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Domestic versus Transnational Terrorism: A Comparison of Causal Mechanisms and Societal Factors

Master's thesis in Political Science

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1 Introduction

During the last couple of decades, and especially after the terrorist incidents in 9/11, the research on terrorism has 'exploded'. The main questions that have been asked are "why does terrorism occur?" and "who are the terrorists?" Several explanations have been presented, both at the individual as well as the societal level. In the latter case, economic, political and socio-cultural structures have all turned out to be important factors in that regard. The problem, however, is that most of this research has been focused around the occurrence *transnational terrorism*, which involves two or more countries. Yet, according to the Global Terrorism Database (GTD) (LaFree & Dugan, 2006) and the newly presented data from Enders, Sandler and Gaibulloev (2011), most terrorism is *domestically*, meaning that it is being perpetrated against civilians in and from the same country as the perpetrator. This may be consequential for at least two reasons. First, this suggests that much of what we know might only apply to a small portion of the overall phenomenon of terrorism (Young & Findley, 2011). For instance, the societal characteristics that are thought to explain transnational terrorism, may in fact explain domestic terrorism. Second, even if the same societal factors explain both these types of terrorism, the causal mechanisms behind might be quite different.

These aspects are important since they address whether results derived from studies of transnational terrorism can carry over to the case of domestic terrorism and thus provide insights into the determinants of the general phenomenon of terrorism. Or, if transnational terrorism is structurally different from domestic terrorism, a very large amount of what we know about the occurrence of terrorism may be based on false assumptions. In other words, have scientists in trying to explain the occurrence of terrorism used theories applicable to domestic terrorism, while testing them for transnational?

Thus, this thesis seeks to answer two main questions. The first one addresses the societal factors that are argued to explain terrorism, and tries to find if there is any difference between domestic and transnational terrorism. It is formulated as follows:

> **Research question 1**: *Are the societal factors that explain the rate and probability of domestic terrorism the same as the societal factors that explains the rate and probability of transnational terrorism?*

If the societal factors are indeed different for domestic and transnational terrorism, there is no doubt that the causal mechanisms leading to either one of these types of terrorism are also different. Yet, as suggested by Young and Findley (2011), even if the societal factors that explain domestic and transnational are similar, the causal mechanisms behind might be quite different. Thus, the second question that needs to be answered goes as follows:

> **Research question 2**: *Are the causal mechanisms leading to domestic terrorism different from the causal mechanisms leading to transnational terrorism?*

There are very few studies which have separated these two types of terrorism. LaFree, Yang and Crenshaw (2009) dichotomized between domestic and transnational terrorism only on 16,916 terrorist incidents between 1970 and 2004 from 53 terrorist groups attacking the United States. This thesis, however, is a lot more comprehensive since it analysis 56,606 terrorist incidents between 1970 and 2007. This is similar to a recent paper by Kis-Katos, Liebert and Schulze (2011). However, they dichotomized between domestic and transnational incidents from the Global Terrorism Database (GTD), by first assigning every known terror group an origin nationality or base country, regardless of the nationality of the perpetrator. So, if one group committed a terrorist act outside its base country, it was counted as a transnational act. In addition, and more importantly, where the perpetrators remained unknown, they assumed it was a domestic incident. This involved over 32,000 terrorist incidents, which may have led to biased results.

This thesis uses the newly presented data from Enders, Sandler, and Gaibulloev (2011). In this data the 'unknown' events are separated from the domestic and the transnational events, leading to a more solid framework. In addition, the GTD data are calibrated with the ITERATE material which adds further strength to the empirical findings. This calibration method is unique and has never been done before (Enders, et al., 2011). Finally, I utilize zero-inflated negative binomial regression in this thesis instead of regular negative binomial regression. This may in a better degree account for excessive zeros in the data material. This makes this thesis a pioneering and important contribution to the field of terrorism research.

To best answer the two presented research questions, I have structured this thesis as follows: In chapter 2 I present definitions and theoretical perspectives on the phenomenon of terrorism. Although widely studied and discussed, the field has not managed to generate a commonly accepted definition (Badey, 1998). It is therefore important to discuss the different aspects of a good definition of terrorism. In addition, since this thesis is heavily based on the inclusion criteria set by the GTD, a discussion around these is central. Further, since this thesis is based around the differences between domestic and transnational terrorism, these will be addressed. Generally speaking, in a domestic terrorist event there are only actors from one state, while in transnational terrorism there are individuals from two or more states involved, either as a perpetrator or a civilian. Lastly, this chapter will include a brief discussion of other forms of political violence, and how terrorism finds its place among these.

Chapter 3 contains the theoretical framework of this thesis. The theoretical framework is based around established thoughts preconditions from collective political violence and conflict theory namely: *identity, frustration,* and *opportunity* (Ellingsen, 2000). Frustration and opportunity have been adapted the field of terrorism research by several scientists (i.e.:Caplan, 2006; Crenshaw, 1998; Ross, 1993; A. Schmid & Jongman, 1988).[1] Identity have been used in terrorism research by, among others, Schwartz, Dunkel, and Waterman (2009), where the perceived 'in-group-out-group' cleavage is central.

In chapter 4 investigates the societal root causes of terrorism. While the preconditions for collective action and political violence explains the framework in which terrorism occurs, this chapter will investigate the root societal settings that are believed to cause terrorism. This will be heavily based on the argued economic, political, and socio-cultural causes on Krieger and Meierrieks' (2011) overview over the determinants of terrorism in their article *What Causes Terrorism?*. This chapter will also draw the different causal mechanisms from the theoretical framework to the different societal factors – creating different hypotheses between domestic and transnational terrorism.

[1] Collier and Hoeffler (2004) and Collier, Hoeffler and Rohner (2009) have in recent studies contrasted these approaches, labeling them 'grievance' (frustration) and 'greed' or 'feasibility' (opportunity or rational actor).

Chapter 5 discusses this thesis' research design, the data, and the operationalization of the dependent and independent variables. Since one of the aims of this thesis is to map out the root causes of terrorism, I only include two control variables. I argue that this is adequate to measure the explanatory power of the independent variables. Finally, this chapter presents the two statistical methods used in the empirical analysis, namely: zero-inflated binomial regression to measure the discrete count variables, and regular logistic regression to measure the dichotomous variables.

Chapter 6 will perform the empirical analysis. To test the argued hypotheses, two sets of analysis are run. First, domestic terrorism is addressed. Here, a zero-inflated negative binomial regression model (ZINB) is run to test whether or not the different independent variables influence the rate of the domestic events, then to test if these variables influences the probability of domestic terrorism, a logistic analysis. Secondly, this process will be repeated with transnational terrorism as the dependent variable.

In the end, in chapter 7, the main findings and concluding remarks of this thesis will be discussed. Here, it will be argued that the societal factors that explain domestic terrorism are quite similar to the one that explains transnational terrorism. The causal mechanisms are, however, different. There seems to be more explanations leading to domestic terrorism than transnational terrorism. One of the reasons for this may be that the research on terrorism has in a larger degree explained domestic terrorism, while tested for transnational terrorism. In addition, it seems that being attacked by transnational terrorism is much more connected to proxies of opportunity. As I suggest, this may simply be because transnational terrorism demands more resources and support to carry out than domestic terrorism. For instance, this thesis suggests that a countries regime type influences the rate and probability of both domestic and transnational terrorism. For domestic terrorism, a lack of democratic freedom such as the opportunity of political participation may generate frustration and thus aggression. For transnational terrorism, a higher rate of democracy may be associated with a larger degree of media exposure form a free press and thus be explained by the theory of opportunity. The explanation, as to why there are fewer causal mechanisms leading to transnational terrorism, can also be that these studies relies in a larger degree on a dyadic research design.

2 What is Terrorism?

This chapter reviews the debate surrounding the definition of terrorism. First, it addresses the debate concerning the definition of the overall phenomenon of terrorism and how the inclusion criteria set by the Global Terrorism Database fits into this. Then, it discusses the differences and similarities of domestic and transnational terrorism. Finally, it explains what terrorism is not, and how this phenomenon separates itself from other forms of political violence.

2.1 Defining Terrorism

> *Terrorism is a dangerous ground for simplificateurs and generalisateurs. To approach it, a cool head is probably more essential than any other intellectual quality.*
>
> *(Walter Laqueur as quoted in: Kegley, 1990, p. 1)*

Terrorism' may be the most important word in today's political vocabulary. Still, since the 1970's, and especially after the attacks on the Israeli athletes by the Palestinian Black September organization during the 1972 Munich Olympics, the attempts to define terrorism have been continuous (Crenshaw, 2007, p. 68). The discord among both politicians and scientists has even led to some voicing that a definition of terrorism can never be agreed upon (Ganor, 2002). Indeed, "one person's terrorist is another person's freedom fighter" (Walter Laqueur as quoted in Primoratz, 2004, p. xi). However, fighting a 'beast' based on a subjective outlook of the warrior is difficult. An objective and collective understanding of *what terrorism is* and *who the terrorists are*, based upon agreed international laws and criteria's are therefore essential if we are to effectively deal with the problem. As some has indicated, an accepted definition may be quintessential in the battle against terrorism. The United Nations High-Level Panel on Threats, Challenges and Change notes in that regard that:

> *[T]he United Nations has not made the best use of its assets in the fight against terrorism. As the Panel rightly advocates, the United Nations must be able to articulate an effective and principled counter-terrorism strategy that is respectful of the rule of law and the universal observance of human rights. One of the obstacles hitherto (…) has been the inability of the membership to agree on a definition of terrorism.*

(UnitedNations, 2004)

What further intensifies the definitional problem of terrorism is the different "arenas of discourse" including the "academic arena; the states' statements; the public debate; and, finally, by those who benefit from different acts of violence and terrorism" (L. Weinberg, Pedahzur, & Hirsch-Hoeffler, 2004). Here, the academics may develop 'maximalist' definitions which included "too many attributes", while states may develop 'minimalist definitions' which excludes theoretically relevant attributes (Munck & Verkuilen, 2002).

An example of a maximalist academic definition of terrorism is the one made by Schmid and Jongman (1988, p. 28). Schmid and Jongman sought to develop an all-embracing definition of terrorism consisting of as many terrorism-related elements as possible. In correspondence with several scholars they extracted twenty two different elements from 109 definitions. They then formulated a definition of terrorism which consists of sixteen of these twenty two elements.

> *Terrorism is an anxiety-inspiring method of repeated violent action, employed by (semi-)clandestine individual, group, or state actors, for idiosyncratic, criminal, or political reasons, whereby – in contrast to assassination – the direct targets of violence are not the main targets. The immediate human victims of violence are generally choses randomly (targets of opportunity) or selectively (representative or symbolic targets) from a target population, and serve as message generators. Threat- and violence-based communication processes between terrorist (organization), (imperiled) victims, and main targets are used to manipulate the main target (audience(s)), turning it into a target of terror, a target of demands, or a target of attention, depending on whether intimidation, coercion, or propaganda is primarily sought.*
>
> *(A. Schmid & Jongman, 1988, p. 28)*

It has, however, been criticized by being 'over-specified' and 'complicated' (Badey, 1998), and thus maximalist.

On the other hand, a definition may be too minimalist. The widely used definition made by the U.S. State Department states that:

> *The term "terrorism" means premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents.*
>
> *(U.S. State Department, 2012)*

What makes this definition too minimalist is, for instance, that they only define terrorism as violence, and not the threat of violence. A good definition, therefore, is found between the maximalist and the minimalist definitions.

A basic, but still comprehensive, definition is presented by Louise Richardson (2006) in her book *What Terrorists Want*. She chooses to define terrorism along seven factors that any act must have in order to attract that label. These factors or characteristics are as follows:

Table 1: Seven characteristics of terrorism

1. Politically inspired
2. Violent or threatens violence
3. Communicates a message
4. Act and victim symbolically significant
5. Carried out by sub-state groups
6. Victim is different from audience
7. Deliberated targeting of civiliance

First, by claiming that a terrorist act needs to be 'politically inspired', Richardson concur with a widespread assumption in the scientific tradition (A. P. Schmid, 2011, p. 77). This tradition includes the before-mentioned definition by Schmid and Jongman. Such political inspirations may, for instance, be to change the regime, changing the people in power or changing social or economic policies. Ganor (2002) claims that an violent act against civilians that lacks a political agenda is, at most, "an act of criminal delinquency" unrelated to terrorism. Even though this is an important aspect which needs to be addressed in the context of the definitional debate surrounding the term 'terrorism', it is not in the case of this thesis. As stated by Duvall and Stohl:

> *Motives are entirely irrelevant to the concept of political terrorism. Most analysts fail to recognize this and, hence, tend to discuss certain motives as logical or*

> *necessary aspects of terrorism. But they are not. At best, they are empirical regularities associated with terrorism. More often they simply confuse analysis.*
>
> *(As quoted in Ganor, 2002)*

The second characteristic that, according to Richardson, needs to be included in a definition of terrorism is violence or the threat of violence. One very interesting aspect that presents itself is that terrorism is also the 'threat of violence'. This, for instance, is not included in the definition by the U.S. State Department. As Schmid (2011, p. 79) points out, "[a] feeling of threat is usually created by one or several acts of violence". Still, it is in the nature of terrorism that the terrorist play with the threat of future violence as a bargaining tool for reaching their goal.

By utilizing terrorism, the terrorists seek publicity. They want to communicate a message to an audience. According to Richardson "the point of terrorism is not to defeat the enemy but to send a message" (2006, p. 4). An ongoing debate is whether terrorists seek the mass media because they depend on it, as a result of their mode of action. Others stress the cynicism and professionalism of the terrorists and the way they actively use and manipulate the media (Gerrits, 1992). For instance, this professionalism became clearly visible during the aftermath of 9/11. From professional edited film footage shown all over the word, Osama Bin Laden conveyed his messages. Distinctly illustrated by a former terrorist from Red Army Faction in Germany, terrorist groups are very aware of their relation with the mass media:

> *We give the media what they need: newsworthy events. They cover us; explain our causes and this, unknowingly, legitimates us. You must understand: the media are very interested in our actions. They look for contacts with us, they try to get information from us and they are eager to report everything we do and say. Take for example the news agencies—within half an hour after calling them and briefing them, which we did quite often, you are in the headlines all over the world. All you need is one phone call, a threat or a declaration. Those [terrorist organizations] I know managed to establish contact and close contact with selected journalists. And the activity is often planned with the media as central factor. Some actions are planned for the media.*

(A. P. Schmid, 2005)

The fourth characteristic presented by Richardson (2006) is the symbolism of the act and victims. Thornton held as early as in 1964 terrorism as "a symbolic act" (as quoted in Hutchinson, 1972). A symbol is something that stands for something else. In the case of terrorism, the victims often represent an idea, ideology, political point of view or a religious belief. Attacking members of the major political party in a state, like Ander Behring Breivik attacked the Workers Youth League (AUF) in 2011, or an attack on important landmarks, like 9/11 in 2001, have for the perpetrators symbolic value. Bin Laden even referred to the Twin Towers as "icons of America's military and economic power" (Richardson, 2006, p. 5). However, Schmid and Jongman (1988) claim in their definition that the victims may also be chosen randomly, in that they are "targets of opportunity" as opposed to "representative or symbolic actors".

Another characteristic set by Richardson (2006) is that a terrorist incident is perpetrated by sub-state of sub-national actors. Since any deliberate attack on civilians by military forces is, according to international law, considered a war crime; it is superfluous to label attacks made by a sovereign state 'terrorism'. This includes states that supports, initiates, or perpetrates terrorism (Ganor, 2002). Given the point taken from Ganor (2002), a sovereign states' involvement with terrorism, is in fact an act of warfare and can thus not be labeled in terms of the definition of terrorism. This is an interesting aspect of the definitional debate surrounding terrorism, and illustrates a conflict between two definitional arenas (academic versus state) of terrorism. The US State Department's definition (as noted above) holds that "terrorism is the purview of non-state actors" (A. P. Schmid, 2011, p. 48). This conflicts with, for instance, Schmid and Jongman's definition which holds that terrorism may be employed or sponsored by state actors. Indeed, a definition articulated like the one by the US State Department "absolves states of any responsibility for their role in terrorist developments within their borders and beyond" (A. P. Schmid, 2011, p. 48). We know however, that states sponsor and use terrorism as a strategy, such as in Iran, Iraq, Syria, and Libya (Richardson, 2006, p. 5).

The sixth characteristic of terrorism labeled by Richardson (2006) is in a certain degree similar to the third point in table 1. In that the victims of an terrorist act, is different from the audience, hence the "direct victims are not the ultimate target" (A. P. Schmid,

2011). This characteristic is also included in the definition by Schmid and Jongman (1988). Thus, the specific identity of the target is usually of no interest to the terrorist, as in contrast to the symbolic value mentioned above. The victim is merely a strategic tool the terrorists use to communicate a message to the main target. "[T]he skin on a drum beaten to achieve a calculated impact on a wider audience" (A. P. Schmid & Graaf, 1982, p. 14).

These victims need to be non-combatants or civilians if the act is to be labeled terrorism, according to Richardson (2006) in point 7, table 1. This is in line with the U.S. State Departments definition noted above. Thus, if the perpetrators only targeted military personnel, armed police, or other non-civilians, it would not be considered terrorism. In addition, if civilians are killed as merely collateral damage by mistake, or not deliberately, it is not view as a terrorist act (A. P. Schmid, 2011, p. 84). That being said, terrorists often do not make a distinction between 'lawful' combatants and innocent non-combatants. Bin Laden claimed that,

> *[t]he ruling to kill the Americans and their allies – civilians and military – is an individual duty for every Muslim who can do it in any country in which it is possible to do it.*
>
> *(as quoted in Garrison, 2004).*

What marks the terrorists is that they may deliberately use civilians because of their innocence, or they do not care whether the victims are civilians or not. As both, the former and the following quote by Bin Laden illustrates:

> *We do not have to differentiate between military or civilian. As far as we are concerned, they [Americans] are all targets.*
>
> *(as quoted in A. P. Schmid, 2011, p. 81).*

2.2 The GTD Inclusion Criteria

Since this thesis is heavily based on the inclusion criteria of terrorism set by the GTD, it is important to debate these. In order for an incident to be included in the GTD *all of the three* following criteria needs to be present (START, 2011):

- **The incident must be intentional –** the result of a conscious calculation on the part of a perpetrator.
- **The incident must entail some level of violence or threat of violence –** including property violence as well as violence against people.
- **The perpetrators of the incidents must be sub-national actors.** This database does not include acts of state terrorism.

The first criteria filters out incidents that are suspected to be a randomly act of violence or an accident. The second criteria covers the elements in both the definitions made by Schmid and Jongman (1988) and Richardson (2006), in that an act of terrorism is not only an act of violence, but also the threat of violence. The third criteria address' the interesting discussion on whether or not it is terrorism, if the act is performed by states. In this case the GTD does not include acts of state terrorism, however it does include *state-sponsored* terrorism (Enders, et al., 2011). Thus, the inclusion criteria is more in concordance with the characteristics set by Richardson (2006) than by Schmid and Jongman (1988), as the latter suggest that terrorism may also be performed by state actors.

In addition, *at least two* of the following three criteria must be present for an incident to be included in the GTD:

> ***Criterion 1:*** **The act must be aimed at attaining a political, economic, religious or social goal.** In terms of economic goal, the exclusive pursuit of profit does not satisfy this criterion. It must involve the pursuit of more profound, systemic economic change.
>
> ***Criterion 2:*** **There must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims.** It is the act taken as a totality that is considered, irrespective if every individual involved in carrying out the act was aware of this intention. As long as any of the planners or decision-makers behind the attack intended to coerce, intimidate or publicize, the intentionality criterion is met.

Criterion 3: **The action must be outside the context of legitimate warfare activities.** That is, the act must be outside the parameters permitted by international humanitarian law (particularly the prohibition against deliberately targeting civilians or non-combatants).

Criterion 1 focuses on the agenda set by the terrorists. What are their aims? One of the characteristics set by Richardson (2006) is that a terrorist act needs to be politically inspired. The GTD broadens this element and adds economic, social and religious goals alongside the political motives. The second criterion focuses on the communicative element of the terrorist act. The fact that the act in itself is only performed to send a message to a larger audience separates the immediate victims from the main target. Thus this criterion meets the characteristics set by both Richardson (2006), and Schmid and Jongman (1988). With criterion 3 in mind, the GTD separates an act of terrorism with legitimate warfare. One of the key statements set by the Geneva Academy of International Humanitarian Law and Human Rights is the "principle of distinction". This principle obliges all parties in a conflict to "target only military objects and not civilian population or individual civilians or civilian objects" (Maslen, 2013). Thus, an act of terrorism cannot be an act of legitimate warfare per definition.

The GTD inclusion criteria cover in a large degree the characteristics set by Richardson (2006), and the most important elements set by Schmid and Jongman (1988) (i.e.: Violence; Political; Threat etc.). The next section seeks to try and differentiate between the two types of terrorism which are in question in this thesis.

2.3 Types of Terrorism

The main pillar of this thesis is the distinction between domestic and transnational terrorism. It is therefore of high importance to differentiate between these two forms.

2.3.1 Domestic Terrorism

According to Enders, Sandler and Gaibulloev (2011) a terrorist incident is domestic if the perpetrators and the target are from, and in, the same country. Thus it has only consequences for the host country, and its institutions, people, property, and policies. In addition, there is no foreign sponsorship or involvement in a domestic terrorist event (Sandler, Acre, & Enders, 2008). For instance, the large amount of suicide bombings that took place during the Second Intifada in Israel was domestic terrorist incidents (Enders,

et al., 2011). Likewise, the bombing of the Alfred P. Murrah Building in Oklahoma City in April 1995 by Timothy McVeigh, was clearly a domestic incident, since only U.S. citizens where involved, both the perpetrator and the victims (Sandler, et al., 2008).

As a contrast to this definition stands the ones used by Engene (2007) in the TWEED dataset, and de la Calle and Sánchez-Cuenca (2011) in the DTV dataset. Here, domestic terrorism is defined solely in terms of the nationality of the acting group, thus the nationality of the victims are irrelevant (Engene, 2007). Engene argues that

> *…though many acts of terrorism are consciously aimed at people of a nationality different from that of the perpetrator, by their randomness, acts of terrorism may also unintentionally or accidentally kill or injure people of the terrorist's own nationality.*
>
> *(Engene, 2007)*

Surely, an act of terrorism that is aimed at victims from the same state as the perpetrators may, owing to random factors, become transnational (e.g. if a foreigner is accidentally near the blast from a car bomb). The terrorists, however, usually plan their attacks carefully, so there is little grounds for anticipating this occurrence to be frequent or non-random (Enders, et al., 2011).

2.3.2 Transnational Terrorism

Since this thesis is based on the distinction embedded by Enders, Sandler and Gaibulloev (2011), it is only natural to use their definition of 'transnational terrorism' as a point of departure. According to them a terrorist incident is transnational if:

- *Through its victims, targets, supporters, or perpetrators, an incident concerns more than a single country*.
- The nationality of the perpetrators differs from that of one or more of the victims.
- The nationality of a victim differs from the venue country.
- Terrorists transit an international border to perpetrate their attack.
- Terrorist attacks against foreign diplomats.
- It is a terrorist event that commences in one country but ends in another. For instance, if a midair hijacking of a plane that leaves Athens bound for Cairo and is made to fly to Algiers.

- A terrorist attack targets an international organization or international peacekeepers.

