debate on how best to approach reintegration in Aceh and other contexts. This study seeks to show how the processes of war affect physical, human, and social capital thereby impacting on the income and welfare of former combatants. In this section, the paper will examine the statistical evidence from the ARLS database to explain the variation among former combatants' incomes and explore the validity of the framework we have developed in the previous sections of the paper. This section begins by estimating a model of former combatants' incomes, which takes into account variables that proxy for their physical, human, and social capital. It is important to emphasize here that, due to limitations in the data, much of the statistical analysis is correlational and any statistically significant relationships between variables should be interpreted as suggestive, not conclusive, evidence for their associated hypotheses. To the extent possible, evidence of the hypothesized intermediate processes will also be examined.

6.1 Determinants of Income

This section begins with an estimate of a model of ex-combatants' incomes in 2008 on proxies for their physical, human, and social capital.[100] Specifically, an index of the estimated value of household assets in 2005 is employed as a proxy of physical capital, the highest level of education attained and whether the ex-combatant was injured during the war as a proxy of human capital, and whether at least one of the ex-combatant's five closest friends was a member of KPA and if the ex-combatant was an officer (at least a rank of subdistrict *sagoe* commander) was used as proxies for social capital with members of the former insurgent organization. These models are estimated for household heads, non-household heads, and pooled samples (both household heads and non-household heads). Distinguishing from among household heads and non-household heads is useful since each is likely to have different constraints and preferences.

[100] We estimate the following model: $y_i = a_{0,i} + \overrightarrow{PC_i} \times A + \overrightarrow{HC_i} \times B + \overrightarrow{SC_i} \times C + \overrightarrow{X_i} \times D + u_i$ Where yi is per capita income for individual i, PCi, HCi, and SCi are vectors of variables that proxy for physical capital, human capital, and social capital variables, respectively, for any individual i. Xi is a vector of control variables, and A, B, C, and D are the corresponding matrices of coefficients.

Table 8: Correlates of Incomes in 2008
Log(Income) in 2008

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Log (Assets in 2005)	0.061** [0.03]	0.093*** [0.03]	-0.012 [0.05]	0.065** [0.03]	0.061* [0.04]	-0.012 [0.05]
Primary School Completed	-0.089 [0.10]	-0.067 [0.12]	-0.192 [0.18]	-0.019 [0.10]	-0.056 [0.10]	-0.192 [0.18]
Middle School Completed	0.094 [0.08]	0.141 [0.09]	0.044 [0.13]	0.156* [0.09]	0.074 [0.10]	0.044 [0.13]
High School Completed	-0.192** [0.09]	-0.214* [0.11]	-0.14 [0.15]	0.109 [0.09]	0.262*** [0.09]	-0.14 [0.15]
Conflict Injury	0.073 [0.09]	0.008 [0.10]	0.245 [0.20]	0.077 [0.19]	0.01 [0.18]	0.245 [0.20]
Close Friend in KPA	0.042 [0.07]	0.078 [0.08]	-0.002 [0.12]	-0.145 [0.14]	-0.148 [0.13]	-0.002 [0.12]
Officer in TNA	0.192 [0.16]	0.192 [0.14]	0.285 [0.52]	0 [0.00]	0 [0.00]	0.285 [0.52]
Age	0.011 [0.03]	-0.016 [0.03]	0.06 [0.09]	0.065*** [0.02]	0.033 [0.03]	0.06 [0.09]
Age-Squared	0 [0.00]	0 [0.00]	-0.001 [0.00]	-0.001*** [0.00]	0 [0.00]	-0.001 [0.00]
Constant	14.874*** [0.62]	14.800*** [0.71]	15.394*** [1.74]	13.524*** [0.58]	14.354*** [0.85]	15.394*** [1.74]
R-squared	0.08	0.093	0.114	0.11	0.134	0.114
Observations	831	575	256	1428	1221	256

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to read this table, a 1 percent increase in assets in 2005 corresponds a 0.061 percent increase in ex-combatant male income.*

If assets in 2005 can be used as a proxy for capital available for productive purposes, the table above indicates that the relationship between assets and incomes is statistically significant at the 5 percent level. For every 10 percent increase in household assets, former combatants can be expected to have a 0.6 percentage point higher income. To put this into context it is useful to note the standard deviation of household assets in 2005, which is a measure of the variation of household assets. The standard deviation is approximately Rp. 19.1 million, which is a relatively large amount relative to ex-combatants' mean household assets of Rp. 10.1 million. This appears to be a result of ex-combatants who had been identified by the government as insurgents who lost most of their assets from having their homes burned down and others who had eluded detection by the government and had retained their assets. Thus, an ex-combatant with one

standard deviation more assets than the mean ex-combatant could expect a 12 percent increase in income—a substantial difference in incomes.[101]

The positive relationship between assets and incomes is similar for male civilians. Household assets just after the war ended in 2005 are especially important in predicting incomes in 2008 for former combatants who are the heads of their households with an increase in incomes of 0.9 percent for every 10 percent increase in assets. This relationship does not hold for non-heads of households (column 6), which may be due to the possibility that ex-combatants who are not the heads of their households may not be able to use household assets for their own incomes.

An examination of the table also shows that in this formulation of the model, besides assets, proxies for human capital and social capital are not associated with better incomes for former combatants. One interesting finding is that former combatants who have completed high school have a significantly lower income than those without a high school education. A comparison of the models for civilians and former combatants reveals that assets are similarly associated with higher incomes. Civilians with more education tend to have higher incomes, whereas former combatants with at least a high school level are associated with lower incomes.

In addition, it is interesting to observe that civilian men have a higher income for every additional year of age. In contrast, there is no underlying difference in incomes between former combatants of different ages. A look at the correlation between age and incomes among civilians reveals a strongly positive trend in incomes over time. This correlation does not exist among former combatants. In other words, older former combatants are likely to have similar incomes as their younger counterparts. The case studies revealed that after the war ended, many former combatants, whether young or old, faced very similar starting points. Initially, many of them began with no ongoing economic activities and with limited assets. Whereas older civilians had long term activities and the accumulation of capital from a lifetime of work that endowed them with greater income streams and assets than younger civilians, the war appears to have had a leveling effect on the starting positions of former combatants.

6.2 Access to Capital

6.2.1 Income and Access to Capital

If the most important factor for incomes is the amount of physical capital former combatants possess, it is useful to examine the differences in income that occur if individuals are provided with larger amounts of capital through either informal loans by other members of combatants' social networks or through bank loans during the period from 2005 to 2008.[102]

[101] In interpreting these results, it is important not to take the point estimate of the above estimates as the marginal effect of an increase in cash assets on incomes. The reason for this is that the asset index used is a measure of non-cash assets, which was used due to the absence of data on cash assets. We used non-cash assets instead of cash assets as cash assets were difficult to measure with confidence, whereas non-cash assets could be directly observed by the enumerators. It is likely that non-cash assets are closely correlated with overall household capital and therefore the measure can be used as a reasonable proxy for overall capital.

[102] The analysis in the previous subsection characterized the correlation between capital, as proxied by assets in 2005, and income through a log-log functional form which shows the correlation between a percentage increase in capital and a percentage change in incomes. In contrast, the analysis in this subsection examines the additional interaction of access to informal and formal loans with incomes in 2008. In order to account for both the level of assets in 2005 and the amount of loans in the intervening period, we adopt a log-linear formulation.

Table 9: Correlates of Income in 2008

Log (Income) in 2008

	Male Ex-Combatants (18-65)			Male Civilians (18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Head	Non-HH Heads	All	HH Head	Non-HH Heads
Assets05 (in Rp. millions)	0.002** [0.00]	0.004*** [0.00]	0 [0.00]	0.008*** [0.00]	0.008*** [0.00]	0.004 [0.00]
Borrow from Civilian (in Rp. millions)	0.005* [0.00]	0.004 [0.00]	0.018 [0.01]	0.007 [0.00]	0.007 [0.00]	-0.031* [0.02]
Borrow from Bank (in Rp. millions)	0.007 [0.01]	0.011* [0.01]	-0.042* [0.02]	0.015*** [0.01]	0.009*** [0.00]	0.094*** [0.01]
Primary School Completed	-0.05 [0.10]	-0.022 [0.11]	-0.219 [0.17]	-0.027 [0.09]	-0.057 [0.09]	-0.091 [0.32]
Middle School Completed	0.11 [0.07]	0.144* [0.08]	0.065 [0.12]	0.153* [0.08]	0.085 [0.09]	0.205 [0.19]
High School Completed	-0.204** [0.09]	-0.240** [0.10]	-0.091 [0.14]	0.041 [0.08]	0.202** [0.08]	-0.291* [0.15]
Conflict Injury	0.076 [0.09]	0.031 [0.09]	0.226 [0.18]	0.153 [0.17]	0.024 [0.17]	1.147** [0.47]
Close Friend in KPA	0.027	0.034	0.005	-0.156	-0.165	-0.703**
	[0.06]	[0.07]	[0.11]	[0.13]	[0.13]	[0.29]
Officer in TNA	0.245* [0.14]	0.238* [0.13]	0.347 [0.53]			
Age	0.008 [0.02]	-0.021 [0.03]	0.025 [0.09]	0.054*** [0.02]	0.026 [0.02]	-0.012 [0.06]
Age-Squared	0 [0.00]	0 [0.00]	0 [0.00]	-0.001*** [0.00]	0 [0.00]	0 [0.00]
constant	15.865*** [0.45]	16.367*** [0.59]	15.627*** [1.38]	14.693*** [0.35]	15.352*** [0.55]	16.359*** [1.08]
R-squared	0.073	0.079	0.13	0.142	0.155	0.487
Observations	964	685	279	1600	1374	226

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to read this table, an increase in assets in 2005 by Rp. 1 million corresponded to a 0.2 percent increase in income in 2008 among all male ex-combatants.*

According to these results, former combatants with greater access to informal loans from 2005 to 2008 are associated with higher income levels in 2008. Among former combatants who have borrowed money from banks, heads of households have a higher income level while non-heads of households are likely to have lower incomes (this finding is only significant at the 10% level). Among civilians on the other hand, heads and non-heads of household are both likely to have higher incomes if they borrow from banks. This is especially the case for non-heads of households. However, among civilians who are not household heads, borrowing from other civilians is negatively associated with income.

