

Poverty and Conflict in Southeast Asia

Anders Engvall



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Stockholm, August 2010

Anders Engvall

Part I

Introduction and Summary of Thesis

Introduction

This is a collection of papers on three Southeast Asian countries, Cambodia, Lao PDR and Thailand. The two initial studies focus on ongoing conflicts in Thailand; the violent insurgency in the southern border region and national political polarization. I approach both these issues with novel data and draw on recent theories from political economy. The two following papers are primarily on poverty; one study of the sources of ethnic minority poverty in Lao PDR, followed by an analysis of rural poverty in Cambodia.

The issues covered here have a fundamental impact on human welfare and poverty has therefore been at the center of economic studies since the birth of the subject (Smith, 1776). Yet, there are many aspects of poverty that remain to be properly understood and explained (Deaton, 2010). Economic studies of violent conflict have received significantly less attention, even though it is clear that economists can contribute to a proper understanding of the causes and consequences of conflicts (Blattman and Miguel, 2010).

Any researcher that ventures into the complex conflicts in a diverse region such as Southeast Asia will face some obvious challenges (see for example Myrdal, 1968). A particular challenge is the lack of reliable information. I have been fortunate to gain access to available datasets making it possible to analyze issues that never before have been analyzed with quantitative methods.

All four studies are explorative in the sense that I apply quantitative methods to issues that have previously mostly been analyzed qualitatively. The papers presented here are all country case studies. By analyzing the complex situation in individual countries it is possible to identify mechanisms that cannot easily be captured in cross country studies. This creates a scope for challenging some established theories and commonly held views about causal links.

One ambition with this thesis is to contribute to the policy debate. Therefore all the papers include discussions about policy implications based on the findings. Hopefully this can make at least a small contribution to alleviating some of the problems covered here.

Summary of papers

Trust and Conflict in Southern Thailand

The conflict in southern Thailand is one of the most lethal and least understood violent insurgencies of past decades. Thousands of lives have been claimed, yet no organized resistance movement has taken responsibility for the violence and no leaders have been identified. Given the scale of the conflict, there is an urgent need for an improved understanding of the sources of the violence. The purpose of this analysis is to study the importance of mistrust in the Thai government among the population in the southern border region as an explanation of the violence. An additional purpose is to identify how economic, ethnic, and religious factors influence trust. To conduct the analysis, I link data sets on trust in the government among individuals in the region prior to the outbreak of widespread violence with reported casualties due to the conflict.

The analysis takes an explicit micro-level approach, focusing on the behavior of individuals for explaining the conflict. This approach advances our understanding of conflict by explicitly accounting for the mechanisms behind violence. The literature on micro studies of violent conflicts is still limited. One of the most promising avenues for new empirical research on civil war is on the subnational scale, analyzing conflict causes at the level of armed groups, communities, and individuals. Recent microeconomic studies of armed conflict cover a range of country cases and provide important insights on the link between violence and socio-economic development. A key argument in the paper is that existing analyses of micro-determinants of conflict, often relying on variables such as poverty, ethnicity, or religion for explaining insurgencies, can be improved. Existing analytical models provide a weak causal identification of the links between explanatory variables and violent insurgencies. This is addressed by introducing trust, or individuals' orientation towards the government, as a key causal link between underlying socio-economic factors and violence.

The paper identifies an association between low levels of trust in the gov-

ernment and high rates of violence by comparing district level pre-conflict trust with casualties during the conflict. Empirical analysis of actual processes of trust formation in the region finds that the strongest factors associated with low trust are a negative perception of own economic status, low perceived community safety, being a speaker of a minority language and employment in agriculture. When controlling for other factors, Islamic faith has an indeterminate effect and Islamic education seems not to be related to trust, while higher secular education is associated with lower trust.

Political Polarization in Thailand

The proliferation of multi-party elections in the developing world calls for a better understanding of why some countries experience instability after democratic reforms whereas other see an increased political stability.

Political polarization has increased rapidly in Thailand leading to a deterioration of stability, a military coup, and waves of street protests. Behind the political instability lies an elite power struggle, but unlike earlier contests for power in Thailand it has quickly spread into a full blown division of society.

The purpose of this paper is to analyze sources of political mass polarization in Thailand. The analysis also seeks to derive policy implications for approaches to overcome polarization, or at least reduce the escalating political differences threatening stability in the country.

Existing empirical studies of the link between polarization and politics assume that polarization is exogenously determined and that there is a stable relationship between measures of social fragmentation and political polarization. Developments in Thailand do not follow this pattern as the dramatic increase in political polarization cannot be explained by increased fragmentation. In addition, increased political conflict followed upon radical changes to government policies, suggesting causality from policies to polarization. This casts doubt on the feasibility to assume political polarization as exogenously determined.

By expanding recent theoretical contributions, the present study suggests an alternative causal link between polarization and politics. It is suggested

that institutional change in Thailand during the 1990s increased the electoral clout of the rural majority, facilitating the rise of new political leaders mainly relying on support from previously excluded groups. The new government introduced policies that appealed to their supporters but provoked a severe reaction from the elite and urban tax payers. What followed was a process of policy driven polarization. This is a situation where new government policies provoke opposite reactions from citizens, whereby some call for reversals of the policy while others favor its continuation in a stronger form.

The paper proceeds with empirical tests using voting data from the 2007 general election as an indicator of political preferences. The paper finds support for the hypothesis of policy driven polarization as the empirical analysis, based on seemingly unrelated regression techniques, identifies an effect of policy based voting, strong influence from regionalism, and some impact of socio-economic cleavages.

Ethnic Minority Poverty in Lao PDR

Ethnic minority groups are overrepresented among the poor in many countries. This form of group or horizontal inequality can have detrimental effects on individuals' welfare and if ethnic inequality persists, individuals within the depressed group may be unable to make a full contribution to their own and society's welfare. Ethnic group inequality can also have detrimental effects on social and political stability and has even shown to have a detrimental effect on growth in cross-country studies.

This paper analyzes the determinants of welfare and poverty among ethnic groups in the Lao PDR in a regression framework, decomposes the sources of ethnic inequality, and estimates the impact of policies to address minority poverty. The report also includes a discussion of the methodology and how the empirical model of poverty determinants is related to the reality in Lao PDR. The analysis is based on detailed household survey data. This analysis contributes by adjusting the econometric estimation method to better accommodate for survey design effects embodied in the Lao data, and by employing new methods to a systematic analysis of ethnic minority poverty.

Descriptive poverty statistics clearly show that poverty is concentrated among ethnic minority groups. Decomposition shows that unequal access to resources, both within the household and in the form of public services, as well as different household demographics seem to explain a large share of minority poverty. To the extent that ethnic minorities have access to land, infrastructure and education, they tend to make use of it at least as efficiently as the majority.

Lao PDR is increasingly reliant on natural resources for foreign income. The combination of ethnic cleavages and reliance on commodity exports in Lao PDR are a cause of concern, as the findings in this analysis suggest that current systems for governance are unable to provide equal opportunities for all ethnic groups.

Rural Poverty in Cambodia

Despite recent progress Cambodia remains one of the poorest countries in the region. Moreover, income growth and poverty reduction are unevenly distributed in Cambodia. Whereas urban areas have seen relatively large gains in the standard of living, progress in rural Cambodia is considerably more modest. Hence, Cambodian poverty is today a predominantly rural issue: about 90 percent of the poor are found in rural areas. Therefore understanding poverty in Cambodia requires an understanding of rural conditions.

A host of features has been suggested as important in explaining poverty in Cambodia, ranging from geographical aspects to poor inputs in agriculture and poorly defined land rights. Based on previous literature, two key issues for reduced rural poverty in Cambodia are identified; agricultural productivity and linkages to the modern economy.

The paper shows that causes of poverty vary within rural Cambodia. It differs between landowners and landless households, and it varies between households in different regions. The policy implication is as important as it is obvious: any successful poverty reduction program has to start by deciding which group in society is the main target for interventions. More specifically, and as expected, inputs to agriculture have a strong positive effect on rural

incomes for landowners. Linkages with the surrounding economy have less of an effect on consumption among landowners. Instead, the main effect of linkages on income is found among the rural landless population.

There are at least three specific policy implications of these findings. First, nonagricultural employment or income opportunities are essential to the consumption levels of sizeable segments of the rural population. Second, education focusing on basic literacy and numeration is an essential ingredient to the ability to make use of such income generating opportunities. Third, to create opportunities, and to reap the benefits of opportunities that already exist, linkages to the wider economy should be supported.

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Part II

Papers

Trust and Conflict in Southern Thailand

Anders Engvall*

Abstract

The insurgency in Thailand's southern border provinces has caused thousands of casualties since 2004. This paper investigates the impact of mistrust of the government on the violent conflict. I analyze how failure to address local grievances has led to a breakdown of trust and created conditions for an insurgency. Empirical tests are carried out using a survey of individual trust in government institutions conducted at the beginning of violent conflict. It is shown that sub-districts where the population displayed lower levels of pre-conflict trust experienced higher levels of lethal violence during the conflict. Factors influencing trust in government institutions are analyzed using ordinal logistic analysis. Economic and ethno-linguistic factors are identified as the main determinants of trust towards the government. The analysis suggest that accelerated economic development of the region and official use of the local language would contribute to rebuilding trust for the government among the population in the southern border provinces.

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Introduction

The conflict in southern Thailand is one of the most lethal and one of the least understood violent insurgencies of the first decade of the 21st century. Thousands of lives have been claimed in attacks against representatives of the Thai state, yet no organized resistance movement has taken responsibility for the violence and no leaders of the insurgency have been identified. Given the duration of the conflict, and the number of lives it has claimed, the need for understanding sources of the violence is urgent. The purpose of this analysis is to study the importance of mistrust in the Thai government among the population in the southern border region as an explanation of the violence. An additional purpose is to identify how economic, ethnic, and religious factors influence trust. To conduct the analysis, I link a data-set on trust in the government among individuals in the region prior to the outbreak of widespread violence with reported casualties due to the conflict.

The causes and consequences of violent conflicts have recently received increased attention from researchers. Cross-country studies highlight the role of economic predation (Bardhan, 1997), grievances and social discontent (Collier and Hoeffler, 2004) and weak state capacity (Fearon and Laitin, 2003; Besley and Persson, 2010) for explaining violence. The present analysis takes an explicit micro-level approach, focusing on the behavior of individuals when explaining a single violent conflict. This approach advances our understanding of conflict by explicitly accounting for the mechanisms that link the behavior of individuals, households and groups with processes of violent conflict (Verwimp, Justino and Brück, 2009).

The literature on micro studies of violent conflicts is still limited. In a recent overview, Blattman and Miguel (2010) find that the most promising avenue for new empirical research on civil war is on the subnational scale, analyzing conflict causes at the level of armed groups, communities, and individuals. Recent microeconomic studies of armed conflict cover a range of country cases and provide important insights on the link between violence and socio-economic development. In an analysis of communal violence in Indonesia, Barron, Kaiser, and Pradhan (2009) identify several factors contributing

to conflict including unemployment, economic inequality and natural disasters. Humphreys and Weinstein (2008) analyze the participation in insurgent and counterinsurgent factions in Sierra Leone's civil war and finds that both poverty, a lack of access to education, and political alienation predict participation in the conflict. Murshed and Gates (2005) find a strong correlation between district-level civil war deaths and poverty, in a study of Nepal's Maoist insurgency.

A key argument in the present study is that existing analyses of micro-determinants of conflict, often relying on variables such as poverty, ethnicity, or religion for explaining insurgencies, can be improved. Existing analytical models provide a weak causal identification of the links between explanatory variables and violent insurgencies. This study introduces trust, or individuals' orientation towards the government, as a key causal link between underlying socio-economic factors and violence. It is shown that it is through the impact on trust that poverty and grievances increase individuals' propensity to support an insurgency against the government. When historical and political circumstances gives a population motives to distrust the government, economic or political chocks can induce break-downs of trust and set-off rebellions.

This analysis of the conflict in southern Thailand makes four main contributions to the literature on sources of conflicts. *First*, it expands the literature on micro-level analyses of conflicts. *Second*, the analytical framework expands existing models on the micro-determinants of violent conflict by introducing an explicit treatment of the role of trust in the government. *Third*, the analysis contributes to our understanding of factors influencing trust in developing country governments. While there is a substantial literature analyzing public trust in developed country governments (see Keele 2007, for an overview), there are few existing studies of the factors determining trust in volatile parts of the world. *Finally*, the analysis adds to the understanding of the nature of the violent conflict in Thailand's southern border region and derives policy implications for managing the conflict.

The article continues with an overview of the conflict in southern Thailand, followed by an analytical discussion of the relation between trust in the government and violent conflict. In the third section the data is introduced,

descriptive statistics presented and empirical findings discussed. The final section concludes and derives policy suggestions.

Thailand's Southern Conflict

Since January 2004, a violent insurgency in Thailand's southern border region has claimed more than 3 000 lives (McCargo, 2009). Most of the casualties have been claimed in a continuous stream of attacks using light weapons with a small number of victims in each attack. There have also been a few spectacular and coordinated acts of violence including bombings. The southern border region, made up of Malay Muslim majority areas in the three provinces of Narathiwat, Pattani and Yala and parts of Songkhla province, has historically been volatile and prone to periodic outbreaks of insurgencies. An analysis of the history of relations between the south and the central government in Bangkok shows that violent opposition against the state has escalated at times when central control over the area has increased, and when systems for local resolution of grievances have been absent. In particular, the latest outbreak of violence is associated with the dismantling of a system of governance that had guaranteed relative stability in the region since the 1980s.

Southern Thailand and Northern Malaysia make up an important cultural, religious, ethnic and linguistic frontier. The southern border region is predominantly Malay and Muslim, giving it a unique character within a Thai speaking and largely Buddhist country. The local language, religion and culture are akin to those of the Malay Muslims in neighboring Malaysia. While Malay Muslims form a majority in the southern border area, making up about 80 percent of the population in the region, they are a small minority in Thailand as a whole. To the north of the area, most people speak dialects of Thai and Buddhism is the dominant religion. The southern border area is a transition zone at a boundary between religions, languages and cultures. The transition is not clear cut and does not conform to the borders of modern day nation-states.

The region has been claimed as a vassal state by Thai kingdoms since the 15th century (Wyatt, 2003). Expanding colonial powers created formal Thai hegemony over the region and the Anglo-Siamese Treaty of 1909 fixed the

current Thailand-Malaysia border (Klein, 1969). With the treaty some Malay Muslims were placed under Siamese sovereignty while the majority came under British jurisdiction, later forming an independent Malaysia.

Thai provincial administration was heavily decentralized prior to reforms at the end of the 19th century (Vickery, 1970). With the reforms the Bangkok government made efforts to bring about assimilation and increased central control of the southern provinces (Tej, 1977). The centralization brought about the first revolts against Siamese rule in 1903 due to the resentment of the local aristocracy (Surin, 1985). In 1906, Bangkok made a policy reversal and gave traditional ruling families a greater role in governing the area. The system of indirect rule was retained until 1933, after Thailand's transition from absolute monarchy to constitutional rule. For long the Bangkok government was content with maintaining authority and central control over the southern border provinces without assimilating its population, and the Malay Muslims kept their separate religious and ethno-linguistic identity (Forbes, 1982). Yet, the local elite gradually lost its position in the provincial administration to Thai Buddhists from the center (Shurke, 1970). The policy of cautious integration changed when a military-led nationalistic regime came to power in the late 1930s. The administration attempted to forcibly assimilate the Malay Muslim population (Forbes, 1982). Broad public resentment grew as the government removed local laws and discriminated against the use of the Pattani Malay language (Thompson and Adloff, 1955). This coincided with the emergence of Malay nationalism in Southeast Asia and contributed to the emergence of a separatist movement in southern Thailand.

The repressive policies provoked a popular uprising in 1948 (Syukri, 2005). During the ensuing decade Malay Muslim resistance continued, but at a somewhat lower intensity (Che Man, 1990). The late 1960s saw another increase in separatism (Forbes, 1982) as a succession of separatist groups carried out a range of bombings, arson attacks and shootings, targeting representatives of the Thai government. The insurgent activities continued throughout the 70s. This increase in opposition to the Thai rule in the southern border region coincided with increased racial tensions and ethnic violence in Malaysia (Roff, 1995).

During Prem Tinsulanonda's eight years as prime minister from 1980, a fragile truce was negotiated and institutional arrangements were set up to manage grievances in the region. The Southern Border Provinces Administrative Center (SBPAC) was entrusted with handling government development funds and the funds were used by the military to create local patronage networks and networks of informers warning the military about anti-government activity (McCargo, 2006). SBPAC built trust with Malay Muslim leaders and provided a link between the state and the local population, while giving military commanders a central role in a governance network in the southern border areas. With this arrangement Bangkok approached the southern border region using both co-option and control.

The governance arrangement was dismantled after Thaksin Shinawatra won the premiership with an electoral mandate for reform. Thaksin saw the SBPAC as an obstacle to the transformation of the country as it gave Prem, who had been elevated to king Bhumibol's highest advisor, a strong influence over the southern border region (McCargo, 2005). Thaksin acted to unravel the political and security arrangement created by Prem by appointing new officials loyal to him and by giving the police a more important role in the new power structure. In May 2002, Thaksin abolished the SPBAC, leaving the southern provinces without any effective channel for communication between the government and Malay Muslim leaders.

The relations between the southern border area and the central government were put at a test when the Thaksin government launched a narcotics suppression campaign, the war on drugs, in early 2003. The war was a massive campaign of extra-judicial killings carried out by police, targeting both known drug offenders as well as innocent outsiders. The war was particularly devastating in the South where relations between the population and government security agencies were already fragile. Among those killed in the southern border provinces were informants with close ties to the military (Thanet, 2006). The violent drug suppression by the police, who had only recently assumed responsibility over security in the South after abolition of the SPBAC, provided a fatal blow to the population's trust in the government.

A first sign that the truce in the southern border area was breaking down

came on January 4 2004, when insurgents launched their largest attack in almost three decades. Unidentified gunmen attacked an army arms depot in Narathiwat, killing four and making off with large numbers of weapons. More violence followed in the early hours of April 28 in the same year, when simultaneous attacks were launched on a dozen checkpoints throughout the region, including a symbolic storming of the Kru Se Mosque. Many of the militants were only armed with sticks or knives and 105 were killed by the security agencies, which only suffered 5 casualties. On October 25 2004, a demonstration outside Tak Bai police station in Narathiwat got out of hand and left 7 demonstrators killed at the site with another 78 casualties claimed from suffocation during transport to an army camp (Senate, 2005).

The objectives behind the violence remain unclear as no organized movement has assumed responsibility for it. Yet some strategic patterns emerge, such as the targeting of representatives of the Thai state, notably military, police and civil servants. The targets extend to locals collaborating with or working for the government, including village headmen and teachers. Moreover, the strategy includes attempts to provoke violent reactions from the security forces to generate sympathy for the insurgents and legitimize their use of force. The selection of the highly symbolic Krue Se Mosque for a hostage siege was an example of this strategy.

The Thai state has responded with violent suppression of the insurgency and with increased presence of police and military (Ukrist, 2006). Security agencies have also resorted to extra-judicial killings and abductions (Amnesty International, 2009). The government has also promoted paramilitary groups, such as village defense volunteers and rangers (International Crisis Group, 2007).

National level political conflicts in Thailand increased in 2006 amid widespread anti-government demonstrations in Bangkok. Thaksin was unseated in a royalist military coup on September 19, setting off an extended period of political turmoil. The dramatic political developments led to diminished attention to the developments in the South, although levels of violence in the southern border area remained at the same level as prior to the coup (Prince of Songkhla University, 2010). After the coup, the military-installed government

recreated the SBPAC, but the policies introduced by it and a string of elected governments have so far proved unable to suppress the insurgency and rebuild stability in the region (Srisompob and McCargo, 2008).

From the historical background a distinct pattern emerges. Tensions and violent opposition against the state in the southern border region have escalated at times when Bangkok has sought to increase central control over the area and when systems for conflict resolution have broken down. Trust is at the center for understanding the fluctuations in the severity of conflict over time; mutual trust has been built when the border area has been given a higher degree of autonomy, whereas periods of strong central rule have produced breakdowns in trust. History has produced its own legacy of mutual suspicion.

Analytical Framework: Trust and Conflict

Household vulnerability to poverty prior to conflicts and their vulnerability to violence during conflicts are at the center of existing models of micro determinants of violent conflict (Justino, 2009). These models are based on the notion that poverty may drive individuals into conflict as some may gain more from being fighters than from peacetime activities (Collier and Hoeffler, 1998). Yet, there are obvious weaknesses with using poverty as an explanation for individuals' propensity to support insurgencies. Poverty is still widespread in the developing world, and being poor doesn't necessarily lead to anti-government sentiments and a willingness to support insurrections.

Trust provides a causal link between underlying socio-economic conditions and opposition against the government. It is through the impact on individuals' orientation toward the state, *their trust in the government*, that factors such as poverty explain conflicts. In situations where poverty or other conditions don't affect trust, we will not expect any increase in violent opposition against the state.

Public trust in the government is necessary for functioning governance. Without trust, leaders are unable to obtain citizens' compliance without coercion (Levi, 1997). The persistence of widespread mistrust of the government

undermines the normal means by which conflict is managed by the political system. Thus, low levels of trust create conditions where anti-government sentiments can be mobilized for violent opposition. Trust is defined as a basic evaluative orientation towards the government, founded on how well the government is operating according to people's normative expectations (Hetherington, 1998). Trust in the government is distinctly different, but interrelated with, *social capital* or interpersonal trust between individuals (Putnam, 1995). Citizens will build up trust as they experience that the government fulfills their expectations, but it will diminish if the government or its representatives are exploitative, discriminatory or otherwise fail to meet expectations.

This analysis is based on the notion that the explicit treatment of trust, which captures the impact of underlying factors such as poverty on individuals' orientation toward the government, will improve existing theories of the micro-determinants of violence. Merely experiencing poverty or vulnerability to violence does not increase a household's propensity to support violence against the government. However, these factors are relevant for explaining support to violent opposition to the extent that they affect trust in the government. Economic deprivation and grievances are relevant explanations for violence if these factors affect individuals' trust in the government. By introducing trust into the analysis it is possible to filter out the economic and physical vulnerability that is relevant for understanding conflict.

Trust is a micro-level equivalent to the macro-level notion of weak-state capacity as a fundamental factor for explaining cross-country variation in conflicts (Fearon and Laitin, 2003; Humphreys, 2005). Both concepts capture a failure of the government to carry out basic governance and satisfy needs among their population.

This echoes Scott's (1976) analysis of peasant rebellions in Southeast Asia. Material incentives were not the decisive factor for motivating people to rise up against the state during periods of economic transformation. Echoing the discussion of trust, Scott found that moral outrage motivated people to rebel.

Insurgency is a form of military conflict characterized by small, lightly armed groups practicing guerilla warfare from rural base areas (Fearon and Laitin, 2003). Insurgent activities tend to be local in nature as this form

of warfare makes use of support and cooperation from local populations to advance their activities. The level of household participation and support for an insurgency is dependent on their trust in the government. Absence of trust will have important implications for explaining outbreaks of conflict, as populations with low trust in the government will provide fertile ground for recruitment of insurgents. In addition, citizens lacking trust in the government and its security agencies will be unwilling to cooperate with soldiers and police and be more prone to providing active and passive support to insurgent groups. A failure of the government to instill trust among sections of the population can be expected to increase the likelihood of violent conflict and is a key pre-condition for civil wars.

However, mistrust is not a sufficient condition as there must be groups with political or economic motives to exploit the mistrust for organizing violent insurrections.

The lower the trust individuals have in the government, the higher the probability that they will actively or passively support an insurgency. Given the local nature of insurgencies this has important implications for understanding the prevalence of conflict.

Hypothesis 1: Low trust in the government will be associated with higher rates of violence during an insurgency.

Sources of Trust in Southern Thailand

Trust in the government stems from an ability to fulfill citizens' needs and expectations. The literature on determinants of trust in developed countries shows how discontent among citizens due to economic disadvantage, a failure to guarantee personal safety, and ethnic and religious discrimination can translate into lower levels of trust in the government (Chanley, Rudolph and Rahn, 2000; Hetherington, 1998; Keele, 2007). This provides guidance for identifying factors shaping trust in the government among the population in southern Thailand prior to the outbreak of the violent insurgency.

The southern border provinces are among the poorer regions of Thailand and are substantially less economically developed than other parts of

the South. Poverty incidence is on par with poor and isolated provinces in the northeast of the country and household income is well below the average of rural Thailand (Bank of Thailand, 2006). In addition to the low aggregate level of economic development, there are also persistent economic cleavages within the area, as the Sino-Thai merchants that dominate the urban economy and the Thai Buddhists that make up a substantial share of government officials enjoy higher standards of living than Malay Muslim villagers. This provides support for the hypothesis that economic disadvantages can fuel discontent and mistrust in the region.

Hypothesis 2: Trust will be lower among those that are economically disadvantaged.

A key task of a state is to provide citizens with security. Failure to guarantee personal safety will influence trust in the government (Chanley, Rudolph and Rahn, 2000). However, the Thai police and military have not been able to provide stability and security to the population in the southern border region. Security forces have used heavy-handed tactics against opposition against the state ever since its incorporation into the Thai state. Both the military and the police are almost exclusively ethnic Thai and Buddhist, and lingual and cultural misunderstandings aggravate the problems. A failure of the security agencies to guarantee safety and respond to the wishes of locals will serve to lower trust in the government.

Hypothesis 3: Trust will be lower among individuals feeling unsafe in their communities.

The importance of ethno-linguistic identity for explaining insurgencies is contested. Horowitz (1985) stresses the importance of ethnic cleavages as a source of group cohesion allowing for mobilization against rival groups or the state. The evidence from macro-level studies using data on ethno-linguistic fractionalization for studying civil war onset is inconclusive. Collier and Hoefler (2004) and Fearon and Laitin (2003) find no effect when economic factors are controlled for. Other studies using alternative specifications of the causal link identify an impact of ethnicity (Cederman, Wimmer and Min, 2010; Kalyvas, 2008).

The analysis of ethnicity and conflict can be clarified by introducing trust

as a transmission mechanism between ethnic relations and violence. The role of ethno-linguistic factors in influencing individuals' perception of the government in many parts of the world is apparent. Alesina, Baqir and Easterly (1999) show how heterogeneity of preferences across ethnic groups hamper government provision of public goods. Drawing on the historical background of the Southern border region, it is clear that ethnic relations have shaped relations between the state and the local population. The main part of the population in the southern border region is ethnically Malay, which is manifested in some unique cultural characteristics (Fraser, 1966). To the extent that culture is a defining element of a person's identity, individuals and groups will seek to protect their cultures against outside influences. This may lead to resistance against a state that represents a single cultural norm. This introduces frictions in their relations with a state that, to a great extent, is built on Thai ethnic identity.