In addition, if there is a terrorist act perpetrated against foreign buildings or property inside the country of the perpetrator, it is still a transnational terrorist incident. For instance, when the American Embassy was bombed in 1983 by a local terror group, the origin country was Lebanon, but the target was the U.S., even though the event occurred in Lebanon (Young & Findley, 2011).

Thus, transnational terrorist are not linked to a specific country or state, like national actors are (Hough, 2007). These groups usually maintain organizational structures or carry out violent activities in more than one country or, in a certain way, larger territories in which they are not a subject to any jurisdiction (Reinares, 2005).

Like many other terms and concepts floating around in the sphere of political science, the distinction between transnational terrorism and international terrorism are blurry and often used interchangeably. However, transnational terrorism is not the same as international terrorism (Hough, 2007; Reinares, 2005)! And since this thesis is heavily based on the former, it is important to draw the distinction. That being said, an act of *transnational terrorism* is an act of *international terrorism*, but, an act of *international terrorism* may not be an act of transnational (Reinares, 2005). What separates these two types is the scale of the terrorists' aim (Marsden & Schmid, 2011, p. 184). According to Reinares (2005) international terrorism encapsulate to aims: First, it is deliberately aimed at affecting the structure and distribution of power on entire regions of the world, and even "the level of global society itself". Second, the terrorists and their victims are located to a significant number of states, nationalities and regions. Thus, where the aim of transnational terrorism is to impact only a small number of states, the aim of international terrorism is more encompassing.

In any case, the differentiation between transnational and international terrorism is solely for the theoretical mind. It makes, therefore, little difference in this analysis since the GTD inclusion criteria states that an incident is transnational if 'two or more countries are involved'. Paul Wilkinson wrote as early as in 1977 that the "definitional debate has become somewhat confused in recent years by the introduction of the term 'transnational' terrorism" (1977, p. 174), and argued that the term 'international

terrorism' was adequate in explaining this phenomenon. This argument has also been put forward in recent years by Badey (1998), who claim that the term 'transnational' "have little or no popular resonance and in most cases have meaning to only an anointed few".

To summarize, a terrorist incident is domestic if both the terrorists and the victims are in, and from, the same country. In which only one state is involved. In contrast, it is a transnational incident if there are two or more countries involved. For instance, in 1975 the American CIA officer Richard Welch was killed in Greece by the Greek Revolutionary Organization. Ten years later, the same terrorist organization killed Nikos Monferatos, who was Greek. Both incidences were carried out in Greece, however the first one is considered transnational, while the latter domestic (Sánchez-Cuenca & Calle, 2009). Moreover, in 2002 there was a hostage seizure at the Moscow Theater by Chechen rebels. This was an act of transnational terrorism since the hostages included about 75 foreigners from Australia, Austria, France, Germany, and elsewhere (Sandler, et al., 2008).

2.4 Terrorism as a Form of Political Violence

According to Marsden and Schmid, "political violence is a heterogeneous term covering a wide variety of phenomena" (2011, p. 160). Types of political action may for instance include, along with terrorism: civil war; guerrilla warfare; revolution; and war. This point, therefore, to the difficult task of distinguishing terrorism from other types of political violence. Enders and Sandler argue that:

> *In its classic sense, war targets combatants with weapons that are highly discriminating in order to limit collateral damage on civilians. Unlike war, terrorism targets noncombatants in a relatively indiscriminate manner.*
>
> *(2006, p. 6)*

Thus, what distinguishes terrorism from other types of political violence is targeting of noncombatants and civilians. However, guerrillas may also occasionally target civilians, and terrorist may also target military personnel and objects. Richardson argues in that regard that the difference lie in the tactic of *deliberately* targeting civilians:

> *[I]f the primary tactic of an organization is deliberately to target civilians, it deserves to be called a terrorist group, irrespective of the political context in which it operates or the legitimacy of the goals it seeks to achieve.*
>
> *(2006, p. 4)*

Terrorism then becomes a distinct form of violent action, as opposed to a tactic used in a wider context of political violence. For instance as a strategy used in a civil war (Sambanis, 2008). Yet, in certain cases it is difficult to distinguish terrorism as a separate violent action from a civil war. As noted by Sambanis (2008), a civil war may start "slow" with some guerrilla activist targeting both state personal and civilians associated with the regime. In addition, the regimes may describe certain acts of guerilla warfare as terrorism in an effort to downplay the political opposition they face. This gives scientists a great challenge when collecting empirical data, as they have to distinguish act of terrorism in the context of other types of political violence. As McAllister and Schmid puts it: "the terrorist 'trees' tend to be overlooked in the 'forest' (and fog) of war" (2011, p. 211).

Bjørgo argues that terrorism in most cases is an "extension and radicalization of various types of conflicts" (2005b, p. 4). And argue that they originate from the same root causes. This suggests that there might be the same underlying causes of terrorism and other forms of political violence. This thought is shared by Lia who suggests that "terrorism and armed conflicts are closely linked and the causalities explaining variations in civil wars may also help us in understanding the causes of terrorism" (2005, p. 12).

In the light of these arguments, the next chapter discusses theories of political action, and show how they can relate to the phenomenon of terrorism.

3 Theories of Collective Political Violence

Terrorism is in some events performed by individuals acting alone. The majority, however, are violent political acts performed by groups or organizations (Ross, 1996). For this reason terrorism may be labeled as a form of collective. This is also claimed by Thomson (1989), who sees a terrorist movement as a "collectivity that seeks change by a particular strategy – namely, terrorism".

According to Ellingsen (2000) for a group to mobilize to collective or political violence, three factors have to be present: a common *identity*, a feeling of *frustration* and finally a window of *opportunity*. This argument is based on the old debate between Gurr (1970) and Tilly (1978), where Gurr in his famous book *Why Men Rebel* argues that political violence comes as a result of frustration or relative deprivation. Tilly on the other hand, in his book *From Mobilization to Revolution* stresses the importance of an opportunity for mobilization as key to understand when political violence takes place. Gurr (2000) in his later works also emphasizes the importance of a common identity.

The phenomenon of political violence, and hence terrorism, have been explained by group *identity,* minority *frustration* and *opportunity* (Ellingsen, 2000). These concepts will function as the theoretical backbone of this thesis.[2] Later, in the next chapter, a focus on the causal mechanisms between these concepts and the societal explanations of terrorism will be addressed.

3.1 Identity

Collective action consists of people mobilizing and acting together in the pursuit of a common interest or goal (Tilly, 1978, p. 7). Tilly (1978), suggests that for a group to mobilize, it first needs a common identity: a self-understanding that defines one's place in the world (Erikson, 1980, p. 22; Schwartz, Montgomery, & Briones, 2006). Everyone identifies with something, be it on a cultural, social, or individual level, where ethnic, religious and linguistic traits becomes important (Schwartz, et al., 2009). However, this 'group identity' is not only formed by traits we have in common with others, but also by what separates us from other groups (Eriksen, 1995), creating 'social categorization'

[2] The old debate between Gurr and Tilly resemble to a large extent the more recent debate within the civil war literature concerning greed versus grievance associated with Collier and Hoeffler (2004). This will be addressed later in the thesis.

(Hogg & Abrams, 1999, p. 11; Sen, 2006, p. 19). Tajfel (1974), claims that this creates social 'in-groups' and 'out-groups' that may, if a group is clearly distinct from another group, create dislike or hate towards the opposite group.

Thus, the aspect of identity may be relevant explanations for both domestic terrorism and transnational. Ellingsen (2000) argues that if the identity fails to coincide with territorial border, a conflict may arise within a nation-state, since linguistic, ethnic, and religious factors seem more important that territorial boundaries. This thought resonates Huntington who argued that the fault lines between civilizations will be the dominating battle lines, and not the lines between nation-states (1993). Moreover, if a minority group is being discriminated against based on their ethnic identity, it may, according to Gurr (2000, p. 66) lead to political action. A dichotomous 'us-versus-them' thinking may especially become severe in matters of a cultural or religious absolutism that, for instance, advocates 'a one true faith', as opposed to the 'evil infidels' (Howard-Hassmann, 1993; Schwartz, et al., 2009).

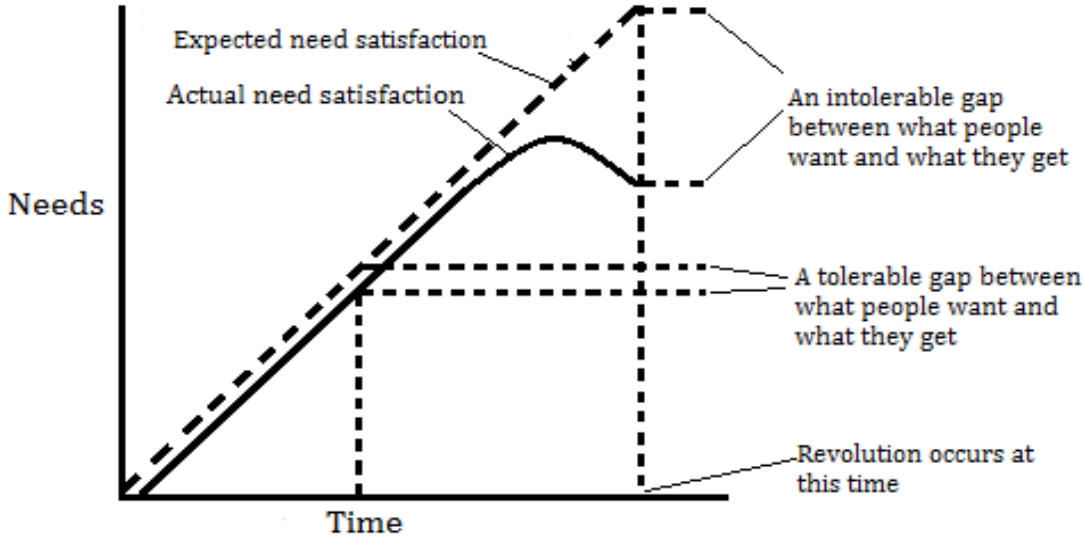
3.2 Relative Deprivation and Frustration

That frustration leads to aggression provides an explanation for why collective incentives can mount to violence, and thus terrorism (Davies, 1969; Gurr, 1970; Wilkinson, 1977). John Dollard and his associates claimed in 1939 to have proven that humans only become violent if they are frustrated in their efforts to attain a particular goal; frustration always leads to some form of aggression (Dollard, Miller, Doob, Mowrer, & Sears, 1939; Wilkinson, 1977, p. 35). This theory of frustration-aggression, or relative deprivation, was later applied by Gurr (1970) and Davies (1969) to political conflict.[3]

Davies rested on the notions of both de Tocqueville – that revolutions may arise when a regime becomes an improvement of its immediate predecessor, and Marx, – that a revolution may be more likely to occur when there has been a social and economic regress (Davies, 1969). Davies claimed that both ideas had explanatory and predictive value if they are put in the proper time sequence, de Tocqueville before Marx. And thus he presented the J-Curve:

[3] The term 'relative deprivation' was first applied by Stouffer et al. (1949).

Figure 1: Davies' J-Curve



(Based on Davies, 1969)

According to him, revolutions are more likely to occur when a prolonged period of economic and social development is followed by a short period of sharp reversal (Davies, 1969). Thus it becomes a discrepancy between people's expected values and what they actually get, leading to frustration. Gurr (1970), who further developed the theory of relative deprivation as a fundamental and necessary prerequisite for armed intrastate conflict, held alongside Davies, that political action may develop if there is an perception of discrepancy between values that individuals believe they are rightfully entitled to and the values they think they are capable of getting and keeping (1970, p. 24).

Since aggression arises by a blockage of an individual's or group's goal attainment, terrorism may be a response to the lack of alternative modes of political expression (McAllister & Schmid, 2011, p. 215). The question that arises, however, is why do some, in this state of frustration, turn to terrorism, while others do not? The suggested answer is presumed to be individual differences (Horgan, 2003, p. 11). In his article *The Staircase to Terrorism*, Fathali M. Moghaddam (2005) illustrates an understanding of the process in which an individual becomes a terrorist. He uses the metaphor of…

> *…a narrowing staircase leading to the terrorist act at the top of a building. The staircase leads to higher and higher floors, and whether someone remains on a particular floor depends on the doors and spaces that person imagines to be open to her or him on that floor.*

While on the "ground floor" relative deprivation and frustration dominate, some individuals will climb to the first floor in a search for improving their situation and seeking justice. If they are unable to adequately amend their situations, they are likely to continue to a higher floor. This search may eventually, according to Moghaddam (2005) , lead the individual to a terrorist organization, where their aggression is aimed against a more specific enemy. According to Atran (2004), radical organization may exploit the frustration that are generated when "converging political, economic, and social trends produce diminishing opportunities relative to expectations".

3.3 Opportunity and Rational Choice

Although Gurr argues that human frustration is a primary source for violence, he concedes that frustration alone is not a sufficient predictor (he even suggests that some men are motivated by greed) (Gurr, 1970, p. 36). Indeed, many people live their lives exposed to the worlds frustrating hardships, still very few of them actually become terrorists (Kruglanski & Fishman, 2006).

Charles Tilly argues in *From Mobilization to Revolution* that a group will act on their interests if, for one, they have the opportunity to do so; second, if the groups organizational structure allows it; and third, if they have a collective control over the resources needed for action (Tilly, 1978). Thus, the interest of the group becomes a calculation of shared advantages or disadvantages that are likely to result from possible interactions with other groups. The strength and weakness of the groups comprise therefore the opportunities to act on its interests (Tilly, 1978, p. 98). This line of thought has in recent years been carried on by, among others, Sidney Tarrow who claims that "people join in social movements in response to political opportunities and then, through collective action, create new ones" (Tarrow, 1994).

The theory of rational choice argues that the individual is always rational in every aspect of its decision-making process, or explores what would be the political outcome of rational behavior (Muller & Opp, 1986). Thus, the individual will compare the gains and

losses of participating, for instance in an act of terrorism, with those of inactivity. However, since a successful rebellion, riot or terrorist act, in most cases, will benefit all supporters of the dissident group's goal, regardless of their own participation, the rational thing to do would be not to participate (Crenshaw, 1998, p. 8). So, why would a rational person become a terrorist? Although, there are several psychological explanations to this paradox (e.g.: Crenshaw, 1998), Edward N. Muller and Karl-Dieter Opp proposes an strategic answer. According to them the "average citizens may adopt a collectivist conception of rationality because they recognize that what is individually rational is collectively irrational" (1986). Therefore, the citizens acknowledge that it is *collectively* rational to participate, although is not *individualistically* rational – where suicide terrorism is the most extreme case in that regard (Pape, 2003).

The debate between the theory of relative deprivation and the theory of opportunity resemble to a large extent the more recent debate concerning greed versus grievance associated with Collier and Hoeffler (2004). According to them rebellion either occurs when grievances are so acute that individuals engage in violent protest, or when profitable opportunities is being given to them. Thus, the latter is not necessarily explained by motive, "but by the atypical circumstances that generate profitable opportunities" (Collier & Hoeffler, 2004).

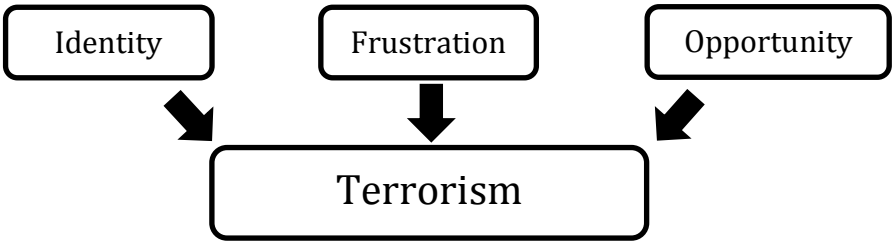
3.4 Summing Up the Theoretical Explanations

As discussed above, identity, frustration and opportunity may lead to collective violence, and thus terrorism. In figure 3, I have showed this schematically. As argued by Tilly (1978) a group needs a common identity if it are to collectively mobilize. First, the identity aspect may further create 'social categorization' with social 'in-groups' and perceived antagonistic 'out-groups', thus the arrow from identity to terrorism. Second, Gurr (1970) argues that if it becomes a discrepancy between people's expected values and what they actually get, it may lead to frustration and, in turn, aggression. This explains the arrow from frustration to terrorism. Third, in his book *From Mobilization to Revolution,* Tilly (1978) argues that a group will act on their interests if they have the opportunity to do so. Thus the arrow from opportunity to terrorism is drawn.

Although these theories are looked on as separate explanations, they might influence and reinforce each other in a more or less degree. For instance, frustration may make the social categorization of identity more salient. Moreover, frustration may also

influence the cost-benefit calculus of opportunity, making individuals think they have 'nothing to lose'.[4]

Figure 2: Explanations of Terrorism



The next chapter combines the theories that have been used to explain terrorism. Even though these theories serves as explanations as to why certain individuals turn to political violence, and thus terrorism, it might be differences in the causal mechanisms to domestic terrorism and transnational terrorism. For instance, the level of democracy in a country could matter to both domestic and transnational terrorism. For domestic terrorism, a lack of democratic freedom could create frustration since individuals are not able to express their opinions. For transnational terrorism, a country's regime type could also matter, but the causal mechanisms might be different. Here, a higher level of democracy might create better opportunities to gain media coverage and exposure for their cause. Thus, identity, frustration, and opportunity, may be influenced to cause terrorism in different ways by the same societal factor.

[4] These relationships will not explicitly be tested in this thesis.

4 The Root Causes of Terrorism and Hypotheses

Having presented the conceptual framework for understanding how collective violence and thus terrorism occurs, the next task is to identify factors that might influence the three core concepts – identity, frustration and opportunity. Thus, this chapter will first present a discussion on analyzing terrorism on the societal level as opposed to individual and group level. Then, it will explain how different societal factors can relate to the theoretical framework laid out earlier. The factors will be divided into economic, political, and socio-cultural determinants, and explain how these can relate to either domestic or transnational terrorism. It will show that these factors may influence a felt common identity, create frustration, and create a window of opportunity for the individuals.

4.1 Analyzing Terrorism on the Societal Level

The theme of conflict and violence is, according to Anatol Rapoport, "a theme that has occupied the thinking of man more than any other, save only God and love" (as quoted in Gurr, 1980, p. 4). From different view-points and scientific branches, researchers have tried to analyze and understand why individuals, groups and states turn to conflict and political violence. Thus, the explanations that have been given as to why political violence occurs may be analyzed on different levels. The level of choice, however, is mainly driven by what answers one might seek.

No matter which environment individuals live under, very few become terrorists. Thus, every analytical aspect on every level is important in understanding terrorism. On the first level, the individual is analyzed. Here, psychological attributes of individuals are often used to explain why certain individuals turn to political violence. Do individuals who perform or participate in political violence have certain identities, traits, and perceptions? This psychological perspective may also be adapted to analyzing terrorism (see Post, 1998). One may ask why some becomes terrorists, or, do terrorists have certain attributes (Engene, 1994, p. 46)? The second level is focused on the group in which the individuals inhabit. Here, the main analytical object is the organization, growth, actions, and fate of political and socioeconomic groups (Gurr, 1980, p. 8). As with the first level, group level researchers utilizes terms and theory from psychology (Lia & Skjølberg, 2004). In relation to terrorism, the research questions often dwell

around internal processes within the group. How are they structured, how does the leadership work, and how does the group survive (Engene, 1994, p. 47)?

The third level, and the one in question in this thesis, is the societal, or the environmental, level. On this level, scientists seek to explain political violence along historical, cultural and socio-political characteristics of the larger society (Lia & Skjølberg, 2004). Thus, the state, in which inhabits groups and individuals, becomes the central or defining element (Gurr, 1980, p. 8). Here, it is focused on the broader context of the terrorist, and the contextual or underlying root causes of terrorism (Engene, 1994, pp. 46-47). In regard to this thesis however, the two first levels are in a large degree dependent on psychological perspectives based on tests and interviews of former terrorists. In the political science school however, it is more common to attack the phenomenon from the societal or environmental angle. Crenshaw argues:

> *A comprehensive explanation, however, must also take into account the environment in which terrorism occurs and address the question of whether broad political, social, and economic conditions make terrorism more likely in some contexts than others.*
>
> *(Crenshaw, 1981)*

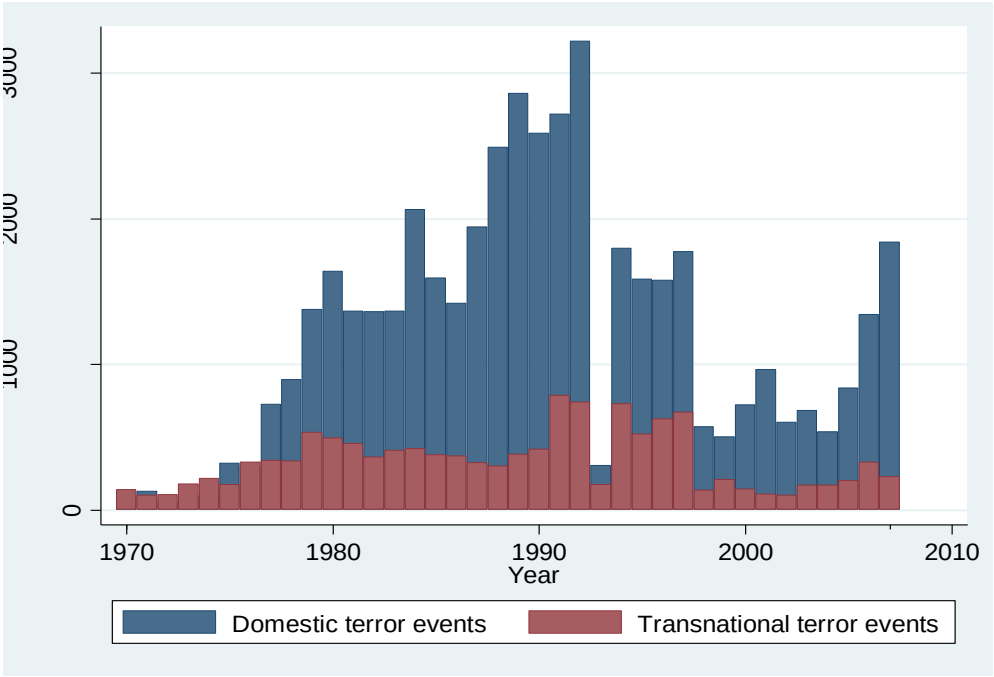
On the societal level it is common to separate between factors at the *economic*, *political* and *socio-cultural level*, where certain characteristics may lead to or prevent terrorism (Eyerman, 1998). The societal level may be a difficult level to analyze, since we here cannot account for certain triggering incidents or motivations that are held by different groups, organizations, and individuals. Thus, the aim an empirical analysis on the societal level, is to make probable why certain, for instance, country characteristics may relate to group or individual action (Engene, 1994, p. 47).

4.2 Domestic Terrorism and Transnational Terrorism

As noted in the introduction of this thesis, scientists have not in a large degree distinguished between domestic and transnational terrorism. Appendix A displays an overview of the quantitative research on the cross-country studies of terrorism. To this authors knowledge, there are only five attempts to analyze how societal determinants relates to domestic terrorism, while there are twenty-three works studying relationship between these determinants and being targeted by transnational terrorism. Although,

this is an informal and in no way a comprehensive overview, it suggests that the research on terrorism is somewhat skewed. Yet, as shown in figure 3 the number of domestic terrorism far exceeds the number of transnational incidents. [5]

Figure 3: Total number of terror events.