Given the previous results, which suggested that capital is associated with greater incomes in 2008, it is at least plausible that increasing access to capital can lead to greater incomes. However, it is possible that the generally positive relationship between incomes and borrowing may simply reflect the willingness of lenders to provide loans to people they view as having the wherewithal to repay their loans rather than the impact that access to capital has on incomes.

To shed more light onto the impact of increasing access to capital, the types of economic activities of former combatants and civilians as well as their investment decisions are examined in subsequent tables.

It is revealing that there is a negative correlation between borrowing and income. The negative correlation between borrowing from a bank and incomes among ex-combatants who are not the heads of their households could indicate that they are using bank loans for consumption rather than for investing in income-generating activities. The paper will examine whether such borrowing is indeed associated with less investment in the subsequent section. Another notable finding is the negative relationship between incomes and informal borrowing by civilians who do not yet head their own households. This negative correlation in the data may reflect a transfer of capital to younger and poorer community members.

It is also notable that in this formulation of the model, education appears to have differential impacts on the incomes of former combatants versus civilians. While completion of middle school is positively, if weakly, associated with incomes for both civilians and ex-combatants, high school completion is negatively associated with ex-combatants' incomes, whereas among civilians it is positively associated with household heads, but negatively associated with non-heads of households. The difference between civilian household heads and non-household heads may be suggestive of the short-run trade offs of education. That is, younger civilians who stay in school longer are likely to have worked less and build up their livelihood activities. Over time, however, educational attainment is associated with higher incomes. For former combatants, some of the higher income occupations that require higher educational attainment, such as government or formal private sector jobs, may not be available to them. The high incomes that former combatants can obtain through patronage do not depend on having a high level of education, but rather one's rank and connections to the appropriate patronage networks. Thus, it appears plausible that the education of former combatants at the high school level or above does not open higher wage opportunities that are available to civilians at least in the short-run.

Besides access to physical and human capital, there are other notable differences between ex-combatants and civilians from the data. First, although having a close friend in the former combatants' organization KPA is not significantly associated with higher incomes, being an officer during the war in the TNA is positively associated with income. Officers are likely to have a 24.5 percent higher income than comparable rank-and-file former combatants. Thus, while social capital among former combatants may be beneficial to members of the elite, it does not appear to benefit the rank-and-file. That is, although many observers of Aceh have noted the fact that some higher ranking former combatants have prospered from their associations with KPA, the results suggest that these benefits did not extend to the rank-and-file at the time of the survey in August 2008. It is important to treat this result with caution. Since the relationship between rank and income did not appear strong in the specification of the model in Table 5, this result may not be robust. Among civilians on the other hand, having a close friend in KPA is associated with lower incomes among non-heads of households. This may be an artifact of the fact that former combatants are more likely to come from poorer communities or that civilians who were in close proximity to former combatants may have been exposed to greater levels of violence.

6.2.2 Investment and Access to Capital

In the previous subsection borrowing from banks was found to be positively associated with incomes for civilian men and ex-combatant heads of households, but negatively associated with ex-combatants who are not the heads of their households. By examining the correlates of investment, it is possible to gain a better understanding of how these loans are being used as well as the more general question of what the determinants of investment levels are. Understanding the determinants of investment can help us to determine whether ex-combatants are making decisions oriented toward future income streams or whether they are oriented toward current consumption. Table 10 presents an estimate of the correlates of investment in 2008.

Table 10: Investment in 2008 (in Rp. Millions)

	Male Ex-Combatants (18-65)			Male Civilians (18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Head	Non-HH Heads	All	HH Head	Non-HH Heads
Assets05 (in Rp. millions)	1.546 [1.42]	2.125 [2.10]	-0.08 [0.08]	0.073 [0.09]	0.298 [0.22]	0.013 [0.02]
Borrow from Civilian (in Rp. millions)	6.114 [4.80]	6.132 [4.87]	3.114 [2.35]	-0.197 [0.65]	-0.269 [0.75]	0.021 [0.11]
Borrow from Bank (in Rp. millions)	1.956 [2.04]	2.302 [2.20]	-0.936 [0.81]	1.477 [1.28]	1.451 [1.28]	1.229*** [0.33]
Primary School Completed	-5.114 [11.35]	-2.524 [12.18]	2.672 [3.44]	6.166 [8.40]	7.989 [11.35]	-8.038 [5.85]
Middle School Completed	20.069* [10.70]	20.309 [14.03]	16.613* [9.22]	12.314 [20.98]	9.344 [28.58]	0.864 [1.89]
High School Completed	-41.138** [20.57]	-43.450* [22.94]	-11.891 [9.33]	-26.729 [20.18]	-29.286 [25.12]	-0.307 [1.43]
Conflict Injury	-0.501 [10.94]	-4.398 [14.98]	-1.856 [6.52]	80.527 [84.03]	81.639 [86.25]	-3.929 [3.95]
Close Friend in KPA	-12.122 [9.81]	-15.08 [13.92]	2.456 [3.40]	-1.582 [10.33]	3.361 [13.66]	0.638 [2.41]
Officer in TNA	-13.378 [9.55]	-12.166 [12.82]	-6.744 [5.54]			
Age	2.895 [3.26]	7.464 [5.89]	-1.49 [4.42]	4.008** [1.89]	-3.265 [4.26]	1.181* [0.62]
Age-Squared	-0.032 [0.04]	-0.086 [0.07]	0.001 [0.07]	-0.050** [0.02]	0.024 [0.04]	-0.016* [0.01]
Constant	-60.56 [62.64]	-152.927 [121.58]	28.8 [69.60]	-66.421* [35.56]	102.575 [97.19]	-11.837 [10.18]
R-squared	0.145	0.165	0.102	0.055	0.079	0.219
Observations	1012	714	298	1745	1431	314

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to read this table, borrowing Rp.. 1 million from a bank corresponded to an increase of Rp. 1.229 million investment for civilian non-household heads.*

While loans from civilians are associated with higher incomes for ex-combatants, there is no significant correlation between civilian loans and investment. This finding of insignificance may be a result of ex-combatants using loan funds to meet their immediate consumption needs rather than for investment. Recall that former combatants that were not household heads who

obtained bank loans had lower incomes. The evidence in Table 7 suggests that their loans are not used for investment purposes. If so, this may be an indication that ex-combatants who do not head their own households and are able to obtain capital are more likely to use the capital for consumption purposes. A comparison with civilians who do not head their households presents a striking difference as they appear to allocate their bank loans to investment at a much higher rate.

Former combatants whose highest level of education is at the middle school level invest at a higher rate, while those at the high school level and above invest less. The reason for these correlations is unclear, although they appear somewhat consistent with similar but weaker correlations among civilians. Finally, the data also indicate that older civilians are more likely to invest more than younger civilians. Interestingly, age is not as significant a correlate of investment for former combatants. This is consistent with the idea that former combatants, regardless of age, returned to similar low levels of capital with which to invest and earn income immediately after the signing of the MoU.

6.2.3 Liquidity

In trying to understand variation in the incomes of former combatants, the paper has established suggestive evidence that supports the hypothesis that variation in access to capital may be a key determinant of the incomes and investment decisions of former combatants. Another way to further understand the sources of variation in former combatants' incomes is to examine the types of activities in which they engage. While investment levels can be suggestive of whether a former combatant is oriented toward future income versus current consumption, exploring the time until an activity yields a return can also help us to understand former combatants' decision processes. Examining the determinants of whether former combatants' primary activities yield a return in the short-run versus the long-run can also help to test one of the main hypotheses developed in the framework and case studies: liquidity constraints. That is, households that are more constrained by liquidity must balance current consumption needs against investment in more lucrative economic activities that take longer to yield returns.