The role of language use goes beyond its link to ethnic identity. Besley and Burgess (2002) highlight the importance of information flows about policy actions in increasing government responsiveness, particularly the role of mass media in creating an incentive for governments to respond to citizens' needs. More than half of the population in the region exclusively speak Pattani Malay at home, while just above 20 percent exclusively rely on Thai (see Table 1). There is a long-standing government policy to allow only Thai in all communication with government officials (Smalley, 1994). Since Pattani Malay is distinctively different from Thai this creates a significant barrier for interaction with the state and its representatives where Thai is the only accepted language. Conservative Thai language policy fails to create opportunities for mutual understanding, as a significant part of the population is so uncomfortable with using Thai that they will avoid all contacts with government officials. The failure of the Thai state to accommodate to local language use clearly hampers the ability of the government to respond to the needs of the population in the Malay speaking parts of the southern border region (Smalley, 1994).

Hypothesis 4: Trust will be lower among those speaking the Pattani Malay language.

Education has for long been regarded as a key instrument both for economic development and for integration of minorities throughout the country (Shurke, 1970). But the response from the population in the southern border region to government education has been mixed. Many opt out of secular education and enroll their children into *pondok* (traditional Islamic boarding schools) or private Islamic schools (Liow, 2009). Pattani Malay is the main language of instruction in *pondok* and students rarely develop proficiency in Thai. The religious curriculum does not prepare the students for formal employment outside the local villages. Private Islamic schools are run on a dual-curriculum basis, with both religious teaching and secular education similar to that offered in Thai government run schools.

Receiving education at *pondok* or private Islamic schools outside the government run system may reinforce a perception of the Thai government as unable to fulfill the individual's educational needs. It can also increase the perceived distance towards the Thai state and its institutions. Those that follow the secular curriculum within the state run schooling system can be expected to build up trust for a government that is supportive to their educational aspirations.

Hypothesis 5: Trust is expected to be higher among those with advanced, secular education.

Religious minorities are susceptible to building up negative sentiments towards the government, if there are frictions between government policies or actions of state and religious beliefs or practices. While secular states strive to maintain neutrality towards religion, there are still many instances where adherents to minority faiths face discrimination. The majority of the population in the southern border region is Muslim, while Thailand is a largely Buddhist country. There is no official religion in Thailand and religious freedom is maintained, with a long tradition of inter-religious co-existence and a state that has been accommodating towards Muslims (Jerryson, 2009). But despite a history of harmony between Buddhists and Muslims, there is a clear religious dimension to the conflict in southern Thailand. During the conflict religious leaders from both sides have become targets of violence from insurgents and the security agencies. Islamic leaders that have been taken into custody by security

agencies have disappeared or been extra-judicially executed (Human Rights Watch, 2007a). Insurgent attacks include decapitations of unarmed Buddhist monks (Human Rights Watch, 2007b). There is evidence that the systematic militarization of Buddhist temples, many of which have been turned into military posts, and the practice of allowing soldiers to ordain as military monks while remaining armed have increased religious tensions in the region (Jerryson, 2009). This gives an indication that religious tolerance has declined in southern Thailand, something that might affect trust in government among adherents to Islam.

Hypothesis 6: Trust will be lower among those practicing Islam, with a further decline during the course of the conflict.

The analysis of the links between violence, trust and socio-economic factors has produced six hypotheses that will be further studied in the remaining empirical sections. Another issue that shall be given due attention is the variation in trust between the three categories of representatives of the Thai state that the population in the South encounter; military, police and civil servants. We can expect that levels of trust in these three groups vary, and that trust is shaped by different factors. As the military and police are responsible for the security situation, issues related to personal safety could be important for perceptions about them. The security agencies are largely staffed by outsiders, something that could have a negative effect on the ability to form bonds with the local population. Civil servants are to a higher extent hired among educated locals, and trust in them could be more closely related to economic issues, rather than safety.

Data and Descriptive Statistics

This section introduces the data sets, provides descriptive statistics covering the population the southern border region and discusses variables used in the empirical analysis. The statistics come from two separate sources. Information on trust and socio-economic data was collected in 2003 through a special census for the southern border region (National Statistics Office, 2004). Data enumeration was carried out by trained health volunteers. These are members

of the local communities that regularly disseminate health related information and collect census data. This ensures a very low incidence of missing information, non-respondents or language related misunderstandings. Some of the information collected is not included in the standard Thai census, and it gives a rich picture of educational status, language use, and religious practices in the region. An additional in-depth survey was administered to a random sample of 28 975 household heads. Through this survey, subjective information on issues such as perceived community safety and trust in the military, the police or civil servants promoting economic development, was collected.¹ Turning to descriptive statistics, Table 1 reports variable means for the full adult population (as reported in the census), heads of households and the random sub-sample of heads of households responding to the extended questionnaire.²

Table 1 contains summary statistics for the full population, all heads of households (column 2) and the sample responding to the additional questions (column 3). The averages are broadly similar across the categories and in particular the random sample seems to represent the full population of household heads well.³ This indicates a possibility to draw inferences based on the information from the sample responding to subjective questions on trust, the economic situation, safety and more.

Potential data quality issues call for attention. Basic information was collected from all individuals in the region but some information, including that on trust, was only collected from a sample of respondents. It has already been verified that this sample reflects the full population. Another source of error can follow from the fact that the census and survey were administered

¹Information on trust was collected on a four step ordinal scale: high, medium, low and no trust. Respondents having no trust were asked for additional information about the reason for their response. The requirement to motivate a "no trust" response introduces potential bias according to language skills or education, and the "no" category was therefore merged with low trust.

²Heads of households were allowed to refer the enumerators to another household member if there was agreement that this would improve the accuracy of the responses.

³The only variable where the sample of household heads deviates significantly from the full population is gender. While on average 29 percent of the households are headed by women, a full 42 percent of the respondents to the in-depth questionnaire were women suggesting that many male household heads let their wives or other female household members respond in their place.

TABLE 1: Variable mean values

Variable	All individuals	All household heads	Sample household heads
Household characteristics			
Female	50.3%	28.5%	42.2%
Male	49.7%	71.5%	57.8%
Age	29.1 years	48.4 years	44.6 years
Economy and safety			
Improved economy	N/A	N/A	20.0%
Worsening economy	N/A	N/A	12.2%
Unchanged economy	N/A	N/A	67.8%
Safe community	N/A	N/A	92.4%
Unsafe community	N/A	N/A	7.6%
Language			
Thai or other language	21.9%	28.2%	27.4%
Pattani Malay only	57.4%	52.9%	54.4%
Both Malay and Thai	20.7%	19.0%	18.3%
Education			
No education	37.5%	36.2%	28.2%
Low secular education	41.2%	52.5%	59.9%
High secular education	6.3%	8.6%	10.9%
Islamic education	6.6%	2.7%	1.0%
Below school age	8.4%	N/A	N/A
Religion			
Buddhism or other	20.7%	26.8%	29.1%
Islam	79.3%	73.3%	70.9%
Profession			
Public sector	5.0%	8.3%	7.7%
Private sector	16.1%	19.3%	19.1%
Agriculture or laborer	47.3%	57.2%	57.7%
Outside labor force	14.0%	12.5%	11.9%
Studying	17.6%	2.6%	3.7%
Location			
Narathiwat	38.9%	38.1%	37.7%
Pattani	36.0%	35.8%	35.0%
Yala	25.1%	26.1%	27.2%
Outside municipal area	76.6%	74.0%	77.5%
Municipal area	23.4%	26.0%	22.5%
Observations	1,748,682	415,638	28,975

by the government and there is reason to suspect underreporting of distrust. There is clearly some awkwardness associated with reporting low trust in the government when the information ultimately will be used by the government. The process of collection, where local health volunteers did the enumeration should have limited this underreporting.

The descriptive statistics in Table 1 offer some important insights about the population in the region. The figures confirm the picture of underdevelopment as more than a third of the population lacks formal education and about 15 percent are unemployed or outside the labor force. Of the heads of households surveyed about their economic situation and safety, more than 90 percent feel safe in their community and a fifth state that their household economy has improved the past year.

Furthermore the statistics give an indication of the division between the large share of the population (more than half) that only speak Pattani Malay at home, and about a fourth that only speak Thai. Malay use is highest in a core part of the region made up of Pattani and northern parts of Yala and Narathiwat. The use of Thai is higher in peripheral areas along the southern border to Malaysia and in sub-districts close to Songkhla province to the northwest (see map in Appendix). Almost 80 percent of the population adhere to Islam (Table 1). Islamic faith is high throughout the region with more than 90 percent in most sub-districts (see map in Appendix). The share is lower in peripheral areas along the border.

Turning to trust in the government (Table 2), a substantial share of the population indicates some level of trust in the military, police and civil servants. There is substantial variation in the responses, with between 19 and 24 percent indicating a lower than average level of trust. The levels of trust are lower with respect to the police and higher for civil servants. The spatial distribution of trust show some patterns (see map in Appendix). Sub-districts with very low average levels of trust tend to be located in the core of the region. This indicates a measure of correlation with the high rates of Malay use and Islamic faith in the core. Yet the core also contains many sub-districts with high trust and there are pockets of low trust at the periphery of the region.

TABLE 2: Trust in military, police and civil servants, household heads 2003

Government institution	Share
Trust in military	
High trust	20.5%
Medium trust	58.3%
Low trust	21.2%
Trust in police	
High trust	19.4%
Medium trust	56.5%
Low trust	24.0%
Trust in civil servants	
High trust	23.7%
Medium trust	58.7%
Low trust	17.6%
Observations	28,975

Patterns of Violence in Southern Thailand

A Violence-related Injury Surveillance (VIS) system maintained by the Prince of Songkhla University has systematically recorded violence throughout the border region (Prince of Songkhla University, 2010). The database records information on all incidents of intentional injury throughout the area, by recording information from hospitals and morgues. All reported figures are limited to victims of intentional violence related to the insurrection. The data does not distinguish between violence perpetrated by insurgents, police, military, or any of the various government sponsored militias.

Disaggregated data has been made available for the 25 months between March 2008 and March 2010 (Prince of Songkhla University, 2010). The data cover 1 083 fatalities, or approximately a third of those incurred during the length of the conflict. Figure 1 presents the frequency of injuries and casualties during the period. The figures support the view that the insurrection claims victims on a high and stable level (the spatial pattern of violence is presented in the Appendix). The data are disaggregated to sub-district level and expressed as casualties per 1 000 inhabitants. Violence is higher in the core area, with

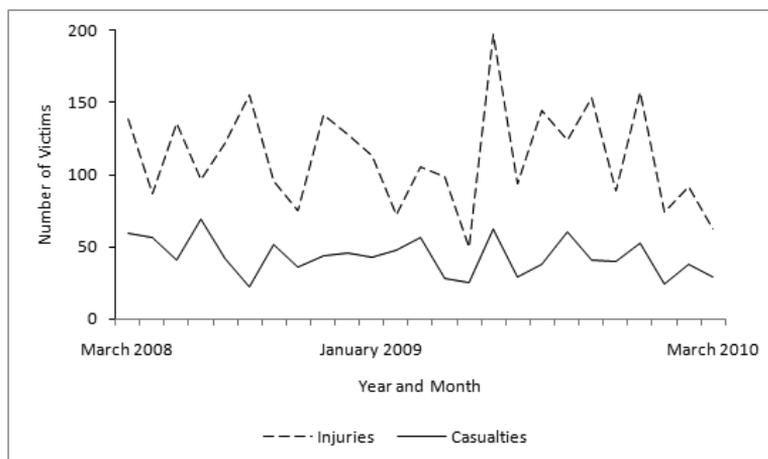


FIGURE 1: Injuries and casualties due to insurgency in southern border provinces, March 2008 - March 2010

lower rates of casualties from the insurgency in areas bordering Malaysia to the south.

Linking the prevalence of violence with possible causal factors is prone to endogeneity problems. Here endogeneity is avoided since the data on trust were collected in 2003, five years prior to the collection of the disaggregated data on violence. Table 3 illustrates the link between individuals' trust and the level of violence in their communities. On average, individuals with low trust in the military experience higher levels of lethal violence in the sub-districts where they reside. The average frequency of violent deaths over the 25 month period was 6.75 casualties per 1 000 inhabitants, a level that is statistically significantly higher than the average level of violence experienced by those with medium (5.96 casualties/1 000) or high trust (5.73 casualties/1 000) in the military. Results for trust in the police follow a similar pattern (see Table 3).

The results confirm *Hypothesis 1*, that low trust in the government will be associated with higher levels of violence during a conflict. The results do not hold for all arms of the government; sentiments towards civil servants seem

TABLE 3: Trust in 2003 and casualties per 1000 inhabitants March 2008 - March 2010, by sub-district

	Casualties per 1000
Trust in military	
High trust	5.73*
Medium trust	5.96*
Low trust	6.75***
Trust in police	
High trust	5.58***
Medium trust	6.05***
Low trust	6.64***
Trust in civil servants	
High trust	6.19
Medium trust	5.97
Low trust	6.18

unrelated to subsequent violence. The five year period between the collection of the information on trust and the statistics on casualties should be sufficient to exclude the possibility of reverse causality. Given that the survey data on trust were collected prior to the outbreak of serious violence, it is only feasible to conclude that trust influences violence. It shall be noted that this only holds for trust in the security agencies, the military and the police, but not for civil servants. Levels of trust in civil servants are not systematically related to subsequent levels of violence. The link between trust and violence reinforces the need for an understanding of the sources of trust.

Econometric Specification

The empirical analysis of trust is based on information in the census data. Respondents gave information on a scale from low, medium to high trust. These categories can be ordered, but the distances between the categories are unknown. The ordinal regression model allows for an econometric analysis without making any assumptions about distance between categories (McKelvey and Zavoina, 1975). The ordinal logistic analysis assumes that a latent

regression model for trust is:

$$y^* = \mathbf{x}_i\boldsymbol{\beta} + \varepsilon_i$$

where the dependent variable y^* is an unobservable continuous indicator of trust, \mathbf{x}_i and $\boldsymbol{\beta}$ are variables and coefficients, and ε_i is a random error. What we do observe is y , a discrete, ordinal index of trust where:

$$y_i = \begin{cases} 1 & \text{if } \delta_0 = -\infty \leq y^* < \delta_1 \\ 2 & \text{if } \delta_1 \leq y^* < \delta_2 \\ 3 & \text{if } \delta_2 \leq y^* < \delta_3 = \infty \end{cases}$$

where 1=low trust, 2=medium trust and 3=high trust, the δ 's are unknown threshold parameters, *cutpoints*. When the unobserved y^* crosses a cutpoint, the observed category changes. Cutpoints are estimated along with coefficients and the intercept using a maximum likelihood method. The likelihood function is estimated under assumption that ε follows a logistic function. For example, the probability of observing $y = tr$ for given values of \mathbf{x} , can be identified with the ordinal regression model:

$$P(y = tr \mid \mathbf{x}) = F(\delta_{tr} - \mathbf{x}\boldsymbol{\beta}) - F(\delta_{tr-1} - \mathbf{x}\boldsymbol{\beta})$$

Details on independent variables and control variables for individual characteristics and location (not included above) are provided in Table 4. There are no high correlations between the independent variables which indicate that problems with multicollinearity will be avoided.

One shortcoming of the ordered logistic model is the difficulty of interpreting results. The identification of statistically significant effects of independent variables based on coefficient estimates and z -values is straightforward. Interpretation of the impact of each variable on the probability of the dependent variable taking on different values is more challenging. A general way of interpreting the results is to assume that a positive (negative) coefficient estimate of β increases (decreases) the probability of being classified in the high trust category for any given dependent variable x .

TABLE 4: Variable definitions

Variable	Definition
Dependent variable	Ordinal index of trust: high, medium or low
Individual characteristics	
Gender	1 if male; 0 if female
Age	Age of respondent
Economy and safety	
Worse economy	1 if worsening economy past year; 0 otherwise
Improved economy	1 if improving economy past year; 0 otherwise
Safe community	1 if local community perceived as safe; 0 otherwise
Language	
Language in household	Variables for Thai, Pattani Malay, or mixed
Education	
No edu.	1 if no formal education
High secular edu.	1 if higher than secondary schooling
Islamic edu.	1 if Islamic education
Religion	
Religious faith in household	Variables for Buddhism, Islam, mixed/other
Profession	
Employment	Variables for Public sector, private sector, farmer/laborer, or outside labor force
Location	Pattani, Yala or Narathiwat
Municipal area	1 if live in municipal area, 0 if rural area

Expected signs for the coefficients are based on the hypotheses derived. Good household economy is expected to have a positive influence on trust in the government, the same holds for use of Thai as it is the only language recognized for official communication. High secular education is expected to have a positive influence, whereas no education or religious Islamic schooling is expected to translate into lower trust. Formal employment in public or private sectors are expected to have a positive impact on trust, with a negative effect for those outside the labor force or employed in the farming/labor sector.

The likelihood test ratio is used to test the overall significance of the model. One measure of fit for the ordered logistic model is the share of correct predictions by the model.

Empirical Results

Table 5 presents the empirical results. A number of observations can be made. The model as a whole is statistically significant and so are most coefficients. Since only trust in the military and the police have a statistically significant influence on subsequent violence, the analysis of determinants of trust will focus on these groups, rather than civil servants. Yet, it is apparent that broadly similar factors influence trust in all three categories.

The variables controlling for gender and age suggest that the young and male have significantly lower trust in the police and civil servants, while there is no age or gender effect for trust in military. The results strongly support the importance of economic factors for explaining trust as the variables for household economy have expected signs and are strongly significant. This suggests that trust is a transmission mechanism between economic welfare or poverty and violence against the state, as suggested in the analytical discussion. The findings are consistent and strong for both military and police, showing that trust in the security apparatus is affected by economic factors for which these institutions don't have direct responsibility.

One issue closely related to economic status is profession. No separate hypothesis was formulated for any effect of source of income on trust. The empirical results do show a strong and consistent result for both trust in the

military and the police; the regression analysis shows a positive effect of either being employed in the public and private sectors or being outside the labor force. There is a negative impact of belonging to the majority category of farmer/laborers (not displayed in Table 5). One implication of this finding is that economic policies to alleviate the conflict in the region could prove most effective if they were targeted to creating income in the unskilled sector, improving income and thus in the long term building trust in the government among farmers and laborers. The strong employment effect is not present for civil servants, except for those in the public sector.

One area of responsibility for the military and the police is protection of community safety. *Hypothesis 3* suggested that those feeling unsafe in their communities will have lower trust in the government. This is supported by the empirical analysis. There is a consistently positive effect of security. These findings are worrisome, since the results are based on statistics collected prior to the outbreak of serious insurgent violence. If the relationship still holds, we can expect that the deteriorating security situation during recent years has been a major blow to trust in the government throughout the region. It also suggests a potential for a negative spiral where violence feeds mistrust in the government, leading to further violence.

Language is a contentious issue in the southern border region. The majority relies on Pattani Malay within their families and communities, but must use Thai in all official government communications. The results for language use are consistent with the hypothesis. The empirical analysis shows that when controlling for other factors, using Pattani Malay within the household tends to give lower rates of trust in the police, civil servants and in particular the military.

There is no empirical support for the hypothesis that high education serves to increase trust in the government. On the contrary, the results consistently show that having higher education is associated with lower levels of trust for all three categories of government representatives. Islamic education has no significant association to trust. This is not consistent with a view that higher secular education would increase integration with mainstream Thai society and thereby increase trust for the government. There are several possible

TABLE 5: Ordinal logistic regression, trust in military, police and civil servants

Dependent variable	Military		Police		Civil Servants	
	Ordinal Trust Coeff.	z-value	Ordinal Trust Coeff.	z-value	Ordinal Trust Coeff.	z-value
Individual characteristics						
Gender	0.04	1.58	-0.06***	-2.57	-0.05**	-2.04
Age	0.05	1.42	0.13***	3.72	0.09**	2.50
Economy and safety						
Worsening economy	-0.20***	-5.38	-0.33***	-8.88	-0.26***	-6.93
Improved economy	0.36***	11.76	0.26***	8.65	0.38***	12.56
Safe Community	0.54***	11.98	0.60***	13.59	0.55***	12.23
Language						
Pattani Malay only	-0.39***	-6.89	-0.18***	-3.33	-0.17***	-3.06
Mixed Malay/Thai	-0.13**	-2.14	-0.09	-1.50	0.01	0.09
Education						
No education	0.05	1.48	0.06*	1.86	0.04	1.22
High secular edu.	-0.08*	-1.70	-0.13***	-2.85	-0.11**	-2.46
Islamic education	-0.04	-0.37	-0.02	-0.16	0.09	0.81
Religion						
Islam	-0.14**	-2.53	-0.07	-1.22	0.13**	2.40
Mixed/other religion	-0.20	-0.72	-0.09	-0.34	-0.25	-0.95
Profession						
Public sector	0.50***	9.16	0.56***	10.38	0.34***	6.31
Private sector	0.11***	3.21	0.06*	1.77	-0.04	-1.09
Outside labor force	0.13***	3.69	0.12***	3.27	0.03	0.75
Location						
Pattani	0.09***	3.30	-0.05*	-1.94	-0.05*	-1.67
Yala	0.11***	3.70	-0.05	-1.62	-0.03	-1.00
Municipal area	-0.06*	-1.90	0.04	1.14	-0.19***	-5.99
Cut1	-0.80		-0.26		-0.75	
Cut2	1.95		2.37		2.01	
Observations	27962		27962		27962	
Model χ^2	943.1***		689.27***		576.76***	

explanations for this finding. Literature on the declining trust in government among citizens in developed countries finds that the increased expectations brought about by increased education have served to decrease trust (Dalton, 2005). The same mechanisms could be at work here. These results call for additional, in-depth studies of the role of higher education in forming trust in governments in general and in particular the role of higher education in the southern border region.

The final hypothesis suggested that there would be a negative impact on trust from belonging to the Islamic faith, a group which is in majority in the southern border region but a small minority in Thailand as a whole. The hypothesis was supported by the evidence of religiously motivated violence during the conflict, but the absence of a history of religious cleavages in Thailand suggested that the effect might be small. The empirical findings support a negative but limited effect of Islamic faith. The effect is only identified for trust in the military, while there is a positive effect for civil servants and no significant effect for the police. Apparently there is no strong independent effect of Islamic faith when controlling for other factors. The prevalence of religiously motivated violence and the use of Buddhist temples as military camps during the course of the insurgency could have had an effect on the perception of government as neutral between religions. That would have had an impact on the relationship between trust in the government and religious faith, since these data were collected. Only collection of additional information would be able to show if the conflict has had any impact of this kind.

To assess the goodness-of-fit the second row in Table 6 reports the predictive power of the model. Overall the model fit is satisfactory, as the estimated propensities to trust are similar to the observed sample averages. The highest difference between observed and estimated sample averages is 1.3 percentage points, but most of the estimates are less than 0.5 percentage points from the observed values.

TABLE 6: Model fit and policy simulations

	Propensity to trust			Propensity to trust			Propensity to trust		
	Military			Police			Civil servants		
	High	Med.	Low	High	Med.	Low	High	Med.	Low
Observed sample average	20.5%	58.3%	21.2%	19.4%	56.5%	24.0%	23.7%	58.7%	17.6%
Estimated average	19.8%	59.6%	20.6%	19.0%	57.4%	23.6%	23.2%	59.5%	17.3%
Simulated values									
Improved economy	25.6%	58.7%	15.7%	23.2%	57.5%	19.3%	30.1%	57.1%	12.8%
Improved safety	20.5%	59.6%	19.9%	19.7%	57.5%	22.8%	24.1%	59.3%	16.6%

Table 6 also reports simulated values of trust under the assumption that all households would report improved economy or that all would feel safe in their communities. The simulations rely on the estimated ordinal logistic model and observed values of all independent variables, except the variable that is altered under each scenario. If all households would experience an improved economy, the model estimates a substantial increase in trust. The share reporting low trust would roughly decline with 5 percentage points, with an improvement in the high trust category of a similar magnitude. The impact of improved community safety is substantially smaller, with an approximate shift of one percentage point from the low to the high trust categories. However, it shall be noted that these results are based on data collected prior to the outbreak of major hostilities and that estimates using more recent information would probably be much different. The deteriorating security situation has probably made safety a more important issue for shaping trust in the government in the southern border area, since the census was collected.

Conclusions

The purpose of this analysis has been to study the importance of mistrust in the government among the population for explaining the outbreak and persistence of a violent insurgency in Thailand's southern border region. A secondary purpose has been to identify the factors that influence trust in the government.

An analysis of the historical context in southern Thailand showed how opposition against the state has increased at times when central control has increased at the expense of local governance. The recent insurgency emerged when an institutional arrangement, the Southern Border Provinces Administrative Center, was abolished and central government rule became stronger. A violent drug suppression campaign put additional strain on the relations between locals and the government. The brutal reaction from the Thai security agencies against early insurgent attacks further alienated parts of the population providing fertile ground for an extended insurgency.

An analytical discussion identified a weakness in existing models for micro-

determinants of violent conflicts. Theoretical models relying on poverty, ethnicity and religion for explaining insurgencies do not account for the causal link between these variables and the animosity against the state that fuels violent insurgencies. This study introduced trust, defined as an evaluative orientation towards the government, as a link between the underlying factors and opposition against the state. Only when poverty and other grievances affect trust in the government, will fertile ground for insurgencies be created and the risk of violent conflicts increase.

When comparing district level pre-conflict trust with casualties during the conflict, support is found for an association between low levels of trust in the government and high rates of violence. Potential sources of trust in the government were derived based on existing theories and an analysis of the context in southern Thailand. An empirical analysis of actual processes of trust formation in the region found that the strongest factors associated with low trust are a negative perception of own economic status, low perceived community safety, being a speaker of a minority language and employment in agriculture. When controlling for other factors, Islamic faith has an indeterminate effect and Islamic education seems not to be related to trust, while higher secular education is associated with lower trust. There are many possible causal links; the negative impact on trust due to education could be related to increased cultural and ethnic awareness among those that has left the region to pursue higher studies. The negative relationship between education and trust could also be a product of higher expectations among those with advanced education, making it more difficult for the government to meet their expectations. This issue needs to be further explored.

Over the past century, a succession of both authoritarian and elected Thai governments have failed to build permanent trust among the population of this region. This analysis suggests that the lack of trust has created an environment that facilitates opposition, resulting in periodical insurgencies against the Thai state. Based on this analysis, some implications for conflict alleviation and prevention policies can be derived. It is important to recognize the unique character of the region and adapt governance arrangements accordingly. Lasting stability in the region is likely to require decentralization and

some measure of autonomy within the Thai state.

To rebuild trust among the population it will be necessary to combine policies to spur economic development with measures aiming to create a sense of justice and security. Continuation of repressive policies such as torture, abductions and extra-judicial executions would be devastating. Language policies need to be adjusted, as Malay speakers display lower rates of trust when controlling for other factors. This may include increased use of Malay in schools and in contacts between the government and the population in the region. This echoes the suggestion from the National Reconciliation Commission to make Pattani Malay a working language in the region (National Reconciliation Commission, 2005). The sustained concerns with education policies are not supported by the analysis.