This is important since transnational terrorism is not a representative sample of the overall amount of terrorism (Sánchez-Cuenca & Calle, 2009). Thus, it becomes dangerous to use data on transnational terrorism to explain the cross-country variations of the overall phenomenon of terrorism.

This leads to the two main hypotheses of this thesis. Given that certain societal characteristics are argued to lead to a higher rate and probability of experiencing terrorism, I would expect that there is a difference between domestic and transnational terrorism.

> **Hypothesis 1: The societal factors that explain domestic are different from the societal factors that explain transnational terrorism.**

[5] The data for 1993 was lost during transit by the PGIS and was never fully recovered (START 2012). It is apparent that the loss was greater for the domestic incidents than for the transnational. The remaining events accounts for approximately 15 percent of total events.

However, it is possible that the societal factors that explain domestic and transnational terrorism are similar, but the causal mechanisms behind them are different. Therefore, an alternative hypothesis is suggested:

> **Hypothesis 2: The societal factors that explain domestic and transnational terrorism are the same, but the causal mechanisms behind are different.**

Hypothesis number two is clearly more based on the theoretical framework than the first hypothesis, and will therefore be answered in the following chapter.

To answer the first hypothesis I have displayed a comparison between the number of domestic terrorist incidents and the number of transnational incidents in table 2. This table can be viewed as a pretest and compares the main economic, political, and socio-cultural factors that are argued to influence domestic and transnational terrorism, using zero-inflated negative binomial regression.[6] The factors that are included in this model are drawn from Krieger and Meierrieks (2011) and the overview of empirical cross-country studies of domestic and transnational terrorism displayed in appendix A, chapter 9. Model A is run using the count of domestic incidents, while model B is run with the count of transnational terrorism. This table suggests that there is little difference between the societal factors leading to domestic and transnational terrorism. This does not give support to hypothesis 1.

First, population and country size are both significantly associated with both domestic and transnational terrorism. While, population has a positive direction, country size is negative. GDP per capita is a factor that associated with both domestic and transnational incidents. According to the overview in appendix A, both Abadie (2006) and Findley and Young (2011) relates this factor to domestic terrorism, while, for instance, Krueger and Laitin (2008) and Blomberg and Hess (2008b) associates GDP per capita with transnational terrorism. In table 2, this factor is positively related to both domestic and transnational terrorism, although the level of significance is higher for transnational.

[6] The characteristics of the zero-inflated negative binomial regression method will be addressed in chapter 5. The usage here is only to compare the direction and the significance of the factors between domestic and transnational terrorism.

Table 2: Comparing domestic and transnational terrorism on all societal factors

	Model A	Model B
	Domestic Count	**Transnational Count**
Count Model		
Population	1.041***	0.491***
	(0.255)	(0.0560)
Country Size	-0.421**	-0.221***
	(0.143)	(0.0533)
GDP per Capita	0.340*	0.527***
	(0.143)	(0.0903)
GDP Growth	-0.0574*	-0.0561***
	(0.0252)	(0.0101)
Trade Openness	-0.00902*	-0.0165***
	(0.00370)	(0.00195)
Democracy	0.0567	0.0641***
	(0.0433)	(0.0104)
Democracy2	-0.0188***	-0.00838***
	(0.00513)	(0.00209)
Durability	-0.00678*	-0.00904***
	(0.00286)	(0.00165)
Population Growth	0.236***	0.163**
	(0.0693)	(0.0520)
Urbanization	0.0201	0.00000193
	(0.0112)	(0.00500)
Education	-0.0219***	-0.0149***
	(0.00580)	(0.00310)
Ethnic Frac.	0.793	0.912***
	(0.500)	(0.260)
Constant	-11.08**	-6.929***
	(3.724)	(0.917)
Inflated Model		
Population	-0.147	-1.801*
	(0.757)	(0.914)
Country Size	-0.275	-1.274*
	(0.373)	(0.579)
GDP per Capita	-0.767*	-2.216***
	(0.357)	(0.669)
GDP Growth	0.0369	-0.0141
	(0.0488)	(0.0439)
Trade Openness	0.00646	-0.0239
	(0.0131)	(0.0248)
Democracy	-0.114	0.0430
	(0.139)	(0.0948)
Democracy2	0.000399	0.00845
	(0.0171)	(0.0123)
Durability	0.0250**	0.0519
	(0.00949)	(0.0285)
Population Growth	0.171	0.609**
	(0.104)	(0.211)
Urbanization	0.0395	0.00227
	(0.0414)	(0.0215)
Eduaction	-0.0317*	-0.0208
	(0.0143)	(0.0197)
Ethnic Frac.	0.363	6.767**
	(0.655)	(2.448)
Constant	1.569***	1.185***
	(0.0532)	(0.0607)
Observations	2761	2761

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

Further, both GDP growth and trade openness are significantly linked to both domestic and transnational terrorism. While, for instance, Kurrild-Klitgaard, Justesen, and Klemmensen (2006), and Koch and Cranmer (2007) associates trade openness with transnational terrorism, there is not a study, at least to this authors knowledge, that explores the link between trade openness and domestic terrorism. Democracy turns out not to be significant in model A, but significant in model B. This may be due to the fact that there are other variables that take away some of the explanatory power of this factor. Both domestic and transnational terrorism are, however, widely associated with different measures of democracy. As seen in the overview in appendix A, chapter 9, every study of domestic terrorism, has included a form of proxy of regime type. This is also the case for studies on transnational terrorism. Finally, ethnic fractionalization seems to be only significant to transnational terrorism. However, as will be argued later in this thesis, this factor also matter to domestic terrorism.

In the end, the result shows that there is not much difference between the factors that influence domestic terrorism and transnational terrorism, conversely to what hypothesis 1 argues. Regardless of this, as argued in hypothesis 2, the causal mechanisms that may lead to this may be quite different.

The following section discusses what is perceived to be the root causes of terrorism. The idea of a 'root' cause is that there is some form of underlying causal relationship between economic, political and socio-cultural characteristics and the occurrence of terrorism (Newman, 2006). Scientist and scholars have in a large degree linked these root causes to economic, political, and socio-cultural factors. An overview of these factors is displayed in appendix A (chapter 9.1). At first glance, it seems to be little agreement of the root causes of terrorism. For economic factors, Blomberg and Hess (2008a) finds that higher income discourage domestic terrorism, while Findley and Young (2011) finds that higher GDP per capita actually encourage domestic terrorism. This discord is also apparent in the study of transnational terrorism. While, for instance, Kurrild-Klitgaard, Justesen, and Klemmensen (2006); Eyerman (1998); and Tavares (2004), finds that higher rates of GDP per capita increases the rate of events, Li (2004); and Braithwaite and Li (2007) finds that GDP per capita actually reduces transnational terrorism. There is also a lack of agreement concerning the political factors. For domestic terrorism, Findley and Young (2011) finds that terror is more likely in semi-

democratic states and autocratic states, while Blomberg and Hess(2008a) argues that greater levels of democracy are positively related to domestic terrorism. In the case of transnational terrorism, it seems that the majority of studies finds there to be a positive relationship between a country's level of democracy and being attacked by foreign groups. As for socio-cultural factors, the empirical overview suggests that the only solid evidence is found in the relationship between population size and the amount of domestic and transnational terrorism.

By using Krieger and Meierrieks' (2011) article *What Causes Terrorism?* as a point of departure, these root causes will be linked to domestic and transnational terrorism. This will be done by creating causal mechanisms from the theoretical foundation laid out earlier to the different societal factors. This will first be done with domestic terrorism, then with transnational terrorism.

4.2.1 Economic Conditions

We fight against poverty because hope is an answer to terror.[7]

4.2.1.1 Domestic

One of the controversial subjects among terrorism scholars is whether domestic terrorism originates in poor economic societies. While both Piazza (2011) and Findley and Young (2011) finds that higher economic development encourage domestic terrorism, Blomberg and Hess (Blomberg & Hess, 2008a) finds that it discourage. Moreover, Abadie (2006) finds that there is not significant relation at all.

In accordance with the frustration-aggression thesis and the theory of relative deprivation, it is the perceived injustice underlying the economic deprivation that gives rise to anger and frustration (Crenshaw, 1981; Ross, 1993). Li and Schaub (2004) even suggests that poor economic conditions create "terrorist breeding grounds", where disaffected populations turn to terrorist activities as a solution to their problems. This might suggest that poorer countries might experience a higher rate and a higher probability of domestic terrorism. Thus, the first hypothesis may be created:

> **HD1: Countries with lower rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.**

[7] George W Bush (2002) remarks at the United Nations International Conference on Financing for Development in Monterrey, Mexico: http://www.un.org/ffd/statements/usaE.htm

Yet, as Lea and Young puts it: "Sheer poverty does not necessarily lead to violence, it may just as easily lead to quiescence and fatalism" (1996, p. 142). Therefore, poverty in itself, no matter how bad it is, may not create frustration, and thus terrorism, as long as it seems just and natural for the individual. In addition, Sánchez-Cuenca and Calle (2009) suggests that "terrorist organizations are the guerrillas of rich countries". From an opportunity perspective, poor states may not have the ability to take the necessary countermeasures against antagonizing groups. Here, these groups may turn into guerrilla or rebellion groups (Blomberg, Hess, & Weerapana, 2004). This may suggest that countries with higher levels of GDP per capita will experience higher rates and a higher probability of domestic terrorism. It is therefore necessary to create an alternative hypothesis in this regard.

$HD1_{alt}$: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.

The theory of relative deprivation is perhaps applicable as an explanation on why economic inequality may encourage political violence. "The relation between inequality and rebellion is indeed a close one", wrote Amartya Sen on the early pages of *'On Economic Inequality'* (1973, p. 1). Indeed knowing that he was standing on the shoulders of De Tocqueville, who argued as early as in 1835 that "almost all of the revolutions which have changed the aspect of nations have been made to consolidate or to destroy social inequality" (KILDE se Lia & Skjølberg). The poor may fight for redistribution, while the rich might strive to keep the status quo. This is putting the 'relative' in the theory of relative deprivation. It is when people compare themselves to others that the discontent occurs, and thus political violence (Lea & Young, 1996, p. 142).

From an opportunity perspective, it should be easier for terrorist organizations to muster recruits and resources in countries where the inequality is high (Krieger & Meierrieks, 2011). Thus, I would expect a positive correlation between economic inequality and the occurrence of domestic terrorism.

HD2: Countries with higher rates of economic inequality will experience higher rates and a higher probability of domestic terrorism.

Though terrorism can occur anywhere, it is argued that is more common in developing societies characterized by rapid modernization (Gurr, 2005, p. 21). As Huntington

famously noted "…modernity breeds stability, but modernization breeds instability" (1968, p. 41). This is also pointed out by Ross (1993) who claims that most grievances are generated during the "transition from traditional to modern society", an argument that is in line with radical theory, or dependency theory, which posits that the "modernization process has a harrowing effect" on the society (Lia & Skjølberg, 2004), and thereby encouraging political violence and terrorism. While both traditional and modern societies exhibit some form of equilibrium, a transitional development from the traditional to the modern may create grievances among the 'modernization losers' (Krieger & Meierrieks, 2011). This way the modernization process alters the traditional social, cultural and organizational norms of the society, and may leave citizens in a state where institutions and organizations cannot cope with the new modern norms (Engene, 1994, pp. 220-221). Thus, the felt grievances among the economic losers of modernization may turn into aggression and domestic terrorism. Krieger and Meierrieks (2011) suggest that terrorists can capitalize on the grievances felt among the people, making recruitment and support more likely. Thus, both the theory of relative deprivation and opportunity may explain the occurrence of domestic terrorism through the process of modernization. One proxy for modernization is the rate of economic growth in a country. A rapid increase in a country's GDP per capita growth may therefore influence domestic terrorism.

HD3: Countries with higher rates of economic growth will experience higher rates and a higher probability of domestic terrorism.

4.2.1.2 Transnational

As discussed earlier, poverty may not lead to domestic political violence *per se*. It is when economical differences become apparent that frustration may arise. This is also the case with transnational terrorism. From the theory of relative deprivation, we cannot rationalize a causal chain from poverty to terrorism unless individuals from a poor country attack a rich country. This, however, requires a dyadic research design and not a univariate cross-country approach like in this thesis.

Although, the relation between poor and rich countries requires a dyadic approach, one could rationale that richer countries have a greater probability of experiencing transnational terrorism. Rich countries may offer better channels of exposure through media coverage and targets of greater symbolic value. Moreover, Blomberg, Hess, and

Weerapana (2004) argues that since economic developed countries have a better ability to not give in to the dissident groups, these groups turn to terrorism instead of guerrilla warfare, since this is more cost-efficient. Therefore, the theory of opportunity may explain that richer countries are more exposed to foreign attacks.

HT1: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of transnational terrorism.

A state's level of trade openness may be linked to transnational terrorism. Although, a dyadic design must be utilized to test whether 'losers' on the global economic marked target the 'winners'; it may be possible that state's succeeding in the global market are more prone to being attacked. Krieger and Meierrieks (2011) suggests that the dominant state's in the global market may be attacked "to counter foreign dominance". This relates to the theory of relative deprivation in that individuals may fear globalization and being 'left behind' in the global market, especially if the global order is perceived as unjust.

This may also be explained by the theory of opportunity. Since transnational terrorism is driven by global factors, it is more plausible that relatively open societies are more prone to being a target. Li and Schaub (2004) argues that "as globalization increases, the cost of illegal activity declines relative to the cost of legal activity, and the overall level of terrorism increases". In addition, transnational terrorist organizations often take advantage of the international trade networks to trade contraband to fund their operations (Li & Schaub, 2004; Matthew & Shambaugh, 1998). This suggests that states with a high level of economic trade openness attract more transnational terrorism by lowering the opportunity costs of illegal operations.

HT2: Countries with higher levels of trade openness will experience higher rates and a higher probability of transnational terrorism.

4.2.2 Political Factors

4.2.2.1 Domestic

A continuous debate in the field of terrorism research is whether a certain regime type is more prone do experience terrorism than others. Two lines of thought, namely the *political access school* and the *strategic school*, have sought explanatory power

(Eyerman, 1998). Both these thoughts, however, share the premise that terrorists are rational individuals who operates in a cost-benefit calculus.

The political access school argues that because democracies are broadly based upon fundamental pillars like freedom, openness and popular participation, dissatisfaction among the citizens rarely reaches a level of serious threat to the existence of the regime itself (Li, 2005; Lia & Skjølberg, 2004; 2000; Sánchez-Cuenca & Calle, 2009). Citizens in a stable democracy are therefore allowed to express their grievances through established institutional venues where their voice can be heard and popular demands can be processed and responded to, thus resolve their dissent in a non-violent way (Drakos & Gofas, 2006; Eyerman, 1998; Wilkinson, 2011). From an opportunity perspective, this would increase the opportunity for the dissident group to participate in institutional politics, and thus decrease the benefit of a potential domestic terrorism act.

On the other hand, however, according to the strategic school, democratic regimes cannot make use of 'hard' counter-terrorism measures which make them soft targets as they are constrained by a commitment to civil liberties and are less able than other states to prevent terrorism or retaliate once it occurs (Eyerman, 1998; Krieger & Meierrieks, 2011; Wilkinson, 2011, p. 22). In addition, democratic states provide more freedom of speech, movement, and association that, may lower the opportunity-cost, and thus incite terrorist organizations (Drakos & Gofas, 2006; Li, 2005).

This would suggest that democracies are neither a regime type that suppress radical forces by channeling their opinions or, on the other hand, encourage terrorism by not having the ability to take the necessarily counter-terrorism measures. On the other side, autocracies do not have the ability to let individuals express their opinions, but they do have the ability to take the necessarily 'hard' counter-terrorism measures. In their work on democracy and civil war, Hegre, Ellingsen, Gates and Gleditsch (2001) argues that semi-democracies experience more political violence, than both autocratic states and democracies. Since, semi-democracies are "partly open yet somewhat repressive" they give groups the motivation to act and the freedom to operate. In addition, frustration may emerge in these types of regimes since citizens do not get their voices heard. Thus, we can expect that there is an inverted U-shaped curve between regime type and domestic terrorism.

HD4: Semi-democratic countries will experience higher rates and a higher probability of domestic terrorism.

The relationship between regime stability and domestic terrorism may also be explained from an opportunity perspective. Piazza (2011) finds that regimes age is a negative predictor of domestic terrorism, and similar, Findley and Young (2011) finds that when regimes are in transition domestic terrorism are more likely. This thought is in line with Gurr who claim that "political terrorists in democratic societies almost invariably emerge out of larger conflicts, and that they reflect, in however distorted a form, the political beliefs and aspirations of a larger segment of society" (1998).

In instable or politically changing states it may arise political vacuums which terrorist groups use to push their agendas (Krieger & Meierrieks, 2011). In times of instability and distress governments are weak and unable to control radical domestic groups, which might lower the opportunity costs of violence. In addition, these groups might find it easier to muster support and recruits as individuals struggle to find alternative ways of expressing their political agendas (Krieger & Meierrieks, 2011; Piazza, 2008b).

HD5: Countries with higher rates of regime stability will experience lower rates and a lower probability of domestic terrorism.

4.2.2.2 Transnational

In dealing with domestic terrorism we saw that the arguments were drawn in the lines of either the 'access school' and the 'strategic school', where the former argued that democracies provided channels for their citizens to express their dissatisfaction, and thus preventing domestic terrorism, while the latter suggested that democratic states created opportunities for the dissent group, due to their lack of hard counter-terrorism measures. While the 'access school' may have explanatory value in the case of domestic terrorism, it has not for transnational terrorism.

The 'strategic school' may, however, work as a rationale on why democracies are more prone to being a target of transnational terrorism. Since counterterrorism capabilities of democracies are constrained by the need to protects civil liberties, its citizens may not tolerate significant reduction in personal freedoms, which may be necessary in dealing with the threat of transnational terrorism (Crenshaw, 1981; Koch & Cranmer, 2007). Thus, the potential gain of the attacker becomes higher than the costs. In addition,

because “the success of a terrorist operation depends almost entirely on the amount of publicity it receives” (Walter Laqueur as quoted in A. P. Schmid, 2004), the terrorist would seek countries where the incidents are more likely to be reported. And because democratic countries place fewer restrictions on media, press freedom is a probable factor (Li, 2005). This is also noted by Engene, who claims that the terrorist benefits on the independent institutions that liberal democracies inhabits (1994, p. 52). Moreover, autocratic regimes may be more able than democracies to impose the greatest control of a state and thus repress potential terrorist incidence, making violent challenge too costly (Krieger & Meierrieks, 2011; Lai, 2007; Sánchez-Cuenca & Calle, 2009).

Because of this, we cannot expect an inverted u-curve in the relation between regime type and transnational terrorism, as we did with domestic terrorism. We can, however, expect that democracies are more prone to experience transnational terrorism.

HT3: Countries with higher rates of democracy will experience higher rates and a higher probability of transnational terrorism.

Terrorist attacks may be more common in politically instable environments. Weak and instable states lack the capacity or will to exercise territorial control and “maintain a monopoly of violence” (Bjørgo, 2005a, p. 258). This may create political vacuums which radical groups use to push their agendas, including foreign groups. These may be less challenged by an instable, and thus weak government (Krieger & Meierrieks, 2011). This may, in turn, lower the opportunity cost for the terrorists.

HT4: Countries with higher rates of regime stability will experience lower rates and a lower probability of transnational terrorism.

4.2.3 Socio-cultural Factors

4.2.3.1 Domestic

A state that is undergoing a rapid demographic change may be more prone to experience domestic terrorism. Demographic strain as a product of a large population and a rapid population growth may foster more frustrated and deprived citizens (Krieger & Meierrieks, 2011). This may trigger terrorism for instance through food shortage and environmental scarcities like “shortage of water, forests, and especially fertile land” (Homer-Dixon, 1994). Henrik Urdal (2005) addresses the neo-Malthusian concern and its relation to civil war. According to this theory, a rapid growth in the population will

increase the risk of violent conflict, due to degradation and scarcity of natural resources. Although Urdal do not find strong evidence in favor of the neo-Malthusian concern, he does suggest that countries facing high rates of population growth may experience higher risks of violence if productive land is already scarce.

> **HD6: Countries with higher rates of population growth will experience higher rates and a higher probability of domestic terrorism.**

Crenshaw (1981) argues that there is a relation between terrorism and urbanization. According to her, urbanization increases "the number and accessibility of targets and methods". This argument is backed up by Ross (1993), who states that "cities are more likely than rural environments to facilitate terrorism". This suggests that the opportunity cost for the terrorist lowers if they operate and target urban civilians and objects. In addition, rapid urbanization may generate demands from the urban population that the state may not be able to satisfy, thus creating frustration and deprivation (Auvinen, 1997). Thus we can expect that states undergoing a high rate of urbanization are more prone to experience political violence, and hence terrorism.

> **HD7: Countries with higher rates of urbanization will experience higher rates and a higher probability of domestic terrorism.**

From 1996 to 1999, Nasra Hassan interviewed almost two hundred and fifty people involved in sub-governmental military camps fighting the Palestinian cause. His observations conflict with the prevailing impression that terrorists are uneducated, poor, and mentally disturbed. In his own words:

> *None of the suicide bombers—they ranged in age from eighteen to thirty-eight—conformed to the typical profile of the suicidal personality. None of them were uneducated, desperately poor, simple-minded, or depressed. Many were middle class and, unless they were fugitives, held paying jobs.*
>
> *(Hassan, 2001)*

Also Krueger and Malecková (2003) challenge this thought. They find that participation in Hezbollah in Lebanon is more likely among people with secondary school or higher education. A possible explanation for this is that terrorist organization may seek and recruit individuals who have better education (Drakos & Gofas, 2006). In addition, well-

educated citizens could identify more strongly with goals of the terrorists organization (Krueger & Malecková, 2003).[8] In any case, as terrorist organization recruit educated citizens, both as leaders and soldier; it benefits their opportunity to act, and their chances for success.

HD8: Countries with higher rates of education will experience higher rates and a higher probability of domestic terrorism.

John Stuart Mill argued as early as in 1861 that "free institutions are next to impossible in a country made up of different nationalities" (Mill, 2010 [1861], p. 296). Though written in a different context, the statement is quite adaptable in the today's current research on ethnic diversity and terrorism. If the identity of a group does not coincide with the territorial borders of its country, it may be difficult for the societies to define its people, and thus it may lead to legitimacy problems (Ellingsen, 2000). In societies which inhabit several different ethnic groups, one could thus expect a higher likelihood of domestic terrorism. Lia and Skjølberg argue that "the conditions for the emergence of terrorism are most favorable in countries where the public is fragmented into several opposing groups" (2004). In addition, ethnic and religious hatreds are widely perceived as a cause of conflict (Collier & Hoeffler, 2004). Although, this aspect is difficult to quantify and measure, it is reasonably to believe that these hatreds occur in a higher degree in multiethnic societies. This relates to the aspect of identity in that ethnic groups may have an 'us versus them' mentality creating domestic friction that may turn into political violence.

In addition, as suggested by Krieger and Meierrieks (2011), it may be both easier and less costly for a group to muster recruits and support against an antagonistic group. This may especially be the case in states where identity-related ideologies are present. Like, for instance, absolutist religion which stresses the one true faith.

HD9: Countries with higher rates of ethnic fractionalization will experience higher rates and a higher probability of domestic terrorism.