There is great variation in the time it takes for a given economic activity to mature until it yields a return. Despite this variation, it is possible to classify economic activities according to a binary category of short-term or long-term activities. Here, activities that take up to six months to yield a return are classified as a short-term activity. The measure takes a value of 1 if it meets this definition of short-term activity and a value of 0 if it generally takes longer than six months to maturity. For example, rice farming generally takes about four months between planting and harvesting and therefore is classified as short-term. On the other hand, coffee growing takes a minimum of three years until coffee beans can be harvested from a plant. Hence, coffee growing is an example of a long-term activity.

Although many of the variables from the income and investment models are also plausible factors in determining whether an individual's primary activity is short-term, it is useful to include additional variables that could plausibly affect the dependent variable of short-term activity. One key hypothesis to be examined is whether tighter liquidity constraints will restrict

former combatants to shorter-term economic activities. Along this vein, a variable for whether the respondents' house was damaged due to the war and whether damage to the house was compensated are included in the estimates. In addition, a measure that accounts for the differences between hilly areas and flat areas are also included.[103]

Table 11: Short Term Primary Activity

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Log (Assets in 2005)	-0.035*** [0.01]	-0.028** [0.01]	-0.045** [0.02]	-0.046*** [0.02]	-0.062*** [0.02]	0.03 [0.03]
House Damaged in Conflict	0.004 [0.03]	-0.045 [0.04]	0.112** [0.05]	0.002 [0.06]	0.047 [0.08]	-0.17 [0.12]
Compensated for House	-0.046 [0.06]	0.01 [0.08]	-0.246* [0.13]	-0.041 [0.11]	-0.081 [0.14]	-0.029 [0.09]
Primary School Completed	0.094* [0.05]	0.103* [0.06]	0.024 [0.08]	0.034 [0.05]	0.036 [0.05]	-0.031 [0.17]
Middle School Completed	-0.028 [0.04]	0.007 [0.04]	-0.087 [0.07]	-0.099* [0.05]	-0.059 [0.06]	-0.11 [0.10]
High School Completed	-0.016 [0.05]	-0.031 [0.06]	-0.001 [0.08]	-0.146** [0.06]	-0.219*** [0.06]	-0.025 [0.10]
Conflict Injury	-0.059 [0.05]	-0.028 [0.05]	-0.183** [0.09]	-0.086 [0.08]	-0.089 [0.08]	0.319 [0.26]
Close Friend in KPA	0.081** [0.03]	0.066* [0.04]	0.117** [0.05]	-0.064 [0.07]	-0.11 [0.08]	-0.045 [0.17]
Officer in TNA	-0.002 [0.11]	-0.081 [0.14]	0.042 [0.09]			
Hilly Terrain	-0.01 [0.04]	0.045 [0.04]	-0.125 [0.09]	0.067 [0.04]	0.022 [0.05]	0.275*** [0.10]
Age	-0.015 [0.01]	-0.029* [0.02]	-0.024 [0.04]	-0.023* [0.01]	-0.014 [0.01]	-0.04 [0.03]
Age-Squared	0 [0.00]	0.000* [0.00]	0.001 [0.00]	0 [0.00]	0 [0.00]	0.001 [0.00]
constant	1.475*** [0.29]	1.538*** [0.36]	1.822** [0.73]	1.841*** [0.41]	1.816*** [0.44]	1.229** [0.58]
R-squared	0.088	0.099	0.192	0.146	0.16	0.322
Observations	860	595	265	1472	1247	225

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to read this table, a 1 percent increase in assets in 2005 is associated with a 3.5 percent lower chance that a male ex-combatant is engaged in a short-term activity.*

As expected, high levels of assets for ex-combatants and civilians are associated with a lower probability that their primary economic activities are short-run activities. This negative relationship between assets and short-term economic activities is not the case only for civilians who are not heads of their households. Consistent with the hypotheses that tighter liquidity constraints lead individuals to take up activities that lead to quick returns, damage to ex-combatants' houses is

[103] These models will estimated as weighted OLS linear probability models.

positively associated with short-run activities for non-household heads. This relationship does not hold for ex-combatants who are household heads. Notably, former combatants who are not household heads and have been compensated for damage to their houses are less likely to be involved in short-run economic activities. One difference between civilians and ex-combatants is that civilians with a high school education are significantly less likely to be involved in short-term activities, while there is no significant correlation for ex-combatants. This underscores the earlier result that education appears more important for civilians than ex-combatants. Another notable result is that having close connections with members of KPA is associated with short-run economic activities, although the reason for this correlation is unclear.

Given the apparent importance of capital to whether ex-combatants and civilians are involved in short-term activities, it is interesting to examine whether increasing access to capital through informal or formal loans leads to more long-term economic activities. To examine this, the models above can be respecified to reflect levels of assets and include the amount that was borrowed from civilians and from banks.

Table 12: Short-Term Primary Activity

	Male Ex-Combatants			**Male Civilians**		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets05 (in Rp. millions)	-0.001 [0.00]	0 [0.00]	-0.003 [0.00]	-0.004*** [0.00]	-0.005*** [0.00]	0.005* [0.00]
Borrow from Civilian (in Rp. millions)	-0.005** [0.00]	-0.004 [0.00]	-0.011** [0.01]	-0.007*** [0.00]	-0.006*** [0.00]	-0.014* [0.01]
Borrow from Bank (in Rp. millions)	-0.011*** [0.00]	-0.012*** [0.00]	0.001 [0.01]	-0.005*** [0.00]	-0.004*** [0.00]	-0.009* [0.01]
House Damaged in Conflict	0.002 [0.03]	-0.044 [0.04]	0.139*** [0.05]	-0.003 [0.06]	0.037 [0.07]	-0.199* [0.11]
Compensated for House	-0.043 [0.06]	0.01 [0.07]	-0.286** [0.13]	-0.078 [0.11]	-0.085 [0.13]	-0.084 [0.11]
Primary School Completed	0.054 [0.05]	0.059 [0.05]	0.012 [0.07]	0.044 [0.05]	0.05 [0.05]	-0.056 [0.15]
Middle School Completed	-0.027 [0.03]	0.007 [0.04]	-0.085 [0.06]	-0.099* [0.05]	-0.069 [0.06]	-0.088 [0.09]
High School Completed	-0.001 [0.05]	-0.014 [0.06]	0.013 [0.08]	-0.126** [0.06]	-0.179*** [0.06]	-0.067 [0.10]
Conflict Injury	-0.033 [0.04]	-0.014 [0.05]	-0.147* [0.09]	-0.069 [0.07]	-0.081 [0.08]	0.310* [0.17]
Close Friend in KPA	0.074** [0.03]	0.067* [0.04]	0.102** [0.05]	-0.065 [0.07]	-0.111 [0.08]	-0.055 [0.16]
Officer in TNA	0.037 [0.09]	-0.004 [0.11]	0.006 [0.09]	0 [0.00]	0 [0.00]	0 [0.00]

Hilly Terrain	-0.01 [0.04]	0.036 [0.05]	-0.137* [0.08]	0.057 [0.04]	0.021 [0.04]	0.260*** [0.09]
Age	-0.007 [0.01]	-0.019 [0.02]	-0.013 [0.04]	-0.016 [0.01]	-0.008 [0.01]	-0.041 [0.03]
Age-Squared	0 [0.00]	0 [0.00]	0 [0.00]	0 [0.00]	0 [0.00]	0.001 [0.00]
Constant	0.811*** [0.24]	0.950*** [0.31]	0.991 [0.68]	1.036*** [0.30]	0.800*** [0.30]	1.681*** [0.46]
R-Squared	0.085	0.097	0.195	0.153	0.166	0.327
Observations	1000	712	288	1651	1406	245

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to read this table, borrowing Rp. 1 million from a civilian is associated with a decrease of 0.5 percent in the likelihood of a male ex-combatant being engaged in a short-term primary economic activity.*

Based on the results above, it appears that access to capital is associated with longer-term economic activities for both ex-combatants and civilians. But, for former combatants it appears that access to capital through formal and informal loans is more strongly associated with longer-term economic activities than the proxy for assets in 2005. In contrast, assets in 2005 are still correlated with longer-term economic activities for civilians. This difference between ex-combatants and civilians may be a result of the possibility that former combatants' household assets may not proxy for capital that can be allocated for investing in longer-term economic activities as well as they might for civilians.

6.3 Violence and Economic Outcomes

Thus far, this paper has found evidence for the importance of capital to the incomes and economic decisions of former combatants and civilians. What then explains variation in assets and access to capital among former combatants? Among the key hypotheses is that assets in 2005 and access to capital may be related to the exposure of the ex-combatants' households and communities to violence. Besides its impact on physical capital, violence may also have a profound impact on ex-combatants' human capital endowments. This subsection will examine the determinants of various proxies for physical and human capital that are important for income generation such as assets, educational outcomes, injuries, and damage to houses. The subsection will then examine the impact of war-time violence on each of these measures.

6.3.1 Assets in 2005

According to the preceding results, the most robust determinant of incomes and the decision to engage in economic activities that yield a return in the short-run is the initial endowment of assets ex-combatants and civilians possess in 2005. Given the importance of assets in 2005 for economic outcomes and decisions, it is useful to examine the correlates of assets just after the war ended. Various measures are included that capture the individual and village experiences of conflict in addition to individual controls for variables likely to affect assets in 2005.