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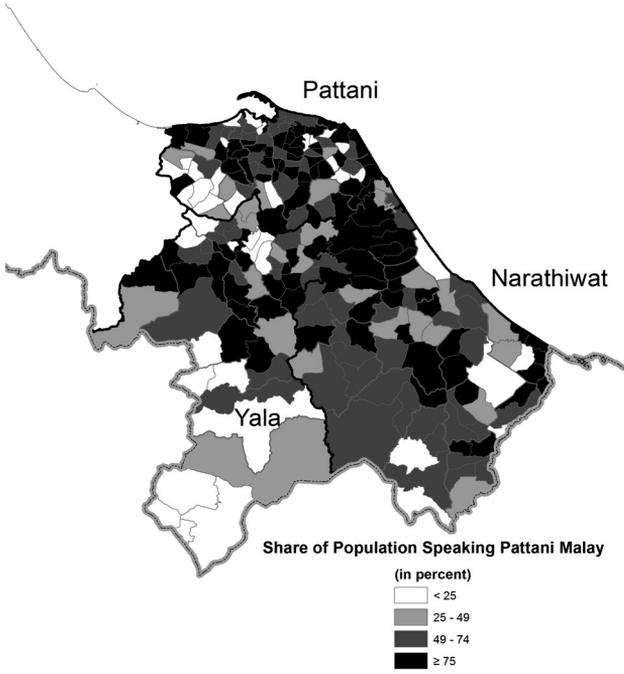
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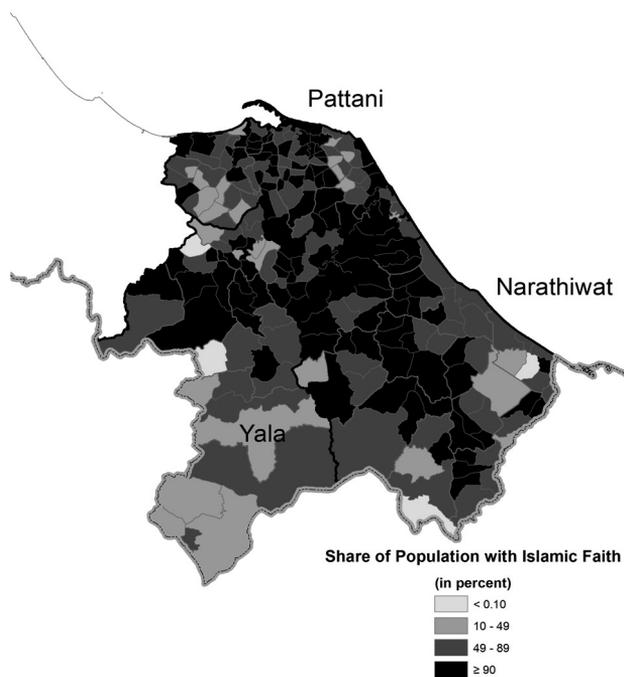
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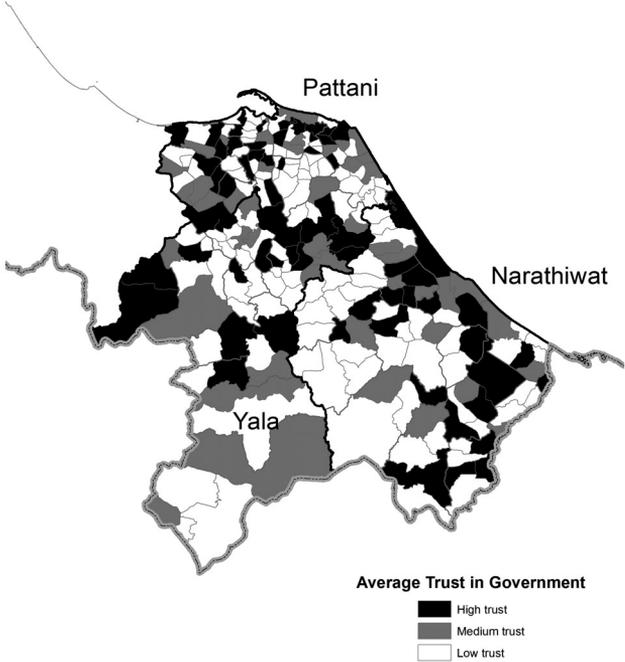
Appendix: Maps



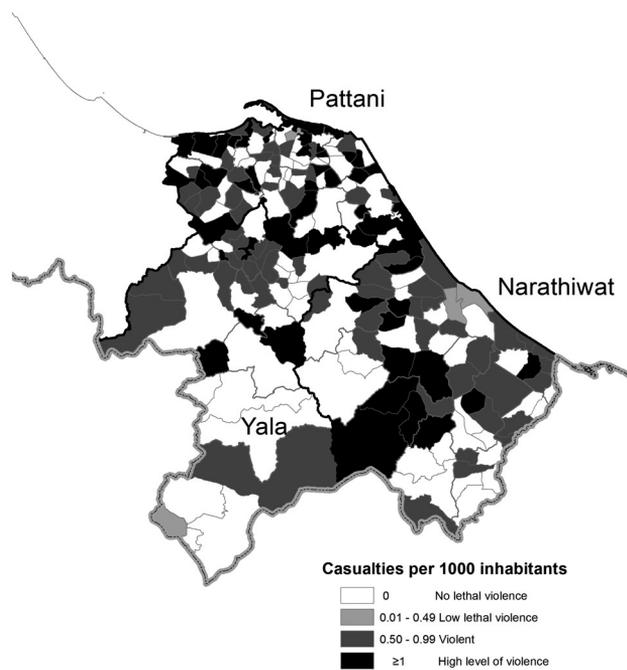
Map 1 Share of population speaking Pattani Malay



Map 2: Share of population with Islamic faith



Map 3: Average trust in government



Map 4: Casualties per 1 000 inhabitants

Political Polarization in Thailand

Anders Engvall

Abstract

The article traces recent political polarization to earlier institutional reforms opening up the political system to increased electoral competition. The increased influence of the rural majority led new political entrepreneurs to introduce welfare policies. The new policies were opposed by urban tax payers, setting off a process of policy driven polarization that drew on underlying cleavages in Thai society. Empirical tests based on voting patterns in the most recent general election using a seemingly unrelated regression model provide support for the hypothesis of policy driven political polarization. The analysis highlights the vulnerability to increased polarization after introduction of institutional reforms that alter the balance of power between different parts of the electorate. It is noted that neither reversals of institutional changes nor policy reversals are effective for stopping negative cycles of increased polarization, whereas inclusive and policy based public debate can lower polarization.

Introduction

Political polarization has increased rapidly in Thailand leading to a deterioration of social stability, a military coup, extensive repression, and waves of massive street protests. Behind the political instability lies an elite power struggle between groups loyal to former Prime Minister Thaksin Shinawatra and the conservative establishment centered on the army, royal palace and technocrats (Tongchai, 2008). Unlike earlier elite contests for power in Thailand it has quickly spread into a full blown division of large swathes of society.

The proliferation of multi-party elections in the developing world calls for a better understanding why some countries experience instability after democratic reforms whereas other see an increased political stability. The purpose of this paper is to analyze sources of political mass polarization in Thailand.¹ A secondary objective is to increase our understanding of the mechanisms that have transformed the initial power struggle into a full-blown polarization of the electorate. The analysis also seeks to derive policy implications for approaches to overcome polarization, or at least reduce the escalating political differences threatening stability in the country.

Existing empirical studies of the link between polarization and policies assume a stable relationship between measures of social fragmentation, political polarization and government policies (Alesina and La Ferrara, 2005; Easterly and Levine, 1997; La Porta et al, 1999). Assuming that polarization is exogenously determined, the literature suggests a causal mechanism affecting economic policies. Developments in Thailand do not follow this pattern. The dramatic increase in political polarization cannot be explained by increased fragmentation. In addition, increased political conflict followed upon radical changes to government policies, suggesting reverse causality from policies to polarization. This also casts doubt on the feasibility to assume political polarization as exogenously determined.

Expanding recent theoretical contributions, the present study suggests an

¹Political mass polarization, as analyzed throughout this paper, must be distinguished from economic polarization, where increased disparity in wealth or incomes leads to material cleavages (Duclos, Esteban and Ray, 2004) or elite political polarization, whereby political preferences of politicians increasingly diverge (Hetherington, 2009).

alternative causal link between polarization and policies. Based on theories of the impact of democratization on power structures (Acemoglu and Robinson, 2001), it is suggested that institutional change in Thailand during the 1990s increased the electoral clout of the rural majority, facilitating the rise of new political leaders mainly relying on support from previously excluded groups. The new government introduced policies that appealed to their supporters but provoked a severe reaction from the elite and urban tax payers. What followed was a process of policy driven polarization as suggested by Dixit and Weibull (2006). This is a situation where new government policies provoke opposite reactions from citizens, whereby some call for reversals of the policy while others favor its continuation in stronger form. The paper proceeds with empirical tests using voting data from the 2007 general election as an indicator of political preferences. The econometric analysis is based on seemingly unrelated regression techniques.

The paper contributes to a limited but growing empirical literature on the mechanisms of political polarization in fragile democracies. Studies of electoral dynamics in East European countries highlight the importance of socio-economic divisions and institutional differences for country outcomes (Tavits, 2005; Tucker, 2002). Research on voter behavior in African elections identifies increasing voter sophistication, promoting issues based politics rather than clientelism (Lindberg and Morrison, 2008; Bratton, Bhavnani and Chen, 2010). While there is an extensive literature on political change in Thailand (see for example Hewison, 2010; McCargo, 2005; Thongchai, 2008), there are no empirical studies on political polarization based on nationally representative data.

The present article makes several contributions to the understanding of political polarization in developing countries. First, it analyzes the mechanisms of policy driven polarization and expands our understanding of underlying causal processes. Secondly, an empirical analysis of voter behavior identifies factors contributing to the existing political divide in Thailand. Finally, policy implications for bridging the divisions are derived. Given the explorative nature of this analysis, suggestions for further research are discussed at length.

The paper proceeds as follows. The next section introduces Thailand's

recent political history focusing on the rapid polarization. This is followed by an analytical section outlining theories of political polarization and potential drivers of Thailand's political divide. A third part introduces the data, outlines the empirical strategy and presents the findings. A final part concludes and derives policy implications.

Background: Thai Political Polarization

This historical and political background highlights how constitutional reforms at the end of the 1990s sought to institutionalize democratic rule with strengthened executive power while erecting checks and balances. In the aftermath of the reforms, Thaksin Shinawatra took office with a strong electoral mandate and implemented far reaching policy changes primarily targeted to demands from the rural electoral majority. The changes provoked a reaction from the urban establishment; a military coup ousted the government and set about to reverse both earlier institutional reforms and Thaksin's policies. The coup served to increase mass polarization as the largely rural electorate continued to give strong electoral support to political parties loyal to Thaksin.

Having erected 18 constitutions and seen 11 governments unseated through coups since 1932, Thais are used to periods of political instability. However, the country was for long characterized as a bureaucratic polity, where politics was a preoccupation of elite groups in Bangkok, with the majority of the population kept outside politics (Riggs, 1966). Coups as a means to topple governments rarely provoked any reactions from broad sections of the population. When elections were held, electoral competition was limited by clientelistic bonds between voters and politicians, producing weak coalition governments posing little threat to the military-bureaucratic elite (Scott, 1972; Chambers, 2008).

Economic development during the 1970s and 80s brought about profound changes, as the urban middle class pressured for democratic reforms and more participatory politics (Prudhisan, 1998). Throughout this period, minor reforms and periods of democratic rule were followed by reversals. Two events in the 1990s made it impossible to hold back change. First, in 1992, the

military violently suppressed demonstrators on the streets of Bangkok. The bloodshed weakened military claims to political influence. Secondly, the 1997 Asian financial crisis undermined the trust in the ability of the business elite, technocrats and incumbent politicians to manage the economy (Nukul, 1998).

The 1997 constitution had broad implications for Thai politics by expanding popular participation and strengthening civil rights. The parliament was strengthened and all seats in the upper house, (the Senate), were opened to electoral competition (Kingdom of Thailand, 1997). Still the constitution included limits on the influence of rural voters. Candidates for parliamentary seats were required to hold a bachelor's degree, effectively excluding over 95 percent of the adult population in rural areas (Pasuk and Baker, 2000). Technocrats and judges were given increased ability to oversee elected politicians through independent institutions and commissions (McCargo, 2003).

Thaksin Shinawatra, a former police lieutenant colonel who had made a fortune after receiving lucrative telecom licenses, was elected prime minister through an electoral landslide in the first election held under the new constitution. When setting up his new political party, Thai Rak Thai (TRT), Thaksin relied on business principles and made extensive use of surveys to identify the interests of voters in view of developing policy platforms addressing the aspirations of large sections of the electorate (Nichapa, 2003).

Once in power, the TRT government implemented a series of transformative policies, including a universal health care program, a village fund for micro-credits, bureaucratic reform, and a campaign against drugs. At the same time, Thaksin received intensive criticism for his attempts to suppress media, weaken independent institutions, as well as for the substantial conflicts of interest between the Shinawatra business empire and Thaksin's position as Prime Minister (McCargo and Ukrist, 2005; Chirmsak, 2004). Human rights abuses were frequent, both in the violent war against drugs and in security agencies' handling of the insurgency in the southern border region. Conservative opposition against Thaksin increased when he challenged royalist control over appointments to leading positions in the military (McCargo and Ukrist, 2005; Connors, 2008). Soon after Thaksin had become prime minister following the election of January 6 2001, he started to antagonize Bangkok's

critical public and the capital's monarchist, bureaucrat and military establishment (McCargo, 2005). Thaksin's policies contradicted royalist and nationalist images of the superior avenue to dealing with social problems and rural development offered by approaches such as sufficiency economy. In 2005 Sondhi Limtongkul, a former Thaksin ally who had turned against him, began successfully organizing large street demonstrations, using his Manager media group to spread the message. At the beginning of 2006, facing protests on the streets of Bangkok by the yellow shirted People's Alliance for Democracy (PAD), Thaksin dissolved parliament and called an election for April. The election was boycotted by the opposition and was subsequently annulled by a court ruling based on technicalities. This was the first in a string of politically controversial judicial rulings that have formed Thailand's recent political history.

The instability created by the protests and annulled election paved the way for a military coup on September 19 2006. The coup was undertaken by the military leadership and engineered by Prem Tinasulandonda, resident of the Privy Council and close advisor to King Bhumipol (Thongchai, 2008; Hewison, 2010). Anti-Thaksin groups in the urban establishment generally supported the coup, while opposition to the coup was stopped through repressive policies. Hewison (2010) argues that Thaksin came to be pitted against the old establishment and that his downfall is a remarkable demonstration of how elite politics operate in Thailand. Thaksin's politics eventually brought an array of conservative, hierarchical, and authoritarian forces together in opposition to Thaksin personally and to his government.

The coup regime took various actions aiming at preventing Thaksin and his supporters from returning to power, including questionable legal actions and court rulings, and a new constitution weakening the influence of the provinces. The 2007 constitution drafted under the control of the coup makers reproduced key elements of the 1997 constitution, including the protection of basic rights and independent agencies of the state (Kingdom of Thailand, 2007). It further enhanced the power of judicial oversight at a time when the judiciary was increasingly politicized. Constitutional changes brought about by the 2007 constitution induced fractionalization of the party system. The fractionaliza-

tion was further driven by the dissolution of Thai Rak Thai and several small parties. A constitution drafted by a committee appointed by the coup makers was approved in a referendum under severe constraints, including a virtual outlawing of campaigning against the draft charter.

Ousting TRT from office by military force by no means removed Thaksin from political influence. The party had won overwhelming electoral victories in the 2001 and 2005 general elections, and could regroup for a post-coup election. Despite the considerable efforts, the coup regime failed to undercut support for TRT polices in rural strongholds (Connors and Hewison, 2008). A 2007 election held under the new constitution was important for judging the success of military and establishment efforts to lower the influence of rural voters and eradicate support for Thaksin. A newly formed proxy party, the Peoples Power Party (PPP), had been formed to replace TRT. The party promised to continue policies directed to the rural electorate. The election on December 23 2007 proved to be a massive show of strength for Thaksin. The PPP got almost 50 percent of the seats (Table 1) and were able to form a government with the support of small parties. The results showed the country divided between the North and Northeast giving strong support to the PPP (see map in Appendix) loyal to Thaksin and the South; and Bangkok voting for the Democrats (see map in Appendix).²

The PAD took to the streets again, this time occupying both the Prime Minister's office and ultimately Bangkok's both airports. Dubious court rulings barred two consecutive Prime Ministers loyal to Thaksin from office and ultimately dissolved the PPP.³ In December 2008, the pro-establishment Democrat Party took office through a deal brokered by top military. The Democrat led government quickly came under pressure from a pro-Thaksin protest movement, the redshirted United Democratic front against Dictatorship (UDD). The Democrat government faced difficulties in establishing po-

²Vote shares reported throughout the text are based on votes for constituency candidates, not party list votes.

³Vorachet (2009) provides an analysis of the weak legal basis for the rulings, including judicial activism, retroactive application of laws passed after the coup, use of special a Constitutional Tribunal set up by the coup makers to handle cases, and the use of announcements by the coup makers as base for court rulings.

litical stability, as they took office without the legitimacy associated with an electoral victory.

As a party with strong links to the royalist and military elite, it has recently attracted significant support from the Bangkok middle-class. The Democrat government has faced two waves of UDD street demonstrations. The use of military force to clash down on the demonstrations has been met with approval from their mainly urban supporters while further undermining support for the government among the pro-Thaksin rural electorate.

A dramatic difference between recent political events and earlier elite contests over power is the impact on the electorate. Political divisions have rapidly led to widespread political polarization throughout Thai society. Another distinct feature is the contested nature of policies introduced by the TRT government. While supporters to Thaksin hail health care and soft loans, opponents dismiss it as a waste of resources. There is broad consensus among studies of TRT's popularity, that welfare policies directed to the rural population were a key factor contributing to the party's rise to power and Thaksin's continued electoral success (Callahan, 2005; Connors, 2008; Hewison, 2010; Hicken, 2006; McCargo, 2008; Pasuk and Baker, 2008; Somchai, 2008; Walker, 2008). Hicken (2006) argues that neither the crisis nor Thaksin's personal assets are enough to explain TRT's rise to power and electoral success. The institutional changes brought about by the 1997 constitution opened new opportunities to political entrepreneurs and gave new incentives to politicians.

Anthropological studies of rural voters' electoral choices stress the role of TRT's party platform which redistributed public resources to rural areas (Callahan, 2005). A study of elections in north-eastern Thailand by Somchai (2008) finds that both policies that reflected the interests of widely divergent sectors of the electorate and use of money politics contributed to its electoral success. Similarly, Andrew Walker (2008) analyzes the politics of election in rural Thailand, finding that TRT was elected based on both superior candidates and policies best matching voters' values. In polls, the health scheme is regularly rated as the TRT government's most popular measure (Pasuk and Baker, 2008). Hewison (2010) also finds that the most successful measure was the 30-baht health care scheme, and notes that to deliver on his promises

Thaksin needed to improve the effectiveness of the conservative and inefficient bureaucracy, making it more responsive to politicians.

In analyzing the link between democracy and growth, Lindert (2003) notes that elite rule damages development by under investing in human capital. Large parts of the Thai population were unable to access health services prior to TRT using public health care reform as a means to attract political support. Thus, it indirectly the support for Thaksin can be traced to earlier failures in addressing the gross economic and social inequalities in Thailand (Connors, 2008). People felt empowered by the TRT schemes, partly through the very real impact of the programs, partly through the impression that Thaksin and his party were responsive to their demands.

Analyzing Political Polarization

This section draws on recent advances in theories of political economy for deriving an analytical framework for explaining the rapid polarization of the Thai electorate. It is shown that political and economic events in the 1990s prompted institutional reforms that increased the influence of the rural electorate. New political entrepreneurs exploited the opportunities brought about by increased electoral competition, offered policy programs targeted to the rural majority and were able to take power from incumbent parties representing the establishment. The implementation of the reforms set off a process of policy driven polarization. This is a situation where new government policies provoke opposite reactions from citizens, whereby some call for reversals of the policy while other favor its continuation in a stronger form. In the Thai case, redistributive health-care policies, highly popular among the rural poor but opposed by urban tax payers, were particularly important for setting off a process of polarization. Subsequent cycles of polarization drew on existing economic and regional cleavages in Thai society. A reaction from pro-establishment military leaders that brought about reversals of the institutional reforms, policy reversals, and repression has not been able to break the polarization.

Electoral polarization is a state of large heterogeneity of voter preferences. This suggests an intensity of views of that is diametrically opposed to those

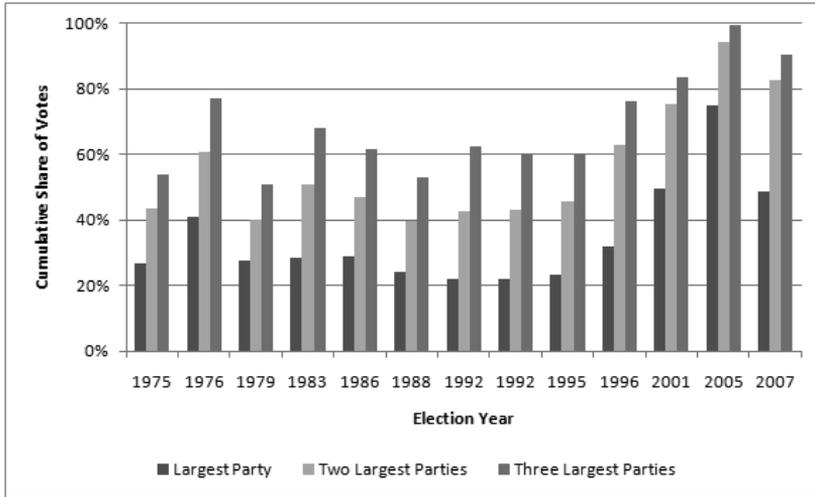


FIGURE 1: Cumulative share of parliamentary seats, three largest parties 1975 - 2007

of their opponents, making it difficult to understand (or even to respect) the worldview that makes those preferences possible (Hetherington, 2009). Esteban and Ray (1994) define a general state of polarization with three distinct features, (i) a high degree of homogeneity of preferences within each group; (ii) a high degree of heterogeneity of preferences across groups; and (iii) a small number of significantly sized groups. While there is no nationally representative Thai data on political preferences, there are plenty of qualitative indications that political views within groups are homogeneous, while those between opposing groups are increasingly heterogeneous (Hewison, 2010; McCargo, 2008; and Thongchai, 2008). A steady decline in the number of medium sized political groups since the mid 1990s is displayed in Figure 1. There has been a marked increase in the relative size of size of the two largest political parties, whereby their cumulative share of parliamentary seats has increased from less than half before 1995 to more than 75 percent in the three latest elections.⁴ In all elections since 2001 voters have faced a choice to support the

⁴The party consolidation could partially be driven by electoral rules seeking to favor

pro-establishment Democrat Party, a party aligned with Thaksin Shinawatra or various smaller parties centered on provincial political bosses. Support for these three groups has been remarkably stable in the four elections held (Table 1) with roughly 40 percent of voters supporting Thai Rak Thai or the Peoples Power Party; 30 percent supporting the Democrats; and 30 percent supporting the minor parties. Only in the 2005 election did Thaksin reach a majority of above 60 percent of the votes after merging TRT with a number of smaller parties. The annulled 2006 election does not lend to any simple interpretation since Thai Rak Thai run unopposed after an opposition boycott.

larger parties that were implemented as part of the 1997 constitution and governed the 2001 and 2005 elections. But the trend also holds for the results prior to the change (1996) and after a reversal of the rules (2007).

TABLE 1: Parliamentary election results, 2001-2007

Election	2001		2005		2006		2007		Remarks
	Share of votes	Seats							
Thai Rak Thai	41%	248	61%	375	61%	460			Dissolved by court
Peoples Power Party							37%	233	Dissolved by court
Democrats	27%	128	18%	96	Boycott		30%	165	
New Aspiration	7%	36							Merged with TRT
Chart Pattana	6%	29							Merged with TRT
Chart Thai	5%	41	11%	27	Boycott		9%	37	Dissolved by court
Mahachon			8%	2	Boycott				Discontinued
Puea Pandin							9%	24	
Ruam Jai Thai Chart Pattana							5%	9	
Matchimatipatai							5%	7	Dissolved by court
Pracharat							2%	5	
Others	14%	18	1%	-			3%	-	
No Vote					38%				
Total	100%		100%	500	100%	460	100%	480	

An analysis of the changes brought about by earlier political reforms is essential for understanding recent events. Acemoglu and Robinson (2001) develop a theory of political transitions. The theory emphasizes the role of threat of social unrest in leading to democratization and the desire of the rich elite to limit redistribution in causing switches to nondemocratic regimes. Inequality emerges as a key factor of political instability as it encourages the rich to contest power in democracies, and also often encourages social unrest in nondemocratic societies. The model provides an analytical basis to interpret political transitions in Thailand since the 1990s. The social pressure after the blatant use of violence to suppress demonstrators in 1992 led to the creation of a constitutional drafting process. The establishment was unable to resist the pressure to pass the 1997 constitution, given the additional impact of the financial crisis. A concerted effort to reverse the institutional reforms was only possible once urban dissent with the effect of more competitive politics had reached a point where a military coup could be legitimized.

Democratic reforms of the kind brought about by the 1997 constitution will alter existing power structures and lead to increasing electoral competition (Acemoglu and Robinson, 2006). Electoral rule changes in the 1997 constitution bringing about increased party-based electoral competition include the introduction of single-member constituencies, rules to prevent party switching, the creation of an Election Commission to prevent fraud, compulsory voting and a fully elected Senate replacing a system of appointed senators. In the Thai context, the reforms increased the electoral influence of the rural majority, while weakening the influence of the military and technocratic elite.

The changed power balance increased the possibility for changes to policy. Cross-country studies by Person and Tabellini (2003), Giavazzi and Tabellini (2005), and Amin and Djankov (2009) find significant effects of reforms of political institutions on economic policies. Additional support is provided in country case studies by Bates and Krueger (1993), taking into account the complexity and the country specificity of the interaction between democracy and economic reforms to support the effect of electoral competition on economic policies. In Thailand, one outcome of the altered balance of power was the introduction of polices that proved popular among large parts of the rural

electorate as discussed above.