[8] Gurr notes that "education without opportunities is an explosive combination" (2005, p. 23). So, my initial though was to control for job opportunities, however, the existing data material is very limited and thus not suitable for this thesis.

4.2.3.2 Transnational

As noted before ethnicities and cultural diversity does not necessarily operate across territorial borders, but along civilizational lines (Huntington, 1993; Krieger & Meierrieks, 2011). Thus, many ethnic groups may live within two or more nation-states (Ellingsen, 2000). This may elevate potential ethnic tensions to not only domestic conflict, but also transnational. An identity group that may be a minority in one state may have ethnic affinities in another state, which may utilize terrorism against a majority or a competing group.

Another aspect, which also can be seen through the glasses of identity and cultural conflict, is the 'Westernization' of the world. Barber (1992) describes the globalization process as a "Jihad versus McWorld". Here, he draws a picture of a world where the "forces of Jihad and the forces of McWorld operate with equal strength in opposite directions". So, the new transnational terrorism occurs as a defensive, reactionary backlash against pressure from globalization, both in economic and cultural terms (Lia & Skjølberg, 2004). In combination with Huntington's 'clash of the civilizations', one could rationalize that terrorist groupings on both sides will seek the opportunity to benefit from the ethnic tension in their recruitment work and legitimate their war.

HD5: Countries with higher rates of ethnic fractionalization will experience higher rates and a higher probability of transnational terrorism.

4.3 Summary of Arguments and Hypotheses

Figure 4 and 5, displays the societal determinants of domestic and transnational terrorism separated. First, we see that there are more arrows leading to domestic terrorism than there are arrows leading to transnational terrorism. One explanation for this may be that the research on terrorism has explained the occurrence of domestic terrorism, while they have used transnational data in their analysis. Thus, it is easier to explain the causal mechanisms leading to domestic terrorism than the mechanisms leading to transnational. Second, it seems that the theory of relative deprivation and opportunity are both significant theories in explaining the occurrence of domestic terrorism, while for transnational terrorism it seems that opportunity have more explanatory power. Transnational terrorism may be more associated with larger costs for the terrorists than domestic terrorism. Transnational terrorism may demand more

resources and planning than domestic terrorism, thus the terrorists need to operate in a cost-benefit calculus in a larger degree than with domestic terrorism.

As shown in figure 4, all the economic factors that are thought to influence domestic terrorism, namely GDP per capita, inequality, and economic growth, is explained by both frustration and opportunity. Thus, these determinants may cause frustration and aggression, and create windows of opportunity to initiate a domestic terrorist act. The same can be said about regime type. As shown earlier, domestic terrorism may be more frequent in semi-democratic regimes since the state cannot utilize adequate counter-terrorist measures, thus lowering the cost of political violence and terrorism. In addition, frustration may arise since semi-democratic states do not offer good channels for the citizens to express their opinion. Regime instability may lower the cost of domestic terrorism since instable states create vacuums in which dissident groups may use to push their agendas. This explains the blue arrow going from regime stability to opportunity. As noted before, the socio-cultural factors a colored green. Population growth may generate frustration among the citizens due to demographic strain like food shortage and environmental scarcities.

The arrow from urbanization to frustration is explained by the increased demands from the urban civilization that the state may not be able to satisfy. Moreover, urbanization may increase the number of accessible targets and methods for the terrorists, thus creating greater opportunity to act. An arrow is also drawn from education to opportunity. This is explained by the terrorist's eagerness to recruit individuals with higher education. Higher educated terrorist leaders and soldier may increase the probability for the terrorist operation to succeed. Lastly, two arrows are drawn from ethnic fractionalization, namely to opportunity and identity. Since it may be easier, and thus less costly, for terrorist organizations to muster support and gain support against antagonistic ethnic groupings, one arrow is drawn from, ethnic fractionalization and opportunity. This aspect also relates to identity, in that strong ethnic groupings may create an 'us versus them' mentality against other groups.

As displayed in figure 5, there are fewer causal mechanisms leading to transnational terrorism, compared to domestic terrorism. The reason for this may be due to the fact that the research on terrorism has explained domestic terrorism while tested for transnational terrorism. Thus, it is easier to find plausible causal chains explaining why

terrorist groups would want to attack domestic targets. Another interesting point is that the majority of arrows displayed in figure 5, leads to the theory of opportunity, while only trade openness may be argued to influence frustration. The reason may be that transnational operations are more costly and demands more resources than domestic operations. Thus, these attacks are more planned in a cost-benefit calculus, than just an act motivated by pure frustration. Another reason may be that, in regard to transnational attacks, the theory of frustration demands a more dyadic research design, where, for instance, groups from poor states targets rich states.

Figure 4: Societal determinants of domestic terrorism

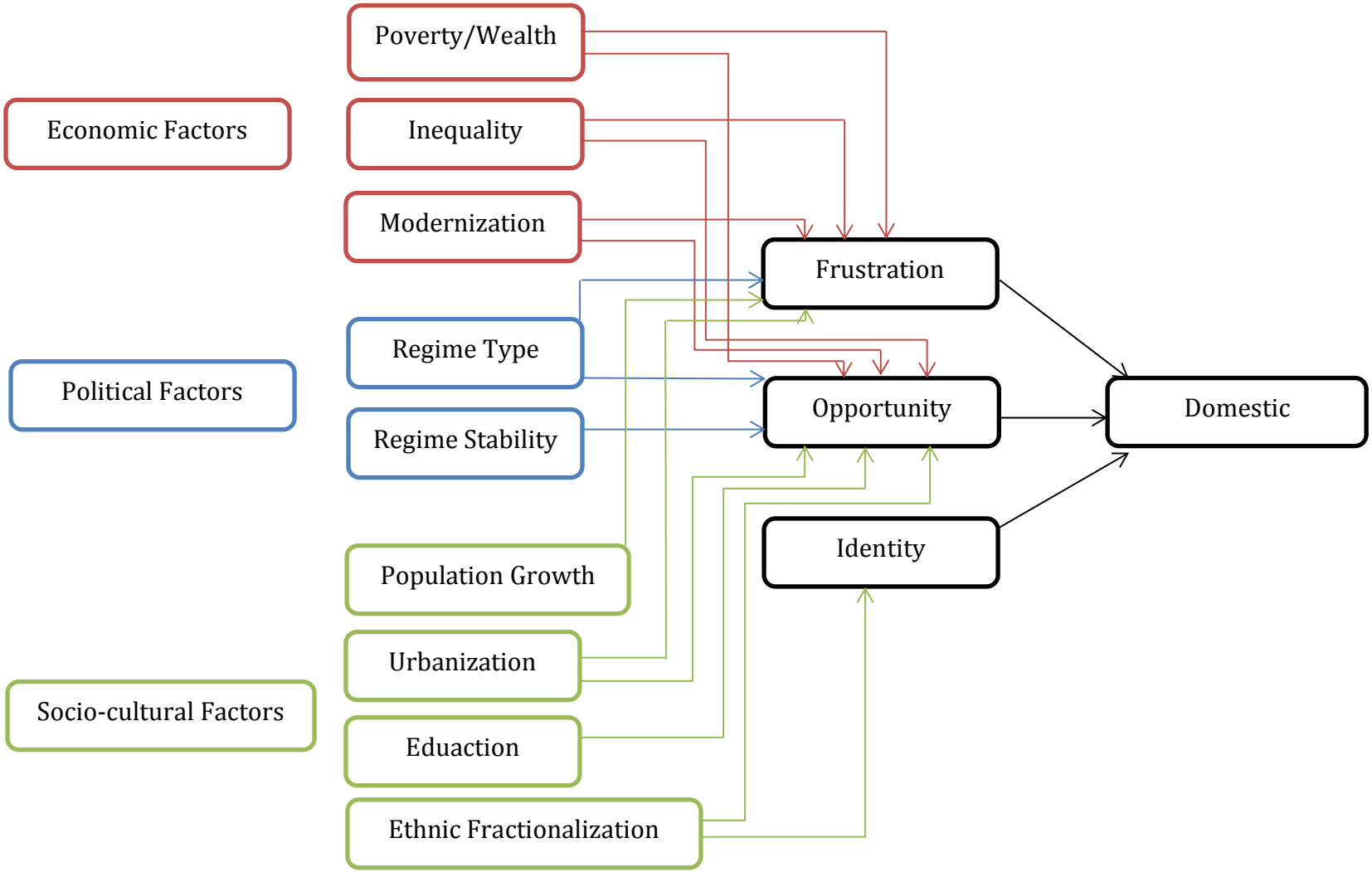


Figure 5: Societal determinants of transnational terrorism.

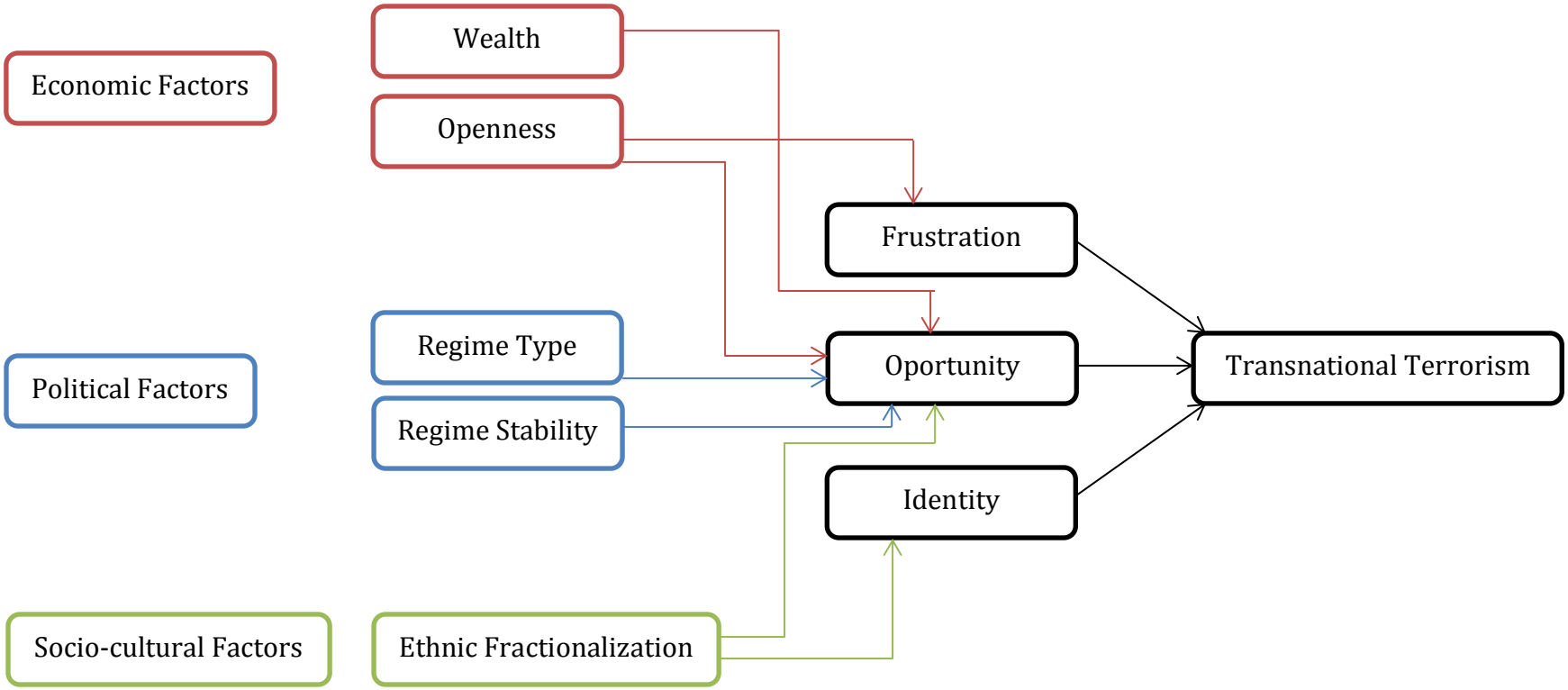


Table 3: Summary of hypotheses.

Domestic Terrorism	Transnational Terrorism
Economic Factors	**Economic Factors**
HD1: Countries with lower rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.	**HT1**: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of transnational terrorism.
$HD1_{alt}$: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.	**HT2**: Countries with higher levels of trade openness will experience higher rates and a higher probability of transnational terrorism.
HD2: Countries with higher rates of economic inequality will experience higher rates and a higher probability of domestic terrorism.	
HD3: Countries with higher rates of economic growth will experience higher rates and a higher probability of domestic terrorism.	
Political Factors	**Political Factors**
HD4: Semi-democratic countries will experience higher rates and a higher probability of domestic terrorism.	**HT3**: Countries with higher levels of democracy will experience higher rates and a higher probability of transnational terrorism.
HD5: Countries with higher rates of regime stability will experience lower rates and a lower probability of domestic terrorism.	**HT4**: Countries with higher rates of regime stability will experience lower rates and a lower probability of transnational terrorism.
Socio-Cultural Factors	**Socio-Cultural Factors**
HD6: Countries with higher rates of population growth will experience higher rates and a higher probability of domestic terrorism.	**HT5**: Countries with higher levels of ethnic fractionalization will experience higher rates and a higher probability of transnational terrorism.
HD7: Countries with higher rates of urbanization will experience higher rates and a higher probability of domestic terrorism.	
HD8: Countries with higher levels of education will experience higher rates and a higher probability of domestic terrorism.	
HD9: Countries with higher levels of ethnic fractionalization will experience higher rates and a higher probability of domestic terrorism.	

5 Research Design and Data

This section will provide for the research strategy, design, and data material. First, it will briefly discuss the research strategy and design. The strategy is the basic choice between the quantitative or the qualitative approach. Once this is set, a research design needs to be formulated. Then, the data used in this thesis will be presented, as well as other data that are being used in the research on terrorism. Here, the dependent variable will be presented in addition to the explanatory and control variables that are being included in the analysis. Lastly, the two statistical methods that will be used in this thesis will be discussed. These are namely: the zero-inflated negative binomial regression and logistic regression.

5.1 Strategy and Design

In social science, there are mainly two branches of research strategies, namely the quantitative and the qualitative strategy. There are several differences between these two strategies, and which one of these is chosen needs to be decided by the research question. According to Ringdal (2007, p. 91), a quantitative strategy is often guided by theory and a deductive approach. This means that the scientist deduce different hypotheses from relevant theoretical perspectives. Variables are then used as measurements of the different theoretical aspects. In contrast, the qualitative strategy is often inductive. Here, the scientist often goes to the informant first, and then tries to apply theoretical explanations to explain the informants actions or thoughts.

In this thesis, I am going to look at the societal explanations of domestic and transnational terrorism, by comparing the number of domestic and transnational terrorist incidents in a country per year. The chosen strategy is thus quantitative, since my approach is to find theoretical causal mechanisms and test these by using a statistic approach.

A design is the researcher's plan or outline for how he or she are going to conduct the study (Ringdal, 2007, p. 93). This study conducts a longitudinal approach, where the number of domestic and transnational events in a country has been measured each year from 1970 to 2007. Time-series studies and longitudinal are similar, however, according to Chuck Huber, time-series data "arise from the collection of many data points over time from a single source" (2013). While longitudinal data follows one or more

analytical unit over time (Ringdal, 2007), As this thesis includes data from 177 countries, a longitudinal is suitable.

5.2 Data

5.2.1 Other Datasets

As discussed earlier, the research on domestic terrorism has been overshadowed by the fixation on transnational terrorism. This is mainly due to the lack of adequate data material on domestic events. The studies on terrorism have in a large degree, since the late 1960's, depended on the *International Terrorism: Attributes of Terrorist Events* (ITERATE) and data from the *National Institute of the Prevention of Terrorism* (MIPT) (Mickolus, Sandler, Murdock, & Flemming, 2010).[9] Currently, ITERATE covers transnational terrorist incidents from 1968 to 2009, and gathers its information from different sources, including the Associated Press, United Press International, Reuters tickers, the Foreign Broadcast Information Service (FBIS) Daily Reports, and major US newspapers (Sandler & Enders, 2004).

Data sets covering domestic incidents have been, until recently, very limited. For instance, MIPT only started to record domestic incidents in 1998 (Enders, et al., 2011). Blomberg and Hess (2008a) applies the RAND data in their analysis. However, it has a very limited time span, covering incidents from 1998 through 2003. Moreover, Jan Oskar Engene's data set, *Terrorism in Western Europe: Event Data* (TWEED), covers internal terrorism for eighteen West European countries between 1950 through 2004 (Engene, 2007). Likewise, Luis de la Calle and Ignacio Sánchez-Cuenca cover terrorism in Western Europe from 1965 through 2005 in *The Domestic Terrorism Victims* (DTV) dataset (Calle & Sánchez-Cuenca, 2011). However, as discussed before, both TWEED and DTV data define domestic incidents only by the nationality of the attacker and the country in which the attack occurs, and not by the nationality of the victim. In addition, the DTV data uses fatality as the unit of observation, and not the numbers of attacks (Calle & Sánchez-Cuenca, 2011).

[9] As displayed in the overviews in table A1 and table A2 in appendix A, out of twenty-three studies on transnational terrorism, fourteen have applied the ITERATE data and eight the MIPT data.

5.2.2 The Global Terrorism Database (GTD)

This thesis seeks to compare the societal explanations of domestic terrorism and transnational terrorism. Up until recently this has not been possible, or it has only been possible through a very limited data material. The Global Terrorism Database (GTD), is the first worldwide data set to comprise both domestic and transnational terrorism over time, and is maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) (Enders, et al., 2011; START, 2010). The GTD draws its information entirely form publicly available, open-source materials, including electronic news archives, existing data sets, books, journals, and legal documents (START, 2012).

However, the GTD does not distinguish domestic incidents from transnational incidents *per se* (Enders, et al., 2011). Enders, Sandler, and Gaibulloev (2011) derive their event counts of domestic and transnational incidents by undertaking several steps. They start by purging the 85,536 terrorist events counted in the GTD for 1970 to 2007. By cleaning and eliminating events that are considered doubtful or mischaracterized, they are left with 66,383 events, eliminating approximately 16,000 incidents. The remaining 66,383 events undergo a five-step procedure in which they are classified as either domestic or transnational. Furthermore, this separation is aided by comparing and contrasting the transnational GTD events with ITERATE. After a procedure of comparing terrorist incidents with the ITERATE, they land on 12,862 transnational events, and 46,413 domestic incidents.[10]

The GTD has, however, some idiosyncrasies. First of all, the dataset consists of two coding phases. The first phase of data was collected by the Pinkerton Global Intelligence Service (PGIS) from the years 1970 to 1997, and cases that occurred between 1998 and 2007 were identified and coded by the Center for Terrorism and Intelligence Studies (CETIS), in partnership with START (START, 2012). The coding conventions, however, used for 1970 to 1997 do not match those used in the second phase since a broader-based definition of terrorism was applied by PGIS (Enders, et al., 2011). However, no documentation is provided as to how this definition is broader. In addition, the data collection between 1970 and 1997 was done in real time, and retrospective between 1998 and 2007 (START, 2012). In any case, a reasonably accurate count is produced as

[10] The remaining is classified as 'uncertain', and counts 7,108 incidents.

Enders, Sandler and Gaibulloev (2011) assume that the domestic and transnational data are adjusted along the baseline of the ITERATE data. Another problem with this data is the absence of material from 1993. This data was lost during an office move and was never fully recovered. The survived data only accounts for 15 percent of the actual attacks (START, 2010).

Moreover, since both the GTD and ITERATE collect their counts from open sources, it may be reasonable to expect systematic reporting biases. For instance, terrorist incidents that are aimed at governments may be under-reported in countries where the media is controlled or weak relatively to those states with a strong media (Eyerman, 1998).

5.2.3 Sample

This thesis is, as noted above, based on the calibrated data made by Enders, Sandler and Gaibulloev (2011). From the 12,862 transnational events and the 46,413 domestic events they have worked out, this thesis holds 10,605 transnational events and 46,001 domestic events in the period from 1970 to 2007, for 177 countries. The reduction is mainly due to difficulties in adapting their raw-data material into an operationalized and functionally dataset. For instance, there were several small states included in the GTD data, which are not included in other data material like, for instance, the World Bank Indicators.

Further, the raw-data does not separate between West-Germany and East-Germany in the period from 1970 to 1991. It is just labeled as Germany. This makes it difficult to merge this data with other data, and have thus been excluded. Finally, the GTD have systematically separated incidents happening in the West-Bank and Gaza Strip from Israel (START, 2011). Although, this is in my opinion an important distinction, it is not consistent with some other data sets; hence a few potential errors may come of this. All in all, however, the reduction is very limited from that of Enders, Sandler and Gaibulloev's (2011) raw-data.[11] And it will not hinder this thesis' main quest, which is to compare the societal determinants of domestic and transnational terrorism.

[11] In addition, the raw data was not presented in a country-year format.

5.3 Operationalization of Variables

This section presents the different operationalizations of the variables that are believed measure the root causes of terrorism. An operationalization seeks to link empirical indicators to theoretical concepts (Ringdal, 2007, p. 467). Hence, in the following section an explanation on how I intend to quantifiable measure the theoretical foundations laid out earlier will be addressed. Both dependent variables, namely the counts of domestic and transnational terrorism, are derived from the calibrated GTD data presented by Enders, Sandler and Gaibulloev (2011). The independent variables and control variables are mainly derived from Krieger and Meierrieks' (2011) overview of the empirical evidence on the determinants of terrorism. In addition, to the count variable, I have generated two dichotomy variables from the before mentioned count variables to address the probability of domestic and transnational terrorism.

5.3.1 Dependent variables

The data set presented by Enders, Sandler and Gaibulloev (2011) produces this thesis' four dependent variables. These are, namely, the count of domestic and transnational terrorist incidents in country-year units for the period 1970 to 2007. In addition, I have generated two dichotomy variables measuring whether or not a country experienced domestic or transnational terrorism in a given year.

This thesis' first dependent variable is the yearly count of domestic terror events in a country from 1970 to 2007. As shown in figure 6 the count increases significantly from the mid 1980's to the beginning years of the 1990's. The event count peaks in 1992, which holds 3,220 events, while the year that holds the fewest counts is 1972 with 56 events. Hence, during a period of 20 years, domestic terrorism increased with 3,165 incidents per year.

The second dependent variable is the country-year count of transnational terrorism from 1970 to 2007. As shown in figure 7, there is a significantly increase in counts from the early years of the 1970's to 1979. However, unlike the domestic terrorism count, there is a decline in the yearly events in the 1980's, followed by a rapid increase around 1990. The yearly number of transnational terrorist events peaks in 1991 with nearly 800 events.

Figure 6: Number of domestic terror events.