Table 13: Assets in 2005

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets in 1998 (in Rp. millions)	0.488*** [0.10]	0.400*** [0.11]	0.767*** [0.09]	0.694*** [0.14]	0.414*** [0.10]	0.967*** [0.03]
House Damaged in Conflict	-1.163 [1.07]	-0.559 [1.50]	-2.825* [1.68]	-3.518** [1.64]	-2.707 [1.65]	-5.100** [2.41]
Total HH Members in 1998	0.403 [0.26]	0.383 [0.41]	0.217 [0.26]	-0.031 [0.26]	0.203 [0.30]	0.187 [0.35]
Years Fighting	-0.078 [0.14]	-0.113 [0.13]	0.203 [0.42]			
Age	-0.17 [0.55]	0.346 [0.64]	0.302 [1.55]	0.112 [0.27]	1.162*** [0.34]	-0.894 [0.60]
Age-Squared	0.002 [0.01]	-0.003 [0.01]	-0.005 [0.03]	-0.002 [0.00]	-0.012*** [0.00]	0.012 [0.01]
Village Homes Burned (as % of total HH)	-0.334 [4.43]	-0.568 [4.17]	-4.544 [11.77]	-15.234** [6.66]	-14.758** [5.91]	-6.908 [13.88]
Villagers Killed (as % of total pop)	-10.585* [6.17]	-9.826 [6.57]	1.014 [34.22]	13.708* [7.38]	14.631** [7.13]	39.286 [62.48]
Ever presence of mil. post (period 1998-2005)	-2.915* [1.52]	-1.842 [1.75]	-3.109* [1.82]	-0.997 [0.92]	-0.413 [0.96]	-2.114 [1.41]
TNA in Village (as % of total pop)	6.938*** [0.98]	2.644*** [0.99]	10.102*** [2.95]	-9.777* [5.42]	-10.848** [4.80]	-13.34 [27.14]
Support for GAM (period 2001-2005)	0.369 [0.39]	0.375 [0.47]	-0.059 [0.23]	0.056 [0.15]	0.312** [0.14]	-0.263 [0.20]
Constant	7.478 [10.48]	-4.597 [12.37]	0.128 [22.27]	4.672 [5.94]	-20.305*** [7.39]	22.403* [11.42]
R-Squared	0.158	0.129	0.35	0.544	0.299	0.88
Observations	979	688	291	1680	1377	303

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, an increase in assets in 1998 by Rp. 1 million is associated with an increase in assets in 2005 by Rp. 488,000.*

Controlling for assets in 1998 before the latest escalation of the war, the most significant correlate of ex-combatants' assets immediately after the war ended in 2005 is the portion of former combatants of the village population. It is notable that although a larger presence of former combatants is associated with greater assets in 2005 for former combatants, it is also associated with fewer assets for civilians. This finding is consistent with Kalyvas' (2006) theory, which argues that a stronger insurgent presence makes denunciations of combatants less likely and the possibility of more widespread, indiscriminate violence that affects civilians more likely (unless insurgents fully control a village).

Although it is also possible that civilians may have been victims of insurgent violence as well, the data indicate that the vast majority of the victims of violence was likely caused by government forces. According to the ARLS data on deaths and injuries, village heads reported that 66.2 percent was due to government forces, 7.0 percent was due to GAM forces, and the perpetrators of the remaining 26.8 percent was either unknown or not reported by village heads. Even if all of the 26.8 percent of unattributed victims was committed to GAM forces, the majority of deaths and injuries would still be due to government forces. This suggests that insurgent forces had better information about fellow villagers and could therefore be more selective about whom to target for violence in order not to alienate large segments of the civilian population.

Another alternative explanation for the higher level of assets for ex-combatants in areas of insurgent strongholds may be the ability of ex-GAM members to dominate the local economy in areas of strong insurgent presence. This could potentially make civilians worse off and ex-GAM better off. Such a hypothesis, however, is difficult to test using the existing data.

Another finding is that the presence of a military post in the village is associated with a lower initial endowment of assets for former combatants when the war ended in 2005. This is consistent with the case studies examined in which the presence of a military post discouraged ex-combatants' family members and civilians from working and often curtailed the times that they could work. Such a scenario led to lower incomes, little accumulation of assets, and sometimes even the liquidation of assets to meet consumption needs.

A look at civilians' assets in 2005 is also useful to our analysis to understand their economic decisions and outcomes. Not surprisingly damage to civilians' houses and the percentage of homes burned down is associated with lower civilian assets in 2005. More surprising is that a larger percentage of villagers killed are associated with higher assets in 2005.

6.3.2 Housing Damage

Among the key tactics in counterinsurgency strategy in Aceh was the destruction of property, especially homes. Where combatants could be identified but not captured or killed, government forces sought to punish insurgents by ransacking their property. When government intelligence sources were unable to identify combatants, they would sometimes resort to punishing civilians more widely. This subsection will examine the correlates of damage to combatant and civilian homes.

Table 14: House Damaged by Conflict

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets in 1998 (in Rp. millions)	0.002 [0.00]	0.002 [0.00]	0.002 [0.00]	0.001 [0.00]	0.001 [0.00]	0 [0.00]
Total HH Members in 1998	0.015** [0.01]	0.029*** [0.01]	-0.002 [0.01]	0 [0.00]	0 [0.01]	0 [0.01]
Years Fighting	0.015*** [0.00]	0.013*** [0.00]	0.030*** [0.01]			
Age	0.042*** [0.01]	0.051*** [0.02]	0.025 [0.05]	0.007 [0.01]	0.01 [0.01]	-0.043** [0.02]
Age-Squared	-0.001*** [0.00]	-0.001*** [0.00]	0 [0.00]	0 [0.00]	0 [0.00]	0.001** [0.00]
TNA in Village (as % of total pop)	-0.125*** [0.04]	-0.164*** [0.06]	-0.362** [0.15]	0.064 [0.16]	0.003 [0.14]	0.928 [0.92]
Village Homes Burned (as % of total HH)	0.893*** [0.23]	0.788*** [0.20]	1.487 [0.98]	0.987*** [0.21]	0.884*** [0.17]	1.345** [0.65]
Villagers Killed (as % of total pop)	0.07 [0.34]	-0.076 [0.33]	4.037*** [1.39]	-0.029 [0.18]	0.084 [0.17]	-2.097 [1.28]
Ever presence of mil. post (period 1998-2005)	0.032 [0.04]	0.057 [0.04]	-0.019 [0.06]	0.046** [0.02]	0.041** [0.02]	0.02 [0.03]
Support for GAM	0.011* [0.01]	0.017*** [0.01]	-0.01 [0.01]	0.003 [0.00]	0.005 [0.00]	-0.004 [0.01]
Constant	-0.478* [0.26]	-0.646* [0.36]	-0.178 [0.73]	0.019 [0.17]	-0.135 [0.18]	1.060*** [0.33]
R-Squared	0.087	0.106	0.131	0.093	0.095	0.346
Observations	979	688	291	1680	1377	303

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, an increase in years fighting by 1 year is associated with a 1.5 percent increase in the likelihood that a male ex-combatant's house was damaged by conflict.*

The table above reveals stark differences in the destruction of houses between ex-combatants and civilians. Among ex-combatants, the larger their household and the longer they fought, the higher the likelihood that their homes would be damaged during the conflict. Not surprisingly widespread destruction of homes in the village is positively associated with damage to ex-combatants' homes, especially among heads of households. It is revealing, however, that a larger insurgent presence was associated with a lower likelihood that a combatant's home would be destroyed. This is similar to the finding that a larger GAM presence was associated with greater assets in 2005 and supports the hypothesis that stronger insurgent presence could prevent individual insurgents' identities from being revealed to government forces. In locations that were known for insurgent activity, the military would establish a post to maintain control over the village. These posts were also associated with a higher probability of civilian home destruction. The presence of these posts were not correlated with a higher probability of combatants' homes being destroyed.

6.3.3 Injuries Due to Conflict

One of the most direct ways that war can affect a combatant's ability to earn an income after war is if it leaves him or her injured. In this subsection, variables that might plausibly correlate with the probability of injury are explored further.