The policy changes are important for explaining subsequent polarization. Early models of voter behavior assumed that political polarization could be analyzed as driven by policy-relevant factors (Downs 1957; Fiorina, 1981). Recent theoretical advances have shown that new policies may lead to political polarization if people interpret the changes differently (Dixit and Weibull, 2006). The model of policy driven polarization is based on the observation that government policies often provoke opposite reactions from citizens; some call for a reversal of the policy while others favor its continuation in a stronger form. The model shows how electorates can become polarized due to biases in perception and reasoning, even when voters agree on basic values and are observing the same political events. This suggests a situation where an initial policy change divides the electorate into two poles, one approving of the new policy and one disapproving. Any further steps taken, either a continuation of the policy or a reversal, can further the polarization. The presence of different prior beliefs undermines the ability to coordinate and overcome polarization, as individuals interpret new information differently (Acemoglu, Chernozhukov and Yildiz, 2006).

In the Thai context, the policy changes introduced by the TRT directed to the rural electorate set off a process of polarization when large shares of the urban voters disapproved of the policies. The urban voters, already having access to healthcare and financial services, perceived the policies as a diversion of resources from urban tax payers with few beneficial effects. The policy reversal after the coup did not reverse the trend in polarization, but set off another reaction from the largely rural supporters of Thaksin. In the theoretical model, a reversal can come about through more factual information about the effect of employed policies, even when the issues at hand are controversial (Dixit and Weibull, 2006). Non-issue based political information will merely serve to increase polarization as it is given widely different interpretations by each group. More of discussion about policies and their effects would, under the assumption that many basic values are commonly held, contribute to bridging the polarization.

Hypotheses

A large part of the analysis presented this far is consistent with earlier analyses of political developments in Thailand, in particular the role of the economic crisis as a driver behind constitutional reforms followed by increased electoral competition opening up to new political forces and significant policy changes. The main contribution of the present analysis is the role of policy changes for explaining polarization. With this in mind, the empirical analysis will be devoted to testing hypotheses of policy driven polarization.

The empirical test relies on data from the most recent election in 2006, where the main contestants were the pro-establishment Democrat party and the Thaksin-loyalist within PPP. As noted above, a key policy introduced by Thaksin was the 30-baht healthcare plan. Through this scheme, large sections of the population suddenly got increased access to medical services. There are large spatial differences in access to medical care in Thailand. Access to health care measured as the number of inhabitants per medical doctor varies substantially between provinces in different parts of Thailand (see map in Appendix). While the number of persons per doctor is below 1 000 in Bangkok, it more than five times this number in most parts of the northeast and the southern border provinces. This gives a picture of a dramatic variation in access to health care. It also shows that large inequalities in access still persist despite the reforms introduced under the TRT government.

It is reasonable to assume that these differences will have an the impact on the policy preferences of voters. Studying the partial correlation between access to health care and support for the Thaksin-loyalists in the PPP party, it is evident that support was higher in areas where the healthcare system is less well developed (Figure 2). The scatter plot shows how a higher number of persons per doctor are correlated with higher vote shares for the PPP.⁵ The opposite holds for the Democrat party, where the negative correlation is even stronger (Figure 3). The data indicate that there is an influence of access to medical services, but only analysis in a regression framework can show if this holds when controlling for other factors that influence voter behavior.

⁵Partial correlations or scatter plots presented here do not imply causality.

Another key policy contributing to TRT's popularity are the cheap loan programs. These provided relief for households burdened by heavy debt, in particular those relying on informal moneylenders charging high interest rates. Whereas urban areas in Thailand are well served by formal financial institutions, inhabitants in rural areas face difficulties in accessing credit (Coleman, 2006). Those living in areas underserved by formal lenders often have to rely on informal loans at high interest rates, producing high levels of household debt. Survey data shows large variation in debt burdens between different parts of the country (see map in Appendix).⁶ Particularly severe debt burdens are found in provinces throughout the central, north and northeast of Thailand. Households in Bangkok and surrounding provinces as well as in the south are less burdened by debt.

Comparing the relationship between indebtedness and electoral outcomes confirms the notion that PPP receive more votes in provinces with higher average debt burdens (Figure 4) and that the opposite holds for the Democrats (Figure 5). This could indicate that Thaksin's rural credit programs won over voters in areas where many households are faced with difficulties handling existing credits.

The policy based-voting hypothesis predicts that voters with relatively higher need for public health care policies and public credits will support PPP over the Democrats.

The analysis of policy driven polarization posits that existing socio-economic cleavages will contribute to further polarization once a policy shift has brought about an initial rift. Political conflict is often a manifestation of competition over scarce economic resources and the access to power to control them. Economic distribution thereby affects the structure of political differences (Acemoglu and Robinson, 2006). In the Thai setting, economic cleavages between the center of development around Bangkok and remote provinces have been present for long (Doner, 2009). Highly centralized state institutions created at the end of the 19th and early 20th century have produced this development pattern (Wyatt, 1969; Christensen, Ammar and Pakorn, 1993).

⁶Debt burden is defined as average household debt divided by average monthly income, drawing on household survey data.

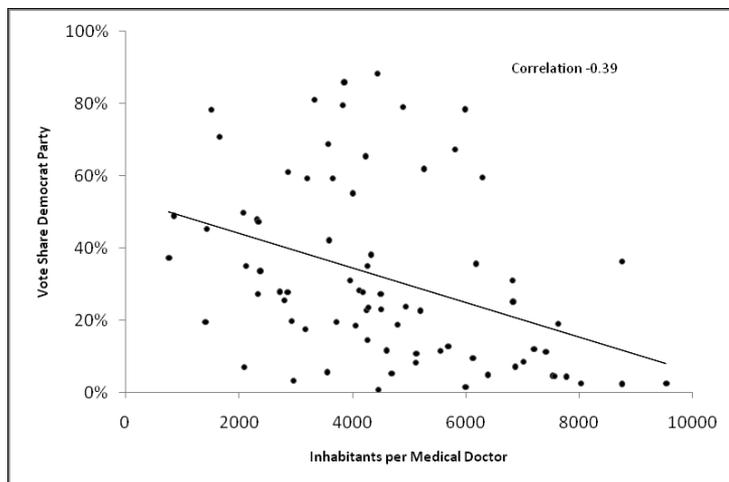


FIGURE 2: Vote share PPP and inhabitants per doctor, by province 2006

The cross-country literature identifies economic voting as a key determinant of electoral outcomes (Lewis-Beck and Stegmaier, 2000; Pacek and Radcliff, 1995). There are two distinct variants of economic voting; evaluative or forward looking. According to the first interpretation voters will punish the incumbent if they disapprove of economic outcomes during their time in office. A forward looking alternative assumes that voters will support parties that they expect to implement economic policies that favor their economic interests. Since the election analyzed here was held after a military installed government had been in office and the military did choose not to contest the election, there was no incumbent facing the voters and focus will therefore be on the forward looking hypothesis.⁷

An analysis of forward looking economic voting in the Thai context must be based on the observation that economic conditions vary dramatically between different parts of the country (Doner, 2009). (See see map illustrating the spatial pattern of economic development in Appendix). The average provincial

⁷This observation would be superfluous in most countries, but the Thai military has a tradition of setting up parties that contest elections held after military coups. One example is after the previous coup in 1991.

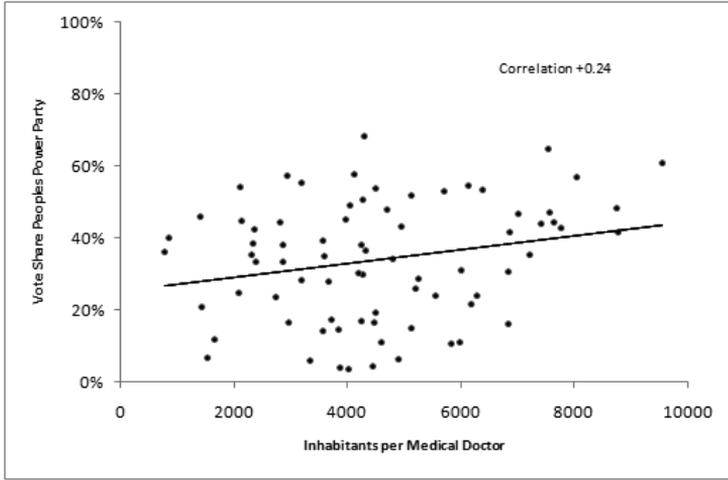


FIGURE 3: Vote share Democrats and inhabitants per doctor, by province 2006

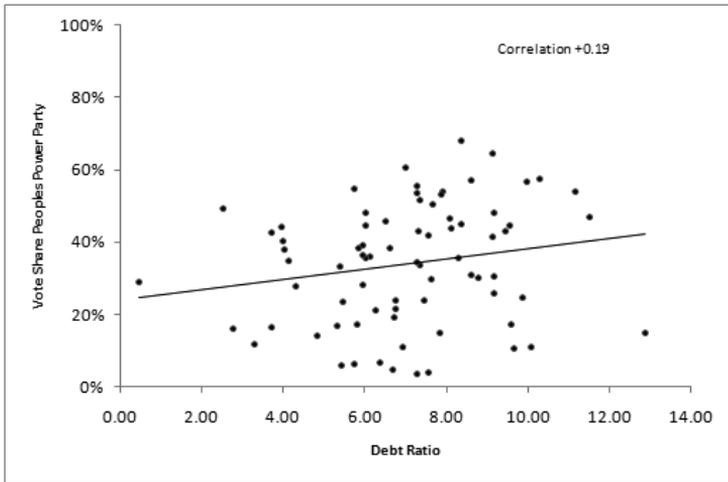


FIGURE 4: Vote share PPP and average debt ratio, by province 2006

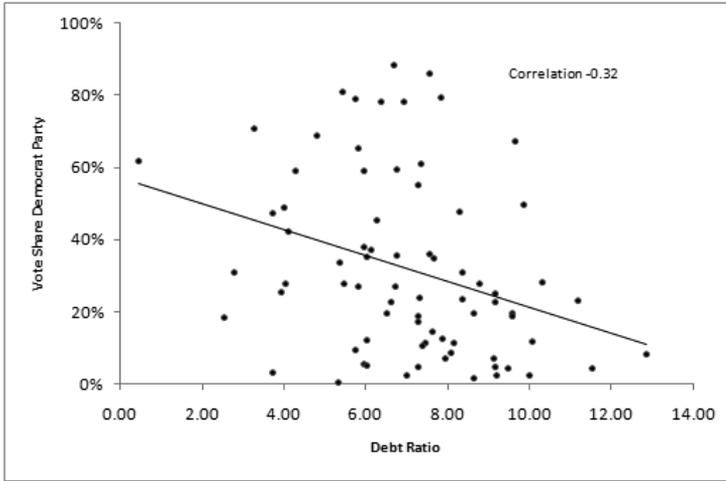


FIGURE 5: Vote share Democrats and average debt ratio, by province 2006

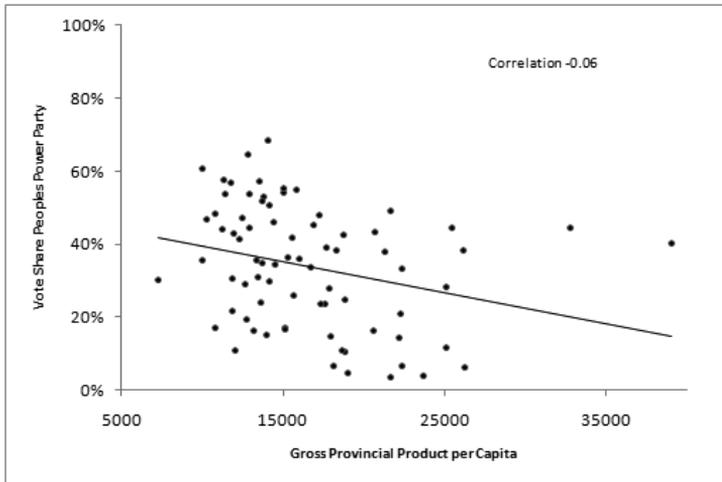


FIGURE 6: Vote share PPP and 2006 provincial product per capita

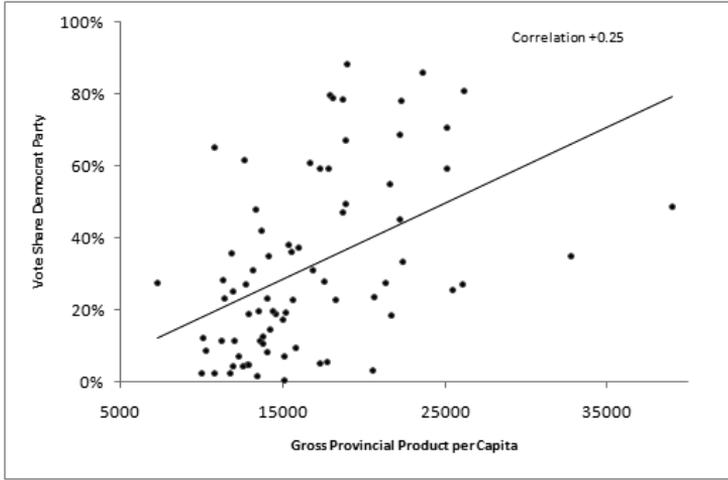


FIGURE 7: Vote share Democrats and 2006 provincial product per capita

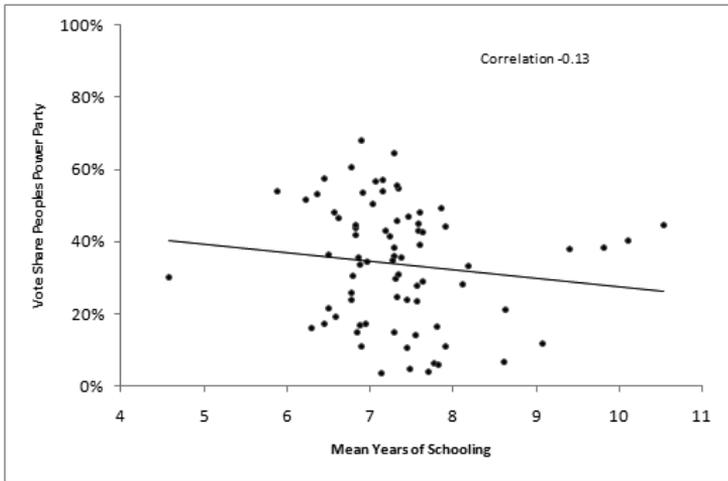


FIGURE 8: Vote share PPP and schooling, by province 2006

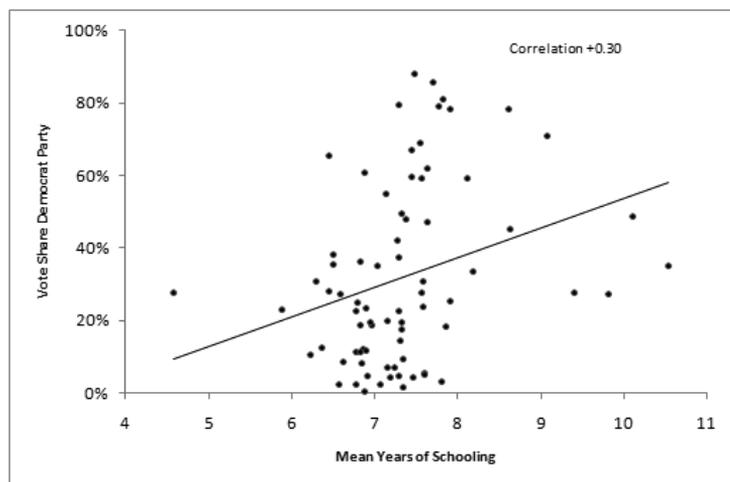


FIGURE 9: Vote share Democrats and schooling, by province 2006

product is highest in Bangkok and surrounding provinces, in particular the heavily industrialized area to the east. The southern and central parts of the country are also richer than remote provinces in the north and northeast.

Figure 6 and Figure 7 show how our measure of economic development is associated with electoral support for PPP and the Democrat party. There is a negative, but rather weak association between vote share for PPP and rising average provincial products. The positive association between electoral success for the Democrats and high provincial product is significantly stronger.

Additional measures of socio-economic development commonly employed when studying developing countries is education and economic structure.⁸ There are large variations in average years of schooling across Thai provinces (see map in Appendix). The pattern differs from that of economic development, as low levels of schooling are found in many provinces in the central

⁸Descriptive statistics on economic structure are not reported here due to space constraints. Correlations between shares of agriculture and provincial income are negative for PPP and positive for the Democrats. The results are driven by the highly productive agriculture, and thus large agricultural income, in the southern provinces that are also strongholds of the Democrat party.

region as well as to the east of Bangkok. According to this metric, education levels in parts of the north and northeast are on the same level as in the south.

Partial correlations between schooling and vote shares for PPP show a negative, but weak association (Figure 8). The positive association between education and support for the Democrat party (Figure 9) is stronger.

Socio-economic-cleavages hypothesis predicts that support for PPP compared to the Democrats will be higher in provinces that are poor, that have low levels of education and rely on agriculture.

Another preexisting cleavage is the regional divide, between Bangkok and central Thailand on the one hand, and regions with distinct lingual and cultural traits on the other hand. The regional identities are expected to feed into the polarization, given that there is a long history of regionally based political parties. Askew's (2008) analysis of the Democrats finds that they have exceptionally strong electoral support in the Buddhist majority provinces of southern Thailand (see map in Appendix). Conversely, TRT under Thaksin developed strong support in north and northeast (see map in Appendix).

Regional voting hypothesis states that Democrats have a regional support base in the south and Bangkok, whereas the PPP has support from voters in the north and northeast.

Politics in Thailand, as in many developing countries, are often described as relying on clientelistic networks of patronage, personal loyalty, and coercion (Scott, 1972). In order to reproduce their leadership, political leaders ensure support in exchange for personalized favors and benefits to voters. These in turn reproduce pacts of mutual loyalty; voters choose representatives based on how good they are as patrons. The implications for voting behavior are distinct from voting based on policies and broad-based regional support. Clientelism is personalized and localized, drawing on leaders' provincial bases. The broad-based PPP and Democrat parties do not follow the classic model of clientelism, as they have electoral support from beyond leaders, or faction leaders, in the provinces. But marginal, small parties can be assumed to rely largely on clientelism.

Clientelistic voting hypothesis: Smaller parties are primarily dependent on patronage for support from voters in the provinces where their leaders or

important factions are based.

It shall be noted that the hypotheses are not mutually exclusive. On the contrary, the analytical discussion outlined a polarization process whereby initial policy polarization is expected to be aggravated by underlying economic and regional cleavages. However, policy driven polarization is not consistent with clientelistic voting since this is a markedly non-policy based hypothesis of electoral choice.

Data and Empirical Analysis

The empirical analysis seeks to explain political preferences using explanatory variables that capture policy needs, socio-economic cleavages, regional variation and clientelism. This analysis of political preferences would ideally rely on individual level information on political views, and corresponding information on the socio-economic sources of political preferences. Unfortunately this type of data is not available for Thailand. For the purposes of this analysis, provincial level voting patterns from the Thai general election of 2006 are used. A key assumption for the empirical analysis is that observed voting patterns are a useful proxy for unobserved political preferences. In absence of adequate disaggregated survey data on political preferences, the model will be estimated based on vote shares within districts of varying characteristics. The assumption that voting patterns accurately reflect political preferences would be undermined if vote-buying made a sufficiently large share of the electorate vote different than their political conviction. However, recent studies of vote buying have found a declining impact of the practice (Callahan, 2005; Bowie, 2008; Walker, 2008). In addition, research indicates that most payments to voters are actually turnout buying rather than vote buying; a practice whereby politicians reward un-mobilized supporters for showing up at the polls (Nichter, 2008).

TABLE 2: Variable definitions and sources

Variable	Definition	Source
Dependent variables	Vote share relative to Democrat party	EC, 2008
Policy preferences		
Relative health service need	Persons per medical doctor	MoPH, 2007
Relative financial services need	Average debt per household	NSO, 2007b
Socio-economic development		
Education level	Average years of schooling	NSO, 2007a
Income level	Average gross provincial product per capita	NESDB, 2010
Share agriculture	Share of provincial income from agriculture	NESDB, 2010
Regionalism		
Region	Central, northeast, north, south, southern border	
Patronage		
De jure leader	Provincial political base of official leader	EC, 2008
De facto leader	Provincial political base of de-facto leader	Matichon (various issues)

All explanatory variables are drawn from official government data. Administrative data on access to health care is used as a measure for the demand for public health services, and household survey data on debt is used as a proxy for the need for financial services. Socio-economic development is measured by survey data on educational attainment, average provincial product per capita and share of agriculture in the provincial economy. Regions are defined according to recognized division of the country into Central, North, Northeast and South. The three southern border provinces are defined as a separate region, due to the different political circumstances in the region. Information on *de jure* and *de facto* leaders are drawn from the election registry and news sources, respectively.

Econometric Specification

Katz and King (1999) showed that ordinary least square (OLS) regression is inappropriate when the dependent variable measures shares of the vote going to each party in an election. Jackson (2002) and Tomz, Tucker and Wittenberg (2002) suggested a seemingly unrelated regression (SUR) model for empirical analysis of voting results generating efficient results. Adopting the notation of Tomz, Tucker and Wittenberg, the proportion of the vote \mathbf{V} for each party j in electoral district i , must meet the following criteria: $\mathbf{V}_{ij} \in [0, 1]$ for all i and j , and $\sum_{j=1}^J \mathbf{V}_{ij} = 1$ for all i .

For the analysis of electoral data based on a SUR-model, a multiequation version of OLS is used. This requires a potentially unbounded dependent variable. Based on Katz and King (1999), the dependent vote variable is converted to an unbound scale by applying multivariate logistic transformation. In this context, conversion is done by calculating the natural log of each party's share of the vote relative to that of a reference party J . The vector of $J - 1$ log ratios for electoral district i is:

$$\mathbf{Y}_i = [\ln(\mathbf{V}_{i1}/\mathbf{V}_{iJ}), \ln(\mathbf{V}_{i2}/\mathbf{V}_{iJ}), \dots, \ln(\mathbf{V}_{i(J-1)}/\mathbf{V}_{iJ})]$$

under assumption that $\mathbf{Y}_i \sim N(\boldsymbol{\mu}_i, \boldsymbol{\Sigma})$ with a mean vector $\boldsymbol{\mu}_i$ and a variance matrix $\boldsymbol{\Sigma}$. We then model $\boldsymbol{\mu}_i$ as a function of explanatory variables \mathbf{x} and

coefficients β :

$$\mu_i = \left[\mathbf{x}_{i1}\beta_1, \mathbf{x}_{i2}\beta_2, \dots, \mathbf{x}_{i(J-1)}\beta_{(J-1)} \right]$$

β and \mathbf{x} can be estimated using SUR, a method that is appropriate for studying regression equations that appear to be unrelated but in fact have correlated errors. The correlation is introduced here because the dependent variable is constructed from vote shares, so that as a higher ratio for one party means a lower ratio for the others. The model is a version of the multinomial logistic function and the estimation method is taken from Zellner (1962).

The main purpose of the empirical analysis is to test hypotheses derived from the analytical discussion. Any empirical analysis of political preferences is challenged by the complexity of underlying processes and risk to be affected by omitted variable bias. This analysis relies on both theoretical models from political economy and qualitative studies of Thai voter behavior to construct an empirical model that captures factors forming voter preferences. Causality cannot be established solely based on the econometric test; which is rather a way of finding support for or reject the hypotheses.

Interpretation of estimated coefficients has to take into account the character of the dependent variable defined above. The Democrat party is used as reference party J throughout, and log ratios are created for all six parties receiving parliamentary seats in the 2007 election. The ratio for the main contestant, PPP, is of particular interest. Estimated coefficients capture the effect of each variable on the vote share relative to the Democrat party. A positive coefficient is expected for the PPP when studying the impact of policy preferences on vote shares. Variables for socio-economic development are expected to give a negative effect for voting on PPP, compared with the Democrats. It is recognized that the PPP has a strong support base in the North and Northeast and the Democrats in the South and Bangkok. These regional voting patterns are expected to give significant results.

Some of the explanatory variables display some correlations, albeit not of an alarmingly high level. The number of observations is 76; equal to the number of provinces in the country. These two factors call for a study of any signs of large standard errors due to multicollinearity.

TABLE 3: SUR model estimates, vote shares 2007 general election

Party Dependent variable	Peoples Power Party		All minor parties	
	Ratio to Democrats		Ratio to Democrats	
	Coefficient	z-value	Coefficient	z-value
Policy preferences				
Persons/doctor	0.594**	2.50	0.465	1.33
Debt	0.099	0.48	0.372	1.22
Socio-economic development				
Education level	2.746**	2.00	0.671	0.33
Income level	-0.219	-0.91	-0.481	-1.35
Share agriculture	0.007	0.04	-0.009	-0.03
Regionalism				
Northeast	1.416***	4.30	1.091**	2.25
North	0.937***	2.71	-0.348	-0.68
South	-2.578***	-7.27	-1.875***	-3.59
Southern border	-0.591	-1.21	-0.221	-0.31
R^2	0.761		0.532	
χ^2	241.32***		86.3***	
Observations	76		76	

Empirical Results

Estimates of the basic SUR model is displayed in Table 3, with two separate regressions for PPP and all minor parties. The results provide insights on the influence of the analyzed variables on voting behavior. A first observation is that most variables and the full models are highly statistically significant, indicating that the estimation is unaffected by multicollinearity. The R^2 -measures of goodness of fit are high. However, some of the variables do not display expected signs, which calls for an in-depth discussion of each variable.

The effect of policy preferences is of central interest for determining the importance of policies for explaining polarization. We have a strongly positive effect on voting for PPP in provinces with underdeveloped public healthcare. This supports policy based voting, where those areas that have an underdeveloped healthcare system will support the PPP in expectation that this will improve their chances of benefiting from expanded public health care. The

results confirm the importance given to health care policies for explaining the popularity of TRT and its successor party PPP. This indicates that policies have an impact on political preferences of the electorate and supports the view that polarization has been policy driven.

The other variable for policy preferences is average debt, relying on the notion that voters that are highly indebted will prefer PPP due to Thaksin's programs for providing micro-credits and debt relief to farmers. The coefficient for debt is statistically insignificant, indicating that there was no substantial effect on voting patterns.

It was suggested that polarization would conform to the socio-economic divide between the less developed areas and more prosperous parts of Thailand, and that this would be reflected in voting patterns. Two variables are used to test for socio-economic factors, but only that for education gives significant results and the sign is contrary to expectations positive. These results do not support the commonly held view that socio-economic cleavages are a main explanation for divisions in the Thai electorate between the pro-establishment Democrats and parties loyal to Thaksin Shinawatra, when controlling for other factors.

The finding that education is associated with higher vote share for PPP goes against a strongly held view among the Thai establishment, which often dismisses Thaksin's supporters as uneducated (Connors, 2003). The empirical results, on the contrary, indicate that voting for PPP is associated with higher education when controlling for other factors. There is reason to doubt the importance of education for explaining voting patterns in Thailand, since these results show that the negative partial correlation between voting for PPP and education level (Figure 8) is turned into a positive relationship in a multiple regression framework when the influence of other factors is taken into consideration.