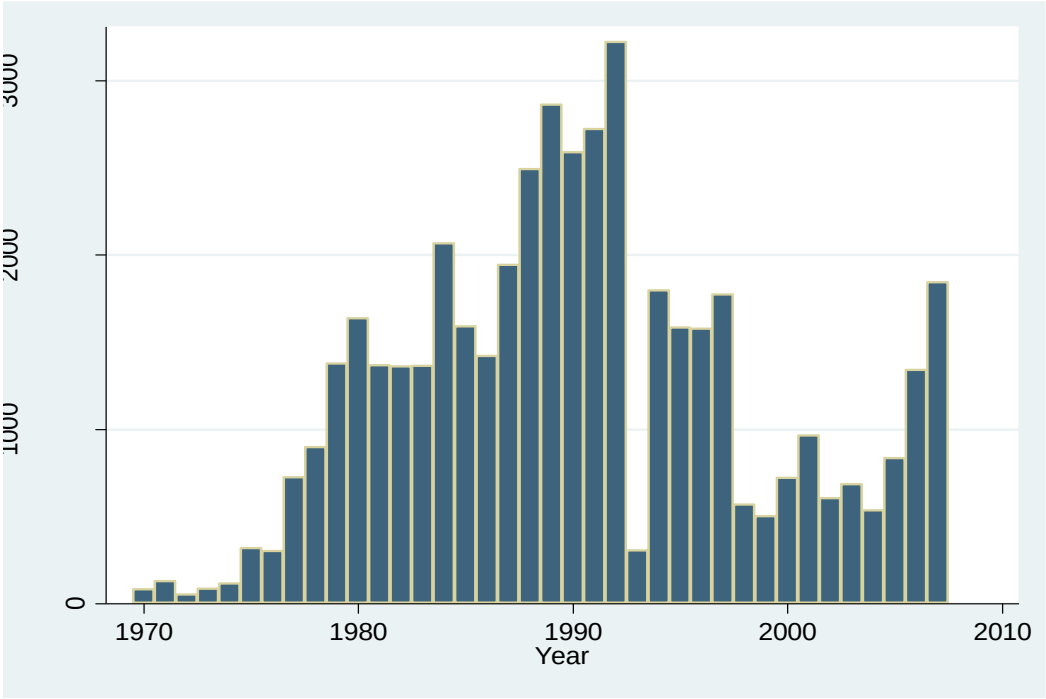
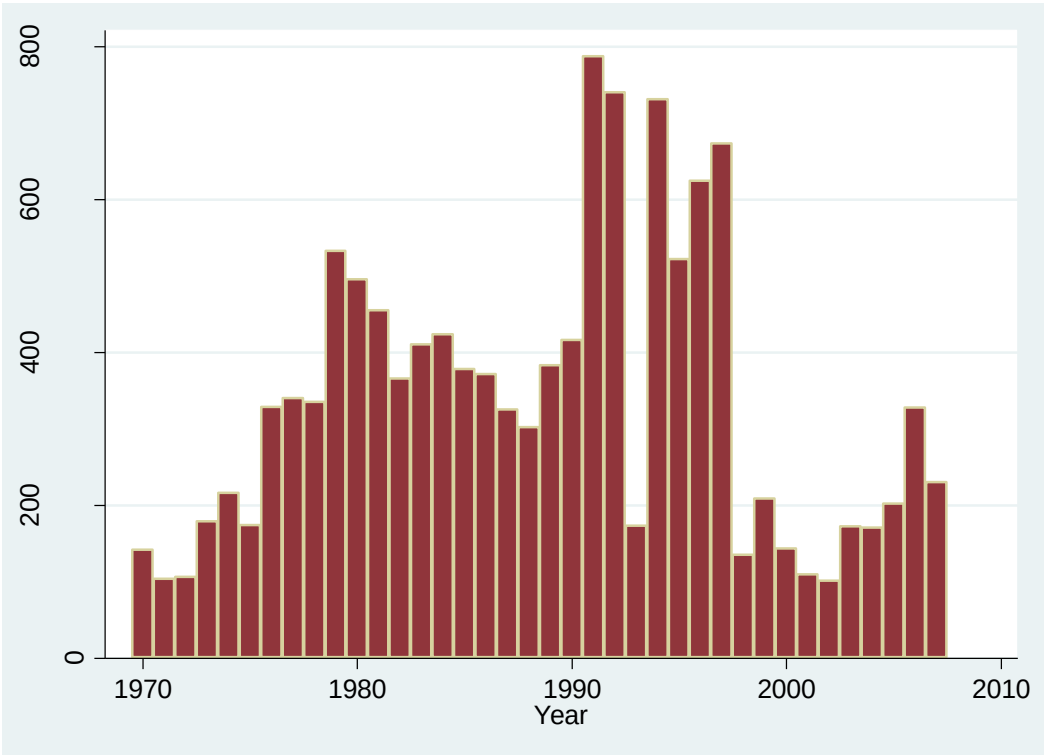


Figure 7: Number of transnational terror events



The immediate difference between the two dependent variables is, as noted earlier, the vast difference in the yearly count. While the amount of incidents is fairly equal along both types in the early seventies, the amount of domestic terrorist events increases rapidly towards the 1980s. According to Rapoport (2004) the late seventies saw the emergent of the 'religious wave' of terrorism, with Islam at the heart of it, causing some of the most "significant, deadly, and profoundly international attacks". Combined with the politically charged 'new left' wave of terrorism, this may explain the rapid increase for both domestic and transnational events. Interestingly, the amount of domestic incidents increases during the 1980s, while there is a decline for transnational events. As will be further addressed later, this may be related to events in Latin America. According to Feldmann and Perälä (2004) many countries in Latin America "that regained democracy in the early 1980s had to confront new opposition organizations". The amount of terrorist events peaks in the early nineties for both types of terrorism. This may be explained by noteworthy events like the opening of the Berlin Wall in 1990; the start of the Gulf War in 1991; the disbanding of the Warsaw Pact in 1991; the breakup of the Soviet Union in 1991; and the creation of a single European market in 1993 (Enders & Sandler, 2002). For both domestic and transnational terrorism, there is a steadily increase in events from the beginning of the 2000s. Torbjørn Kveberg (2012) finds in his master's thesis, a steady rise of exclusively religious incidents each year up until 2010.

Table A3 in appendix A (chapter 9.2) displays an overview of every country included in this study, in addition to the rate of domestic and transnational terrorism they have experienced. Table 4 displays the seven countries that have experienced the highest rate of domestic and transnational terrorism. First of all, the difference between the rates of domestic terrorism and transnational terrorism is evident. Peru has almost experienced five times more domestic terrorism than the country that has experienced the most transnational terrorism. Secondly, it is very interesting that only two countries, Colombia and Spain, appear on both lists. This suggests that being tormented by domestic terrorism does not necessarily increase the rates transnational terrorism.

A third point is that, for domestic terrorism four of the seven countries is located in Latin America, while for transnational terrorism, only Colombia is. Colombia has also the highest rate of transnational terrorism. Terrorism in Latin America is in a large degree

associated with left wing ideologies and drug trafficking. According to Dennis, political violence has tormented the past two centuries of Colombian history, but this reached unprecedented levels after the outbreak of *La Violencia* in 1948 (2006, p. 91). Later guerilla and terrorist groups such as FARC (Fuerzas Armadas Revolucionarios de Colombia) was established. Although formed as the military wing of the Colombian Communist Party, they have today ties to drug trafficking and actively targets foreign and domestic individuals (NCTC, 2012). In Peru the Shining Path has hundreds of combatants, and is also involved with drug trafficking (Sullivan, 2008). Indeed, the larger part of the domestic terrorist incidents in Peru happened during the 1980's and early 1990's. This is clearly linked to the progress of the Shining Path. In the words of Starn, Robin, and Degregori (2005, p. 319):

> *On May 18, 1980, Peru held elections for a civilian president after twelve years of military rule. Few paid much attention to reports that, just the day before, five masked members of the Communist Party of Peru– Shining Path had burned ballots in the Ayacucho village of Chuschi. But Chuschi was the opening salvo in a revolutionary assault on the Peruvian state. As it continued into the 1990s, the Shining Path became the largest insurgency on Peruvian soil since Túpac Amaru's rebellion two centuries before and one of the most violent in late-twentieth-century Latin America.*

Interestingly, only Colombia and Spain occur on both lists. In Spain the ETA is by far the most important terrorist organization, if not in Europe (Barros, 2003). ETA has not only committed numerous attacks on Spanish citizens, but have has also targeted journalists and tourists areas, which may explain the high rates of transnational incidents accounted to Spain (Office for Counterterrorism, 2012). With the terrible civil war onset and the breakdown of state institutions, Lebanon got sucked in a regional conflict that included their neighbors Israel and Syria, along with Iraq, Iran, and Libya; the United States and France; as well as the Soviet Union (J. Marshall, 2012, p. 1). This may explain Lebanon's high rate of transnational incidents.

Table 4: The seven countries with most terrorist incidents

The seven countries with highest rate of domestic terrorism.		The seven countries with highest rate of transnational terrorism.	
Country	Domestic Incidents	Country	Transnational Incidents
Peru	4,648	Colombia	962
Colombia	4,218	Lebanon	598
El Salvador	3,045	Spain	431
India	2,944	Germany[12]	405
Spain	2,095	Iraq	392
Chile	1,774	Italy	383
Turkey	1,651	France	335
Total	**20,375**	**Total**	**3,506**

As noted above, in addition to analyzing if certain societal traits of a country may explain the rates of the two types of terrorism, a regular logistic regression analysis to account for the probability of experiencing terrorism will be run. Therefore, I have created two dichotomy variables. In the first variable I have plotted 1 if the country experienced domestic terrorism that year or 0 if it did not experience domestic terrorism. And in the second variable the country-year have been give 1 if it experienced transnational terrorism that year or 0 if it did not. Of all the 177 countries that are included in the analysis 161 have experienced at least one incident of domestic terrorism, while 148 countries have experienced transnational terrorism. Independent Variables

The theory chapter outlined in what way economic, political, and social factors could trigger both domestic and transnational terrorism. By certain traits, societal factors may lead to frustration among citizens, create opportunities to act, or make certain identity factors more salient. As seen in appendix A (chapter 9.2), there is a vast amount of different theories and causal mechanisms that are argued to play a factor in the genesis of terrorism as well as increasing the rate and probability of being a target of foreign attacks. In this thesis, I have used, as a point of departure, the overview of the determinants of terrorism made by Krieger and Meierrieks (2011).

[12] The data has not distinguished between West Germany and East Germany.

5.3.2 Economic variables

In accordance with the empirical foundation laid out in this thesis, I present the following operationalization of the economic variables.

5.3.2.1 Poverty and Wealth

One variable that have been widely used to measure poverty is a country's Gross Domestic Product (GDP) per capita (e.g.: Findley & Young, 2011; Krueger & Laitin, 2008; Tavares, 2004). This variable is derived from The World Development Indicators (WDI), published by the World Bank (2013), and indicates a country's GDP in constant U.S. 2000 dollars. This variable is calculated annually and covers every year of this thesis' sample. Due to a possible decreasing return to scale, I use a log transformed version in the analysis.[13] In addition, this variable has been lagged one year. Countries associated with low rates of GDP per capita are mostly found in Africa, like Liberia, Congo Kinshasa, and Burundi. As seen in the overview in table A3 in appendix A, they are however not associated with very high rates of either domestic or transnational terrorism.

5.3.2.2 Economic Inequality

As noted earlier, terrorism may arise in countries tormented by economic inequalities. Frustration may arise if there is a discrepancy between what individuals think they deserve in the economic distribution process and what they actually receive, while radical groups may exploit economic inequalities to muster support and recruits.

A widely used measure of economic inequality is the GINI index. The GINI index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution (WorldBank, 2013). The index of 0 represents perfect *equality*, while and index of 100 implies perfect *inequality*. Thus, in the case of domestic terrorism, I would expect a positive direction. In addition, this variable is lagged one year.

The GINI index is, however, not perfect. It is severely characterized by the lack of coverage for many years and countries. To account for this I have combined the index derived from the World Bank data (2013) and the UNU-Wider World Income Inequality Database presented by the World Institute for Development Economic Research (UNU-

[13] For instance, the leap from 10,000 to 20,000 is more than the leap from 10 to 20.

WIDER, 2008). Although, this combination improves the quality of this variable in a very large degree, it is still not perfect.

5.3.2.3 Economic Growth

As noted earlier, it is expected to be a connection between a state's economic growth process and domestic terrorism. This is usually measured by a GDP per capita growth index, which I have drawn from the World Development indicators (WorldBank, 2013). This variable measures continually the annual percentage growth rate of GDP at marked prices based on constant local currency, and is aggregated on constant 2000 U.S. dollars. This variable is also lagged one year.

5.3.2.4 Trade Openness

The first aspect that is believed to only matter for transnational terrorism is a country's level of trade openness. Economically integrated states may be more prone to experience transnational terrorism as a reaction by groups to counter foreign dominance. One could hypothesize that these groups grow from states that are falling behind in the global market, but this requires a dyadic research design.

To measure a countries level of economic integration, a country's level of trade openness is used. This variable is drawn from the World Development Indicators (WorldBank, 2013), and is the logged "sum of exports and imports of goods and services measured as a share of gross domestic product". In addition, this variable is lagged one year.

5.3.3 Political variables

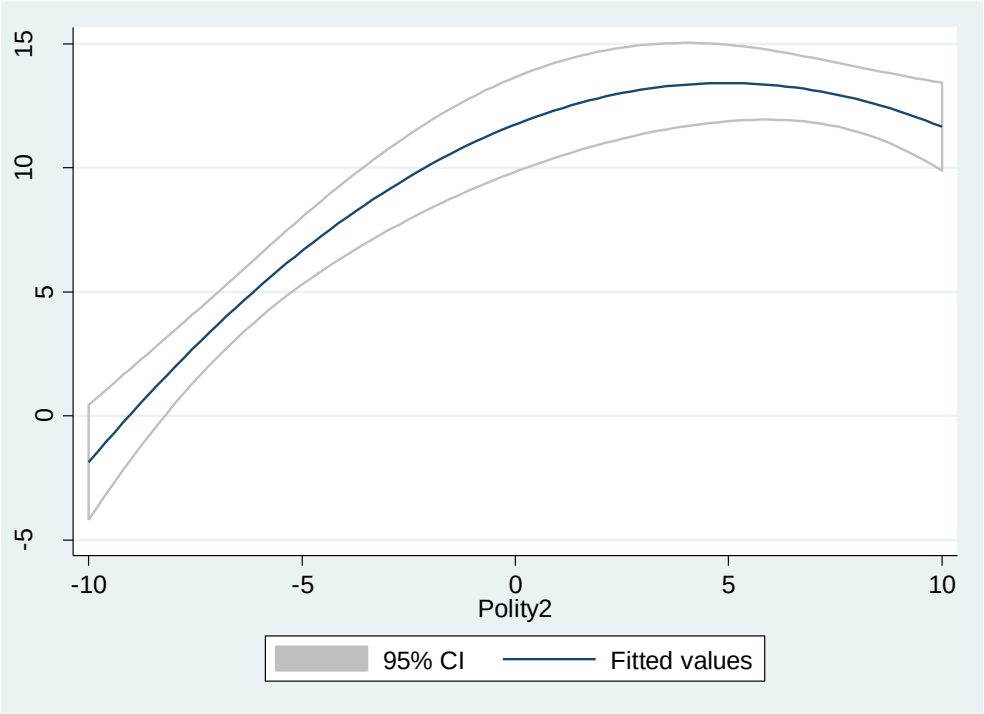
5.3.3.1 Regime Type

As noted earlier, it is an ongoing dispute in the terrorism research whether a certain regime type is more prone to experience terrorism. In the debate between political access school and the strategic school, there is still no consensus whether democratic states are more prone to experience domestic terrorism that autocratic states. As discussed above, I expect that being a semi-democratic state increases the rate and probability of experiencing domestic terrorism, and that democratic states are more exposed to transnational terrorism. As displayed in the overview in table A3 in appendix A, it is difficult to assess this. For instance, both China and Cuba, two countries that are associated with higher rates of autocracy, have not experienced a lot of terrorism

despite their high levels of population.[14] Still, Mexico, during their period of democratization in the 1990's, experienced a boost in domestic terrorism. From 1994 through 1997, Mexico experienced 134 domestic terrorist incidents. As seen in the overview in table A3 in appendix A, this accounts for over half of the total amount (228 counts) of domestic incidents counted in Mexico from 1970 through 2007.

A common and widely used measure of democracy, is the Polity IV project presented by Marshall, Jaggers, and Gurr (2011). The polity project measures and computes a country's level of aggregated democracy and autocracy by certain composite indices and characteristic. These proxies are: executive recruitment; the independence of executive authority; and political competition and opposition. The Polity IV have variables that includes a country's degree of democracy, which is scored along an eleven point scale were 10 is strongly democratic. Likewise, autocratic is measured along an eleven point scale were 10 is strongly autocratic. From this, they have made a combined scale called Polity2. This is computed by subtracting the AUTOC score from the DEMOC score; resulting in a unified scale that ranges from +10 (strongly democratic) to -10 (strongly autocratic).

Figure 8: Quadratic prediction plot of democracy and domestic terror events



[14] China has experienced 92 domestic events and 23 transnational events, while Cuba has experience 16 domestic events and 7 transnational.

Figure 8 displays the possibility of a curvilinear relationship between the degree of democracy and the rate of domestic terrorism.[15] As seen, there is reason to believe that there is an inverted U-curve. Thus, the analysis will also include a squared term of the Polity2 variable.[16] These variables are both lagged one year.

5.3.3.2 Regime Stability

A sizable number of scientists find that regime age is a negative predictor of terrorism (Eyerman, 1998; Koch & Cranmer, 2007; Piazza, 2011). Thus, it is believed that established regimes are less likely to experience both domestic and transnational terrorism than relatively new regimes.

To measure this, I use the duration variable from the polity data. This variable measures continually the number of years since the most recent regime change, or the year of independence (M. G. Marshall, et al., 2011). Thus, a country will be given the baseline of 0 (year zero) and one value added in the subsequent year until a new regime change or transition period occurs. This variable is lagged one year.

5.3.4 Socio-cultural variables

5.3.4.1 Population Growth

As shown earlier, there is reason to believe that a rapid growth in population may increase the risk of domestic terrorism. Following Homer-Dixon (1994), frustration may arise as a consequence of shortage of water, forest and fertile land. To account for this, I include a lagged measure of population growth from the World Bank Indicators (WorldBank, 2013). Population growth is the annual percent of the exponential rate of growth of midyear population from year -1 to t.

5.3.4.2 Urbanization

As suggested by Crenshaw (1981), a high rate of urban population may increase the rate and probability of terrorism. As discussed before, this may be explained both from a frustration-aggression perspective and from an opportunity perspective. To test this, I include a lagged measure of the urban population inhabiting a country. This variable is

[15] I have also created a quadratic prediction plot of democracy and transnational terrorism. This figure shows a steadier incline and is included in figure B1 in appendix B.
[16] I did assess using a dummy variable to measure semi-democratic states. I found, however, that using a squared term was the most appropriate for this thesis. This is also done by Hegre, et al.(2001)

also derived from the World Bank data (2013). Urban population is drawn from the percentage of a county's total population.

5.3.4.3 Education

To test whether higher education increases the rate and probability of experiencing domestic terrorism I use a lagged state's net enrollment rate of secondary school, drawn from World Bank (2013). The problem, however, is that this variable is very poor and lacks a huge amount of observations. Thus, in the analysis I will proceed with caution.

5.3.4.4 Ethnic Fractionalization

As discussed earlier, it is expected that the rate and probability of experiencing both domestic terrorism and transnational terrorism increases in ethnic fragmented and fractionalized states. This may be explained by a severe group identity friction, creating opposing groups. This may not only be a domestic phenomenon since ethnic groups may operate across civilizational lines instead of territorial borders (Ellingsen, 2000; Huntington, 1993).

To test for this an updated measure of a country's ethnic fractionalization, taken from Ellingsen (2000) is included.[17] This variable measures the probability of two random individuals belongs to different ethnic groups. Thus, a value of 1 indicates a perfect heterogeneous country and 0 a perfect homogenous country. Examples of the latter are countries like North Korea and Iceland, while examples of highly fractionalized countries are Uganda and Kenya.[18] Ellingsen (2000) have based this variable on three different sources, namely *The Handbook of Nations*, *Britannica Book of the Year*, and *Demographic Yearbook*. This variable is lagged one year.

5.4 Control Variables

In this thesis I have chosen two control variables. What makes this thesis special is that it consists of many independent variables. Since the aim of this thesis is to compare two dependent variables along different environmental characteristics, it is difficult to develop a solid set of variables to control for the effects of the independent variables. I any case, I have decided to use two measures that are argued to be solid indicators of a

[17] This data is updated to the year 2012.
[18] Uganda has the highest level of ethnic fractionalization is this analysis with a level of 0.872, while Kenya has a level of 0.864.

country's societal characteristic, and are widely used as explanations of terrorism. These are, namely, population and country size.

5.4.1 Population Size and Country Size

The first control variable is the population size of a country. Since the difference between 2 and 3 million inhabitants may be more substantial than 152 and 153 million, I have log transformed this variable. Population size is taken from the World Bank Data (2013) and is lagged one year.

Population size is probably the most consistent finding in the research on terrorism (Burgoon, 2006; Dreher & Gassebner, 2008; Findley & Young, 2011). More people mean more accessible targets and potential recruits for the terrorists. In addition, as pointed out by Eyerman (1998), more people means more demands placed upon the government than in less populous states. Thus, I expect that a more population increases the rate and the probability of experiencing terrorism, both domestic and transnational.

Eyerman (1998) further argues that in smaller states the government should be more able to monitor their population than large states. In addition, large areas may make it easier for dissident groups to find safe havens with difficult access (Abadie, 2006). This may suggest that larger areas increase the rate and probability of experiencing domestic terrorism. However, as Sánchez-Cuenca and de la Calle (2009) points out, terrorists must remain underground. In large areas they may develop to become guerillas instead of terrorists. From the overview in table A3 in appendix A, country size is not necessarily linked to higher rates of terrorism. For instance, while both Russia and the United States have experience higher rates of attacks, China has been fairly spared. To account for this I thus include a log transformed measure of a country's square kilometer.

5.5 Statistical Dependency

In the research on terrorism it is both intuitive to believe, and empirically found (see Krieger and Meierrieks, 2011) that there is temporal contagion. Past terrorism breads new terrorism. In regression analysis one of the assumptions is that "the usual standard errors, tests, and confidence intervals assume no correlation among errors" (Hamilton, 1992, p. 51). When using cross-section time-series data to analyze the probability of terrorism occurring, it is unlikely that units are statistically unrelated over time. Beck, Katz and Tucker (1998) suggests adding a temporal dummy variable measuring time since last observation (in this case, *time since last terror incident*) and *splines* to the

logistic regression. The splines give a smoothed version of the hazard information (risk of terrorism) captured in the temporal dummy.

5.6 Quality of Data

As noted before, the GTD data have some problems in regards to the two separated coding phases. The fact that the coding conventions that were used for 1970 to 1997 do not match the years of 1998 to 2007, is not optimal. However, I do not see that this will reduce the quality of the findings in this thesis. First, this thesis' approach is longitudinal. This means that it uses data of every year from 1970 through 2007. If the research question had suggested a cross-sectional design, the problem would have been potential bigger. Secondly, the ITERATE have used a consistent coding method over the entire period (Enders, et al., 2011). This way, the potential differences may have been reduces in the calibration process between the GTD and ITERATE. Third, and finally, the fact that a large amount of data for 1993 is missing, may be a potential problem. However, since this is the case for both domestic and transnational terrorism, I will argue that this does not reduce the quality of the empirical results.

The Polity2 data have come under some criticism. Munck and Verkuilen (2002) argue that one "particularly grave problem for the Polity index" is the omission of 'participation. Alternatively, it could have been possible to include Freedom House's measure of political rights and civil liberties or Vanhanen's measure of democracy.