Table 15: Probability of Conflict Injury

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets in 1998 (in Rp. millions)	0.002* [0.00]	0.002** [0.00]	0 [0.00]	0 [0.00]	0 [0.00]	0 [0.00]
Total HH Members in 1998	-0.007 [0.01]	-0.002 [0.01]	-0.009 [0.01]	-0.005 [0.00]	-0.003 [0.00]	-0.007** [0.00]
Years Fighting	0.003 [0.00]	0.004 [0.00]	0 [0.01]			
Age	-0.003 [0.01]	-0.007 [0.01]	0.013 [0.03]	0.010*** [0.00]	0.007 [0.01]	0.006* [0.00]
Age-Squared	0 [0.00]	0 [0.00]	0 [0.00]	-0.000*** [0.00]	0 [0.00]	0 [0.00]
TNA in Village (as % of total pop)	0.005 [0.03]	0.057 [0.04]	-0.016 [0.08]	0.074 [0.11]	0.009 [0.09]	1.002** [0.50]
Village Homes Burned (as % of total HH)	-0.158 [0.13]	-0.134 [0.14]	-0.580* [0.34]	-0.034 [0.05]	-0.038 [0.06]	-0.107 [0.09]
Villagers Killed (as % of total pop)	0.207 [0.29]	0.155 [0.32]	-0.359 [0.95]	0.021 [0.13]	0 [0.15]	0.108 [0.28]
Ever Presence of Mil. Post (period 1998-2005)	-0.054* [0.03]	-0.082** [0.04]	-0.006 [0.04]	0.031*** [0.01]	0.038** [0.01]	0.016 [0.01]
Support for GAM (period 2001-2005)	-0.001 [0.00]	-0.002 [0.01]	0.002 [0.01]	-0.002 [0.00]	-0.005 [0.01]	0.001 [0.00]
Constant	0.262 [0.20]	0.339 [0.30]	0.143 [0.44]	-0.095 [0.07]	-0.005 [0.14]	-0.085* [0.04]
R-Squared	0.073	0.081	0.115	0.054	0.06	0.115
Observations	979	688	291	1680	1377	303

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, an increase in age by assets in 1998 by Rp 1 million is associated with an increase of 0.2 percent in the likelihood that a male ex-combatant was injured by conflict.*

As the above results show, there are few meaningful correlates with the probability of conflict-related injuries. Perhaps the most interesting result is the fact that the presence of a military post has a negative association with conflict injuries for ex-combatants while it has a positive association for civilians. That is, the presence of a military post in a village appears to raise the likelihood of violence against civilians. The negative correlation of military posts and injuries for ex-combatants may be reflection of the tendency of military posts to be located in areas of stronger GAM presence. A stronger GAM presence might plausibly make it easier for insurgents to avoid being identified and therefore avoid violence at the hands of government forces. Alternatively, the presence of a post could increase the risk of violence by government forces

that attempt to extract information from civilians, whereas insurgents could simply avoid the village once the government established a post in the village.

6.3.4 Educational Attainment

Among civilians, high school attainment is associated with higher incomes for heads of households and more economic activities that are more oriented for the long-term. The effect that war has on educational attainment and therefore subsequent income streams is well documented. In the case of Aceh, what effect did the war have on educational attainment?

This subsection examines the correlates of high school completion. Male ex-combatants and male civilians are compared between the ages of 18 and 26 since the combatants were still of schooling age in 1998 when the bulk of GAM recruits began to join the insurgency.

Table 16: High School Completed

	Male Ex-Combatants	**Male Civilians**
	(Ages 18-26)	(Ages 18-26)
	(1)	(2)
Assets in 1998 (in Rp. millions)	0.004* [0.00]	0.003** [0.00]
Total HH Members in 1998	0.017 [0.01]	0.018 [0.02]
Years Fighting	-0.049*** [0.02]	
House Damaged in Conflict	-0.031 [0.07]	-0.151 [0.16]
Injury Due to Conflict	0.036 [0.08]	-0.236 [0.24]
Age	0.672** [0.32]	-0.059 [0.26]
Age-Squared	-0.014** [0.01]	0.001 [0.01]
TNA in Village (as % of total pop)	0.270** [0.11]	1.126 [1.50]
Village Homes Burned (as % of total HH)	-0.071 [0.66]	-0.662* [0.39]
Villagers Killed (as % of total pop)	-0.276 [0.36]	-1.778*** [0.68]
Ever presence of mil. post (period 1998-2005)	0.011 [0.07]	0.032 [0.10]
Support for GAM (period 2001-2005)	-0.013** [0.01]	0.023 [0.02]
Constant	-7.559** [3.73]	1.661 [2.83]
R-Squared	0.18	0.283
Observations	164	260

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, a Rp. 1 million increase in assets in 1998 is associated with a 0.4 percent increased chance that a male ex-combatant completed high school.*

The results reveal that assets in 1998 are associated with greater likelihood of completing high school for both combatants and civilians. Not surprisingly, the duration of fighting is associated with a lower probability of completing high school. More interesting, but less readily explainable, is the fact ex-combatants in villages with a larger GAM presence were more likely to have completed high school. A look at the civilians shows that higher levels of violence, either in terms of the number of villagers killed or the number of homes burned, are associated with significantly lower likelihood of high school completion and therefore worse economic prospects in the long-run.

6.4 Explaining Access to Capital

Thus far, the paper has established cumulative evidence suggesting the central importance of capital to the economic outcomes and decisions of former combatants and civilians in Aceh. Given the importance of capital, it is important to understand how individuals are able to gain access to capital. Some of the common means by which individuals in Aceh gain access to capital are through banks, informal moneylenders and traders (known as *toke*), and informal loans from social networks within and outside of their villages. This subsection examines some of the correlates of access to capital through informal and formal means.

6.4.1 Informal Sources of Capital

In many developing country contexts, communities provide the vital services of social insurance and finance for their members. During hard times, community members can turn to their broader communities for assistance. For community members who require capital to carry out their economic activities, communities can be a vital source of capital. The provision of informal loans may also be a tangible metric for the degree of reintegration of former combatants into the civilian population itself since they show how civilians may be willing to provide help to returning ex-combatants. A look at the sample means of average loans from both formal and informal sources is revealing.

Table 17: Informal and Formal Loans (Means)

	Ex-Combatants	Civilians	Difference
Borrowed from Civilians (in Rp. millions)	2.874	1.024	1.850***
Borrowed from Banks (in Rp. millions)	0.602	1.808	-1.206***

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. Weights are the inverse of probability of selection. Data: ARLS*

Former combatants received on average Rp. 2.87 million (approximately US$ 280) from informal sources, which is Rp. 1.85 million more than civilians. But, civilians receive Rp. 1.21 million more in loans from banks than former combatants. To understand the reason for these differences, it is useful to examine the correlates of both types of lending. Variables are included that reflect the individual and village experiences in violence, individual controls likely to affect the need or ability to borrow, and assets in 2005.

Table 18: Money Borrowed from Civilians (in Rp. millions)

	Male Ex-Combatants			Male Civilians		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets in 2005 (in Rp. millions)	0.052 [0.04]	0.075 [0.06]	-0.007 [0.01]	0.005 [0.01]	0.013 [0.02]	-0.001 [0.00]
Total HH Members in 2008	0.008 [0.15]	0.247 [0.29]	0.033 [0.08]	-0.002 [0.05]	0.013 [0.07]	0.02 [0.04]
Years Fighting	0.018 [0.08]	-0.02 [0.08]	0.226** [0.09]	--	--	
House Damaged in Conflict	1.965*** [0.53]	2.198*** [0.68]	0.792* [0.40]	0.538 [0.45]	0.795 [0.57]	-0.829* [0.47]
Injury Due to Conflict	0.586 [0.82]	0.103 [1.04]	0.835 [0.55]	1.678** [0.81]	1.717* [0.90]	0.541 [0.49]
Age	0.467* [0.25]	0.248 [0.40]	-0.599 [0.49]	0.197*** [0.06]	0.245*** [0.09]	-0.047 [0.09]
Age-Squared	-0.006* [0.00]	-0.004 [0.00]	0.01 [0.01]	-0.002*** [0.00]	-0.003*** [0.00]	0.001 [0.00]
Close Friend in KPA	0.53 [0.44]	0.753 [0.64]	0.348 [0.31]	0.479 [0.55]	0.46 [0.72]	0.813 [0.57]
Officer in TNA	-0.416 [1.14]	0.045 [1.54]	-0.299 [0.86]	--	--	
TNA in Village (as % of total pop)	-1.683** [0.66]	-1.528* [0.78]	-0.895** [0.37]	-1.246 [1.14]	-1.634 [1.24]	4.995 [6.85]
Village Homes Burned (as % of total HH)	-4.32 [2.92]	-5.343 [3.49]	0.831 [4.58]	0.412 [1.25]	0.202 [1.41]	1.179 [1.67]
Ever presence of mil. post (period 1998-2005)	0.508 [0.58]	0.563 [0.77]	-0.05 [0.35]	0.093 [0.23]	0.25 [0.30]	-0.363 [0.31]
Support for GAM (period 2001-2005)	-0.038 [0.10]	-0.074 [0.14]	0.031 [0.06]	0.01 [0.04]	0.028 [0.04]	-0.059 [0.08]
Heavy House Damaged by Tsunami	1.164 [1.46]	1.27 [1.78]	-0.032 [0.62]	1.969* [1.11]	1.934 [1.21]	2.243 [2.28]
Hilly	-0.008 [0.62]	0.002 [0.88]	-0.492 [0.37]	-0.377 [0.26]	-0.484 [0.31]	-0.107 [0.24]
Constant	-10.045* [5.12]	-6.336 [7.81]	7.672 [6.64]	-3.194** [1.43]	-4.304** [1.89]	1.535 [1.55]
R-Squared	0.079	0.087	0.225	0.038	0.039	0.095
Observations	994	700	294	1709	1400	309

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, an ex-combatant whose house was damaged in the conflict borrowed Rp. 1.965 million more from civilians than one who did not have house damage.*

The results from the table above show that former combatants who have sustained damage to their homes due to the conflict are significantly more likely to receive informal loans. This appears to be evidence that communities serve as a source of social insurance for former combatants who have suffered significant property losses during the war. Along this line, former combatants who are not heads of households who have fought for longer periods received larger informal loans. Among civilians, individuals who have been injured from the conflict are associated with approximately Rp. 1.7 million (roughly US$ 170) in additional informal loans.