Studying the strongly significant results for the regional indicators confirms the importance of geographically defined political bases for PPP and the Democrats. In comparison to the central region (used as the default in the estimation), there is a strongly positive effect for provinces in PPP strongholds of the North and Northeast, whereas the opposite holds for the South. The

presence of strong regional political bases contributes to the fierce polarization. The policy issues that played a role for initial polarization may easily be overtaken by regional identities as a factor for mobilizing political support against opponents.

Table 3 also reports results for vote shares of minor parties relative to the Democrat party. These parties were assumed to be locally based around leaders with strong support in their provincial strongholds. Drawing mainly on clientelistic support, the minor parties do not rely on policy programs addressing the needs of citizens for electoral support. The findings confirm this view, as the policy variables are insignificant, but with a negative and significant coefficient for level of provincial economic development. This indicates that the minor parties are supported by voters in poorer provinces.

To study the importance of clientelism, a second expanded model has been estimated. The fourth hypothesis suggested that the minor parties primarily rely on bonds between leaders and the local electorate in their strongholds. To test this the expanded model include additional variables for the provincial political base of the official, or *de jure*, leader and the *de facto* leader for the three parties that are ultimately under control by politicians that are banned from official participation in politics.⁹ To capture the effect of political bases, separate expanded model regressions are run for each minor party.

The results presented in Table 4 and 5 indicate that most of the minor party vote shares are unaffected by the policy variables (except the debt variable for two of the parties). The variables for leaders' provincial political bases are significant for four of the five minor parties.¹⁰ For two parties it is the *de jure* leaders, but for the other two it is the variables for *de facto* leaders. The results indicate that the minor parties do benefit from clientelistic bonds and that the bonds are to the *de facto* leaders in two cases where they have been banned from taking on formal political positions due to court rulings.

Turning to the results for PPP, there are no statistically significant results

⁹The *de facto* leaders are Thaksin Shinawatra - PPP, Somsak Thepsutin - Matchimathipattai and Suwat Liptapanlop - Ruamjai Thai Chart Pattana (Matichon, various issues).

¹⁰The fifth and exception to the rule is Puea Pandin, an alliance of political faction mostly from Northeastern Thailand. The party leader Suwat Khunkitti doesn't seem to benefit from his political base in Khonkaen.

for either the provincial bases of the official leader Samak Sundaravej or the *de facto* leader Thaksin Shinawatra.¹¹ An interpretation is that PPP and the Democrats, unlike the minor parties, don't rely on clientelistic support.

¹¹Samak has a political base in Bangkok, and Thaksin resided in Bangkok for many years. However, he was born in the northern center of Chiang Mai and still maintains strong bonds to the province.

TABLE 4: Expanded SUR model estimates, 2007 general election

Party	Peoples Power Party		Puea Pandin		Chart Thai	
	Ratio to Democrats	z-value	Ratio to Democrats	z-value	Ratio to Democrats	z-value
Policy preferences						
Persons/doctor	0.567**	2.34	0.375	0.88	0.397	0.99
Debt	0.076	0.36	-0.777**	-2.17	1.131***	3.21
Socio-economic development						
Education level	2.966**	2.05	-0.149	-0.06	0.120	0.05
Income level	-0.174	-0.63	0.399	0.96	-0.117	-0.29
Share agriculture	0.070	0.28	0.164	0.48	0.342	1.03
Regionalism						
Northeast	1.469***	4.28	2.731***	4.63	-0.182	-0.32
North	1.030***	2.80	0.145	0.24	-1.061**	-1.80
South	-2.639***	-6.79	-1.258**	-2.05	-1.581**	-2.62
Southern border	-0.625	-1.24	0.324	0.38	0.499	0.60
Patronage						
De jure leader	0.254	0.28	-0.143	-0.12	3.564***	2.96
De facto leader	-0.479	-0.79	N/A	N/A	N/A	N/A
R^2	0.758		0.530		0.366	
χ^2	242.71***		86.46***		40.02***	
Observations	76		76		76	

TABLE 5: Expanded SUR model estimates, 2007 general election

Party	Matchima- thippatai	Pracharaj	Ruamjai Thai Chart Pattana
Dependent variable	Ratio to Democrats z-value	Ratio to Democrats z-value	Ratio to Democrats z-value
Policy preferences			
Persons/doctor	0.547	0.050	0.414
Debt	-0.016	-0.365	-0.522
Socio-economic development			
Education level	0.99	2.005	0.430
Income level	-0.33	-0.397**	0.407
Share agriculture	0.203	0.505	1.007
Regionalism			
Northeast	1.253**	-1.084**	0.936
North	-0.061	-0.486	0.139
South	-1.069	-1.133	-2.030***
Southern border	-1.341	-4.104***	-1.901*
Patronage			
De jure leader	0.94	2.149**	2.039
De facto leader	1.856*	N/A	3.496*
R^2	0.349	0.245	0.321
χ^2	43.30***	25.15***	39.97***
Observations	76	76	76

Taken together, the results support the existence of policy based voting, some influence from socio-economic divisions on electoral behavior and a large role of regionalism for explaining political preferences. Clientelism affects support for minor parties. The findings support the notion that Thai voters respond to policy issues and that the notion of policy driven polarization is a feasible mechanism explaining the emergence of a deep divide within the electorate.

The findings provide some indications for policies to address the wide polarization. As noted above, political discourse that is not policy oriented risks to increase polarization due to the different interpretations by each group. In the Thai context, the pro- and anti-Thaksin political wrangling is likely to aggravate polarization, since it only serves to reinforce existing convictions. Discussion about policies and their effects would, on the other hand, contribute to bridge the polarization. In the short and medium term, reforms of media that stimulate an issue oriented debate would be beneficial.

Political polarization can be made worse when profit maximizing media firms cater to partisan audiences by suppressing information that the partisan audience does not like hearing (Bernhardt, Krasa and Polborn, 2008). This is the case in Thailand where biased reporting by both private media firms and state media has led to increased polarization (McCargo, 2009).

Some institutional features make Thailand prone to polarization. The high degree of centralization of the political and administrative system makes contests over central government authority essential for all actors with a potential stake in outcomes of such contests (Doner, 2009; Glassman, 2010). The limitation of all political contests to a single national-level arena increases the potential reward for winners of political contests while excluding the possibility of trade-offs whereby losers on the national level could devote resources to contesting for sub-national political power. This forces all actors with stakes in political outcomes to intensify contests and gives incentives to apply strategies that are highly polarizing.

The centralization of power also makes it possible to stage military coups, as a successful coup only requires control over limited areas of central Bangkok. Polarization made the recent coup possible, since the coup makers could be

certain that a substantial share of the supporters of the opposition would support a military overthrow of the government.

Polarization gave the opposition motives to employ strategies that would provoke or facilitate a military coup. In the presence of polarization, electoral success for the anti-Thaksin opposition was difficult. Once polarization had driven political convictions far apart, it was highly unlikely that the opposition would be able to attract voters from government supporters. Toppling of the government and a reversal of the earlier institutional reforms were the only possibility for the establishment to regain some of the power earlier lost.

However, in this state of affairs reversals of institutional reforms and policy changes will risk to further increase polarization by provoking opposition from those that benefited from the changes. In the Thai context it is obvious that the rural electorate is unwilling to give up the influence gained earlier. Thus efforts to increase elite control of politics by reintroducing multi-member constituencies, increasing the share of urban members of parliament, appointing a pro-military Election Commission, and a partially appointed Senate have only made the rural electorate more determined to exert their due influence over policy making.

Discussion

Thailand has been affected by severe political conflicts between supporters of the former prime minister Thaksin Shinawatra and pro-establishment groups. The purpose of this paper is to analyze sources of electoral polarization in Thailand. A secondary objective is to increase our understanding of the mechanisms that has transformed the initial power struggle into full-blown polarization of the electorate.

A study of Thailand's political history showed how constitutional reforms during the 1990s strengthened democratic institutions while creating checks and balances on those holding elected office. The reforms facilitated the rise to power of Thaksin Shinawatra. With a strong electoral mandate from rural voters, Thaksin implemented far reaching policy changes including public health care reform and micro-credit schemes. The new economic policies were met

with resistance from the urban establishment, and after street protests the government was ousted in a military coup. The coup makers set about reversing earlier institutional reforms and dismantled some of Thaksin's policies. However, the coup led to increased polarization as the largely rural electorate continued to give strong electoral support to political parties loyal to Thaksin. A post-coup election returned another pro-Thaksin government. This time the establishment resorted to use highly controversial judicial powers to oust two elected governments until a pro-establishment government took power facilitated by the army. Judicial and military interference in politics set off new waves of street protests, this time by pro-Thaksin groups. The protests only ended through use of harsh repression.

The developments in Thailand do not conform to the general model of developing country political polarization offered by the literature. The standard model suggests that social and ethnic fragmentation are important drivers of political polarization and that redistributive economic policies are an outcome of partisan politics (Easterly and Levine, 1997; La Porta et al, 1999). Recent experiences from Thailand saw policy changes prior to the onset of polarization. In addition, there are few signs that underlying fragmentation has changed to an extent that would explain the rapid increase in polarization.

Alternative causal links are suggested, whereby institutional change altered the relative influence of the elite versus the rural majority. This led to increased electoral competition and facilitated the emergence of governments with a strong mandate from rural voters. Policy changes prompted a reaction from the elite and urban tax payers that set off a process of policy driven polarization. The suggested process is supported by recent theoretical contributions (Acemoglu and Robinson, 2006; Dixit and Weibull, 2007). Policy reversals after the military coup did not lower the level of political contests, as it provoked a negative reaction from supporters of the ousted regime.

An empirical analysis relying on a model for seemingly unrelated regression tested hypotheses on policy based voting using electoral data from the most recent general election and socio-economic variables. The empirical analysis identified an effect of policy based voting and strong influence from regionalism, with some impact from socio-economic cleavages. There is only support

for clientelistic voting for minor parties.

The econometric findings support the hypothesis of policy driven polarization. Yet the mere complexity of Thai politics and the range of contested issues calls for further research into the drivers of voter preferences. Additional research could contribute to an understanding of the importance of issues that had to be excluded from the current analysis.

Results highlight the vulnerability to policy driven polarization after introduction of institutional reforms that alter the balance of power between different parts of the electorate. Reversal of institutional reform does not break polarization and stop instability, it only further agonizes the electorate.

Some implications can be drawn for long term institutional reforms. Due to the centralized nature of the Thai political system, political contests are largely played out on the national level. Decentralization would move decisions closer to the voters and lower the need to contest for national power.

The analysis is largely explorative, given the lack of earlier quantitative studies of the causes of polarization in Thailand. The scarcity of available information for analyzing voters' preferences is a major obstacle to analyzing micro determinants of political behavior. Increased collection of data on individual preferences and attitudes would facilitate a better understanding of the political economy of Thailand. It would also promote increased focus on sentiments within the electorate, rather than solely focusing on elite politics. A particular challenge when researching Thai politics is the difficulty to distinguish between the effects of changes to the rules of the game versus shifts in electoral preferences.

Many aspects of Thai politics are highly contested. This includes the impact of controversial policies, primarily those introduced during Thaksin Shinawatra's tenure as prime minister. Other contentious issues are the impact of vote-buying or turnout buying on electoral outcomes, the prevalence of corruption under different governments, and the role of the media, military, judiciary and palace in politics. More evidence based studies of these issues could contribute to lower social conflicts in the long run.

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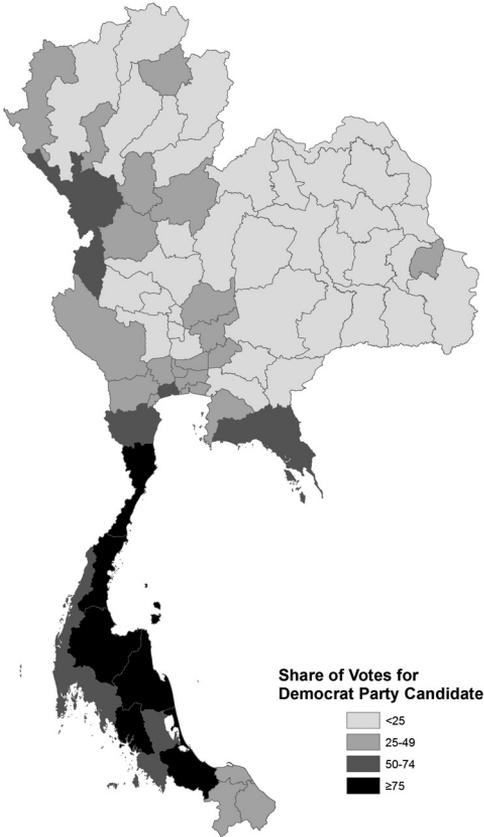
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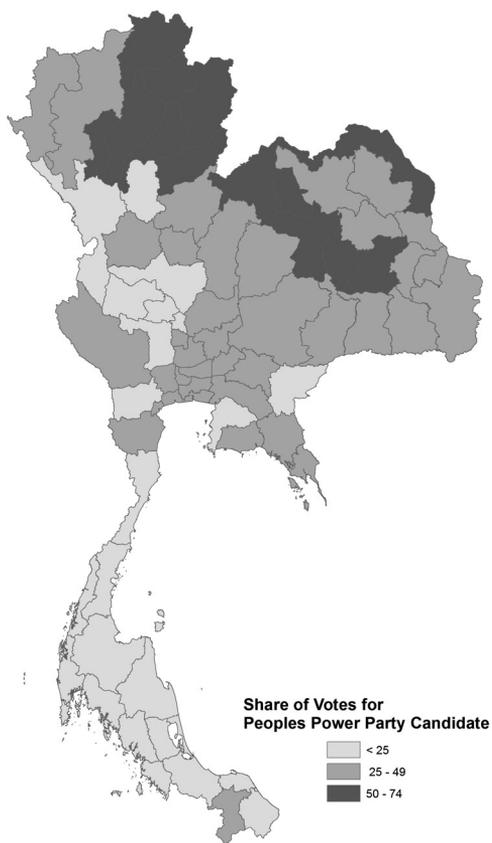
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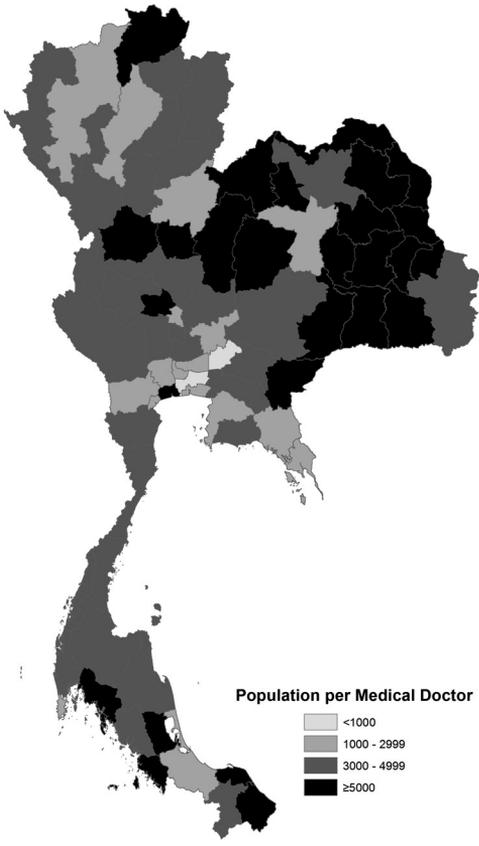
Appendix: Maps



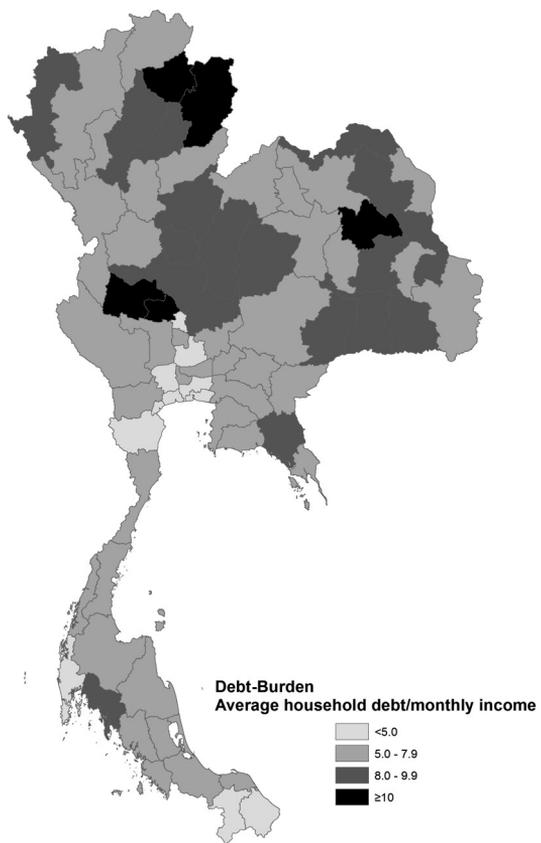
Map Democrat vote share, 2006 general election



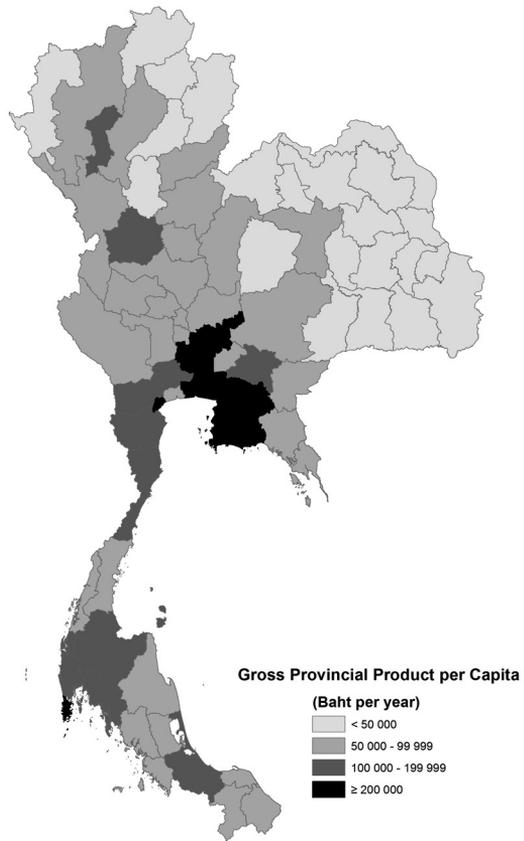
Map PPP vote share, 2006 general election



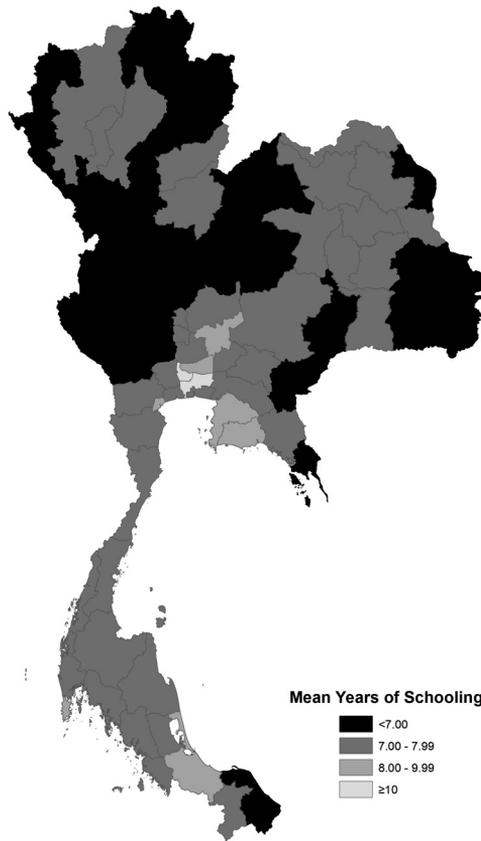
Map access to health care services, by province level 2006



Debt-burden, provincial level 2006



Map average gross provincial product per capita 2006



Map average education, by province 2006

Ethnic Minority Poverty in Lao PDR

Anders Engvall*

Abstract

Ethnic minorities have a significantly higher poverty incidence than the majority in Lao PDR. Based on survey data the determinants of minority poverty are analyzed, the sources of inequality decomposed, and the expected impact of policies to address minority poverty estimated. When economic factors are controlled for, ethnicity does not have any significant effect on poverty. Decomposition shows that unequal access to resources and demographic variables largely explain the majority-minority poverty gap. A strategy for alleviating minority poverty in the Lao PDR is suggested: (1) broad policies covering education, infrastructure and agricultural development can address poverty among ethnic minorities; (2) policies should be tailored to the needs of the individual minority groups.

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Introduction

Ethnic minority groups are overrepresented among the poor in many countries. This form of group or horizontal inequality can have detrimental effects on individuals' welfare and if ethnic inequality persists, individuals within the depressed group may be unable to make a full contribution to their own and society's welfare. Ethnic group inequality can also have detrimental effects on social and political stability (Stewart, 2005). High ethnic polarization has even shown to have a detrimental effect on growth in cross-country studies (Easterly and Levine, 1997).

The purpose of this article is to analyze the determinants of welfare and poverty among ethnic groups in the Lao PDR in a regression framework, decompose the sources of ethnic inequality, and estimate the impact of policies to address minority poverty. Since the chosen econometric method can have a strong influence on the results, the report also includes a discussion of the methodology and how the empirical model of poverty determinants is related to the reality in Lao PDR. The analysis is based on detailed household data from the Lao PDR Expenditure and Consumption Surveys collected in 1992/93, 1997/98, 200/03 and 2007/08.

Earlier studies of ethnicity and poverty in Southeast Asia include Anand's (1983) analysis of Malaysia, which identified ethnic cleavages as a key factor for explaining patterns of inequality in the country. An analysis of ethnic inequality in Vietnam, find that differences in returns to productive characteristics are important for explaining ethnic inequality (van de Walle and Gunewardena, 2001) . There is evidence of compensating behavior on the part of the minorities. Based on the findings, the authors suggest policies that are adapted to the behavioral patterns of ethnic minorities within poor areas. The present study seeks to build on these earlier analyses from countries in the region, while also expanding the understanding of unique patterns and sources of ethnic minority poverty in Lao PDR. Earlier quantitative analyses of household data in Lao PDR have focused on the welfare impacts of road infrastructure (Warr, 2005), market integration (Andersson, 2009) or general determinants of poverty (Andersson, Engvall and Kokko, 2005). Earlier studies of ethnic

minorities in Lao PDR have relied on qualitative sources (notably Ireson and Ireson, 1991; ADB, 2001; and Goudineau, 2003). This analysis contributes by adjusting the econometric estimation method to better accommodate for survey design effects embodied in the Lao data, and by employing quantitative methods to a systematic analysis of ethnic minority poverty.

The paper proceeds as follows: the next section gives a summary description of the main ethnic groups in Lao PDR; this is followed by a discussion of poverty incidence in the country with a particular focus on patterns of poverty among ethnic minorities; then a theoretical model of household welfare is outlined and the econometric method discussed; the regression results are presented and ethnic aspects of poverty analyzed through decomposition of sources of inequality and estimated effects of alternative policy scenarios. A concluding section summarizes and discusses the results.

Background: Ethnic Minorities and Poverty

Lao PDR is a multi-ethnic country and a common classification identifies 49 separate ethnic groups. These ethnic groups are commonly grouped into four main ethnic families, the Lao-Tai, the Mon-Khmer, the Chine-Tibet, the Hmong-Mien (Lao National Front for Construction, 2005).

The **Lao-Tai**, sometimes referred to as ethnic Lao, is the major lowland group inhabiting valleys and river plains across the country. The Lao-Tai can be found throughout mainland Southeast Asia, being the dominant group in Lao PDR and Thailand. The Lao-Tai group has historically enjoyed a dominant position in society, politics and economic relations. Their traditional livelihood is based on cultivation of glutinous rice as the staple crop. The Lao-Tai normally live in permanent villages cultivating wet-rice, but also practice swidden agriculture. Agricultural work is shared among women and men. Women are traditionally important decision makers within the household and manage much of the family economy.

The **Mon-Khmer** tend to inhabit hillsides and midland areas in the north and south-east of the country. They inhabited the area making up present Lao PDR prior to the arrival of the Lao-Tai. Traditionally these groups practice

swidden rice farming and live in permanent villages although they might move if the fertility of fields within a reasonable distance is depleted. Women tend to do most of the agricultural cultivation while men hunt, fish, build and clear fields. The traditional livelihood of the Mon-Khmer could be described as maximizing access to natural endowments, rather than efficient use of inputs into agricultural production (ADB, 2001).

Chine-Tibet groups are concentrated in highland areas in the far north of Lao PDR, where provinces bordering China have large Chine-Tibet populations. These groups began to migrate into present day Lao PDR during the nineteenth century. They tend to reside on the upper slopes or tops of mountains where ordinary (non-glutinous) rice is grown in swidden agriculture. Corn is often planted to supplement the rice. Villages are traditionally semi-migratory, moving when fields have been exhausted. Women's status is lower than among the Lao-Tai. The highland Chine-Tibet group has been described as maximizers of production and labor inputs (ADB, 2001).

The **Hmong-Mien** are concentrated in mountainous areas of central Lao PDR, and scattered across the northern region. The Hmong-Mien began to migrate into present day Lao PDR during the nineteenth century and took up residence on the upper slopes or mountains tops. Just as the Chine-Tibet, they grow ordinary rice in swidden agriculture which is supplemented by corn and migrate to new areas when soils have depleted. Residing in highland areas with scarce resources, the Hmong-Mien group has developed agricultural methods that serve to maximize available resources (ADB, 2001).

There are several **marginal ethnic groups** in Lao PDR, besides the four main families discussed here. There are marginal groups living in remote rural areas, as well as migrants from China, Vietnam, and South Asia living in urban areas. It is outside the scope of this analysis to give a full overview of these diverse groups.

Drawing on data from the four LECS surveys, it is possible to study trends in poverty over time as well as the geographic and ethnic distribution of poverty. The statistics presented here are based on poverty headcount measures presented in DOS (2010). A household is characterized as poor if its per capita consumption falls below a poverty line allowing for a sufficient

food requirement plus a basket of non-food goods and services. The consumption measures and poverty lines are consistent across all LECS surveys. Table 1 summarizes data on poverty headcount in the total population and rural poverty across regions, provinces, and ethnic groups. Poverty incidence has fallen substantially over the period, although the rate of decline has slowed down somewhat. In 2007/08, 26.5 percent of the population was poor, compared with 46.0 percent in the first survey. Table 1 also provides detailed poverty rates for rural areas. These are consistently higher than the total poverty headcount, where also urban households are included. The higher poverty rate, in combination with the large population share in rural areas, translates into a very high rural share of the poor. The overall reduction in rural poverty during the period with available data hides substantial differences in developments across provinces and regions, with consistently higher poverty incidence in the northern part of the country.