Finally, as noted earlier, the GINI index drawn from the World Development Indicators (WorldBank, 2013), lacks a vast amount of observations. Although, I have merged this the income inequality data from the UNU-Wider World Income Inequality Database (UNU-WIDER, 2008), it is far away from optimal. This diminishes the explanatory power of this variable in a large degree.

5.7 Statistical Methods

As noted previously, two types of statistical methods are applied namely, zero-inflated negative binomial regression and logistic regression. While the zero-inflated negative binomial regression is being applied to the count variable to test whether certain societal characteristics may explain the rate of terrorism, the logistic regression is being applied to test whether these characteristics may increase or decrease the probability of experiencing terrorism.

5.7.1 Zero-Inflated Negative Binomial Regression: A Count Data Approach

The main purpose of my statistical model is to account for differences and similarities between the two dependent count variables namely, the number of domestic terror events and the number of transnational events. Since both these variables measure the number of events that occurred in a country in a given year, the values are discrete and non-negative (King, 1989). Scientists from various disciplines have often relied on regular linear regression when dealing with count outcomes, however, according to Long and Freese this can result in "inefficient, inconsistent, and biased estimates" (2006, p. 349).

For count variables, Poisson regression provides the most basic model. Here, a Poisson distribution determines the probability of a count (one terrorist incident in this case).[19] This model, however, rarely fits due to overdispersion. This means that it does not allow the conditional variance to be greater than the conditional mean (Long & Freese, 2006, p. 372). As for this thesis' two dependent variables the conditional variance is vastly greater than the conditional mean, thus indicating a potential overdispersion.[20] This makes either the negative binomial regression model or the zero-inflated negative regression model more applicable since they allow the variance to exceed the mean.

Figure 9 and 10 shows that zero is the most common count in both variables. What speaks in favor of the zero-inflated negative binomial regression is that it accounts for *excessive* zeros. According to Long and Freese (2006, p. 394) the zero-inflated negative binomial regression allows for zeros to be generated by two distinct processes. In the first process, an outcome of 0 occurs with a probability of 1 in an *always zero group*, and in the second, *not always zero group*, an outcome of 0 occurs, but there is still a nonzero probability that there is a positive count. This means that certain country-year cases are never likely to experience terrorism, while other cases are likely to experience terrorism while still experiencing some periods without it (Findley & Young, 2011). Moreover, test statistics aimed at providing guidance in deciding between negative binomial regression and zero-inflated negative binomial regression recommend using a zero-inflated

[19] In a Poisson distribution, the relationship between the expected count, μ, and the probability of observing any observed count, y, is shown as: $\Pr(y|\mu) = e^{-\mu}\mu^{y}/y!$, for $y = 0, 1, 2 \ldots$ (Long and Freese 2006, p. 349).

[20] For the country-year count of domestic incidents the mean is approximately 6 and the variance 932, while the transnational count shows a mean of 1 and a variance of 47.

technique.[21] Thus, what we end up with is two models. The first model is a count model presenting result equivalent to the negative binomial regression model. The second model is an inflated model and accounts for excessive zeroes in the analysis.

Figure 9: Country-level distribution of domestic events.

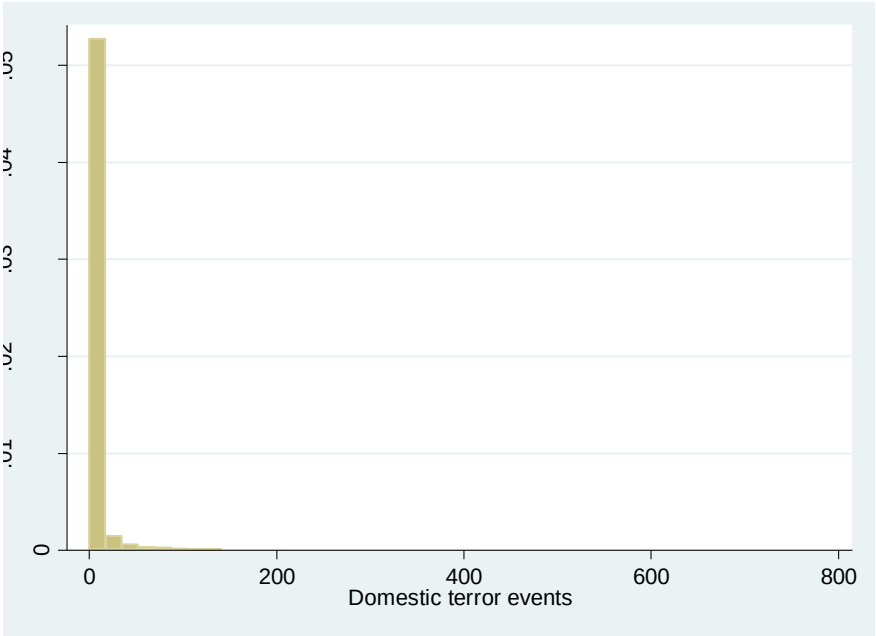
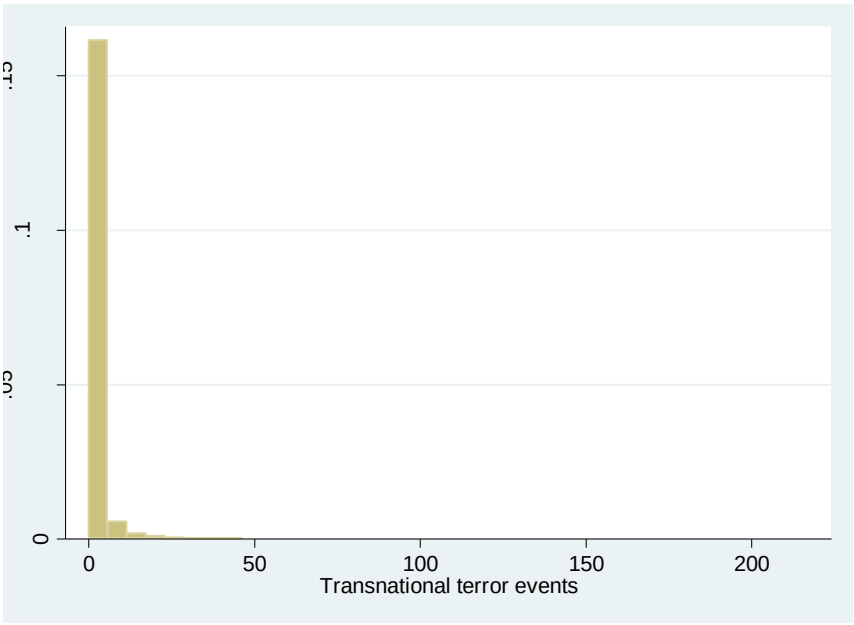


Figure 10: Country-level distribution of transnational events



[21] I have applied BIC, AIC, and Vuong statistics to determine whether or not to use the zero-inflated negative binomial method. See figure D1 and table D2 in appendix D.

5.7.2 Logistic Regression: A probability approach

Logistic regression is a widely applied approach when dealing with dichotomous variables (Hamilton, 1992). Therefore I have recoded both count variables measuring the number of terrorist events occurring in one country in a certain year, to measure *if* a country experienced terrorism. This makes me able to analyze the probability of a country experiencing either domestic or transnational terrorism, where a terrorist event is coded as 1 if a country experienced terrorism that year, and 0 if a country did not experience terrorism. Logistic regression is defined as:

$$P(Y) = \frac{1}{1+e^{-(b0+b1X1i)}}$$

Where P(Y) is the probability of Y occurring, King and Zeng (2001) suggests applying rare event logistic regression when dealing with excessive zeros since regular logistic regression may result in biased results. This, however, is suggested for small samples (under about 200), in which this thesis' sample is not. Therefore I am applying regular logistic regression.

5.8 Data Summary

Table 5 displays this thesis' descriptive statistics. As shown, there are four dependent variables, two count variables and two dichotomy variables. Every independent variable is lagged one period, and is measured as continually variables. As noted, the GINI index lacks a vast amount of observations, which may become potentially difficult in the analysis.

Table 5: Descriptive statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
Domestric Incidents	6,046	7.609	33.920	0	673
Transnational Incidents	6,046	1.754	6.339	0	135
Domestic Dichotomy	6,046	0.331	0.471	0	1
Transnational Dichotomy	6,046	0.305	0.451	0	1
Economic Variables					
Log GDP per Capita	5,407	7.500	1.576	4.057	10.891
GINI Index	1,810	38.617	10.981	12.1	76.6
GDP per Capita Growth	5,353	1.847	6.662	-50.290	147.549
Log Trade Openness	5,187	4.147	0.630	-1.175	6.084
Political Variables					
Polity2	5,241	0.459	7.492	-10	10
Polity2 Squared	5,241	56.329	31.957	0	100
Regime Durability	5,464	22.436	28.542	0	198
Socio-Cultural Variables					
Population Growth	5,863	1.893	1.598	-10.955	17.535
Urbanization	5,654	49.324	24.506	2.382	100
School Enrollment	4,065	56.798	34.085	0	162.349
Ethnic Fractionalization	4,696	0.324	0.256	0	0.873
Control Variables					
Log Population	6,046	15.604	1.864	9.859	21.001
Log Country Size	5,801	11.896	2.132	5.768	16.612

6 Empirical analysis

This chapter performs the empirical analysis based on the theoretical foundation put forward earlier. In order to properly test for both the rate of terrorism and the probability of experiencing an attack, I intend to run two different analyses. First, to account for the rate of terrorism, the discrete count variable counting the number of times a country in a given year experienced either a domestic or a transnational terrorist attack is utilized. To test for this, as noted before in chapter 5, zero-inflated negative binomial regression is applied. The zero-inflated negative binomial regression analysis reports two distinct sets of models in each table. First, it produces the negative binomial regression model, referred to as the count or non-certain-zero model. This model can be interpreted as an increasing in the number of events with an increasing or decreasing in the rate of the explanatory variable. The second model reports the inflated model. This reports the probability of a country being a certain zero or not. In addition, to test if certain societal factors may influence the probability of experiencing either domestic or transnational terrorism, logistic models are also run. Thus, this empirical analysis makes it possible to both answers whether certain country characteristics may influence the rate of terrorism and the probability of experiencing an event.

6.1 Domestic terrorism

As noted above, this section provides the empirical analysis of the rates and probability of domestic terrorism. First, I will provide a separate test for the economic, political, and socio-cultural factors that have been argued to influence domestic terrorism. Second, this will lead up to a final model where all variables are included.

6.1.1 Zero-inflated negative binomial models

Table 6 displays a zero-inflated negative binomial regression analysis where the economic factors that are hypothesized to influence the rate of domestic terrorism are included.[22] In model 1 and 4, GDP PER CAPITA is included along with the control

[22] An ongoing debate is surrounding whether or not to include all variables in the inflated section of the zero-inflated negative binomial regression model. Drakos and Gofas (2006) argue that only factors associated with regime type should be included in the inflated section. This is due to potential under-reporting biases caused by, for instance, limited press freedom. I have, however, chosen to include all variables in the inflated section, which is also done by Piazza (2011). Appendix D table D1 provides a comparison between models with all factors included in the inflated section, and models with only the variable measuring DEMOCRACY is included.

variables.[23] As shown GDP PER CAPITA is not a significant predictor of the rates of domestic terrorism in either model 1 or 4. In the inflated model, GDP PER CAPITA is significant and negative when it is included with all the other economic predictors (model 4). This may suggest that when all other variables are being held constant, the log odds of being an excessive zero would decrease by 0.387 for every additional point on the GDP PER CAPITA scale. In other words, the larger the GDP PER CAPITA the less likely it is that the zero would be due to *not* experiencing domestic terrorism. Thus, the larger the GDP PER CAPITA, the more likely the country is of experiencing at least *one event* of domestic terrorism. This, will however, be further addressed in the logistic analysis. In model 2, the GINI INDEX is included to measure a country's level of economic inequality. Unfortunately, the variable is very poor with only 1,773 observations. Still, this variable shows, in the count model, to be significant on the $p<0.001$ level and positive. In model 3, GDP PER CAPITA GROWTH is included. As shown, this variable is a significant and negative predictor of the rate of domestic terrorism, when all other variables are held constant. This is interesting since it disputes the suggested hypothesis that higher rates of economic growth increase the rate of domestic terrorism. In addition, in the inflated model, in model 4, the variable becomes significant on the $p<0.05$ level when POPULATION, COUNTRY SIZE, and GDP PER CAPITA is accounted for and held constant. This suggests that, not only do GDP PER CAPITA GROWTH explain a decrease in the rate of domestic terrorism; it also suggests that states that have a higher rate of economic growth have a lower probability of experiencing at least one event of domestic terrorism. This aspect, however, will be further tested in the logistical model later.

Turning to the control variables, it is shown that POPULATION may explain an increase in the rate and probability of experiencing domestic terrorism in all models, except in the inflated model when it is tested against the GINI INDEX. The lack of significance here may be explained by the lack of observations. COUNTRY SIZE however is, in the count model, only significant when the GINI INDEX is included. This may not have any other substantial effect than that COUNTRY SIZE becomes more important when there is a high degree of economic inequality.

[23] Throughout the empirical analysis I use capital letters when I address the variables.

Table 6: Economic variables and domestic terrorism

	Model 1	Model 2	Model 3	Model 4
Count Model				
Population	0.686***	1.065***	0.690***	0.710***
	(0.0859)	(0.131)	(0.0676)	(0.0915)
Country Size	-0.111	-0.319***	-0.105	-0.105
	(0.0634)	(0.0856)	(0.0623)	(0.0616)
GDP per Capita	-0.0127			-0.0370
	(0.0879)			(0.0897)
GINI Index		0.0867***		
		(0.0103)		
GDP Growth			-0.0241**	-0.0252**
			(0.00848)	(0.00869)
Constant	-7.477***	-15.03***	-7.691***	-7.725***
	(0.869)	(2.016)	(0.797)	(0.897)
Inflated Model				
Population	-1.038***	-0.485	-1.127***	-1.009***
	(0.0973)	(0.373)	(0.0939)	(0.0965)
Country Size	0.240**	-0.428	0.296***	0.239**
	(0.0812)	(0.276)	(0.0852)	(0.0816)
GDP per Capita	-0.325			-0.387*
	(0.167)			(0.190)
GINI Index		0.0740*		
		(0.0373)		
GDP Growth			0.0189	0.0245*
			(0.00972)	(0.0104)
Constant	1.762***	1.619***	1.751***	1.737***
	(0.0497)	(0.0696)	(0.0445)	(0.0540)
Observations	5184	1773	5141	5059

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

Table 7, provides the separate test of the political variables based on the theoretical foundation put forward above, namely: regime type, measured by a country's level of DEMOCRACY, and regime stability, measured by DURABILITY.

In model 5, DEMOCRACY and DEMOCRACY-SQUARED are included. In both models a country's level of DEMOCRACY is significantly positive, while DEMOCRACY-SQUARED is significantly negative, when all other variables are being held constant. This suggest that there is an inverted U-shape in the relation to the counts of domestic terrorism, and thus that a higher rate of domestic terrorism may occur in semi-democratic states. In model

6, the regime DURABILITY is included. As shown, this variable is a negative and significant predictor of higher rates of domestic terrorism. In the inflated model, regime durability is also found to be significant and positive, both when it is only measured alongside the control variables and when it is included with the other political variables in model 7.

Table 7: Political factors domestic terrorism

	Model 5	Model 6	Model 7
Count Model			
Population	0.655***	0.915***	0.744***
	(0.122)	(0.0933)	(0.142)
Country Size	-0.110	-0.187**	-0.143
	(0.0878)	(0.0671)	(0.0883)
Democracy	0.0634***		0.0636***
	(0.0141)		(0.0151)
Democracy2	-0.0179***		-0.0158***
	(0.00245)		(0.00237)
Durability		-0.0103***	-0.00630***
		(0.00156)	(0.00147)
Constant	-6.329***	-10.32***	-7.389***
	(1.112)	(1.024)	(1.399)
Inflated Model			
Population	-0.890***	-1.398***	-0.864***
	(0.182)	(0.134)	(0.202)
Country Size	0.143	0.427***	0.0986
	(0.137)	(0.109)	(0.135)
Democracy	-0.0846***		-0.0956***
	(0.0213)		(0.0264)
Democracy2	0.00404		-0.000261
	(0.00361)		(0.00398)
Durability		0.00727**	0.00886***
		(0.00255)	(0.00256)
Constant	1.651***	1.892***	1.664***
	(0.0444)	(0.0467)	(0.0452)
Observations	5110	5325	5110

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

Table 8, includes the socio-cultural factors that are argued to influence the rate and probability of domestic terrorism. Hypothesis HD6 suggests that countries with higher rates of population growth will have higher rates of domestic terrorism. In model 8,

POPULATION GROWTH in included. In the count model, POPULATION GROWTH is significant on the $p<0.001$ level and positive, when all other variables are being held constant. However, this variable loses its significance in model 12 where all other socio-cultural variables are included. This may suggest that population growth is not as important in predicting the rates of domestic terrorism as other variables. Another interesting find is that in the inflated model, POPULATION GROWTH shows significant and positive results in model 8. This suggests that higher rates of population growth may not increase the probability of experiencing at least one event of domestic terrorism. Thus, as it may not increase the probability of domestic terrorism, it may increase the rate of the events. This will, however, be further addressed in the logistic test.

In model 9, the variable URBANIZATION is included. Hypothesis HD7 argues that countries with higher rates of urbanization will experience higher rates of domestic terrorism. In both model 9 and 12 the variable turns out to be significant on the $p<0.001$ level and positive. Model 10 has the variable EDUCATION included. Hypothesis HD8 argues that countries with higher rates of education will experience higher rates of domestic terrorism. Conversely to the hypothesis, education is negatively associated with the rates of domestic terrorism, both in model 10 and 12. This suggests that higher rates of domestic terrorism may be associated with a lower level of education.

In model 11, a measure of a country's ETHNIC FRACTIONALIZATION is included. As argued in hypothesis HD9, it is expected that countries with higher levels of ethnic fractionalization will experience higher rates of domestic terrorism. As shown in model 11 and 12, ETHNIC FRACTIONALIZATION is a significant and positive predictor of the rate of domestic terrorism, when all other variables are being held constant. In fact, it is even more significant when it is included alongside the other socio-cultural measures, going from a $p<0.05$ level to $p<0.001$.

Table 8: Socio-cultural analysis and domestic terrorism

	Model 8	Model 9	Model 10	Model 11	Model 12
Count Model					
Population	0.740***	0.721***	0.997***	0.718***	1.055***
	(0.0639)	(0.0640)	(0.0842)	(0.112)	(0.0805)
Country Size	-0.172**	-0.198**	-0.227***	-0.192*	-0.388***
	(0.0581)	(0.0632)	(0.0661)	(0.0960)	(0.0824)
Population Growth	0.167***				0.0653
	(0.0465)				(0.0895)
Urbanization		0.0173***			0.0297***
		(0.00356)			(0.00532)
Education			-0.0161***		-0.0234***
			(0.00286)		(0.00501)
Ethnic Frac.				1.128*	1.720***
				(0.516)	(0.480)
Constant	-8.027***	-8.043***	-10.36***	-7.499***	-11.26***
	(0.748)	(0.797)	(0.977)	(1.110)	(0.894)
Inflated Model					
Population	-0.991***	-1.027***	-0.621***	-1.260***	-0.790***
	(0.0856)	(0.0867)	(0.142)	(0.140)	(0.137)
Country Size	0.169*	0.145	-0.0570	0.243	-0.133
	(0.0733)	(0.0869)	(0.0999)	(0.143)	(0.171)
Population Growth	0.207**				0.224
	(0.0670)				(0.135)
Urbanization		-0.00737			-0.0142
		(0.00590)			(0.00936)
Eduaction			-0.0560***		-0.0299**
			(0.00921)		(0.00947)
Ethnic Frac.				-0.759	0.255
				(0.860)	(0.952)
Constant	1.785***	1.783***	1.783***	1.926***	1.818***
	(0.0451)	(0.0474)	(0.0454)	(0.0515)	(0.0590)
Observations	5629	5596	4015	4551	3265

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

6.1.2 Final ZINB model domestic

Table 9 displays the final zero inflated negative binomial regression analysis for the count of domestic terrorism. This table builds further on the separated models built above. Thus, in model 13, I have included, alongside the control variables, the economic and political factors; in model 14 the political and socio-cultural factors; and in model 15 the economic and socio-cultural factors. Then, in model 16, all these factors are included.

This is being done to make it possible to test the different factors across the societal classifications.

Hypotheses HD1-HD3 addresses the economic factors that are argued to influence the domestic terrorism. Hypothesis HDI, argues that countries with *lower* rates of GDP per capita will experience higher rates of domestic terrorism, while $HD1_{alt}$ argues that countries with *higher* rates of GDP per capita will experience higher rates of domestic terrorism. In table 6, as displayed above, it is shown that GDP PER CAPITA is not a significant predictor of the rate of domestic terrorism, when it is included alongside the control variables. Here, in table 9, this variable is significant and positive in model 13 and 16, but not in model 15. This is interesting since in these two models (model 13 and 16), the variable measuring a country's GDP per capita is tested alongside the political factors. Thus the political factors actually give GDP PER CAPITA explanatory power. This may indicate that higher rates of domestic terrorism may occur in the combination between good economic and poor institutional conditions.

Hypothesis HD2 argues that countries with higher rates of economic inequality will experience higher rates of domestic terrorism. The variable measuring economic inequality, as noted before, lacks a vast amount of observations, and is therefore not included in the final model. However, results from table 6, indicates that the GINI INDEX is a positive predictor if the rates of domestic terrorism, although this is not enough to either confirm or reject the hypothesis.

Hypothesis HD3 argues that countries with higher levels of economic growth will experience higher rates of domestic terrorism. Here, ECONOMIC GROWTH is used as a proxy for a country's level of economic modernization. In model 13, 15 and 16, this variable is included. As displayed in table 9, *this hypothesis cannot be confirmed*. Growth per GDP capita is in fact a negative predictor of the rate of domestic terrorism. This means that countries that have higher rates of growth in the GDP per capita will actually experience lower rates of domestic terrorism. Also here it may be a relationship between ECONOMIC GROWTH and the political factors. Although, this variable is significant in all models, it is more significant in models where it is included alongside political variables (with $p<0.01$ in model 15, and $p<0.001$ in model 13 and model 16). This may suggest that economic growth lowers the rate of domestic terrorism in countries that have the institutions to satisfy the people's demands.

Hypotheses HD4 and HD5 accounts for the political factors that argues to influence the rate of domestic terrorism. The political factors are included in model 13, 14, and 16. Hypothesis HD4 argues that semi-democratic countries will experience a higher rate of domestic terrorism. This is measured by including a DEMOCRACY-SQUARED variable together with the DEMOCRACY variable. Earlier, in table 7, it was shown that when only the political variables were tested, this turned out to be confirmed. Here, in table 9, this is not the case in model 13, when it is tested against only the economic variables. In model 13 only the squared term is significant and negative, indicating a decreasing line on the democracy scale. This may suggest, as pointed out above, that there is a correlation between a country's regime type and the level of economic development.[24] This may indicate that low democracies that also have a higher levels of GDP per capita, have higher rates of domestic terrorism. Still, in model 16, where all of the variables are included, both DEMOCRACY and DEMOCRACY-SQUARED are significant. *This suggests that semi-democratic states have a higher rate of domestic terrorism.* Hypothesis HD5 argues countries with higher levels of regime stability will experience lower rates of domestic terrorism. To test for this I have included a proxy of regime DURABILITY. In table 7, this was shown to be confirmed. This is also the case here in table 9. In model 16, DURABILITY is negative and significant on the $p<0.05$ level. *Thus, hypothesis HD5 can be confirmed.* The fact that the level of significance drops from a $p<0.001$ level in model 13 to $p<0.005$ in model 14 and model 16, may suggest that the socio-cultural factors take away some of the explanatory power of DURABILITY.