The table also reveals another important result. Villages with TNA populations that are larger shares of the village population provide roughly Rp. 1.7 million (roughly US$ 170) less in informal loans to ex-combatants. Consistent with the qualitative cases examined earlier, communities' role as sources of social insurance may be constrained by their capacity to provide assistance to former combatants. Even if the possibility that flatland areas may have higher access to capital and therefore do not need informal sources of capital is controlled for, the larger presence of ex-combatants is strongly correlated with fewer loans. Notably, public support for GAM during the war is not significantly correlated with higher levels of assistance from civilians. This implies that a community's capacity may be more important than its war-time support for former combatants in determining whether they provide financial assistance to former combatants. It is also notable that close connections to KPA and being an officer in GAM's military wing are not associated with greater access to informal loans.

6.4.2 Formal Sources of Capital

Thus far, the paper has found that access to bank loans is associated with higher incomes and longer-term economic activities for civilians and ex-combatant heads of households. Although formal loans can be a powerful vehicle for higher incomes, access to formal loans is generally limited in developing country contexts, including Aceh.[104] Because banks are concerned with the ability of borrowers to repay their loans, loans are limited to those believed to have the wherewithal to repay the loans rather than those with the most capital constraints. What are the determinants of bank lending? This subsection explores some of the correlates of bank lending for civilians and ex-combatants.

Table 19: Money Borrowed from Bank (in Rp. millions)

	Male Ex-Combatants			**Male Civilians**		
	(Ages 18-65)			(Ages 18-65)		
	(1)	(2)	(3)	(4)	(5)	(6)
Household Head Status	All	HH Heads	Non HH Heads	All	HH Heads	Non HH Heads
Assets in 2005 (in Rp. millions)	0.011 [0.01]	0.009 [0.01]	0.02 [0.02]	0.059** [0.03]	0.118*** [0.03]	0.014 [0.01]
Total HH Members in 1998	0.008 [0.05]	0.042 [0.08]	0.029 [0.05]	-0.022 [0.10]	-0.159 [0.13]	0.111 [0.08]
Years Fighting	-0.012 [0.04]	-0.02 [0.05]	0.032 [0.06]	--	--	--
House Damaged in Conflict	0.24 [0.28]	0.267 [0.35]	0.18 [0.25]	-1.378*** [0.50]	-1.613*** [0.61]	-0.04 [0.32]
Injury Due to Conflict	-0.344 [0.23]	-0.47 [0.31]	0.002 [0.25]	0.116 [1.38]	0.435 [1.42]	-3.922 [3.15]
Age	0.106 [0.09]	0.069 [0.10]	-0.272 [0.32]	0.475*** [0.12]	0.717*** [0.20]	0.343* [0.19]
Age-Squared	-0.001 [0.00]	-0.001 [0.00]	0.005 [0.01]	-0.005*** [0.00]	-0.008*** [0.00]	-0.005* [0.00]
Close Friend in KPA	0.233 [0.26]	0.316 [0.36]	0.106 [0.25]	0.052 [0.53]	0.117 [0.84]	0.029 [0.38]

[104] World Bank (2009)

Officer in TNA	0.258 [0.75]	0.297 [0.93]	-0.359 [0.22]	--	--	--
TNA in Village (as % of total pop)	0.361 [0.24]	0.753** [0.31]	-0.835** [0.41]	-0.329 [2.46]	-1.448 [2.03]	26.84 [20.86]
Village Homes Burned (as % of total HH)	-0.98 [1.40]	-1.406 [1.77]	1.34 [1.88]	1.086 [1.33]	1.637 [1.51]	-0.222 [1.83]
Ever presence of mil. post (period 1998-2005)	0.115 [0.34]	0.017 [0.42]	0.369 [0.23]	-0.214 [0.51]	-0.538 [0.68]	0.037 [0.34]
Support for GAM (period 2001-2005)	0.062* [0.04]	0.053 [0.05]	0.063* [0.04]	-0.241 [0.16]	-0.171 [0.15]	-0.371 [0.29]
House Damaged by Tsunami	0.626 [1.16]	0.586 [1.12]	0.923 [1.69]	1.758* [1.05]	2.019* [1.17]	-0.219 [0.41]
Hilly	-0.448** [0.22]	-0.672** [0.30]	-0.014 [0.25]	-1.318** [0.57]	-1.431** [0.71]	-0.716* [0.41]
Constant	-1.987 [1.76]	-0.942 [1.84]	2.471 [4.29]	-8.296*** [2.41]	-13.569*** [4.46]	-5.876* [3.40]
R-Squared	0.029	0.03	0.111	0.083	0.092	0.387
Observations	994	700	294	1709	1400	309

Notes: *Significance * p<0.10, ** p<0.05, *** p<0.01. District dummies included for all models. Weights are the inverse of probability of selection. All models are OLS regressions; probits yield similar results. Standard errors in brackets are clustered at the village-level to account for correlations within villages. Data: ARLS. As an example of how to interpret this table, being located in a hilly village is associated with Rp. 448,000 borrowed less from a bank on average than someone in a flat area.*

The data on civilians provides evidence that banks provide loans to those thought to have the wherewithal to repay the loans. Civilians with greater assets, whose homes did not sustain damage due to conflict and who were in the latter part of their working lives were associated with more bank loans on average. The data on ex-combatants reveals fewer systematic patterns among covariates of bank loans. One interesting finding that does not lend itself to easy interpretation is that the proportion of TNA in a village is positively correlated with bank loans for ex-combatant household heads, but negatively correlated with non-household heads. Whereas informal loans from civilians were largely need-based, bank loans were based more on higher perceived chances of success and therefore regressive in nature. That is, older civilians with larger capital endowments have greater access to bank loans than younger civilians or ex-combatants. Finally, ex-combatants in hilly areas have significantly fewer bank loans than in flatland areas, highlighting the greater financial isolation of the hilly interior.

7. CONCLUSIONS

7.1 Summary of Findings

The ARLS dataset has provided a unique opportunity to examine hypotheses about the decisions and outcomes of ex-combatants and civilians in post-war contexts. The paper has developed a framework that connects war-time experiences in violence with the post-war decisions that ex-combatant and civilian households make with regard to their livelihoods.

The paper has found that in the post-war context, ex-combatants have lower levels of assets and education than civilians. These disparities shape many of the constraints and opportunities that have defined the post-war economic challenges of ex-combatants. With fewer assets in 2005, ex-combatants' had lower incomes and quickly-maturing, but less profitable, economic activities in 2008. Increased access to formal and informal loans appears to allow former combatants and civilians to devote their time to longer-term economic activities.

Second, while education appears to be strongly correlated with higher incomes in the long-run for civilians, it does not appear to be associated with higher incomes among former combatants so far. It is possible that returns on educational investment may manifest themselves over time; however, ex-combatant income in the short and medium term does not appear to benefit from higher educational outcomes.

Third, while much has been made about the importance of connections to the KPA for patronage-related income, these benefits appear to be limited primarily to the officers. Rank-and-file former combatants do not appear to benefit in higher incomes from connections to KPA. Most former combatants generate their incomes through activities such as agriculture that do not benefit from closer connections to KPA.

In addition to the direct impacts of the war on ex-combatant households, there are significant effects of the war on their communities. In some communities, the impact of counterinsurgency violence was focused on combatant households and largely avoided civilian households. In others, combatants were able to avoid detection by blending into their communities. In such communities, civilians had a much higher chance of sustaining losses to their assets than in communities where government forces were able to identify insurgents. In the post-war context, civilians in communities that had experienced heavier losses in assets were less able to provide informal loans to returning ex-combatants than those in areas where civilians were largely spared from violence.

7.2 Implications for Policy

The ultimate objective of this paper was to provide an analysis of ex-combatants economic outcomes to inform policymakers and scholars concerned with reintegration in Aceh. Indeed, the aforementioned results have important implications for Aceh's reintegration policy as well as its broader development policies.

7.2.1 Priorities: Access to Credit

The most robust finding is the importance of capital to the choices and outcomes of ex-combatants and civilians. Informal and formal sources of loans are associated with engagement in longer-term activities, which are associated with higher incomes in the long run. In the absence of capital, former combatants have resorted to menial wage labor and in many cases to illegal logging to fulfill their immediate consumption needs. Those who have gained access to capital have been able to devote more time to cultivating longer-term economic activities. Following these results, increasing access to capital is likely to lead ex-combatants to invest in longer-term activities that can raise their incomes and in turn raise the opportunity cost of taking up arms again. Increasing access to capital for poor households, including ex-combatants, can also help to shift ex-combatants' energies away from environmentally destructive illegal logging since they could invest in more lucrative longer-term activities.