The last section of Table 1 presents some comparisons of rural poverty across ethnic families. Very large differences in poverty incidence between the main ethnic families are apparent. All minority groups show substantially higher poverty headcount rates than the Lao-Tai majority, with the Mon-Khmer and Chine-Tibet groups in particularly weak positions. But as noted earlier, ethnic groups are concentrated in certain geographic areas and the categories thus overlap to some extent. The Mon-Khmer for example are concentrated in Oudumxay in the north, and Saravane and Sekong in the south. All of these provinces have rural poverty rates above the national average. By merely studying these descriptive statistics is not possible to determine whether the minority groups are poorer due to ethnic factors or spatial conditions. Figure 1 provides further illustration of the concentration of poverty in rural areas and among minority households. The figure illustrates shares of urban population and rural population divided into majority Lao-Tai and the ethnic minority groups. An overwhelming majority of both the population (71.2 percent) and the poor (81.9 percent) reside in rural areas. Furthermore, individuals in rural areas belonging to ethnic minorities are heavily overrepresented among the poor, as they make up less than a third of the population, but constitute almost half of the poor in Lao PDR.

TABLE 1: Total Poverty Headcount and Rural Poverty by Region, Province and Ethnic Family

	1992/93	1997/98	2002/03	2007/08
Lao PDR	46.0%	39.1%	33.5%	27.6%
Rural areas	51.8%	42.5%	37.6%	31.7%
Vientiane M.	52.9%	11.1%	20.2%	15.2%
Northern Region	55.5%	48.6%	39.1%	36.5%
Phongsaly	72.0%	58.4%	52.7%	50.1%
Luangnamtha	55.4%	53.5%	22.1%	35.7%
Oudomxay	47.3%	70.6%	46.2%	38.6%
Bokeo	63.6%	40.0%	20.6%	35.3%
Luangprabang	62.4%	42.3%	40.6%	30.8%
Huaphanh	73.3%	72.6%	54.8%	52.7%
Xayabury	14.9%	18.3%	23.7%	15.8%
Central Region	48.5%	41.5%	39.0%	33.5%
Xiengkhuang	71.6%	43.9%	46.6%	48.1%
Vientiane Province	31.9%	29.0%	19.9%	31.7%
Borikhamxay	16.8%	27.0%	37.0%	22.4%
Khammuane	49.8%	49.3%	35.9%	29.8%
Savannakhet	58.3%	44.4%	48.0%	34.6%
Xaysomboun SR	N/A	63.4%	31.9%	N/A
Southern Region	51.9%	41.6%	35.5%	25.5%
Saravane	48.0%	40.3%	57.1%	38.7%
Sekong	67.0%	52.9%	44.6%	59.3%
Champasack	46.8%	39.6%	19.8%	9.3%
Attapeu	82.3%	49.0%	47.3%	28.9%
Ethnic Families				
Lao-Tai			28.6%	20.1%
Mon-Khmer			54.4%	48.4%
Chine-Tibet			40.2%	47.6%
Hmong-Mien			45.3%	44.4%
Other			52.8%	16.0%

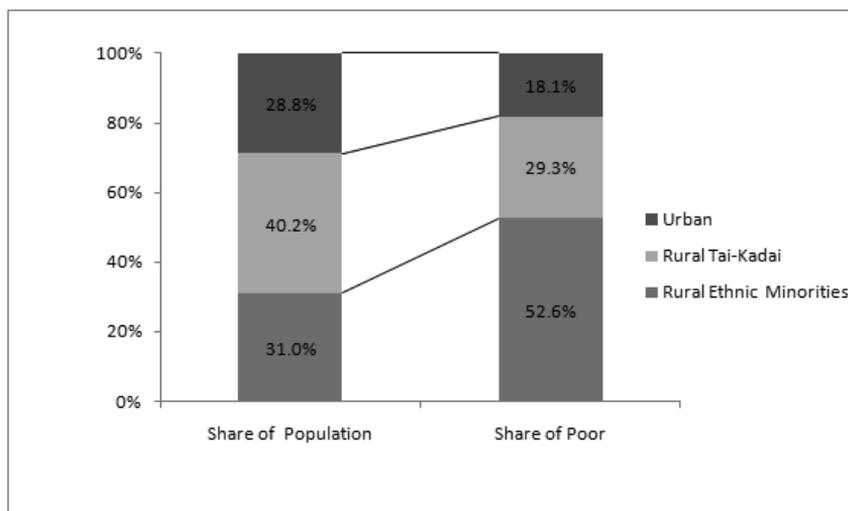


FIGURE 1: Population and poverty headcount shares 2007/08, by urban, rural and ethnic minority

Framework of Analysis

As noted above, there are many possible approaches to analyzing ethnicity and poverty. While earlier studies of Lao PDR have largely been based on qualitative sources, this report relies on econometric analysis of household survey data which enables a study of general patterns based on a large sample.

As shown in the previous section, poverty is concentrated to rural areas and ethnic minorities are heavily overrepresented among these rural poor. Based on this observation, the analysis will focus on rural households. A further rationale behind focusing on rural poverty is that ethnic aspects and traditional livelihoods can be expected to have a larger impact on rural poverty.

Ethnic differences in rural welfare can stem from many different sources. Ethnicity may affect choices of agricultural technology, the division of labor, habitat, and social organization. The presence of discriminatory policies may also affect welfare through inequality in access to public goods such as infrastructure and education. The remainder of this section outlines a frame-

work of analysis for studying determinants of rural welfare and sources of ethnic differences.

Rural Welfare and its Determinants

In the empirical development literature it is common to analyze determinants of poverty by relating measures of welfare to various individual, household, and community characteristics in a multiple regression framework (Singh et al., 1986). This method makes it possible to identify determinants of welfare, sources of differences between population groups and compare the effects of possible policy interventions. However, although the overall methodology is becoming standardized, there are a number of theoretical issues that deserve attention. These concern the choices of dependent and independent variables, the econometric specification, the estimation method as well as the interpretation of the results.

The first issue is the choice of welfare measure or dependent variable. In principle there are three main alternative welfare measures: consumption expenditure, income, or binary indicators of poverty. Here consumption expenditure is used as the welfare measure. The following paragraphs discuss the strengths and shortcomings of this specific measure.

Both consumption expenditure and income can be justified as a measure of welfare, since both measure the ability to obtain goods and services. In many cases the measures would produce similar results, but both also have potential weaknesses. Both consumption and income measures fail to incorporate some important aspects of welfare, such as consumption of commodities supplied by, or subsidized by, the public sector (for example, schools, health services, and roads) and several dimensions of the quality of life (consumption of leisure and the ability to lead a long and healthy life).

The decision to use a consumption-based rather than an income-based measure of individual welfare in this study is motivated by several considerations. First, income can be seen as a measure of welfare opportunity, whereas consumption may be interpreted as a measure of welfare achievement (Deaton, 1997). Since not all income is consumed, nor all consumption financed out of

income, the two measures typically differ. Consumption is arguably a more appropriate indicator if we are concerned with realized, rather than potential, welfare. Second, consumption typically fluctuates less than income. Individuals rely on savings, credit, and transfers to smooth the effects of fluctuations in income on their consumption. In particular, it is common that temporary increases in income are not consumed immediately, but rather spread out over longer time periods. It can therefore be argued that consumption provides a more accurate and less volatile measure of an individual's permanent income and welfare over time. Third, some researchers and policymakers hold the belief that survey respondents are more willing to reveal their consumption behavior than their income. Finally, a relatively large proportion of the labor force in developing countries is engaged in self employed activities where it is particularly difficult to measure income accurately. Similarly, many individuals are engaged in multiple income generating activities in a given year, and the process of recalling and aggregating income from different sources can be difficult.

An alternative welfare measure would be a binary measure indicating whether or not an individual belongs to a poor household. Yet, this would discard a lot of the available information: using a continuous variable like consumption expenditure exploits more of the available information since it takes into account consumption differences below as well as above the poverty line. In addition, this measure would introduce additional sensitivity to the choice of poverty line.

The consumption measure is expressed in real terms where price differences between regions and survey months have been controlled for. This adjustment of nominal measures of consumption to real values requires a price deflator. There are two main alternatives for calculating a real consumption measure, the money metric approach and the welfare ratio (Deaton, 1997). In the money metric approach individual weights reflecting the consumption patterns of each household are used, whereas if the welfare ratio is employed the weights are the same for all households. Here a welfare ratio is calculated with a weighting corresponding to the poverty line (reflecting the consumption patterns of the poor). Using this method, prices have been adjusted to the median 2002/03

urban Vientiane price level.

The consumption measure includes the total value of food and non-food goods and services, whether purchased, home-produced, or received as a gift or payment in kind, as well as imputed use values for owner-occupied housing and household durable goods. As noted above, a significant omission from the consumption measure is consumption of commodities subsidized or supplied by the public sector free of charge.

Since surveys collect data at the household and not the individual level, consumption totals are calculated on a household basis. It is possible to either treat the household as the unit whose welfare is being analyzed, or to use some rule to divide household consumption between its members. As an individual basis for measurements is conceptually clearer, this is the approach used here. There are a variety of methods for calculating individual consumption measures, involving needs-based adult equivalence scales (Deaton, 1997). Still, none is completely satisfactory since they all require strong assumptions. Even if such adjustments are made, it is still possible that the distribution of income within households systematically differs from what is assumed. In the light of these practical difficulties in compensating for differences in requirements between adults and dependents, a straight per capita normalization is used.

While consistent with standard practice, the use of per capita normalization of consumption still involves assumptions that may affect welfare comparisons. For instance, as a welfare measure, per capita normalization implies equal requirements, in monetary terms, for each household member regardless of age, sex, or other characteristics. However, in the case of food requirements, it is arguable that children's requirements are less than those of adults; the opposite may be true for other goods and services, such as education. Another problem is that per capita normalization doesn't allow for economies of scale in household size; the prospect that it is less expensive for two persons to live together than it is for them to live separately. While there is evidence that economies of scale exist, varying largely with consumption patterns within the household, it seems clear that the scale effects are not homogenous across household sizes (Lanjouw and Ravallion, 1995). Efforts to adjust for economies

of scale would risk introducing biases. This further motivates a straight per capita normalization. Still, some caution is in place since this model builds on a unitary view of the household and may fail to capture significant intra household differences.

A further theoretical issue is the choice of explanatory variables. In principle, the choice should be based on a model for household welfare determination. On a basic level, welfare depends on access to production factors: labor, capital, land, and technology, as well as the quality of these. In addition, the role of human capital in the form of education and experience has often been emphasized as an important determinant of welfare (Mincer, 1958). As noted above, household income and consumption are shared among members of the household. This introduces a need to account for household composition, such as household size or the share of working age adults relative to dependent children and elders. The environment in which the household or individual operates influences the outcome of the production process in many ways. The degree and nature of competition varies between locations, and affects the prices in the market. Institutions and public policy also influence the conditions for economic activity, and may vary between locations. Similarly, access to and the quality of public infrastructure is important.

Access to savings and other sources of non-production income may have direct effects (in terms of higher consumption potential) as well as indirect effects (through better access to capital and other production factors). To complicate the issue further, it should be recognized that there is probably a cumulative two-way relationship between income from production activities and savings potential: the households that are able to generate much income are probably also able to save and may use the savings for investments that enhance their productive capacity. Conversely, poor households may be caught in a poverty trap, where their incomes are too low to allow them to set aside money for investments that could raise output.

Empirical Analysis

Based on the discussion of theoretical considerations above, an empirical model of household welfare can be outlined. Per capita consumption expenditure, measured at the household level, depends on three types of variables. At the core of the model are the production factors that the household uses to generate consumption capacity. Secondly, the household composition crucially influences consumption. Finally, the productivity of the household is influenced by infrastructure that varies between villages.

The econometric specification is based on the theory of agricultural household models (Bardhan and Udry, 1999; Singh et al., 1986). The model (1) has logarithmic real per capita consumption expenditure as its dependent variable. The explanatory variables fall into the three main groups: household production factors, household composition, and village infrastructure. This yields a model of the form:

$$\ln C_i = \alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 Z_i + \varepsilon_i$$

where $\ln C_i$ is the log per capita consumption of household i , the variables X_i , Y_i , and Z_i are vectors of household production factors, household composition and village infrastructure variables, α is a constant, and β_1 , β_2 and β_3 are the corresponding vectors of coefficients, and ε_i is a normally distributed random error term. Furthermore the effects of ethnicity and location are controlled for, but not included above. Most variables are measured at the household level, whereas the infrastructure and location variables are defined at the village and province level. This formulation is attractive since it has a relatively straightforward functional form while being consistent with established models for household welfare. The regression model permits inferences to be made about the direction and strength of the relationship between a set of independent variables and the dependent variable.

There are several potential effects of ethnicity on welfare that can be captured in this model. First, it is possible that ethnic origin has a direct impact on consumption. On the other hand, it is possible that ethnicity has an indirect

effect that leaves minority households with lower endowments of production factors, village infrastructure or less favorable household composition. A third potential channel is differences in resource utilization that would influence the return minority households obtain on their endowments. This can be thought of as an effect stemming from differences in livelihoods and patterns of maximization.

It is important to distinguish between these three channels of ethnic inequality, since policy prescriptions and the prospects for improvements may be quite different. For example, there is a difference between a situation where minority welfare are lower solely because they are of a certain ethnicity (direct effect), and one where the lower welfare level can be explained as a result of lower levels of endowments or lower returns (indirect effects). In the former case, it may be difficult to develop policies to improve the situation of minority households; in the latter case, providing more resources to minorities or providing training to promote more efficient resource utilization may improve the situation. The presence of direct effects can be readily tested by including ethnic variables in multiple regression models, while identifying indirect effects requires a decomposition of the sources of poverty.

Variables

The following paragraphs outline five groups of explanatory variables. The choice of variables has been guided by an effort to avoid highly correlated variables that would introduce identification problems. This is necessary to make it possible to distinguish the individual contribution of each factor. The choice is also limited to exogenous variables that are expected to influence household consumption without themselves being determined by consumption. This excludes potentially endogenous variables, such as assets determined by current income.

Another issue related to variable choice is the gap between theoretical concepts like capital, technology and infrastructure, on the one hand, and available empirical data, on the other hand. These concepts are typically difficult to operationalize and measure with any accuracy. In many cases, it

is therefore necessary to settle for imperfect proxy variables. The remainder of this section discusses the chosen groups of explanatory variables.

i) Household production factors. The variables in this category are intended to reflect the production capacity of the household and include measures for the inputs of land, physical capital, human capital, and technology.

Land is a very important factor for determining the welfare of rural households. Variables for two categories of land, irrigated and un-irrigated land, are included. This separation accounts for expected differences in productivity. The variable does not control for land quality within the categories.

Including variables for household **physical capital** poses some challenges. Many measures of capital would create problems of identification. Still, livestock is included under the assumption that household holdings of cattle, buffaloes, and pigs are exogenously determined.

Apart from the physical input of labor, it is also important to account for **human capital**, which is related to the education level of the household's adult members. The household's expenditure on education of children is not included, as it cannot be considered exogenous. The investments in schooling undertaken today do not determine the present welfare level of the household, but are instead dependent on the household's present welfare: it is mainly households with relatively high incomes that can afford to invest substantially in education. It should be noted that education may affect economic welfare in many different ways. For example it can influence both returns within economic activities and access to such activities. In addition education may limit fertility and thus reduce the number of dependent children. So, education may raise productivity, increase access to non-farm employment, improve the ability to set up a household business, raise productivity in farming, and decrease the burden of dependants. In the regression model the maximum educational attainment of any adult household member is included, as this has been shown to be a good indicator of human capital in developing countries (Jolliffe, 2002). Variables capturing the presence of literate men and women in the household are also included. The hypothesis is that female education has a different return than male education.

Hence, we include variables for educational attainment in the household,

based on the hypothesis that human capital (as measured by formal education and literacy) contributes positively to welfare. These are one variable capturing the maximum education level attained by any adult in the household, and a dummy variable to indicate the presence of a literate adult household member.

Variables related to **technology** are intended to capture the choice of activity (agriculture or business) as well as the household choice of agricultural methods. A potentially important technologic choice is that between households relying solely on physical labor and those using machinery. Another choice is whether or not to use chemical fertilizers. Furthermore, while agriculture is the vastly dominant activity in the sample households, it is not the only one. In Lao PDR, a household business is often the major complementary activity to subsistence agriculture. We therefore include variables to indicate whether the household uses agricultural machinery, chemical fertilizers and whether it runs a non-agricultural business.

ii) Household composition. Since the per capita consumption measure is generated from information on household consumption, it is necessary to control for the size and composition of the household. This creates problems for the identification of the labor input variable: there is no strict separation between variables for labor input and for controlling for household composition. When interpreting the results it is important to note that demographic variables combine these two effects.

The data set includes detailed information regarding the **size of the household** and the distribution of household members across gender and age groups. The number of adults in productive age is used to control for the household's labor input. Another variable measures the dependency ratio calculated by dividing the number of dependents with the total number of household members. Based on experience from other countries, households with a higher dependency ratio are expected to display lower per capita consumption (Lanjouw and Ravallion, 1995; Deaton and Paxson, 1998). Similarly there might be a negative effect of an increasing number of adult family members. This would be due to a declining marginal contribution from each additional working member of the household.

Gender might affect household income, as it is commonly observed that males and females face different economic opportunities. A variable is included to control for the effect of the gender of the head of household.

iii) Variables for **village infrastructure** are included to capture the effects of infrastructure on household welfare. This includes information about access to important physical infrastructure in the form of roads and electricity, as well as healthcare infrastructure.

iv) Variables for **ethnicity** are included to control for the effect of ethnic origin. The LECS dataset includes information on self-identified ethnic identity. The 50 groups are aggregated into variables corresponding to the main ethnic families in Lao PDR.

v) **Spatial variables** control for the effects of local conditions regarding geography, climate, and institutions. Variables that control for altitude of the village and for province are included.

Data and Estimation Issues

The primary data source for this study is LECS3. The survey gathered information on 8 092 households from all 18 provinces in Lao PDR, but the relevant data set is limited to the 8 048 households for which village level data is available. The main parts of this analysis are based on a subset of 6,474 rural households.

The most recent LECS survey, collected in 2007/08, is not used for the econometric estimation. This is motivated by data quality issues related to this survey, see DOS (2010) for details. In particular the absence of detailed price information for rural areas prevents a reliable analysis of ethnic minority groups in different isolated areas of the country.

Average values for the regression variables for rural households are presented in Table 2. It should be noted that the chosen variables are not correlated with each other to any significant degree. An exception is the strong negative correlation between the variables denoting road access during the dry season only and all year road access which is expected and should not pose any complication for the estimation.

TABLE 2: Variable definitions and summary statistics

Variable	Definition	Rural average
Dependent variable	Per Capita Consumption	KIP 154,740
Household production factors		
Irrigated land area	irrigated farmland	0.05 Ha
Unirrigated land area	farmland	1.80 Ha
Number of cattle	number of cattle	1.3
Number of buffalo	number of buffalo	1.2
Number of pigs	number of pigs	1.1
Literate female	literate female in household	57%
Literate male	literate male in household	80%
Household business	non-agricultural business	14%
Education index	index for education	N/A
Agricultural mechanisation	household has tractor	20%
Fertilizer use	use chemical fertilizer	28%
Household composition		
Dependency ratio	ratio dependents to adults 18-59	56%
Adults	number of adults	2.95
Male head of household	male head of household	97%
Village infrastructure		
Access to dry season road	road access in dry season only	17%
Access to all season road	road access in all seasons	57%
Electricity access	village access to electricity	33%
Healthservice access	village with health service	74%
Ethnicity		
Lao-Tai	head of household Lao-Tai	59%
Mon-Khmer	head of household Mon-Khmer	26%
Chine-Tibet	head of household Chine-Tibet	4%
Hmong-Mien	head of household Hmong-Mien	10%
Other ethnicity	head of household other ethnicity	1%
Spatial variables		
Low altitude	lowland area	50%
Mid altitude	midland area	31%
High altitude	highland area	19%
Province	indicator for province	N/A

The estimation method must take into consideration the nature of the LECS3 survey through which the data was gathered (Deaton, 1997). This involves compensating for survey design effects as the LECS3 survey is stratified and clustered. There are 54 strata made up of 3 household types (urban and rural with or without road) in 18 provinces. The 450 sample villages form clusters or primary sampling units. The estimation is adjusted to take this design into account when calculating standard errors. The regression is weighted to provide a consistent estimate of the population regression function (Deaton, 1997).

Empirical Results

The results of the estimation of the regression model are presented in Table 3. A first comment concerns the fit and the interpretation of the model. The model is estimated with an R^2 of 0.38 based on the sample of 6 474 rural households, which indicates that the model explains a reasonable share of the variation of consumption in the sample. Since the dependent variable is in logarithmic form, the estimated regression coefficients measure the percentage change in per capita consumption within the household resulting from a unit change in the continuous independent variables (this interpretation does not hold for dummy or indicator variables).

It can also be noted that all significant variables display the expected signs. This indicates that the variables included in the model do indeed influence household welfare as expected. The following paragraphs take a more detailed look at the estimated coefficients group-wise, starting with production factors.

The land variables show a positive contribution to welfare, albeit with a low degree of statistical significance. Still, this result reinforces the view that access to farm land contributes to household consumption. The contribution from ownership of farm animals is in general consistent with expectations. Cattle ownership seems to be of particular importance. Also buffalo and pig ownership have positive, albeit insignificant, coefficients. The variables related to agricultural technology appear to have a strong effect on consumption.

The biggest individual impact on consumption capacity, however, does not

seem to be directly related to agriculture, but rather to a move away from agriculture, since the variable for families with a household business records a large and significant positive coefficient. Households with a business have a consumption capacity that is higher than that of similar households that do not operate any household business. It appears clear that this result provides support for policies focusing on diversification of rural activities.

All variables for education and human capital are strongly significant, and it appears that literacy has a particularly positive impact for women. The coefficient for female literacy is higher than that for male literacy. This is an interesting observation with potentially important policy implications. If investments in female literacy give larger welfare effects than investments in male literacy, there are clear reasons for focusing such investments on women. However, the reason for the weaker results for males may be due to less variation in male literacy. As shown in Table 2, there is a literate adult man in 80 percent of the households, compared to 57 percent having a literate female member. Therefore the variable for male literacy might not capture differences between households' human capital endowments to the same extent.

Besides literacy, more advanced education has a value as shown by the maximum education variable. Raising the educational level of the most advanced household member, for example from lower to upper secondary schooling, raises the family's average per capita consumption level significantly.

Turning to household composition it is clear that both the dependency ratio and the number of adults are strongly negatively associated with our welfare measure. These results imply that larger families typically have lower per capita consumption, and that the welfare level is reduced further if the family has many members that can be categorized as dependents. This is consistent with cross country studies indicating that higher fertility increases poverty (Eastwood and Lipton, 1999).

The positive impact of labor that could be expected is not obvious in the model, but this depends partly on the distribution of observations and partly on the diminishing marginal productivity of labor at the household level while keeping other inputs constant. Additional working family members are left with less productive tasks, and their lower marginal productivity will therefore

TABLE 3: Regression results

Dependent variable	All rural households	
	Cons. per capita	
	Coefficient	t-value
Household production factors		
Irrigated land area	0.015*	1.81
Unirrigated land area	0.007	0.83
Number of cattle	0.017***	2.72
Number of buffalo	0.009	1.55
Number of pigs	0.008	1.11
Literate female	0.063***	3.68
Literate male	0.032*	1.79
Household business	0.249***	10.51
Education index	0.073***	6.38
Agricultural mechanisation	0.125***	5.67
Fertilizer use	0.062**	2.24
Household composition		
Dependency ratio	-1.381***	-26.89
Adults	-0.519***	-21.65
Male head of household	0.076*	1.71
Village infrastructure		
Access to dry season road	0.106**	2.01
Access to all season road	0.108***	2.84
Electricity access	0.053*	1.71
Healthservice access	0.021	0.60
Ethnicity		
Mon-Khmer	-0.084**	-2.21
Chine-Tibet	0.158**	2.05
Hmong-Mien	0.060	1.04
Other ethnicity	-0.202***	-2.65
Spatial variables		
High altitude	0.011	0.29
Mid altitude	-0.009	-0.22
Province (coefficients not reported)		
Observations	6474	
R^2	0.377	
F-ratio	33.55***	
Degrees of Freedom	[41, 358]	

reduce per capita welfare.

The variable for male head of households exhibits a positive and statistically significant value. This indicates that there could be a gender bias against the approximately 3 percent of households that are headed by a female. An implication for this finding is that additional attention should be paid to promoting equal opportunities for women. It should be noted that the very small share of households that are headed by females could deviate from the majority in other respects not captured by this model and further in-depth analysis is needed to establish causal relationships.

The village level variables related to access to infrastructure and public services mostly display coefficients of expected signs. The relationship between road access and household welfare is controlled for by two variables, one for dry season access only and one for all season road access (leaving no road access as the base case). The standard assumption is that households living in villages without roads will suffer from a lack of market access, increasing the costs of inputs, lowering the price of sold goods, and limiting the possibility for non-agricultural employment. Rice, the basic food for most Lao households, is of central importance: aside from own consumption, rice sales provide the income needed to purchase other goods. The transaction costs for rice can be expected to be higher for households located in villages with limited road access. There seems to be support for this interpretation; households in villages with dry season road access record a positive impact and there is an additional impact of all season road access.

A first point to note is that the results in Table 3 cast some doubt on the established views regarding the significance of ethnicity. While some ethnic variables are significant there is no clear pattern in comparison with the default case, the Lao-Tai majority population. The Mon-Khmer display negative and significant coefficients, but the variables for the Chine-Tibet and Hmong-Mien categories are positive. This indicates that ethnicity as such cannot explain poverty among minorities when controlling for other factors.

As discussed in above, all aspects of ethnic effects on poverty cannot be captured in this basic regression analysis. It is possible that there are other indirect channels from ethnicity to poverty. In order to explore the indirect

effects of ethnicity, some further analytical steps shall be taken. First, the differences between ethnic groups can be further tested through separate regressions for the ethnic families. This makes it possible to examine whether the marginal effects of the welfare determinants are different across the ethnic families.

Summary statistics by ethnicity as shown in Table 4 displays the variation across different groups and provides a picture of unequal access to production factors, as well as substantial differences in household composition and village infrastructure.

Land, a crucial factor of production for rural households, seems to be rather evenly distributed across the ethnic families. The average landholdings of the majority Lao-Tai are similar to those of minority groups, but this land is to a higher extent irrigated. Other factors influencing agricultural productivity are less evenly distributed. Fertilizer use ranges from 44 percent of households among Lao-Tai to 5 percent among Hmong-Mien; cattle ownership averages more than three animals in Hmong-Mien households, but less than one in Mon-Khmer and Chine-Tibet. More than one in four Lao-Tai households but only one in fifty Chine-Tibet households have access to a tractor, and so forth. The overall picture is one of great variation in the endowments of production factors.