Hypotheses HD6 through HD9, addresses the socio-cultural factors and are included in model 14, 15, and 16. Hypothesis HD6, argues that countries with higher rates of population growth will experience higher rates of domestic terrorism. In table 8, it was shown that POPULATION GROWTH was not significant when it was included alongside the other socio-cultural factors. Here, in table 9, it is significant on the $p<0.05$ level in model 14 and on the $p<0.01$ level in model 16. Interestingly, it is only significant when it is included alongside the political variables. This may suggests that population growth becomes important in semi-democratic states, where the government may not have the ability to handle an increase in demands from an increasing growing population. *In any case, this hypothesis may be confirmed.*

[24] The correlation test displayed in table C1, appendix C, shows a value of 0.590; which is not too high.

Hypothesis HD7 argues that countries with higher rates of urbanization will experience higher rates of domestic terrorism. Interestingly, this variable is significant in all models, except in model 16, where it is included alongside all the other variables. The reason for this may be that, when combined with the political and economic variables, a country's level of URBANIZATION is not important in predicting the rates of domestic terrorism. *Thus, this hypothesis cannot be confirmed.* In table 8, it was shown that a country's level of EDUCATION was negatively associated with the rate of domestic terrorism. As conversely argued in hypothesis HD8, it is expected that countries with higher levels of education will experience higher rates of domestic terrorism. In model 14, 15, and 16, this variable is negative and significant on the $p<0.001$ level, showing that higher rates of education leads to fewer events of domestic terrorism. *Thus, this hypothesis cannot be confirmed*.

Finally, hypothesis HD9 argues that a higher rate of ethnic fractionalization leads to higher rates of domestic terrorism. *This cannot be confirmed* since this variable is only significant in model 16. Thus, it is not significant when it is included alongside the political variables. This may, suggest that the political variables are more important in explaining the rates of domestic terrorism than ETHNIC FRACTIONALIZATION.

Turning to the control variables, it seems that the more people that are living in a country (measured by POPULATION SIZE), the higher rate of domestic terrorism they experience. Further, COUNTRY SIZE is a negative predictor of the rate of domestic terrorism. This finding goes against the initial thought put forward in this thesis. However, it is plausible, as suggested by Sánchez-Cuenca and de la Calle (2009) that in larger countries insurgents groups may develop to become guerillas instead of terrorists.

Table 9: ZINB model for domestic incidents - all variables

	Model 13	Model 14	Model 15	Model 16
Count Model				
Population	1.081***	1.054***	1.060***	1.010***
	(0.0608)	(0.0959)	(0.137)	(0.116)
Country Size	-0.215***	-0.374***	-0.334***	-0.315***
	(0.0488)	(0.0827)	(0.0818)	(0.0913)
GDP per Capita	0.552***		0.0132	0.351*
	(0.0635)		(0.113)	(0.152)
GDP Growth	-0.0526***		-0.0438**	-0.0762***
	(0.0116)		(0.0146)	(0.0177)
Democracy	0.0159	0.0986***		0.0824***
	(0.0127)	(0.0185)		(0.0249)
Democracy2	-0.0227***	-0.0176***		-0.0173***
	(0.00266)	(0.00300)		(0.00371)
Durability	-0.0137***	-0.00556*		-0.00585*
	(0.00167)	(0.00218)		(0.00260)
Population Growth		0.208*	0.0903	0.224**
		(0.0899)	(0.153)	(0.0732)
Urbanization		0.0317***	0.0279***	0.0175
		(0.00566)	(0.00690)	(0.00916)
Education		-0.0259***	-0.0271***	-0.0279***
		(0.00486)	(0.00679)	(0.00459)
Ethnic Frac.		0.572	1.369**	0.639
		(0.435)	(0.494)	(0.524)
Constant	-15.60***	-10.44***	-11.59***	-12.13***
	(0.829)	(1.091)	(1.904)	(1.730)
Inflated Model				
Population	-0.332	-0.700***	-0.682**	-0.661*
	(0.190)	(0.207)	(0.230)	(0.292)
Country Size	-0.160	-0.128	0.00930	-0.0626
	(0.105)	(0.156)	(0.277)	(0.194)
GDP per Capita	0.0456		-0.446	-0.422
	(0.122)		(0.421)	(0.374)
GDP Growth	0.0224		0.0220	-0.000117
	(0.0176)		(0.0208)	(0.0388)
Democracy	-0.399***	-0.0276		-0.0489
	(0.0761)	(0.0611)		(0.0677)
Democracy2	-0.0344***	0.00638		0.00682
	(0.00881)	(0.00857)		(0.0112)
Durability	0.0323***	0.0151**		0.0192**
	(0.00762)	(0.00559)		(0.00630)
Population Growth		0.171	0.226	0.209
		(0.129)	(0.263)	(0.119)
Urbanization		-0.0140	0.00677	0.00489
		(0.0110)	(0.0258)	(0.0298)
Education		-0.0394	-0.0353	-0.0277
		(0.0238)	(0.0386)	(0.0155)
Ethnic Frac.		0.577	-0.400	0.425
		(0.845)	(1.119)	(1.045)
	(2.431)	(2.525)	(3.636)	(3.533)
Constant	1.736***	1.719***	1.755***	1.628***
	(0.0401)	(0.0579)	(0.0888)	(0.0694)
Observations	4573	3104	2929	2793

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

6.1.3 Logistic regression models

In this section the logistic regression models analyzing the societal factors and domestic terrorism are presented. As opposed to the zero-inflated negative regression analysis that predicts the rates of domestic terrorism, the logistic regression shows the probability of experiencing domestic terrorism. This section is built in the same way as the zero-inflated negative binomial section. First, I present an empirical analysis where the economic, political, and socio-cultural factors are separated from each other. Then, secondly, I present a final model where these factors are included together. By doing this, it is possible to show if certain factors loses or gains significance when included together. To account for the probability of experiencing domestic terrorism, I have generated a dichotomy variable that are coded 1 if a country experienced domestic terrorism in a given year, and 0 if it did not. In addition, in all the logistic models I have included time since last domestic terrorist event and three cubic splines. This is to control for time dependence in the data.[25] Also here, every explanatory variable is lagged one period.

Table 10 displays the empirical evidence of the separated logistic analysis. Here, I have chosen to build the model by blocks, namely economic variables in model 17, political variables in model 18, and socio-cultural variables in model 19.[26]

Model 17 shows that GDP PER CAPITA is significant on the $p<0.001$ level, and positive. This suggests that a country's wealth may increase the probability of experiencing domestic terrorism. The second economic hypothesis (HD2) argues that states with higher rates of economic inequality have a higher probability of experiencing domestic terrorism. As noted before, the GINI INDEX lacks a vast amount of observations and has therefore only been included in the model building in table E1 in appendix E. It is not significant when it is only included alongside the control variables, but significant when all of the economic factors are tested together. Although, it is difficult to either confirm or reject this hypothesis, I do suggest that economic inequality have an influence on both the rate and the probability of domestic terrorism. ECONOMIC GROWTH is significant and a negative predictor of domestic terrorism, when all other variables are being held constant.

[25] This was discussed earlier in chapter 5.5
[26] I have tested all the factors separately in appendix E.

Model 18 contains the block of political factors. Not only do semi-democracies increase the rate of domestic terrorism, it also increases the probability of an event happening. This cannot be said about regime DURABILITY. Although, as found in table 9, more durable states have a decreased effect on the rates of domestic terrorism, it does not increase the probability of it happening (as argued in hypothesis HD5). This may suggest that regime DURABILITY have an effect on the rate of domestic terrorism after something else has triggered it.

Model 19 addresses the socio-cultural factors. First, POPULATION GROWTH is not a significant predictor of the probability of domestic terrorism, when all other variables are being held constant. Second, URBANIZATION is significant and positive on the $p<0.01$ level. Thus, it may be reason to believe that not only do urbanization increase the rate of domestic terrorism, it also increase the probability of experiencing an event. As seen earlier, higher EDUCATION may explain an increased rate of domestic terrorist events. In appendix E (table E3), it is also found that EDUCATION increases the probability of experiencing an event. However, it loses its explanatory power when it is included alongside the other socio-cultural factors in model 19. This may be due to a high correlation with the variable measuring URBANIZATION, which is over 0.6 (see table C1 in appendix C). Finally, ETHNIC FRACTIONALIZATION is positive and significant on the $p<0.05$ level, suggesting that countries with higher levels of ethnic fractionalization may have a higher probability of experiencing domestic terrorism.

POPULATION SIZE and COUNTRY SIZE are both significant in all models. However, POPULATION SIZE is positive, suggesting that countries with higher rates of inhabitants have a higher probability of experiencing domestic terrorism. COUNTRY SIZE is, however, negative, meaning that larger countries may have a lower probability of experiencing domestic terrorism.

Table 10: Logistic analysis of domestic terrorism

	Model 17	Model 18	Model 19
Population	0.482***	0.472***	0.487***
	(0.0335)	(0.0333)	(0.0446)
Country Size	-0.119***	-0.0954***	-0.149***
	(0.0252)	(0.0258)	(0.0356)
GDP per Capita	0.0774***		
	(0.0221)		
GDP Growth	-0.0232***		
	(0.00661)		
Democracy		0.0496***	
		(0.00538)	
Democracy2		-0.0061***	
		(0.00124)	
Durability		-0.00117	
		(0.00121)	
Population Growth			-0.0284
			(0.0344)
Urbanization			0.00887**
			(0.00283)
Eduaction			-0.00216
			(0.00233)
Ethnic Frac.			0.442*
			(0.175)
Time Since Dom.	-0.156***	-0.144***	-0.190***
	(0.0187)	(0.0186)	(0.0255)
_spline1	0.000682**	0.000734**	0.000620***
	(0.000214)	(0.000230)	(0.000185)
_spline2	0.0142***	0.0138***	0.0130***
	(0.00203)	(0.00204)	(0.00221)
_spline3	-0.0069***	-0.0069***	-0.00652***
	(0.00120)	(0.00124)	(0.00122)
Constant	-6.640***	-5.986***	-6.210***
	(0.437)	(0.417)	(0.522)
Observations	5059	5110	3265

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

Table 11, displays the final logistic model. This table consists of four models. In model 20, the economic and the political factors are included, in model 21 the political and socio-cultural factors, and in model 22 the economic and socio-cultural factors are tested against each other. In model 23 all the variables are included.

First, in the zero-inflated negative binomial regression model (table 9), it shows that the rate of domestic terrorism increases as the rate of GDP per capita increases, when all other variables are being held constant. This contradicts hypothesis HD1 put forward in this thesis, but supports $HD1_{alt}$. According to hypothesis $HD1_{alt}$, it is expected that countries with higher rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism. According to table 11 (model 23) and table 9 (model 16), it seems that both the rate of domestic terrorism and the probability of experiencing an event, increases with higher GDP per capita. *Thus, the alternative hypothesis $HD1_{alt}$ may be confirmed.*

The second hypothesis (HD2) argues that countries with higher rates of economic inequality will experience a higher probability of domestic terrorism. As noted before, the GINI INDEX, which are used to measure economic inequality, lacks a considerable amount of observations. Thus, I have included this variable only in table E1, in appendix E. The model shows that the probability of experiencing domestic terrorism in fact increases with higher rates of economic inequality, when all other variables are being held constant.

Hypothesis HD3 argues that countries with higher levels of economic growth will have a higher probability of experiencing domestic terrorism. This is measured by including ECONOMIC GROWTH. In table 9, the results showed, conversely to the argument in this thesis, that a higher rate of economic modernization actually has a decreasing effect on the rate of domestic terrorism. As shown in table 11, this is also the case for the probability of experiencing domestic terrorism. *Thus, this hypothesis cannot be confirmed.*

Hypotheses HD4 and HD5 addresses the political factors concerning domestic terrorism. First, HD4 argues that semi-democratic countries will experience higher rates and a higher probability of domestic terrorism. The findings in table 11 suggest that not only do the rate of events increase in these regime types, but also the probability of experiencing domestic terrorism increases. *Thus, hypothesis HD4 may be confirmed.*

Hypothesis HD5, argues that countries with higher levels of regime stability will experience higher lower rates and a lower probability of domestic terrorism. To measure for this, I have included a proxy for regime DURABILITY. In table 9, it shows

that the rate of domestic terrorism decreases as the regime durability increased. In table 11, however, regime durability is only significant in model 20, where only economic and political variables are included, and not in model 23, when all variables are included. This may suggest that, although regime stability may not have a triggering effect on domestic terrorism, more unstable regimes may accelerate the rates of events.

Finally, hypotheses HD6 through HD9 puts forward the socio-cultural arguments on the societal causes of domestic terrorism. First, HD6 argues that countries with higher levels of population growth will experience higher rates and a higher probability of domestic terrorism. In the zero-inflated negative binomial model displayed in table 9, it shows that population growth is a significant and positive predictor of the rate of domestic terrorism. Yet, as shown in table 11, the probability of experiencing domestic terrorism does not increase along an increase in the population. *Thus, this hypothesis can only partly be confirmed.*

Hypothesis HD7, argues that countries with higher rates of urbanization will experience higher rates and a higher probability of domestic terrorism. Table 9 shows that an increase in the rate of domestic terrorism cannot be explained by an increase in the level of urbanization. In the logistic results displayed in table 11, URBANIZATION is not a significant prediction of the probability of experiencing domestic terrorism, when all other variables are being held constant. Thus, *hypothesis HD7 cannot be confirmed*.

Hypothesis, HD8 argues countries with higher rates of education will experience higher rates and a higher probability of domestic terrorism. The zero-inflated negative binomial regression in table 9 shows that this is indeed not the case. Here, it is shown that the rate of domestic terrorism decreases with an increase in the level of EDUCATION in a country. Although, the direction is the same, table 11, shows insignificant results in this regard. Thus, the rate of education may explain an increase in the rate of domestic terrorism, yet, it cannot be said to increase the probability of an event happening. Therefore, *this hypothesis can only partly be confirmed.*

Finally, hypothesis HD9 argues that countries with higher levels of ETHNIC FRACTIONALIZATION will experience higher rates and a higher probability of domestic terrorism. *This hypothesis cannot be confirmed*, as this variable is not significant in either

the zero-inflated negative binomial regression model or the logistic regression model, when all other variables are included and being held constant.

Table 11: Logistic models of domestic incidents - all variables

	Model 20	Model 21	Model 22	Model 23
Population	0.433***	0.422***	0.430***	0.423***
	(0.0368)	(0.0501)	(0.0506)	(0.0523)
Country Size	-0.0612*	-0.0974*	-0.108**	-0.0829
	(0.0289)	(0.0418)	(0.0415)	(0.0442)
GDP per Capita	0.158***		0.132*	0.222**
	(0.0353)		(0.0663)	(0.0781)
GDP Growth	-0.0249***		-0.0189*	-0.0210*
	(0.00692)		(0.00886)	(0.00938)
Democracy	0.0344***	0.0412***		0.0383***
	(0.00645)	(0.00793)		(0.00885)
Democracy2	-0.00624***	-0.00456*		-0.00605**
	(0.00150)	(0.00186)		(0.00203)
Durability	-0.00362*	-0.000976		-0.00284
	(0.00152)	(0.00184)		(0.00198)
Population Growth		0.0554	-0.0170	0.0365
		(0.0396)	(0.0486)	(0.0502)
Urbanization		0.00836**	0.00435	0.000229
		(0.00323)	(0.00402)	(0.00432)
Eduaction		-0.00274	-0.00410	-0.00405
		(0.00275)	(0.00297)	(0.00305)
Ethnic Frac.		0.217	0.429*	0.209
		(0.198)	(0.200)	(0.211)
Time Since Dom.	-0.839***	-0.924***	-0.924***	-0.883***
	(0.0444)	(0.0531)	(0.0550)	(0.0556)
_spline1	-0.000136	-0.000291*	-0.000206	-0.000237
	(0.0000976)	(0.000131)	(0.000119)	(0.000128)
_spline2	-0.0196***	-0.0235***	-0.0223***	-0.0216***
	(0.00183)	(0.00226)	(0.00229)	(0.00232)
_spline3	0.00728***	0.00924***	0.00851***	0.00829***
	(0.000927)	(0.00119)	(0.00117)	(0.00120)
Constant	-6.424***	-5.154***	-5.948***	-6.372***
	(0.532)	(0.606)	(0.696)	(0.780)
Observations	4573	3104	2929	2793

Robust standard errors in parentheses. Independent variables lagged one period.

*p<0.05 ** p<0.01 *** p<0.001

The control variables suggest that more populous countries have a higher probability of experiencing domestic terrorism. This can be stated since POPULATION is significant

(on the p<0.001 level) in all models and positive. COUNTRY SIZE is significant and negative in all models, except in model 23. Although, it is not significant in the final model, it suggests that smaller countries actually have a higher probability of experiencing domestic terrorism.

By comparing the final models of the zero-inflated negative binomial regression (table 9) and the logistic regression (table 11), there is some interesting aspects. First, there seems to be a higher rate of significant factors in the zero-inflated negative binomial regression than in the logistic regression. Where nine out of eleven variables are significant in the former model, and only five out of eleven in the latter. This may suggest that there are more societal factors that may explain higher rates of domestic terrorism, than the probability of experiencing at least one event. A second interesting aspect is that neither of the socio-cultural factors presented in model 23 in the logistic model are significant, while there are two in the zero-inflated negative binomial model, namely POPULATION GROWTH and EDUCATION.

6.2 Transnational terrorism

In this section I will turn to the factors that are argued to influence the rate and probability of transnational terrorism. As discussed earlier there are fewer hypotheses that are argued to influence the rate and probability of transnational terrorism than domestic terrorism. This may be due to shortcomings in the terrorism literature. An explanation for this is that scientists have explained and argued on the causal mechanisms leading to domestic terrorism, while tested for transnational terrorism.

As with the former section, models where the economic, political, and socio-cultural factors are separated will be presented. Then, I will present a model where all the factors are included. This will first be done with a zero-inflated negative binomial regression model to account for the rate of events, then with a logistic method to address the probability of experiencing an event.

6.2.1 Zero-Inflated negative binomial regression

Table 12 presents the economic variables that are argued to influence the rate and the probability of transnational terrorism. According to hypothesis HT1, it is expected that countries with higher rates of GDP per capita will experience higher rates of transnational terrorism. The results in table 12 suggests that a country's GDP PER

CAPITA is not significant when it is only included with the control variables against the dependent variable, in model 1. However, it becomes significant on the p<0.05 level when it is combined with the variable measuring a country's trade openness. An interesting aspect is shown in the inflated model. Here, the variable measuring a country's GDP PER CAPITA is significant on the p<0.001 level and negative in both model 24 and 26. This suggests that the log odds of being an excessive zero would decrease for every additional point on the GDP per capita scale. Thus, the larger the GDP per capita, the more likely a country is of experiencing at least one event of transnational terrorism. This aspect will, however, be addressed further in the logistic models.

Table 12: ZINB model of economic factors and transnational terrorism

	Model 24	Model 25	Model 26
Count Model			
Population	0.499***	0.434***	0.387***
	(0.0632)	(0.0605)	(0.0586)
Country Size	-0.102*	-0.185***	-0.215***
	(0.0448)	(0.0490)	(0.0441)
GDP per Capita	0.0687		0.0834*
	(0.0429)		(0.0378)
Trade Openness		-0.0126***	-0.0159***
		(0.00183)	(0.00143)
Constant	-6.610***	-3.296***	-2.552**
	(0.741)	(0.812)	(0.810)
Inflated Model			
Population	-1.088***	-1.444***	-1.137***
	(0.130)	(0.191)	(0.175)
Country Size	0.0946	0.231*	0.0261
	(0.0915)	(0.107)	(0.0974)
GDP per Capita	-0.711***		-0.828***
	(0.164)		(0.157)
Trade Openness		-0.0175	-0.00720
		(0.0102)	(0.00379)
Constant	1.330***	1.350***	1.214***
	(0.0548)	(0.0553)	(0.0526)
Observation	5184	5023	4887

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

In model 25, TRADE OPENNESS is included. Here, TRADE OPENNESS is actually negatively correlated with the rates of transnational terrorism, with the $p< 0.001$ level in all models, when all other variables are held constant. Thus, economic integration actually decreases the rates of transnational terrorism. This goes against the initial argument of hypothesis HT2, which argues that countries with higher rates of trade openness will experience higher rates of transnational terrorism.

Hypotheses HT3 and HT4 addresses the political factors that relates to transnational terrorism. These factors are presented in table 13. HT3 argues that countries with higher rates of democracy will experience higher rates of transnational terrorism. This is claimed on the basis that democratic states are not capable of dealing with the threat of terrorism in the same degree as autocratic states, since it may affect the civil freedoms of the people. In addition, democracies may offer better channels of media exposure than autocratic regimes. As displayed model 27 of table 13, DEMOCRACY is indeed associated with higher rates of transnational attacks. Moreover, in model 28, I have included DEMOCRACY-SQUARED. This suggests, as with domestic terrorism, that there is a curvilinear relationship, an inverted U-shape, between the rate of transnational terrorism and the level of democracy.

Hypothesis HT4 argues that instable countries will experience higher rates of transnational terrorism. As shown model 29 and 30, this hypothesis can be confirmed since the DURABILITY is negative and significant on the $p<0.001$ level.

Table 13: ZINB models of political variables and transnational terrorism.

	Model 27	Model 28	Model 29	Model 30
Count Model				
Population	0.326***	0.386***	0.578***	0.422***
	(0.0605)	(0.0689)	(0.0579)	(0.104)
Country Size	-0.0677	-0.0356	-0.141**	-0.0315
	(0.0629)	(0.0513)	(0.0451)	(0.0518)
Democracy	0.0526***	0.0696***		0.0745***
	(0.0108)	(0.00878)		(0.00801)
Democracy2		-0.0103***		-0.00758***
		(0.00160)		(0.00185)
Durability			-0.00770***	-0.00754***
			(0.00104)	(0.00134)
Constant	-3.801***	-4.750***	-6.801***	-5.427***
	(0.734)	(0.927)	(0.728)	(1.398)
Inflated Model				
Population	-1.403***	-1.679***	-1.564***	-1.975
	(0.348)	(0.500)	(0.262)	(1.042)
Country Size	0.299	0.459	0.407**	0.544
	(0.202)	(0.244)	(0.146)	(0.364)
Democracy	-0.0131	0.0243		0.0458
	(0.0342)	(0.0466)		(0.0826)
Democracy2		-0.00901		-0.0152
		(0.00474)		(0.0149)
Durability			-0.000922	0.00867
			(0.00319)	(0.0116)
Constant	1.364***	1.408***	1.514***	1.429***
	(0.0782)	(0.0883)	(0.0571)	(0.128)
Observations	5110	5110	5325	5110

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

Table 14 displays the only socio-cultural factor that is argued to influence the rate transnational terrorism. The model suggests that higher rates of ethnic fractionalization do not explain higher rates of transnational terrorism.