A notable result from the analysis is that higher levels of formal educational attainment has not appeared to benefit former combatants markedly since returning from war. Although it is possible that education may become more beneficial to ex-combatants' incomes over time, at least in the short and medium term higher education does not appear especially helpful. While it is premature to conclude that investing in education or skills will not eventually become important to the welfare of former combatants, in the short and medium term, their access to capital appears to be a larger determinant of incomes. These findings may not be applicable for less formal skills training, as this study only examined levels of formal education. Further research on the impact of skills training programs would help to assess whether vocational training could be an effective intervention.

7.2.2 Targeting: Individual vs. Community

This paper's findings also have important implications for how reintegration and development programs should be targeted in Aceh and potentially other contexts. Evidence suggests that the government's counterinsurgency strategy led to two categories of how violence was applied: selective and indiscriminate. In communities where violence was selectively applied against limited numbers of insurgent households, civilians have been able to provide greater assistance to former combatants after the war. However, civilians in communities that saw sustained, widespread violence have been less able to provide assistance to their generally larger ex-combatant communities. This would imply that policymakers should target reintegration and development programs especially in villages that sustained widespread violence during the war.

A related finding is the importance of informal loans from civilians as a source of capital for former combatants. Whereas access to bank loans is largely regressive, benefiting those already with profitable livelihoods, informal loans are a more progressive source of social insurance, aimed at providing capital to those with acute needs. Expanding capital to communities that have sustained widespread damage from the war could in turn lead to greater assistance to poorer fellow villagers, in addition to potentially improving social cohesion. The finding that informal lending to ex-combatants is lower in villages with more former combatants suggests that resource constraints may be preventing former combatants from accessing vital capital through traditional mechanisms of social insurance via civilians. Thus, an increase in resources

to communities with especially high numbers of former combatants and conflict victims could potentially be an efficient means by which to improve post-conflict welfare. The finding that members of the community provide loans progressively to fellow members in need provides support for community-driven reintegration programs, which provide resources to communities to allocate to victims of conflict. The BRA-KDP reintegration program in Aceh was designed around this principle. In the impact evaluation of the BRA-KDP program, villages that received the program appeared to have significantly less poverty than in comparison villages that did not receive the program, which suggests that the resources were usefully targeted at the groups that were more impoverished (Barron et al., 2009, pp. 28-30).

7.2.3 New Sources of Resentment

During our field visits, a common sentiment among rank-and-file former combatants was that the elite in KPA were profiting from increased political power or access due to the election of former GAM members to the district head positions and the governorship. Many of the rank-and-file noted that resentment was building toward elites who have not shared their newfound prosperity. In the words of one ex-combatant, "The commanders used the GAM name to get contracts for themselves, but they haven't shared their take yet."[105]

The data here supports the perception that elite connections to KPA, not rank-and-file connections, are associated with higher incomes. In interviews with policymakers, a common perception is that former combatants are doing well. This may be due to the more conspicuous presence of elite ex-combatants in urban areas where policymakers are more likely to reside. This belies the fact that the vast majority of former combatants, at least when the survey was implemented in August 2008, still have significantly fewer assets than civilians. It is also possible that the recent success of Partai Aceh[106] candidates' in local parliamentary elections has given former GAM insurgents more opportunities to exploit political connections for personal economic gain. Even with this increased access to government resources, it is likely that many former combatants will be unable to exploit political connections and remain impoverished. It is therefore critical that policymakers remain committed to assisting reintegration efforts in poor, rural areas, particularly where violence was more widespread. Shifting attention away from this significant population of impoverished former combatants risks stoking the fires of resentment again.

[105] Interview, ex-GAM combatant, Banda Aceh, June 14, 2008
[106] GAM's affiliated political party

8. APPENDIX: SURVEY METHODOLOGIES

8.1 Overview

This appendix is a description of the research and sampling design for the Aceh Reintegration and Livelihood Surveys (ARLS) adopted from a more general document of the ARLS sampling strategy (which can be found at . This study was funded by the World Bank and designed by a team of researchers from Columbia (Macartan Humphreys and Laura Paler), Harvard (Yuhki Tajima) and Stanford Universities (Jeremy Weinstein) and the World Bank (Patrick Barron). The surveys were implemented in Aceh by the research firm A.C. Nielsen from July-September 2008.

The over-arching goal of these surveys is to assess prospects for peace and reintegration among both civilian and former-combatant populations in Aceh. The immediate goals of the ARLS were twofold. One was to collect individual-level data for an impact evaluation of the provincial government's BRA-KDP project, a post-conflict community-drive development program funded by the national government with technical assistance provided by the World Bank. The second was to collect livelihood and reintegration data on a representative sample of ex-combatants, and a control group of civilian males. Surveys were conducted in a representative sample of 754 villages throughout Aceh. In sampled villages, four over-lapping surveys were implemented:

Long Household Survey (LHS): Conducted in a representative sample of villages from the 67 rural subdistricts that received BRA-KDP, as well as in a representative sample of villages in 67 matched subdistricts (described in Section 2). Five households were randomly sampled in sampled villages, and main respondents were selected randomly from all males and females between the ages of 18-65 who had lived in the household for at least one month. The LHS is a representative sample of men and women from BRA-KDP treatment and control subdistricts. It is not representative of other subdistricts and is not representative at the district level. (Contained in R_DATA).

Short Household Survey (SHS): Implemented in a representative sample of all subdistricts not included in the LHS. The main goal of this survey is to provide, in conjunction with the LHS, an Aceh-wide representative control group of adult males between the ages of 18-65 for the ex-combatant survey. Male respondents were sampled from two randomly sampled households in selected rural villages and eight randomly sampled households in urban villages. A representative sample of male respondents can be achieved by combining the SHS and the male sub-population of the LHS. (Contained in R_DATA).

Ex-TNA Survey: An Aceh-wide representative sample of ex-combatants. Eligible respondents included anyone who fought with GAM-TNA, or was in the GAM-TNA command structure, for at least one month since 1998. A full list of ex-TNA was enumerated in each of the 754 villages and ex-TNA were sampled with a 6 in 10 probability (Contained in R_DATA).

Village Head Survey (VHS): A survey of village-head characteristics, as well as village-level characteristics in all sampled villages. (Contained in VH_DATA).

Household Rosters: In the LHS, SHS and Ex-TNA surveys, data was collected on every member of the respondent's 1998 and 2008 households. The roster includes demographic, welfare, recruitment and conflict data on all members in the household at those times. (Contained in H_Data).

Table 20: Summary of Sample

	Long Household		Short Household		Ex-TNA	Village Head*
	Treated	Controls	Rural	Urban		
Number of villages	218	245	265	25	320	756
Number of subdistricts	67	69	99	15	153	247
Number of districts/kota	17	17	17	3	19**	20
Number of respondents	1090	1225	531	200	1075	756
Total respondents	**2315**		**731**		**1075**	**756**

** Two additional VH surveys were conducted*
*** There were no ex-TNA surveys conducted in Aceh Tenggara*

8.2 Selection of Subdistricts for Long and Short Surveys

In sum, the LHS is representative of males and females living in BRA-KDP treatment and control subdistricts. BRA-KDP treatment and control subdistricts are predominantly rural and high capacity. They do represent a range of levels of conflict-affectedness. This is not an easy population to generalize to. The LHS data on its own should not be used to make inferences about other subdistricts or be considered representative at the district level. The SHS survey was conducted in the remainder of rural and urban villages in Aceh. The main goal of the SHS was to complete an Aceh-wide representative sample of civilian males. Using the SHS in conjunction with the male subpopulation of the LHS provides an Aceh-wide representative sample of civilian males to be used as a control group for the ex-TNA survey.

8.3 Sampling

8.3.1 Strata and Clusters/PSUs

To achieve geographic and population representativeness, both subdistrict and population categories were used as strata for all surveys. Within strata, villages are the primary sampling unit (psu) and were sampled with equal probability.

Three sources of data were consulted to achieve the most current population and subdistrict information for Aceh. The main data source comes from the World Bank Conflict and Development Team in Aceh, and was used in assigning the BRA-KDP program.[107] Since this data only covered rural areas, this data was merged with 2005 BPS census data on urban populations. These figures were then checked against a third data source, the 2007 RMU data. When comparing the data sources, significant inconsistencies in several districts were found (see Table 22).

To determine which data source was most accurate, villages with identical population data in both WB/BPS and RMU datasets were identified. There were two types of inconsistencies in

[107] As an island that largely escaped the conflict, Sabang was not included in the national sample.

the remaining data: 1) differences in population numbers for the same village, and 2) villages and/or subdistricts that appeared in one dataset but not the other. We identified all villages with population ≥ 700 in either the WB/BPS or RMU datasets for which there were major inconsistencies between the data sources.[108] Focusing on large villages was especially important because the potential for sampling error is greater in large population centers. For each village, the World Bank checked data by consulting the appropriate data collection institution or local officials. In most cases, the WB/BPS data was deemed more accurate than the RMU data in rural areas, while the RMU data was deemed more accurate in urban areas.[109]

Given these checks:

- WB/BPS data is used as the master population data.
- RMU data is used for all rural villages not in the WB/BPS data (174 villages) and for the few instances in which consistency checks proved the RMU data was more accurate than World Bank data (e.g. for several subdistrict in Bireuen). [110]
- RMU data is used for all urban areas (kotas).
- The final dataset contains 6,202 villages in 248 subdistricts.