The picture is similar regarding household composition. Minority households are burdened by more dependents and tend to have more adult family members. However, the largest differences are probably to be found in the village infrastructure. Almost 65 percent of Lao-Tai live in villages with all season road access and more than 80 percent have health services in their village. The corresponding figures for Chine-Tibet households are 14 percent for road access and 45 percent for health services. These summary statistics indicate that uneven access to resources could be a crucial part of the explanation for differences in welfare across ethnic groups.

Still, access to resources is not the sole determinant of welfare. Efficient use is also crucial. It is commonly noted that livelihoods, agricultural practices and work habits differ between ethnic groups. These differences may reflect a situation where groups living in highland areas have developed practices

TABLE 4: Summary Statistics, Rural Households by Ethnicity

	Lao- Tai 3483	Mon- Khmer 1914	Chine- Tibet 335	Hmong- Mien 646
Observations				
Consumption	KIP 174020	KIP 123385	KIP 132302	KIP 134316
Household production factors				
Irrigated land area	0.09 Ha	0.02 Ha	0.01 Ha	0.01 Ha
Unirrigated land area	1.87 Ha	1.65 Ha	1.80 Ha	1.76 Ha
Number of cattle	1.36	0.63	0.88	3.04
Number of buffalo	1.32	1.08	1.07	1.38
Number of pigs	0.80	1.15	1.65	2.26
Literate female	76%	37%	9%	17%
Literate male	88%	73%	24%	68%
Household business	19%	6%	0%	7%
Agricultural mechanisation	27%	10%	2%	11%
Fertilizer use	44%	6%	6%	5%
Household composition				
Dependency ratio	55%	58%	56%	63%
Adults	2.92	2.96	3.16	3.13
Male head of household	96%	97%	99%	99%
Village infrastructure				
Access to dry season road	16%	18%	11%	19%
Access to all season road	65%	51%	14%	41%
Electricity access	44%	16%	0%	20%
Healthservice access	81%	67%	45%	64%
Spatial variables				
Low altitude	68%	31%	1%	14%
High altitude	13%	46%	94%	76%
Mid altitude	20%	23%	5%	10%

that make efficient use of the available scarce resources. Thus households with different ethnic origins may differ in their resource use and compensate (or aggravate) the differences in access to resources. Through separate regressions (Table 5) it is possible to study resource use among the different ethnic families.

Some highly interesting patterns emerge from the separate regression models for the four ethnic groups as presented in Table 5. There are large differences in the explanatory power between the different groups. For Lao-Tai and Mon-Khmer the R^2 are on the same level as for the aggregate household sample, for Hmong-Mien the explanatory power is lower, but for Chine-Tibet it is substantially higher.

TABLE 5: Estimation by ethnic family

Dependent variable	Lao-Tai		Mon-Khmer		Chinc-Tibet		Hmong-Mien	
	Cons. per capita							
Household production factors								
Irrigated land area	0.016*	1.68	0.026*	1.88	-0.013	-0.37	-0.019	-0.76
Unirrigated land area	-0.005	-0.58	0.041***	2.94	0.034	1.11	0.052***	2.51
Number of cattle	0.012	1.41	0.015	1.63	0.050***	3.94	0.030*	1.88
Number of buffalo	0.005	0.65	0.019***	2.05	0.012	0.85	0.035*	1.70
Number of pigs	0.002	0.24	0.001	0.11	0.027	1.54	0.013	0.80
Literate female	0.075***	3.37	0.035	1.51	-0.123**	-2.26	0.079	1.27
Literate male	-0.001	-0.03	0.070***	2.77	-0.048	-1.09	0.092**	2.10
Household business	0.259***	9.64	0.224***	4.88	dropped		0.142	1.57
Education	0.114***	6.63	0.028**	2.03	-0.001	-0.07	0.072***	2.64
Agricultural mechanisation	0.131***	5.14	0.108***	2.66	-0.008	-0.03	-0.057	-0.99
Fertilizer use	0.057*	1.94	0.129***	2.79	-0.144**	-2.10	-0.070	-0.82
Household composition								
Dependency ratio	-1.510***	-22.19	-1.258***	-16.80	-0.964***	-8.27	-1.171***	-7.64
Adults	-0.573***	-17.47	-0.479***	-11.71	-0.340***	-5.86	-0.455***	-10.55
Male head of household	0.069	1.49	0.076	0.70	-0.050	-0.62	-0.207	-1.31
Village infrastructure								
Access to dry season road	0.136**	2.01	0.131*	1.82	-0.178*	-1.67	-0.137	-1.43
Access to all season road	0.121	2.19	0.098***	1.97	0.139	1.35	0.008	0.06
Electricity access	0.016	0.45	0.102*	1.73	dropped		0.275***	3.25
Healthservice access	0.027	0.48	0.046	1.20	-0.107	-1.47	0.057	0.56
Spatial variables								
High altitude	0.018	0.31	-0.013	-0.26	-0.017	-0.06	0.148	1.08
Mid altitude	-0.048	-1.02	0.040	0.75	-0.157	-0.51	-0.013	-0.08
Province control variables								
Observations	3483		1914		335		646	
R^2	0.363		0.391		0.442		0.304	
Degrees of Freedom	[37, 354]		[36, 349]		[18, 63]		[29, 196]	

Besides the fit of the model, the coefficient estimates display substantial differences between the ethnic families. The Lao-Tai and Mon-Khmer tend to have coefficients that are similar in direction and size to the full sample of rural households. This indicates that these groups have similar patterns of resource utilization. The groups living in highland areas, the Chine-Tibet and Hmong-Mien, display different patterns. Several coefficient estimates for these groups differ markedly from those of the other ethnic families. Examples are the negative impact of female education among the Chine-Tibet and the insignificant impact of household business among the Hmong-Mien. The variables for agricultural technology also display consistently negative coefficients (albeit only statistically significant for fertilizer use among Chine-Tibet), indicating that households relying on traditional agricultural methods experience higher welfare levels. The highland groups also show different returns from village infrastructure, with a negative impact of access to dry season road among the Chine-Tibet and statistically insignificant effects among Hmong-Mien.

These results show that there are substantial differences in the welfare generating processes between the ethnic families. This implies that there are reasons to believe that indirect effects, in the form of differences in access to and returns from resources, are relevant for understanding welfare differences among ethnic groups.

Decomposition of Ethnic Sources of Poverty

This far the analysis of ethnic sources of welfare differences has shown that there is some direct impact of ethnicity; furthermore there are substantial differences in access to resources, and large differences in resource use as shown through the separate regressions. Through a decomposition the relative impact of these factors can be studied.

Decomposition can be used to analyze the shares of the consumption gap between the majority and ethnic minorities that are due to access to resources and resource utilization. This technique, commonly used for analyzing labor market discrimination, is known as a Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). Following Psacharopoulos and Patrinos (1994), this

decomposition will here be used to analyze differences in consumption between rural households with different ethnic belonging.

The mean consumption differential between two groups can be decomposed as follows:

$$\begin{aligned} \ln \hat{C}^a - \ln \hat{C}^b &= \hat{\beta}_1^a (\bar{X}^a - \bar{X}^b) + \hat{\beta}_2^a (\bar{Y}^a - \bar{Y}^b) + \hat{\beta}_3^a (\bar{Z}^a - \bar{Z}^b) + \\ \textit{Total Difference} &\quad \textit{Production factors} \quad \textit{Household composition} \quad \textit{Village infrastructure} \\ &\quad + \bar{X}^b (\hat{\beta}_1^a - \hat{\beta}_1^b) + \bar{Y}^b (\hat{\beta}_2^a - \hat{\beta}_2^b) + \bar{Z}^b (\hat{\beta}_3^a - \hat{\beta}_3^b) \\ &\quad \quad \quad \textit{Difference in returns} \end{aligned}$$

where $\ln \hat{C}^a$ and $\ln \hat{C}^b$ represent the mean log earnings of the majority a and the minority b . The first right hand side component is the consumption differential due to differences in endowments of production factors between the groups (here weighted by the parameters estimated for the majority). The second component is the differential due to differences in household composition, the third that due to differences in village infrastructure and the final component is that attributable to between-group differences in the returns to all individual characteristics.

To avoid a comparison of households that not only differ in ethnicity but also in basic conditions such as location, climate, external economic conditions and institutional factors, the decompositions are done using matched samples of minority and majority households of identical size from the same districts. This matching, based on propensity scores, is done to eliminate differences due to geographic factors.

Consumption Gap Decomposition Results

The results from the decompositions (Table 6) reinforce the view that unequal access to resources is important for explaining the consumption gap. Looking jointly at all minorities, the consumption gap to the majority can be fully explained by differences in endowments. This indicates that a major part of the higher poverty rates among minorities can be explained by less access to land, more dependents and worse infrastructure than the Lao-Tai. The

TABLE 6: Consumption gap decomposition, matched samples

	All minorities	Mon- Khmer	Chine- Tibet	Hmong- Mien
Due to endowments				
Production factors	80%	68%	159%	150%
Household composition	25%	14%	22%	70%
Village infrastructure	8%	0%	65%	13%
Total endowments	112%	82%	246%	234%
Due to returns	-12%	18%	-146%	-134%

most important of these are the category production factors, which account an overwhelming part of the gap. Resource use (or returns) are according to this analysis more efficient among minorities and even serve to lessen the impact of the unequal access to resources as indicated by the negative value for the total difference in returns.

Looking at the detailed results of the decomposition some further patterns emerge. Again the highland groups, Chine-Tibet and Hmong-Mien, display similarities. Both these groups are highly efficient in their utilization of scarce resources and are able to compensate for unequal access to resources, here shown as negative signs of the differences in returns. This indicates that these groups have adapted their livelihoods to the conditions in upland areas. Similar decomposition exercises analyzing ethnic differences in Vietnam also showed a compensating behavior among minorities (van de Walle and Gunewardena, 2001). The difference to the Mon-Khmer is apparent; they use resources less efficiently than the majority population. This reinforces the view that the highland groups are efficient maximizers of production and labor inputs, while the Mon-Khmer rely on seeking out abundant natural environments, something that might have become increasingly difficult by time.

This analysis has so far highlighted some possible explanations to the differences in welfare between ethnic families in Lao PDR. First, households from different ethnic groups have highly different access to resources and use these in different ways. By studying the impact on poverty of changes to resource endowments, the economic significance of these results can be estimated. The

following section provides an estimation of the impacts of possible policy interventions.

Policy Scenarios

A final step in this empirical inquiry is an analysis of the estimated effects on welfare and poverty of changes to the endowments of minority households. This can be thought of as a comparison of possible policy interventions to improve the welfare of minority groups, and a test of the economic significance of the results provided this far.

The estimation of the welfare effects of alternative scenarios builds on a further extension of the earlier econometric model. First, a base case scenario is estimated where household consumption is predicted using the estimated coefficients and values for the relevant ethnic subgroup:

$$\ln \hat{C}^b = \hat{\alpha}^b + \hat{\beta}_1^b \bar{X}^b + \hat{\beta}_2^b \bar{Y}^b + \hat{\beta}_3^b \bar{Z}^b$$

where $\ln \hat{C}^b$ is the predicted consumption under the base case scenario, $\hat{\alpha}^b$, $\hat{\beta}_1^b$, $\hat{\beta}_2^b$, and $\hat{\beta}_3^b$ are the estimated constant and coefficients; and \bar{X}^b , \bar{Y}^b , \bar{Z}^b , are the mean endowments of group b . Predicted values under alternatives scenarios are derived according to the following example:

$$\ln \hat{C}_j^b = \hat{\alpha}^b + \hat{\beta}_1^b \bar{X}^a + \hat{\beta}_2^b \bar{Y}^a + \hat{\beta}_3^b \bar{Z}^a$$

where $\ln \hat{C}_j^b$ is the predicted consumption, for group b under scenario j . The example illustrates a scenario where the original endowments, \bar{X}^b , \bar{Y}^b , \bar{Z}^b , are replaced by those for the majority group a : \bar{X}^a , \bar{Y}^a , \bar{Z}^a .

To study the impact of possible policy programs on welfare among the ethnic families, five potential scenarios have been constructed:

I. Infrastructure. In this scenario it is assumed that heavy investments in rural infrastructure are carried out. The effect is to bring the level of minority households' access to dry and wet season road as well as electricity and healthcare to the same level as those for rural Lao-Tai households. Furthermore it is assumed that the area of irrigated land is increased to the level of

the majority.

II. Education. In this scenario schooling is extended to ensure that literacy, maximum education and business skills are brought to the same level as that of the majority population.

III. Household. In this scenario household composition and literacy is increased to the level of the majority. This could be achieved through programs for family planning and adult learning.

IV. Agriculture. In this scenario all endowments of agricultural production factors (land, livestock and agricultural technology) are made equal to those of the majority population.

V. All. In the final scenario all of the above policy programs are implemented.

Using the formula outlined above, consumption and poverty estimates are derived for all ethnic families. To make prediction possible it is assumed that the households benefit from changes in endowments without bearing the costs for financing investments or reaping additional, supplemental benefits such as labor income in development projects. These assumptions can be justified in the Lao PDR context given the large reliance on aid financing and the common use of external labor for development projects. It should also be noted that the predicted consumption under different scenarios is derived under an assumption of constant distributional patterns within each ethnic group.

The estimated impact of the policy scenarios for different minority groups is illustrated in Table 7. The estimated percentage change in consumption and the new poverty headcounts are illustrated for each scenario.

Studying the effect on all minority households we find encouraging results. In each policy scenario there is a positive effect on consumption and an associated fall in poverty headcount. This indicates that there could be substantial benefits in terms of poverty alleviation through investments in rural minority households. In scenario (V.) where all variables are altered, the estimated poverty headcount for the minority households are actually comparable to the 28.6 percent rate among rural Lao-Tai.

But these overall results hide striking differences between ethnic families.

TABLE 7: Consumption Changes and Poverty Headcount under Policy Scenarios, by Ethnic Family

Scenario	All minorities	Mon-Khmer	Chine-Tibet	Hmong-Mien
Base case				
Poverty headcount	50.8%	54.4%	40.2%	45.3%
I. Infrastructure				
Consumption change	4.8%	3.5%	9.8%	6.9%
Poverty headcount	47.2%	51.2%	32.4%	41.1%
II. Education				
Consumption change	8.2%	9.8%	-18.8%	12.9%
Poverty headcount	44.4%	45.5%	65.5%	36.7%
III. Household				
Consumption change	9.7%	8.0%	-10.9%	23.8%
Poverty headcount	43.1%	47.4%	55.7%	29.4%
IV. Agriculture				
Consumption change	7.0%	10.3%	-3.4%	-3.7%
Poverty headcount	45.4%	45.0%	44.4%	48.7%
V. All				
Consumption change	27.8%	28.8%	-11.4%	33.2%
Poverty headcount	28.9%	30.4%	56.0%	23.7%

Both Mon-Khmer and Hmong-Mien show positive effects that are in line with expectations. But Chine-Tibet show surprising results as consumption rates fall and poverty increases in most scenarios. Behind these results lies the peculiar structure of original endowments and somewhat different patterns of returns among the Chine-Tibet. The main conclusion from analyzing these scenarios is that policies can be a powerful instrument to affect ethnic minority welfare, but that special attention is needed when adapting policy programs to the needs of individual ethnic groups.

Conclusions

This paper has sought to improve our understanding of ethnic aspects of rural poverty in Lao PDR. The main basis for the analysis is an analytical model of household welfare in a multiple regression framework and LECS3 household survey data. The analysis was extended with a decomposition of sources of ethnic welfare inequality and an analysis of the possible impact of policy interventions. This concluding section summarizes the results, key implications, and limitations of the analysis.

Descriptive poverty statistics clearly show that poverty is concentrated among ethnic minority groups. All minorities have higher poverty headcount rates than the Lao-Tai majority, with the highest rural poverty rates found among the Mon-Khmer. However, when controlling for other determinants of poverty there is no clear indication that ethnicity as such explains the higher rates of poverty. The causes of minority poverty must therefore be sought among access to and use of productive resources. Decomposition shows that unequal access to resources, both within the household and in the form of public services, as well as different household demographics seem to explain a large share of minority poverty. To the extent that ethnic minorities have access to land, infrastructure and education, they tend to make use of it at least as efficiently as the majority. Yet there is a large difference between ethnic groups as regards resource use; the Chine-Tibet and the Hmong-Mien tend to make more efficient use of available resources than the Mon-Khmer.

This analysis identifies some main elements of a multi-ethnic poverty re-

duction strategy for Lao PDR. Two policy implications are that: (1) broad policies covering both education, access to infrastructure and agricultural development are needed to address the differences in economic opportunities facing ethnic minorities; (2) poverty alleviation policies should be tailored to the needs of individual ethnic minority groups in order to maximize the impact.

Some caution is in place when interpreting the results. They should be seen as indicators of broad patterns and trends, rather than exact measures of specific relationships between variables. Lao PDR is increasingly reliant on natural resources for foreign income. Ethnic cleavages and reliance on commodity exports are both factors associated with risk for political instability in developing countries (Blattman and Miguel, 2010). In Lao PDR, both factors are present and the findings in this analysis suggest that current systems for governance are unable to provide equal opportunities for all ethnic groups. This is alarming, and calls for increased attention to ethnic minority poverty, both as a worthy development target in its own right, but also to lay a foundation for social and political stability.

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Poverty in Rural Cambodia*

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Abstract

Cambodia has been growing rapidly over the past few years, but remains one of the poorest countries in East Asia. This paper analyzes rural poverty in Cambodia to identify the factors that explain its occurrence and persistence. The reduction of rural poverty in Cambodia requires (1) improvements in agricultural productivity and (2) the establishment of other income earning opportunities for the rural population. Our econometric investigation of the 2004 Cambodian Socio-Economic Survey shows that the main causes of poverty differ between landowners and the landless, and between different regions. Increasing inputs to agriculture is critical to increasing the welfare of landowning poor, and linkages with the rest of the economy are of vital importance to both landowners and the landless poor.

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Introduction

Poverty estimates for Cambodia show unexpectedly strong progress with a decline in poverty rates from about 47 percent of the population in 1994 and 1997 to about 35 percent in 2004 (World Bank, 2006). Yet, despite the progress made, Cambodia remains one of the poorest countries in the region. Moreover, income growth and poverty reduction are unevenly distributed in Cambodia (see Sok, 2007 for a summary). Whereas urban areas have seen relatively large gains in the standard of living, progress in rural Cambodia is considerably more modest. Hence, Cambodian poverty is today a predominantly rural issue: about 90 percent of the poor are found in rural areas and the urban–rural income gap is increasing. In other words, understanding poverty in Cambodia requires an understanding of rural conditions. Such conditions vary substantially between regions, which presumably is the reason for the observed variation in rural poverty rates (Mak, 2001).

A host of features has been suggested as important in explaining poverty in Cambodia, ranging from geographical aspects to poor inputs in agriculture and poorly defined land rights. Based on previous literature, our a priori hypothesis is that reduced rural poverty in Cambodia would have to rest on two pillars. First, improvements in agricultural productivity are necessary. Second, other income-earning opportunities for the rural population have to be expanded. The first pillar includes factors such as land rights, irrigation, and access to fertilizers and modern seeds. It also includes access to health and education. The second pillar is concerned with linkages to a modern sector and with access to markets for agricultural products.

Any attempt to seriously reduce poverty needs to be based on a careful analysis of its determinants. For instance, poverty caused by poor infrastructure or no land titles needs a different plan of action than poverty caused by poor seeds or a lack of irrigation. As has been observed it is not self-evident that rural implies agriculture, or that agriculture, whether it is a question of “have” or “have nots”, is directly related to poverty (Rigg, 2006). In the Cambodian case, it could also be mentioned that a large part of the decline in poverty so far can be explained as a peace effect, that is by an increase

in economic activity that can be expected after the resumption of peace and stability (World Bank, 2006). Further progress is likely to require more focused policies, which is why careful analysis of the determinants of poverty is warranted.

Recent studies suggest that countries should focus on removing the main constraints to economic growth (Hausmann, Rodrik and Velasco, 2005) or poverty alleviation (Lundström and Ronnäs, 2006). However, it is not obvious how one should rank different constraints. This might be one explanation for the very different views among policymakers and multilateral organizations on the main reason for why rural poverty is now prevalent. By way of an example, in Cambodia the government emphasizes the need to increase irrigation – it forms part of the so-called *rectangular strategy* (RGC, 2005) – whereas the World Bank is more skeptical of the economic return on such investments. Neither is it obvious that the same constraints are the most important ones across, for instance, geographical areas or farm size classes.

In this paper, we will evaluate the importance of different constraints for poverty by examining the rich data from the Cambodian Socio-Economic Survey (CSES), which encompasses 15 000 households in 900 villages. We will also look for the determinants of poverty in different regions and for different sub-sets of rural households.

Rural Poverty Eradication: A Framework

As agriculture employs three-fifths of the labor force and accounts for one-third of GDP, rural development will have to be at the heart of any strategy to move Cambodia into the ranks of the more affluent. This is especially so because nine-tenths of the poor reside in rural areas. However, rural residents do not necessarily engage in agriculture for a living. Indeed, an important reason for people being poor appears to be that they are not engaged nearly enough in the activities of the primary sector. Restricted access to land, or no access at all, are often seen as an important contribution to rural poverty (Sik, 2000; Chan and Acharya, 2002). An increased ability to produce a marketable surplus and to provide an income beyond mere subsistence would

be an important contribution to poverty alleviation and, in the aggregate, to the general development effort.

Although many economists today argue that there is nothing, in principle, that sets countries at low levels of development aside from those that have been successful (Krugman, 1995; Lazear, 2000), others point to a number of structural features that are likely to be a direct constraint on the ability to move to higher levels of income (Fine, 2002; Kanbur, 2002). Early work in the latter vein includes Lewis (1954), who posited that a nearly unlimited supply of unskilled labor would prevent an economy from getting off the ground. No matter the demand from the modern or urban sector, the effect on rural areas would be small because of the widespread underemployment.

The approach taken here is a modified Lewisian one, where we move away from the assumption of a closed economy. Furthermore, as demand for labor and land is geographically uneven we do not necessarily accept a spatially undifferentiated, unlimited supply of labor and the rather bleak prospects for productivity growth that Lewis assumed (Acharya et al, 2003). It is clear, however, that agricultural incomes cannot be improved much unless labor can also be released into other activities with higher levels of productivity. This is especially so in Cambodia, where the ability of agriculture to absorb still more labor appears to be approaching its limit. Lundström and Ronnås (2006) have suggested that this role has already shifted to the informal non-agricultural sector, which is no better at holding up productivity levels, and hence incomes, than is agriculture.

As mentioned previously, rural incomes are dependent on output in production (agriculture) and on linkages with other sectors of the economy. These linkages may take the form of access to markets for agricultural produce or access to other (nonagricultural) sources of income.

Thus, linkages will affect investment in agricultural production both through markets for agricultural products and through remittances that are used for investment.¹ Markets are important because they provide opportunities for

¹Previous findings suggest that remittances are available to relatively few households in Cambodia, with sums remitted being small and often used for daily consumption needs rather than investments (ADB, 2001; Dahlberg, 2005). The *Moving Out of Poverty* study

a departure from subsistence farming to a more cash crop-oriented one; and such a move, if successful, will generate income. Investment can take the form of irrigation (for example water pumps) or other infrastructure, or the use of high yield seeds and fertilizers. Linkages will also have a direct effect on consumption through remittances.

Previous studies offer some support of the importance of linkages in explaining poverty. A comparison of households in both rural and urban Cambodia finds that poor households tend to have relatively less access to all-weather roads and markets (World Bank, 2007). Although this is not particularly surprising in view of the fact that it is but a small proportion of the poor who reside in urban areas, the chances that the rural poor are disadvantaged is also relative to the rural non-poor in this respect. Furthermore, the rural poor tend to have little access to water pumps and irrigation.

Incomes and Poverty in Cambodia

Income and poverty can be measured in different ways. It involves basic choices between income and consumption-based indicators of well-being. Income, together with assets, measures the potential claims of a person or household, whereas consumption captures realized living standards. One reason for preferring consumption to income as an indicator of living standards is variability (Ravallion, 1994). In a mostly agricultural economy, people receive income only infrequently, and the amounts differ across seasons. Households often have consumption-smoothing opportunities through savings and community-based risk sharing. This is confirmed by empirical evidence suggesting that households in low-income agricultural societies manage to smooth consumption in spite of highly volatile income receipts (Deaton, 1997). Thus, current consumption is likely to be a better indicator of present well-being than current income; and consumption may be a better indicator of longer-term welfare, because it reveals information about incomes at other points in time.

We rely on a national poverty line based on nutritional requirements devel-

by CDRI noted a substantial increase in money remitted over time, but that variation across the nine villages covered by the survey was very large (Fitzgerald et al, 2007).

oped by the World Bank (2006). The simplicity of a poverty line facilitates the focus on the poor, but it is a crude device. In particular, the binary character of the measure is problematic because poverty involves multiple dimensions of deprivation, including poor health, low human capital, and malnutrition. In principle, each of these deserves separate attention.

The Cambodian Social Economic Survey of 1994 revealed that roughly 39 percent of the population was below the poverty line. Due to security reasons, the survey could not cover the whole country and a considerable portion of the presumably poorer parts of Cambodia had to be left out, suggesting that the true poverty figure was higher (Knowles, 2005). In 1997, another similar survey was conducted, including more provinces but with the drawback of recording consumption in one month only. This survey suggested that the poverty rate had been roughly stable between 1994 and 1997.²

Fragmented evidence from small-scale surveys suggested that little progress was being made. UNDP (2006) reported that about one-third of the population lived below the poverty line, only a small decrease from the 39 percent in 1994. Other reports suggest that poverty increased over the 1999-03 period. The World Bank estimated that the poverty rate went from 41.5 percent in 1999 to 45.5 percent in 2003 (EIC, 2004). The IMF (2004) reported that it went from 37 percent in 1996 to 42 percent in 2002.

It was therefore a positive surprise that CSES 2004 recorded a substantial drop in the poverty rate from 39 percent in 1994 to 28 percent in 2004.³ Using the results for the whole country in 2004 to make backward projections for the whole country in 1994, it was estimated that the poverty rate fell from 47 percent in 1994 to 35 percent in 2004. Non-monetary indicators of living standards also suggest that poverty has been reduced. Despite the progress being made, Cambodia remains substantially poorer than neighboring countries; it also has a lower life expectancy, and higher child and maternal mortality rate (Sjöberg and Sjöholm, 2006).

²The survey was conducted in a setting of political turmoil, which suggests that households consumed less than normal to build up reserves for an uncertain future. Hence, the true poverty is likely to have declined between 1994 and 1997 (Knowles 2005).

³All provinces were included in the CSES 2004, but as previously mentioned large areas were left out of the 1994 survey.