A target of 750 villages (that is, slightly less than one in eight or 1/8) was set for sampling. In addition, a floor of at least one village per subdistrict was set, bringing the total target to 754. Sub-districts and population categories were used as strata with 1 in 8 villages from each strata randomly selected with equal probability (independent of village size) for enumeration. The size stratum was set in accordance with World Bank population categories: villages with fewer than 300 people were designated as *small,* villages with 300-700 people as *medium,* and villages with more than 700 as *large*.

Since strata were small, integer issues were important for sampling. Allocations were made as follows: Let nij denote the number of villages in subdistrict ***i*** of population category ***j***. The target number of villages to be selected is given by ***mij=nij*/8. Let *nij**=floor(m)**. Then with probability ***mij – nij*, nij****+1** villages were selected. With probability ***nij**+ 1 – *mij***, we selected ***nij**** villages. The expected number of villages selected is thus **(*mij – nij**) X(*nij** +1) + (*nij** + 1 – *mij*) X *nij** = *mij***. In each subdistrict the actual target differs from the expected number by no more than one.

8.3.2 Sampling Households for the LHS and SHS

Following the selection of PSUs, households were treated as SSUs and were sampled with equal probability in selected villages. For the LHS, five households were sampled using a simple SRS. For the SHS, two households were sampled in rural areas and eight households in urban areas. Three methods were used for selecting households, based on the availability of information on households and the village population.

[108] Specifically, we queried the 94 villages outside of the 95 percent confidence interval of the log of the WB population data and the RMU population data.
[109] Sabang was not included in this study.
[110] Changes were made at the subdistrict level, rather than the village level. For instance, if we had asked for clarification on two villages in a subdistrict, and the WB confirmed the RMU data was more accurate, we used the RMU data for all villages in that subdistrict.

1. **For all villages where there was a complete list of all households updated within the past year.** Systematic random sampling was used to select households. All households in the village were counted *(n)* and assigned a number. Let *m* equal the target number of households in the village with m=5 for LHS, m=2 for SHS rural and m=8 for SHS urban. The sampling interval is then given by ***k=n/m***. A starting household, *h*, was selected randomly choosing a number between 1 and *k.* Within each village, ***h, h+k…h+(m-1)k*** were selected.
2. **Villages where a) there is no complete household list and b) village population < 300.** Systematic random sampling was used to select households. Unlike in (1), enumerators did their own full enumeration of all households in the village. They followed the steps in (1) for sampling households.
3. **Villages where a) there is no complete household list updated within the last year and b) village population ≥ 300.** Because of the size of these villages, enumerators first randomly sampled with equal probability two hamlets, which are formal subunits within villages. Enumerators then obtained or made a complete list of all households in each selected hamlet. If no list was available, the teams used a variant of the compass method. This involved selected a geographic central point in the hamlet and randomly selected a direction. Enumerators then walked in that direction to the edge of the hamlet, making a complete list of households along the way. For LHS and urban SHS, the households lists were combined and households were sampled using the method described in (1) above. For rural SHS, one household in each hamlet was randomly sampled.

If enumerators failed to make contact with the sampled households, then they attempted to survey these households two more times. If they failed to contact the household, then they selected the neighboring household on the right.

8.3.3 Respondent Selection

Respondents for household surveys were randomly sampled from all eligible household members as follows.

- LHS: All male and female household members between the ages of 18-65 who had lived in the household for at least one month.
- SHS: All male household members between the ages of 18-65 who had lived in the household for at least one month.

Upon arriving at the household, enumerators first made a complete list of all eligible respondents. They then used a random number and a kish grid to select the respondent within the household. Two kish grids were used and randomized across surveys to balance the probability of selection across all surveys. If the first selected respondent was not present, enumerators made three attempts to return. If that individual was not present on the third attempt, the next person on the list was selected as a replacement respondent.

8.4 Ex-Combatant Survey

Ex-GAM (TNA) combatants were interviewed in all 754 sampled villages, as long as former combatants were present in that village. For the purpose of the study, a former-combatant was defined as anyone who fought with GAM-TNA or was in the military command structure for at

least one month since 1998. Across all sampled villages with ex-combatants, six out of every ten (6/10) ex-combatants would be surveyed in each village, with a floor of one per village.

Within each selected village an **exhaustive** list of all ex-combatants was compiled through consultations with village leaders and GAM/KPA representatives. The total number of ex-combatants in every village was recorded. Each ex-combatant on the list was then assigned a number between 1 and *n.* A second number *z* between 1 and 10 was then selected randomly. Enumerators referred to a kish grid that ensured a 6/10 probability of selection to determine how many and which individuals were to be interviewed.

8.5 Sampling Probabilities for the LHS and SHS

Within a given stratum, the probability of selection for an individual respondent in the LHS and SHS depends on three elements: 1) The probability that village *k* is selected, based on proportional probability sampling in each strata; 2) the probability that household *j* (given village *k* is selected), with households sampled according to a fixed number; and 3) the probability that individual *i* (given household *j* in village *k* selected), where one individual per household was selected. The probability of selection for an individual *i* in household *j* in village *k* can therefore be represented as:

$$\Pr(ijk) = \Pr(k) \times \Pr(j|k) \times \Pr(i|jk)$$

In the survey, $\Pr(k)$ was set to 1/8. $\Pr(j|k)$ = 5/n for LHS, 2/n for SHS rural, and 8/n for SHS urban (with adjustment to account for deviations in the actual number of surveys conducted in LHS and SHS areas) where n is the estimated number of households in the village (*desa*) or urban neighborhood (*kelurahan*). $\Pr(i|jk)$ is 1/(eligible respondents in household for each survey-type).

For household level probabilities, the probability of selection is simply:

$$\Pr(jk) = \Pr(k) \times \Pr(j|k)$$

For ex-TNA probabilities, the probability of selection is:

$$\Pr(ik) = \Pr(k) \times \Pr(i|k)$$

Where $\Pr(k)$ still equals 1/8 and $\Pr(i|k)$ is set equal to 6/10.

The sampling weight for an individual is the reciprocal of the probability that the individual is selected to be in the sample.

8.6 Replacement PSUs

In some cases, surveys were not able to be conducted in originally sampled villages. In general, two types of problems were encountered:

1. Villages did not exist or existed in different subdistricts.
2. Ex-TNA surveys were forbidden in some districts.

If enumerators entered a village and household surveys could not be completed, the procedure involved randomly selecting a replacement village from within the same strata. Table 21 presents the list of randomly sampled replacement villages. In cases where the ex-TNA survey has forbidden, enumerators generally were able to complete village head and LH or SH surveys.

Table 21: Survey modules in each survey

Module #	Module	Long Household Survey	Short Household Survey	Village Head Survey	GAM Survey
I	Survey Identifier Information	√	√	√	√
II	Household Roster	√	√		√
III	Household Wealth	√	√	√	√
IV	Individual Level Behavior And Attitudes	√	√		√
V	Collective Action	√			
VI	Project Perceptions	√			
VII	Recruitment [March 1998 – August 2005]	√	√		√
VIII	TNA Module				√
	Village Head Modules			√	
	Provides data for:	BRA-KDP evaluation	GAM study	BRA-KDP/ GAM study	GAM study

Table 22: Comparison of World Bank/BPS and RMU Population Data

	World Bank Data		2007 RMU data		Compared	
District	# of villages	Total pop	# of villages	Total Pop	RMU-WB Villages	RMU-WB Population
Aceh Barat	274	98740	321	185477	47	86737
Aceh Barat Daya	132	116799	132	116799	0	0
Aceh Besar	604	297614	610	298693	6	1079
Aceh Jaya	126	64614	176	93531	50	28917
Aceh Selatan	256	211469	258	213648	2	2179
Aceh Singkil	192	158803	192	154828	0	-3975
Aceh Tamiang	213	242542	212	244614	-1	2072
Aceh Tengah	269	176123	276	176196	7	73
Aceh Tenggara	236	144334	236	144334	0	0
Aceh Timur	497	341915	504	367998	7	26083
Aceh Utara	832	498017	832	497800	0	-217
Bener Meriah	232	118778	232	119078	0	300
Bireuen	576	334757	561	364511	-15	29754
Gayo Lues	129	98024	129	98024	0	0
Kota Banda aceh	86	176881	90	49605	4	-127276
Kota Langsa	51	137586	51	28739	0	-108847
Kota Lhokseumawe	67	162423	28	74273	-39	-88150
Nagan Raya	169	97005	223	54025	54	-42980
Pidie	952	507558	952	492421	0	-15137
Simeulue	135	80139	138	73861	3	-6278
Grand total	6028	4064121	6153	3848455	125	-215666

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