TABLE 1: Poverty in rural and urban Cambodia 1994 and 2004

	1994	2004
Rural	43	34
Phnom Penh	11	5
Other urban	37	21

Table 1 (based on CSES, 2004) reports that poverty varied substantially between urban and rural areas. These figures are based on those regions that are available in both 1994 and 2004. The sharpest fall in poverty is seen in urban areas in general and in Phnom Penh in particular. In 2004, the poverty rate was 5 percent in Phnom Penh, 21 percent in other urban areas, and 34 percent in rural areas. The main reason for the sharp fall in urban poverty is that economic growth in Cambodia has been generated primarily by the garment and tourism industries, which are concentrated to a few urban places.

Hence, poverty is predominantly a rural phenomenon and the CSES suggested that 91 percent of all poor are living in rural areas. With a large majority of the population engaged in agriculture, it is obvious that access to land is also a crucial determinant of welfare in Cambodia. Many rural households suffer from landlessness or near landlessness, however, or lack formal property rights to the land they live on. The survey was conducted in a setting of political turmoil, which suggests that households consumed less than normal to build up reserves for an uncertain future. Hence, the true poverty is likely to have declined between 1994 and 1997 (Knowles, 2005). All provinces were included in the CSES 2004, but as previously mentioned large areas were left out of the 1994 survey.

A discussion of landlessness needs to be qualified as voluntary landlessness is a natural outcome of any successful development process. Households that leave the agricultural sector commonly sell off their land holdings. Involuntary landlessness among households that remain in the rural economy, on the other hand, is an outcome of weak ownership protection and vulnerability. Where rural households are deprived of their land through distress sales or outright

TABLE 2: Rural Poverty by Province

Region	Province	Poverty headcount
Phnom Penh	Phnom Penh	3.2%
Plains	Kandal	16.0%
	Kampong Cham	30.7%
	Prey Veng	28.1%
	Svay Rieng	30.2%
	Takeo	23.7%
Coast	Kampot	23.4%
	Koh Kong	26.6%
Tonle Sap	Bantey Meanchey	31.1%
	Battambang	27.1%
	Kampong Chhang	32.2%
	Kampong Thom	44.9%
	Pursat	34.1%
Plateau/Mountain	Siem Reap	53.3%
	Kampong Speu	53.3%
	Kratie	39.5%
	Oddar Meanchey	20.8%
	Mondul Kiri	35.0%
	Preah Vihear	49.0%
	Ratanik Kiri	45.5%
	Stung Treng	85.0%

land grab, increased poverty can be expected. There are clear indicators that involuntary landlessness has been on the rise in Cambodia, but a lack of data makes it difficult to pinpoint the precise causes of the increase in landlessness (World Bank, 2006). Demographics clearly play an important role. With a population that has grown from around 8 million in the late 1980s to 14 million in 2007, it is obvious that land has become an increasingly scarce resource. Younger families are often in a weak position in the land market; there is little unused land, land prices are high, and the parents' land is often too small to offer a reasonable livelihood for all their children.

Another issue is the lack of savings and access to credits among poor households. Vulnerable households are subject to shocks; crop failures, illness

among household members, and livestock mortality are major threats causing unexpected economic stress. Because most poor rural families have limited access to credits, repeated shocks may eventually result in distress sales of land and landlessness.

A further cause behind landlessness is weak legal protection for land ownership. Few poor rural households have completed the registration procedures that are necessary to secure their property rights, and they are therefore vulnerable to land grabs. In addition, there are a large proportion of households that can be characterized as nearly landless, with 0.5 hectares of land or less; in some provinces, this group accounts for one-fourth of the rural population (Chan and Acharya, 2002).

Table 2 reports that poverty differs substantially across regions and provinces. The large variation in rural poverty makes it possible to examine its determinants by relating it to variation in other factors. Table 3 reveals that poor households are disadvantaged compared to the non-poor in a number of respects. As previously noted, a common observation is that poverty is partly explained by a lack of integration with the rest of the economy. Thus, although the share of households receiving remittances do not differ much – and receiving households are in a distinct minority, no matter the socioeconomic status of the recipient – the amount of money received differs quite markedly. Similarly, the poor are disadvantaged with respect to access to markets, at least as gauged in the form of physical distance to the nearest regular market place. In particular, the access to markets appears to be consistent with the importance of being able to integrate into the economy.

TABLE 3: Linkages to other sectors of the economy in rural Cambodia

Region	Distance to market, km		Distance to all-weather road, km		Domestic remittances share receiving (Riel/receiver)		Foreign remittances share receiving (Riel/receiver)	
	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor
Total	7.13	9.75	0.80	0.74	0.14%	0.12%	0.06%	0.03%
Plains	7.33	8.45	0.75	0.70	(56,665)	(36,499)	(102,682)	(28,946)
Tomle Sap	7.48	10.81	0.78	0.76	0.15%	0.12%	0.04%	0.03%
Coastal	8.05	6.38	0.63	0.69	(46,696)	(37,130)	(42,367)	(12,562)
Plateau	11.61	13.30	0.84	0.77	0.14%	0.12%	0.07%	0.05%
					(44,317)	(35,539)	(107,944)	(52,485)
					0.17%	0.14%	0.05%	0.03%
					(45,145)	(13,675)	(15,186)	(31,965)
					0.17%	0.12%	0.02%	0.01%
					(64,310)	(46,183)	(12,437)	(11,845)

It should be underlined that with the exception of distance to market and receipt of remittances from abroad, differences between rich and poor households are not very pronounced – and even when they are of some magnitude, the pattern across regions is not entirely clear-cut. On the coast and the plateau foreign remittances, for instance, benefit poor recipients more than the non-poor on average, both in absolute and presumably therefore also in relative terms. The same applies to distance, at least in the coastal zone, where the poor enjoy a shorter distance to the market than do the relatively rich. However, there is one indicator that would seem, superficially at least, to benefit the poor irrespective of where they live: distance to an all-weather road.

There are a number of possible explanations for the observed deviations from the overall pattern. First, it should be noted that those regions that deviate from the predominant pattern are those at the extremes: the coast is better off than any other region save the capital, and the plateau and mountains are far worse off than the others are. This alone may skew patterns. Furthermore, rural households living on the coast may have better access to non-agricultural work, including in cities and abroad. If so, this would show up on a more disaggregated level of analysis: provinces with the same favorable location characteristics would display patterns similar to those on the coast.

There are, however, a few other potential explanations. One is the access to major urban areas, which may allow for easier access to urban employment or urban informal sector activities (Fitzgerald et al, 2007). There are indications that urban income opportunities are an attractive alternative only when agriculture is not a viable option, however. Another possible explanation is the increase in land speculation and land grabbing that may follow improved roads access. Road development may thus deprive vulnerable households of their land and limit the positive impact of improved linkages.

TABLE 4: Agriculture in rural Cambodia

Region	Land area, ha		Crop diversification		Use of fertilizer (share of households)		Access to irrigation (share of households)	
	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor
Total	2.53	2.68	0.31	0.23	0.85	0.73	0.59	0.42
Plains	3.24	4.53	0.32	0.27	0.85	0.80	0.58	0.51
Tonle Sap	2.16	1.66	0.26	0.20	0.71	0.63	0.45	0.36
Coastal	1.19	0.93	0.39	0.29	0.86	0.74	0.31	0.17
Plains	1.23	1.39	0.29	0.18	0.60	0.55	0.34	0.32

Table 4 displays the conditions for agricultural production in Cambodia. It appears that the poor have, on average, more land at their disposal than the non-poor do. This statistic captures all rural dwellers, including both the poor without land and the better-off in rural areas who have left agriculture behind. This highlights the potential problem in only associating poverty and vulnerability to the non-availability of land. Regional differences are rather pronounced, however, and it is difficult to draw any firm conclusions based on these descriptive statistics.

More informative, then, are the data on crop diversification, providing a first cut at the extent to which farmers specialize.⁴ It also provides clues as to the extent households are engaged in subsistence agriculture, which normally is taken to imply a high reliance on rice production. Although crop diversification is not very prominent, the difference between the poor and non-poor is striking and consistent throughout the regions. One reason for this state of affairs, as the two final columns of Table 4 suggest, might be that the non-poor also apply higher levels of fertilizers and have better access to irrigation, suggesting in turn that higher (and more reliable) yields are within range for the non-poor. Again, differences are not dramatic, but they are consistent across the sample and clearly indicate that a lack of inputs (here: fertilizers) could be an important correlate, and perhaps the cause of rural poverty (this is also consistent with a recent case study by Chea, 2006). To find out if it is, and whether physical access might be important to the well-being of rural inhabitants, we now turn to the econometric analysis.

⁴At this point it is in order to note two things. First, crop diversification may result from a desire to diversify income or to minimize risk. Typically, one would expect richer households to opt for diversification for the former reason, whereas poor households would be more likely to embark on a diversification strategy to offset food shortages. The Moving Out of Poverty study by CDRI offers some support for this conjecture (Fitzgerald et al, 2007). Second, in agrarian households income diversification may result from other means than crop diversification, such as locally available off-farm jobs or through migration (So, Lim, and Hou, 2007).

Econometric Estimations and Results

Data

Our empirical analysis is based on the rich household information from the CSES 2004, which is a sample of 15 000 households drawn from 900 villages. The data includes detailed information at the individual, household, and village level. In addition to household consumption of various goods, it includes a wide range of social indicators, the daily time use of all household members, sources of household income, data on land use, and access to social services and infrastructure (Knowles, 2005).

Empirical analysis

The analysis is based on a modified agricultural production model. In principle, the model allows us to capture the determinants of consumption in an agricultural household. The production factors included on the right side of the model captures the contribution to consumption capability of assets and characteristics of the household. This formulation is attractive because it has a relatively straightforward functional form while being consistent with established models for household welfare presented by, for example, Glewwe (1991). Our econometric analysis starts out from the following expression:

$$C_i = \mathbf{x}_i\boldsymbol{\beta} + \varepsilon_i$$

where C_i is the dependent welfare variable, here per capita consumption in household i , \mathbf{x}_i is a vector of variables for linkages with the rest of the economy and inputs into agricultural production and control variables. ε_i is a normally distributed error term. We will estimate equation (1) using ordinary least square (OLS) with log-transformed continual variables.

Table 5 shows our three different categories of variables. Linkages will be captured by remittances, distances to the nearest all-weather road and economic (commercial) center, household businesses, and household members working abroad. These variables capture the access to other parts of the economy for rural households. Well developed linkages are expected to have a

TABLE 5: Variables included in the econometric estimations

Variable	Definition	Expected sign
Dependent variable	per capita consumption expenditure	
Linkages		
remittances	dummy variable	+
distance to all-weather road	kilometers	-
distance to economic center	kilometers	-
household business	dummy variable	+
employment abroad	dummy variable	+
Inputs		
land area	land area	+
titled land	share of total land	+
irrigated land	share of total land	+
improvement of land	dummy variable	+
land conflict	dummy variable	-
livestock	conversion units	+
agricultural mechanization	dummy for tractor	+
fertilizers	dummy for chemical fertilizer	+
Household control variables		
household size	no. of family members	-
male head of household	dummy variable	?
dependency ratio	ratio of dependents to adults (18-59)	-
max. formal education	index	+
literate	dummy variable	+
Infrastructure		
electricity	dummy variable	+
primary school	dummy variable	+
health service	dummy variable	+

positive impact on consumption, our welfare measure.

We include a number of inputs into agriculture: land in general and improved land; land rights; irrigation and fertilizers; livestock; and mechanization. We also include a dummy variable for land conflicts, the presence of which are expected to have a negative impact on agricultural investments and thereby on consumption.

To control for other factors that affect rural welfare, we include a number of control variables common to the literature on rural poverty. These variables are both household and village characteristics.

As previously argued, we believe that linkages with other sectors of the economy can increase welfare both through a direct effect on current consumption and through a higher investment in agricultural production leading to higher and more reliable future yields. One method to evaluate the relative importance of the direct and indirect effect is to start with estimations where only the linkage and control variables are included and continue with estimations with the additional inclusion of input variables. Finally, determinants to poverty are likely to differ between landowners and the landless population. In particular, inputs to agriculture are not relevant in an analysis of the latter group. We therefore make a distinction between the two groups in our econometric analysis.

Results

We start in Table 6 to estimate consumption per capita in Cambodian households. The first estimation examines the effect of linkages on consumption and the second estimation examines the effect of inputs in agriculture. Estimation 3 includes both linkages and inputs and estimation 4 is the full model including additional variables that might affect consumption. Using different sets of variables in the estimations gives us a sense of how robust the results are.

Focusing primarily on the full model, it is seen that domestic remittances and household businesses are the linkage variables that affect consumption. Remittances are statistically significant at a 1 percent level in all estimations and the coefficient suggest that households with remittances have about 5 (full

model) to 10 percent (estimations 1 and 3) higher consumption. Household business is also highly statistically significant and the coefficient suggests that it increase consumption by about 20 percent. The other two linkage variables are not seen to have a statistically significant effect on consumption in all estimations.

Turning our attention to the input variables, we see that a number of them have a positive and statistically significant effect on consumption. The shares of titled land, improved land, livestock, and fertilizers have consistent statistically significant effects on consumption. It is seen in the full model that a 1 percent increase in the share of titled land increases consumption by 7 percent, that households with improved land have 11 percent higher consumption, that a 1 percent increase in the amount of livestock increases consumption by 2 percent, and that the use of fertilizers increases consumption by 13 percent. Finally, the result for household characteristics is broadly in line with what is typically found in similar studies on other countries: there are negative welfare effects for large households with high dependency ratios and for those with female household heads (Deaton and Paxson, 1998; Ellis and Bahigwa, 2003; Woolard and Klasen, 2005). Moreover, education improves household consumption. However, literacy has no significant effect, but it could be that any such effect is captured by the education variable. Of the village characteristics, it is only access to electricity that has a significantly positive effect on consumption.

TABLE 6: The effect of linkages and inputs on rural consumption

	Linkages		Inputs		Linkages and inputs		Full model	
	z-value		z-value		z-value		z-value	
Remittances	0.11***	5.24			0.10***	4.88	0.05***	2.19
Distance to road	-0.02	0.96			-0.02	0.98	0.01	0.37
Distance to econ. center	0.06*	1.85			0.06	1.71	0.03	0.75
Household business	0.20***	10.07			0.20***	10.05	0.19***	9.97
Employment abroad	0.00*	1.69			-0.01*	1.87	0.00	1.10
Inputs								
Land area			-0.02*	1.76	-0.01	0.86	0.02***	2.92
Share titled land			0.05***	2.63	0.05**	2.32	0.07***	3.23
Share irrigated land			0.02	0.84	0.03	1.18	0.03	1.28
Improved land			0.10***	2.41	0.10***	2.56	0.11***	2.61
Land conflict			0.01	0.20	0.02	0.37	0.03	0.67
Livestock			0.01*	1.75	0.01	1.86*	0.02***	3.49
Agricultural mech.			0.04	1.01	0.03	0.91	0.07*	1.92
Fertilizers			0.14***	5.07	0.11***	4.34	0.13***	4.69
Control variables								
Household size							-0.52***	24.90
Male head of household							0.11***	6.15
Dependency ratio							-0.07***	8.25
Max education							0.01***	5.83
Literate							0.06	1.08
Infrastructure								
Electricity							0.23***	5.60
Primary school							0.02	0.66
Healthservice access							0.02	0.67
Observations	9403		9403		9403		9403	
R-square	0.165		0.147		0.176		0.335	

TABLE 7: The effect of linkages and inputs on rural landowning households' consumption

Linkages	Linkages		Inputs		Linkages and inputs		Full model	
	z-value	z-value	z-value	z-value	z-value	z-value	z-value	z-value
Remittances	0.10***	4.44	0.01	1.61	0.09***	4.23	0.04	1.63
Distance to road	-0.02	1.33			-0.02	1.45	0.00	0.19
Distance to econ. center	0.08**	2.31	0.08***	3.49	0.07*	1.95	0.04	1.22
Household business	0.17***	8.44	0.03	1.40	0.16***	8.26	0.16***	8.52
Employment abroad	0.00	1.29			-0.01*	1.69	0.00	0.53
Inputs								
Land area			0.01	1.61	0.02**	2.11	0.04***	4.90
Share titled land			0.08***	3.49	0.06***	2.86	0.09***	3.79
Share irrigated land			0.03	1.40	0.04	1.62	0.04*	1.69
Improved land			0.11**	2.47	0.11***	2.63	0.11***	2.68
Land conflict			0.01	0.30	0.02	0.41	0.03	0.65
Livestock			0.00	0.01	0.00	0.00	0.02**	2.41
Agricultural mech.			0.02	0.58	0.02	0.63	0.05	1.52
Fertilizers			0.11***	3.92	0.10***	3.45	0.11***	3.69
Control variables								
Household size							-0.52***	22.73
Male head of household							0.10***	4.54
Dependency ratio							-0.06***	6.09
Max education							0.01***	4.87
Literate							0.06	0.92
Infrastructure								
Electricity							0.18***	4.49
Primary school							0.03	0.93
Healthservice access							0.01	0.28
Observations	7924	7924	7924	7924	7924	7924	7924	7924
R-square	0.106	0.094	0.094	0.119	0.119	0.271	0.271	0.271

The effect of inputs in agriculture is only relevant for those rural households that are engaged in agriculture. We therefore divide our sample between households with and without land in Tables 7 and 8, respectively. The results for landowners in Table 7 are rather similar to those of the full sample. The same inputs to agriculture have a positive effect on consumption, with one exception: the coefficient for livestock is not statistically significant in all estimations in Table 7. Again there is a negative effect of increased household size, a high dependence ratio, and of female head of household. Higher education and access to electricity are associated with higher consumption welfare.

Perhaps the most important difference between the estimations on landowners (Table 7) and full sample of households (Table 6) is that there is no positive effect of remittances in the former sample (full model). In the estimations on the landless in Table 8, the effect of remittances is positive and statistically significant: remittances increase landless households' consumption by 13 percent. Hence, one tentative conclusion is that linkages are of most importance for the landless by offering alternative income earning opportunities and that the effect of linkages in agricultural investments might be relatively minor.

To sum up the results so far, it has been seen that both some linkages and some input variables have a positive effect on household incomes. The results seem to suggest that the latter group of variables is perhaps relatively more important. We previously discussed the possibility that linkages might have a direct as well as an indirect effect on incomes. For this reason, the outcome of the analysis is not clear, but there is some room to speculate on the respective effects from the obtained results. In statistical estimations on landowning households, remittances, household business, and distance to all-weather markets are the three linkage variables that show some evidence of a positive effect on consumption. If the effect from these factors were primarily indirect (working through increased possibilities and incentives to invest in agriculture) we would expect the statistical significance to disappear when we control for inputs to agriculture. This does not happen; the same linkage variables are statistically significant when controlling for inputs. What we do find is that the effect of distance to all-weather roads and remittances turns insignificant when we control for household and village characteristics.

TABLE 8: The effect of linkages and inputs on rural landless households' consumption

Head	Linkages		Full model	
		z-value		z-value
Linkages				
Remittances	0.13***	3.33	0.12***	2.43
Distance to road	0.01	0.52	0.04*	1.99
Distance to econ. center	0.01	0.18	0.00	0.03
Household business	0.29***	8.29	0.24***	6.36
Employment abroad	-0.01	1.70	-0.01*	-1.75
Control variables				
Household size			-0.50***	12.81
Male head of household			0.15***	4.11
Dependency ratio			-0.11***	5.78
Max education			0.02***	3.62
Literate			0.07	0.59
Infrastructure				
Electricity			0.27***	4.21
Primary school			-0.02	0.32
Healthservice access			0.02	0.27
Observations	1479		1479	
R-square	0.266		0.444	

One possible explanation is the positive correlation between remittances and education. Moreover, the effect of access to all-weather roads might be closely related to access to electricity; both might capture an aspect of integration with the surrounding economy.

As previously discussed, household incomes and poverty differ between provinces. Moreover, conditions for agriculture are also very different between regions. It is therefore likely that determinants to poverty show a similar difference between regions, an issue that we examine in more detail in Table 9. Indeed, the hypothesis appears to be correct: the determinants to poverty differ substantially between the four regions. Starting with linkages, owning a business is the only variable that is statistically significant in all estimations. In Tonle Sap and the Mountain region, this is in fact the only linkage variable that has a statistically significant impact on incomes. Own business increases consumption with between 14 percent (Coastal region) and 24 percent (Mountain).

Continuing with inputs, it is seen that most variables are statistically significant in some of the regions, but not in all of the regions. Large and irrigated land area, livestock, and fertilizers are positive for incomes in the Plains; large land area with land titles and fertilizers in the Coastal area; titled and improved land as well as mechanization and use of fertilizers in the Tonle Sap region; and livestock and improved land in the Mountain region.

The effects of control variables are more similar between the regions and largely in line with previous results. One result that might be worth mentioning is that there is no positive effect of access to electricity in the Mountain region, but instead a positive effect of access to health services.

TABLE 9: The effect of linkages and inputs on rural households' consumption, by region

Linkages	Plains Full model		Coastal Full model		Tonle Sap Full model		Mountain Full model	
	z-value	z-value	z-value	z-value	z-value	z-value	z-value	z-value
Remittances	0.04	1.28	-0.01	0.07	0.07	1.47	-0.01	0.14
Distance to road	-0.02	1.39	0.07**	2.56	0.03	1.07	0.00	0.10
Distance to econ. center	0.10**	2.27	0.26**	2.41	0.04	0.51	-0.14	1.38
Household business	0.16***	6.49	0.14***	2.70	0.20**	5.60	0.24***	4.65
Employment abroad	0.00	1.80	0.00	0.37	0.01	0.93	0.05	0.44
Inputs								
Land area	0.03***	3.21	0.03**	2.24	0.01	0.79	-0.03	1.52
Share titled land	0.03	0.87	0.14*	1.91	0.11**	2.37	0.11	1.62
Share irrigated land	0.07**	2.26	-0.16**	2.26	0.03	0.64	0.05	0.74
Improved land	0.07	1.58	0.10	0.65	0.26**	1.96	0.29**	2.21
Land conflict	0.03	0.44	0.08	1.02	0.01	0.11	0.09	0.92
Livestock	0.03***	3.05	0.01	0.35	0.01	1.05	0.02*	1.78
Agricultural mech.	0.03	0.69	-0.08	0.85	0.16***	2.85	0.14	0.92
Fertilizers	0.12***	2.78	0.25***	3.47	0.13***	2.78	0.05	0.99
Control variables								
Household size	-0.50***	16.66	-0.58***	7.87	-0.53***	13.54	-0.54***	11.25
Male head of household	0.10***	3.44	0.05	0.80	0.13***	3.52	0.17***	4.14
Dependency ratio	-0.07***	5.52	-0.08***	3.72	-0.06***	4.44	-0.03	1.33
Max education	0.01***	4.39	0.01**	1.97	0.01***	3.18	0.04***	3.79
Literate	0.19***	2.93	0.06	0.48	-0.05	0.42	-0.08	0.70
Infrastructure								
Electricity	0.21***	3.29	0.39***	3.68	0.31***	3.81	0.09	1.13
Primary school	0.00	0.02	0.05	0.66	0.07	1.17	0.10	1.51
Healthservice access	-0.03	0.84	-0.01	0.11	0.00	0.07	0.31***	4.46
Observations	4386	814	814	3063	3063	1140	1140	1140
R-square	0.211	0.404	0.404	0.280	0.280	0.374	0.374	0.374

Conclusion

Cambodia has made substantial progress in its economic development over the past decade, and poverty has been reduced on a significant scale. However, economic growth started from a very low level of development and sustained attempts at poverty eradication set out from a situation where an overwhelming share of the population lived under very harsh conditions (EIC, 2007). As a consequence, Cambodia remains a poor country. The most important changes during the past decade have been the growth in urban incomes and that poverty today is primarily a rural phenomenon. That brings rural poverty to the frontline of economic policy.

Our results show that causes of poverty vary within rural Cambodia. It differs between landowners and landless households, and it varies between households in different regions. In particular, we note important geographical differences in the constraints faced by rural households. In this study we have been able to add some detail at the regional level (in turn broadly congruent with Cambodia's major agroecological zones) and at the level of the provinces. Thus, while the determinants of poverty identified here are present throughout much of the country, their relative weight varies across geographical units.

The policy implication is as important as it is obvious: any successful poverty reduction program has to start by deciding which group in society is the main target for interventions. More specifically, and as expected, inputs to agriculture have a strong positive effect on rural incomes for landowners. Landowning households with large plots of titled, irrigated, and improved land have relatively high levels of consumption. However, not all of the linkages have a positive effect on income in all of the regions, but all of them have a positive effect in some parts of a region.

Linkages with the surrounding economy have less of an effect on consumption among landowners. Although remittances, own businesses, and distance to all weather roads are found to have a positive effect in some estimations. Moreover, our hypothesis of a positive effect of linkages on agricultural investments, and thereby on landowners' consumption, does not receive much support in our econometric analysis. However, there is some evidence of an

effect of linkages on income through, for instance, increased schooling and through improved infrastructure.

Instead, the main effect of linkages on income is found among the rural landless population. Remittances and household businesses are alternative income earning opportunities associated with a clearly positive effect on welfare. In this context, it should be noted that this result most likely captures at least two different types of situations. On one hand, landless poor in close proximity of resources or employment opportunities benefit through the access to alternative sources of income, as is indeed illustrated by the *Moving Out of Poverty* study. On the other hand, the landless also includes groups that were never land-owners or peasants to begin with. Teachers, civil servants, and traders can be expected to be at least somewhat better off than landed poor, the landless, or resourcepoor agricultural households.

There are at least three specific policy implications of these findings, and an additional observation with a potential bearing on policy can be made. First, nonagricultural employment or income opportunities are essential to the consumption levels of sizeable segments of the rural population, including the landless and/or poor, and should therefore be encouraged. Second, education focusing on basic literacy and numeration is an essential ingredient to the ability to make use of such income generating opportunities. The provision of this basic service should therefore be encouraged and supported. For now access to and costs of primary education is a concern (Bray and Seng, 2005), while over time higher levels of educational attainment should presumably be a goal. Third, to create opportunities, and to reap the benefits of opportunities that already exist, linkages to the wider economy should be supported.

However, at this point we should also note that our results provide few clues as to whether the provision of physical access and transport infrastructure may in fact increase polarization. Previous work (Fitzgerald et al, 2007) suggests that agricultural growth may create increased polarization not merely by increasing top incomes but also reducing access to land and common pool resources by the poor. Furthermore, anecdotal evidence suggests that improved access increases potential land values, phenomenon that the rich and well-informed are thought to take advantage of – and then presumably at the

expense of poor landowners who are made to part with their land at low prices. This may well be the case, but no evidence to this effect has been detected in the course of our analysis. Conversely, we have not found any solid evidence that can be used to refute this presupposition.

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