Table 14: ZINB model of socio-cultural factors and transnational terrorism

	Model 31
Count Model	
Poulation	0.345***
	(0.0721)
Country Size	-0.106
	(0.0696)
Ethnic Fractionalization	0.563
	(0.359)
Constant	-3.693***
	(0.714)
Inflated Model	
Population	-1.289***
	(0.191)
Country Size	0.234
	(0.140)
Ethnic Fractionalization	-0.364
	(0.841)
Constant	1.493***
	(0.0560)
Observations	4551

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05, ** p<0.01, *** p<0.001

6.2.2 Final ZINB model transnational

Table 15 displays the final zero-inflated negative binomial regression model for the count of transnational terrorism. The economic, political, and socio-cultural factors are included and compared in model 32 through 35. In model 32, I have included, in addition to the control variables, the economic and political variables; in model 33, the political and socio-cultural variable; and in model 34, the economic and socio-cultural variables. Finally, in model 35, I have run a model consisting of all the factors that are argued to influence the rate and the probability of transnational terrorism.

First, hypotheses HT1 and HT2 address the economic factors that are argued to influence the rate and probability of being attacked by transnational terrorism. These factors are included in model 32, 33, and 35. Hypothesis HT1 argues that countries with

higher rates of GDP per capita will experience higher rates of transnational terrorism. This argument is certainly confirmed when looking at table 15. Both in model 32 and, more importantly, in model 35, this variable is positive and significant on the $p<0.001$ level. In model 34, GDP PER CAPITA is not significant. This may suggest, that economic conditions, measured by GDP PER CAPITA, gains explanatory power in semi-democratic regimes. Hypothesis HT2 argues that countries with higher rates of trade openness will experience higher rates and a higher probability of transnational terrorism. As far as the rate is concerned, TRADE OPENNESS actually has a decreasing effect on transnational terrorism. As displayed in model 32, 33, and 35, this variable is negative and significant on the $p<0.001$ level in all models.

Turning to the political variables, table 15 displays these variables in model 33, 34, and 35. First, hypothesis HT3 argues that countries with higher rates of democracy will experience higher rates of transnational terrorism. Earlier, in table 13, it was shown that an increase in DEMOCRACY increased the rate of transnational terrorism. It was also shown that semi-democratic states had a higher rate of attacks. Thus, in table 15, DEMOCRACY-SQUARED is included. The results suggest that there is a curvilinear relationship between the rates of transnational terrorism and the count of transnational terrorism.

The second hypothesis that addresses transnational terrorism and political factors is regime stability. Hypothesis HT4 argues that countries with higher rates of regime stability will experience lower rates of transnational terrorism. Thus, the more unstable a regime is, the higher rate of transnational terrorism is expected. This argument is confirmed as the variable DURABILITY is negative and significant on the $p<0.001$ level in model 32 and 35, and $p<0.01$ in model 33. Finally, as noted before, there is little evidence that a higher rate of ethnic fractionalization increases the rate of transnational terrorism. ETHNIC FRACTIONALIZATION is only significant in model 34 and not in model 35 where all the variables are included.

Turning to the control variable, POPULATION is significant on the $p<0.001$ level in all models and positive. This suggests that countries with more population will experience higher rates of transnational terrorism. In the inflated model, POPULATION is, in addition, significant and negative, which suggests that more populous countries may have a higher probability of experiencing at least one transnational terrorist event. This,

however, will be further addressed in the logistic model. COUNTRY SIZE is, in model 35, also significant (on the p<0.01 level). However, conversely to this thesis' initial thought, it is negative. This suggests that countries with lower rates of geographical size will experience a higher rate of transnational terrorism.

Table 15: ZINB model for transnational terrorism - all variables

	Model 32	Model 33	Model 34	Model 35
Count Model				
Population	0.348***	0.355***	0.216**	0.415***
	(0.0559)	(0.0548)	(0.0673)	(0.0555)
Country Size	-0.110*	0.000510	-0.163**	-0.174**
	(0.0499)	(0.0442)	(0.0627)	(0.0561)
GDP per Capita	0.262***		0.0648	0.380***
	(0.0608)		(0.0425)	(0.0689)
Trade Openness	-0.0166***		-0.0169***	-0.0184***
	(0.00167)		(0.00168)	(0.00187)
Democracy	0.0424***	0.0692***		0.0372**
	(0.0103)	(0.00742)		(0.0138)
Democracy2	-0.00870***	-0.0105***		-0.00924***
	(0.00201)	(0.00186)		(0.00190)
Durability	-0.00991***	-0.00473**		-0.0105***
	(0.00129)	(0.00146)		(0.00208)
Ethnic Frac.		0.316	0.660*	0.827
		(0.232)	(0.334)	(0.547)
Constant	-4.060***	-4.800***	-0.410	-5.462***
	(0.840)	(0.631)	(0.856)	(1.592)
Inflated Model				
Population	-1.419***	-4.651**	-1.095***	-2.826***
	(0.354)	(1.417)	(0.201)	(1.518)
Country Size	0.112	1.128**	-0.0228	-1.253
	(0.157)	(0.376)	(0.140)	(1.013)
GDP per Capita	-0.892***		-0.828***	-1.291
	(0.225)		(0.138)	(1.542)
Trade Openness	-0.0103		-0.00121	-0.00939
	(0.00669)		(0.00417)	(0.0127)
Democracy	-0.0118	0.190**		-0.0461
	(0.0363)	(0.0689)		(0.123)
Democracy2	0.00452	-0.0664*		0.0279
	(0.00552)	(0.0287)		(0.0408)
Durability	0.0145*	0.0583*		0.00555
	(0.00673)	(0.0259)		(0.0212)
Ethnic Frac.		6.038*	-0.281	5.106*
		(2.861)	(0.755)	(2.180)
Constant	1.149***	1.551***	1.195***	1.263***
	(0.0573)	(0.0470)	(0.0630)	(0.162)
Observations	4526	4160	3802	3617

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

6.2.3 Logistic regression models

Table 16 displays the logistic regression model of the analysis of transnational terrorism where the economic, political, and socio-cultural factors are separated. As with the logistic regression analysis of the domestic hypotheses, I have chosen to build the model by blocks, where model 36 includes the economic factors; model 37 the political factors; and model 38 the one socio-cultural factor.[27] In addition, every model contains a TIME SINCE TRANS. variable, measuring the time since last transnational terrorist event, and three cubic splines.

Model 36 addresses the economic hypotheses that argue to influence the probability of experiencing transnational terrorism. First, as the GDP PER CAPITA is significant on the $p<0.001$ level and positive. The second hypothesis, HT2, argues that countries that have higher rates of trade openness will experience a higher probability of transnational terrorism. To measure this, I have included a variable measuring a country's TRADE OPENNESS. The results are displayed in model 36. Conversely to the argument, trade openness reduces the probability of transnational terrorism.

Model 37 addresses the political factors that are argued to influence the probability of experiencing transnational terrorism.[28] First, DEMOCRACY is significant on the $p<0.001$ level and positive, suggesting that higher rates of democracy increases the probability of experiencing transnational terrorism. Hypothesis HT4, argues that the probability of experiencing transnational terrorism is higher in unstable states since terrorist groups may take advantage of regimes where the government do not have control over its territory. Since DURABILITY is not significant, this is not confirmed. ETHNIC FRACTIONALIZATION is actually significant in model 38. This may suggest that a larger amount of ethnic groups in a country increases the probability of transnational terrorism.

[27] In appendix E (chapter 9.5) I have analyzed these variables separately, as shown, this did not give different effects in the explanatory power.
[28] In appendix E, table E5, it is tested whether a there is a curvilinear relationship between democracy and the probability of experiencing transnational terrorism. It is not.

Table 16: Logistic model of transnational terrorism

	Model 36	Model 37	Model 38
Population	0.316***	0.337***	0.353***
	(0.0352)	(0.0343)	(0.0340)
Country Size	-0.105***	-0.0457	-0.0572*
	(0.0290)	(0.0281)	(0.0275)
GDP per Capita	0.148***		
	(0.0251)		
Trade Openness	-0.00610***		
	(0.00120)		
Democracy		0.0282***	
		(0.00519)	
Durability		-0.00188	
		(0.00126)	
Ethnic Frac.			0.348*
			(0.152)
Time Since Trans.	-0.851***	-0.869***	-0.829***
	(0.0523)	(0.0504)	(0.0530)
_spline1	0.000135	0.000138	0.000167
	(0.0000933)	(0.000101)	(0.000102)
_spline2	-0.0277***	-0.0291***	-0.0269***
	(0.00343)	(0.00334)	(0.00351)
_spline3	0.00759***	0.00809***	0.00728***
	(0.00132)	(0.00131)	(0.00137)
Constant	-4.076***	-4.438***	-4.762***
	(0.532)	(0.420)	(0.410)
Observations	4887	5110	4551

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

As with the zero-inflated negative binomial regression in table 15, I have separately run the different economic, political, and socio-cultural blocks against each other in table 17, only this time with a logistic method. Model 39 consists of the economic and political factors; model 40 of the political and socio-cultural factors; and model 41 of the economic and socio-cultural factors. Finally, in model 42 I have included all variables.

First, hypotheses HT1 and HT2 address the relationship between a country's economic factors and transnational terrorism. HT1 argues that countries with higher rates of GTD per capita will experience higher rates and a higher probability of transnational terrorism. In table 15 it was shown that this factor increased the rate of transnational attacks. Moreover, table 17 displays that an increase in the GDP PER CAPITA also

increases the probability of experiencing transnational terrorism. Thus, *hypothesis HT1 can be confirmed.*

Second, according to hypothesis HT2, it is expected that countries with a higher rate of trade openness will experience a higher rate and a higher probability of transnational terrorism. As shown in the zero-inflated negative binomial regression model in table 15, it seems that trade actually decreases the rate of attacks. The same can be said about the probability of being attacked by transnational terrorism. As shown in table 17, an increase in the level of trade, actually decreases the probability of transnational terrorism. *Thus, this hypothesis cannot be confirmed.*

Turning to the political factors, it was shown in table 15 that, not only do democracies have an increased rate of transnational terrorism; this is also the case for semi-democratic states. However, when including DEMOCRACY-SQUARED in the logistic model, this variable is not significant (see table E5 in appendix E). Thus, I have only included DEMOCRACY in the final model. The results show that, when all other variables are being held constant, DEMOCRACY is a significant and positive predictor of the probability of experiencing transnational terrorism. *Thus, this hypothesis can be confirmed.*

The second hypothesis concerning the political factors is regime stability. Hypothesis HT4 argues that countries with higher rates of regime stability will experience lower rates and a lower probability of transnational terrorism. As shown earlier, in the zero-inflated negative binomial regression model in table 15, more unstable states, measured by regime DURABILITY, have an increased rate of transnational terrorism. Here, in table 17, the logistic regression analysis displays, in model 42, that unstable state also have an increased probability of experiencing an attack. *Thus, it is possible to confirm the hypothesis that an increase in regime stability decreases the rate and probability of experiencing transnational terrorism.*

Finally, hypothesis HT5 argues that an increase in a country's ethnic fractionalization increases the rate and probability of experiencing transnational terrorism. Unlike in the zero-inflated negative binomial model ETHNIC FRACTIONALIZATION is significant when all other models are included. This suggests that, although more ethnic groups do not

increase the rates of transnational terrorism, it increases the probability of experiencing an attack.

Turning to the control variables it is clear that POPULATION is a significant (on the p<0.001 level) and a positive prediction of the probability of transnational terrorism. Thus countries with higher rates of population will experience a higher rate and a higher probability of foreign attacks. COUNTRY SIZE is, however, not a significant predictor. In table 15, the zero-inflated negative binomial model showed that the rate of transnational attacks was negatively associated with COUNTRY SIZE. This means that the geographical size of a country does increase the probability of an attack, but lower levels of size may increase the rate.

Table 17: Logistic model for transnational terrorism - all variables

	Model 39	Model 40	Model 41	Model 42
Population	0.309***	0.275***	0.260***	0.246***
	(0.0381)	(0.0370)	(0.0393)	(0.0418)
Country Size	-0.0739*	-0.0106	-0.0715*	-0.0438
	(0.0317)	(0.0299)	(0.0326)	(0.0345)
GDP per Capita	0.182***		0.170***	0.193***
	(0.0334)		(0.0303)	(0.0387)
Trade Openness	-0.0064***		-0.00743***	-0.0073***
	(0.00127)		(0.00139)	(0.00143)
Democracy	0.0150*	0.0281***		0.0157*
	(0.00624)	(0.00566)		(0.00668)
Durability	-0.0053***	-0.00104		-0.00441**
	(0.00149)	(0.00135)		(0.00161)
Ethnic Frac.		0.228	0.417*	0.367*
		(0.159)	(0.169)	(0.172)
Time Since Trans.	-0.805***	-0.854***	-0.812***	-0.781***
	(0.0535)	(0.0548)	(0.0582)	(0.0587)
_spline1	0.000152	0.000151	0.000157	0.000169
	(0.000103)	(0.000101)	(0.0000992)	(0.000102)
_spline2	-0.0258***	-0.0284***	-0.0257***	-0.0246***
	(0.00355)	(0.00358)	(0.00381)	(0.00386)
_spline3	0.00697***	0.00782***	0.00691***	0.00654***
	(0.00139)	(0.00139)	(0.00147)	(0.00149)
Constant	-4.543***	-3.968***	-3.842***	-4.075***
	(0.603)	(0.455)	(0.600)	(0.667)
Observations	4526	4160	3802	3617

Robust standard errors in parentheses. Independent variables lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

In comparing the final zero-inflated binomial regression model shown in table 15 with the final logistic model in table 17, there are not many differences. First of all, although not every factor has the direction that was expected, every one turned out to be significant. That is, every factor except the measure of ETHNIC FRACTIONALIZATION, which was found not to be significant in the zero-inflated negative binomial model. Second, every factor, in both models, turned out to be significant either on the $p<0.001$ level or the $p<0.01$ level, expect DEMOCRACY and ETHNIC FRACTIONALIZATION in the logistic model. This suggests that it is possible to generalize their explanatory power with a high rate of certainty.

6.3 Summary of Main Findings

This empirical analysis has tested whether economic, political, and socio-cultural factors can explain the rates and probability of countries experiencing domestic and transnational terrorism. Table 14 and table 15 summarize the main findings of the nine hypotheses that were argued to explain the rates and probability of domestic terrorism, and five hypotheses argued to influence the rate and probability of transnational terrorism.

First, none of the economic hypotheses that were argued to influence both the rate and probability of experiencing domestic terrorism was confirmed. GDP PER CAPITA is shown to be a significant and positive predictor of both the rate and probability of domestic terrorism. This is highly surprising, and goes against earlier findings.[29] Thus, countries with higher rates of GTA PER CAPITA will experience higher rates and a higher probability of both domestic terrorism and transnational terrorism.

Both economic growth and trade openness turned out to be significant in the opposite direction of what was argued. First, GDP growth seems to have a negative effect on both the rates and the probability of domestic terrorism. A reason for this may be that frustration arises in times of slow economic growth. Likewise, trade openness has a negative effect on transnational terrorism. The results suggest that a higher rate of trade openness reduces the rate and the probability of transnational terrorism.

[29] Findley and Young (2011) also find that countries with higher rates of GDP per capita experience higher rates of domestic terrorism. They do not, however, suggest an explanation for this.

Turning to the political factors there are some interesting findings. For domestic terrorism the argument is that semi-democratic countries will experience a higher rate and a probability of terrorism. This was confirmed. Although not hypothesized, this was also tested for transnational terrorism. The results show that semi-democratic states can experience a higher rate of transnational terrorism, but they do not have a higher probability of experience an event. This may suggest that there are some other triggering factors leading to a transnational attack, but when an attack has occurred a fragile regime type may influence the rate. Another interesting difference between domestic and transnational terrorism is uncovered by the variable DURABILITY. This variable is used to measure hypotheses HD5 and HT4, namely that countries with higher rates of regime stability will experience lower rates and probability of domestic and transnational terrorism. For transnational terrorism this turns out to be confirmed, but not for domestic terrorism. For domestic terrorism regime stability does not have an influence on the probability of an attack, only the rates.

Another interesting finding is uncovered in the socio-cultural factors. For both domestic terrorism and transnational terrorism, none of the socio-cultural factors that are argued to influence the rate and probability of an event is confirmed. The only evidence that is found is that ETHNIC FRACTIONALIZATION increases the probability of experiencing transnational terrorism. This is a highly interesting find, since it goes against a lot of previous findings linking socio-cultural factors to the phenomenon of terrorism.

Table 18: Summary of hypotheses for domestic terrorism

Domestic Terrorism	Supported	Partly Supported	Not Supported
Economic Factors			
HD1: Countries with lower rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.			X
HD1$_{alt}$: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of domestic terrorism.	X		
HD2: Countries with higher rates of economic inequality will experience higher rates and a higher probability of domestic terrorism.		X[30]	
HD3: Countries with higher rates of economic growth will experience higher rates and a higher probability of domestic terrorism.			X
Political Factors			
HD4: Semi-democratic countries will experience higher rates and a higher probability of domestic terrorism.	X		
HD5: Countries with higher rates of regime stability will experience lower rates and a lower probability of domestic terrorism.		X[31]	
Socio-Cultural Factors			
HD6: Countries with higher rates of population growth will experience higher rates and a higher probability of domestic terrorism.		X[32]	
HD7: Countries with higher rates of urbanization will experience higher rates and a higher probability of domestic terrorism.			X
HD8: Countries with higher levels of education will experience higher rates and a higher probability of domestic terrorism.			X
HD9: Countries with higher levels of ethnic fractionalization will experience higher rates and a higher probability of domestic terrorism.			X

[30] The GINI INDEX lacks a huge amount of observations. Therefore, I do not find the evidence solid enough to confirm this hypothesis. Although, the theoretical foundation and the little empirical evidence gives reason to believe that the argued hypothesis can be confirmed.

[31] The variable measuring regime stability, DURABILIY, is only significant in explaining the rates of domestic terrorism and not the probability.

[32] POPULATION GROWTH is only significant in explaining the rates of domestic terrorism and not the probability.

Table 19: Summary of hypotheses for transnational terrorism

Transnational Terrorism	Supported	Partly Supported	Not Supported
Economic Factors			
HT1: Countries with higher rates of GDP per capita will experience higher rates and a higher probability of transnational terrorism.	X		
HT2: Countries with higher levels of trade openness will experience higher rates and a higher probability of transnational terrorism.			X
Political Factors			
HT3: Countries with higher levels of democracy will experience higher rates and a higher probability of transnational terrorism.	X		
HT4: Countries with higher rates of regime stability will experience lower rates and a lower probability of transnational terrorism.	X		
Socio-Cultural Factors			
HT5: Countries with higher levels of ethnic fractionalization will experience higher rates and a higher probability of transnational terrorism.		X[33]	

[33] ETHNIC FRACTIONALIZATION is only significant when testing for the probability of transnational terrorism and nor when tested for the rate.

7 Discussion and Conclusion

During the last couple of decades, the amount of publications that have sought to explain the phenomenon of terrorism has 'exploded'. The majority of this research has been focused on finding explanations that may give answers to "why does terrorism occur?" and "who are the terrorists?". On the societal level, scientists have mainly focused their research on transnational terrorism, using the target country or the total amount of incidents as their main proxy. Still, recent findings show that domestic terrorism happens far more frequent than transnational terrorism. This may have led to skewed knowledge about the true causes of terrorism. Since, domestic terrorism is far more frequent than transnational terrorism, what we might know about the phenomenon may only be applicable to a small portion of the overall phenomenon.

The aim of this thesis has therefore been to explore the root causes of terrorism in a cross country longitudinal data approach. Based on the newly presented data from Enders, Sandler, and Gaibulloev (2011), this thesis have for the first time been able to separate between domestic and transnational terrorism. This has been done by creating a foundation based on arguments and theories from the literature of political violence, namely the theories of identity, frustration, and opportunity. From these theories it has created causal relationships leading to economic, political, and socio-cultural societal factors that are argued to cause terrorism.

This thesis was built on two research questions. The first question asked whether the *societal factors that explain domestic terrorism are the same as the societal factors that explain transnational terrorism*. I am tempted to answer yes. This analysis shows that the societal factors that are argued to explain the rates and the probability of domestic terrorism are relatively similar to those of transnational terrorism. Thus, this thesis supports the findings of Kis-Katos, Liebert, Schulze (2011). In the empirical analysis, two different statistical methods were applied. First, as the main variable was a discrete count variable, a zero-inflated negative binomial regression was used. The results here suggest that there are few differences between domestic and transnational terrorism. Of the six variables that was included both in the domestic and the transnational zero-inflated negative binomial regression models, all turned out significant and had the same direction. Secondly, dichotomy variables were constructed to test the probability of experiencing domestic and transnational terrorism using logistic regression. This test

showed that regime stability (measured by regime DURABILITY) is significant for transnational terrorism and not for domestic terrorism. In addition, and as expected, semi-democratic states have a higher probability of domestic terrorism, but not for transnational terrorism. For transnational terrorism, only countries with higher rates of democracy have a higher probability of being attacked. Lastly, for transnational terrorism, a higher rate of ethnic fractionalization increases the probability of attacks, but not for domestic terrorism.

The second question that was put forward asked if *the societal factors that explains transnational terrorism also explains domestic terrorism, are the causal mechanisms behind them different*. The thesis suggests a 'yes' to this question. The theoretical foundation shows that there are far more causal chains leading to domestic terrorism than there are to transnational terrorism. This may be due to the reason that the research on terrorism has explained the occurrence of domestic terrorism, while they have used transnational data in their analysis. The causal mechanisms that are underlying domestic and transnational terrorism may be different. For instance, countries with higher levels of GDP per capita will experience higher rates and a higher probability of both domestic and transnational terrorism. However, the causal mechanisms behind this may be quite different. For domestic terrorism insurgents may apply terrorism instead of guerilla warfare, since richer states often has a better equipped counter-terrorism system. For transnational terrorism, insurgents may cross boarders to countries with higher levels of GDP per capita since these states often has more valuable targets and better channels for exposure. Another important finding is that the theory of frustration (or relative deprivation) and opportunity are both important in explaining the occurrence of domestic terrorism, while for transnational terrorism it seems that opportunity has the superior explanatory power. I suggest that the reason for this may be that these attacks demands more resources and planning than a domestic attacks.

7.1 Value Added and Future Research

Definitional issues and political agendas have stunted the coordination of scholars around a typology of terrorism, and many scholars create their groupings of different forms of terrorism. Rather than accept these typologies uncritically, scholars should

attempt to identify whether these different forms of terrorism have different causal processes.

(Young & Findley, 2011)

This thesis has tried to do just that. By first addressing the different causal mechanisms, separating between domestic and transnational terrorism, and secondly, giving an empirical analysis on how the different economic, political, and socio-cultural factors influence these two forms, this thesis have given an important and pioneering contribution to the research on terrorism.

In addition, the thesis is, to my knowledge, the first attempt to throughout differentiate and compare domestic and transnational terrorism on the societal level using the new data material presented by Enders, Sandler, and Gaibulloev (2011). This way, it provides a balance to a field of research that is in a large degree fixated on transnational terrorism.

Future research needs to further examine and analyze the difference between domestic and transnational terrorism. For instance, since domestic terrorism is far more frequent than transnational terrorism, it would have been interesting to analyze the dynamic interactions between these two forms. As noted by Enders, Sandler, and Gaibulloev (2011), campaigns may start off as domestic terrorism and eventually turn to transnational terrorism. This way domestic terrorism might function as a driver of transnational terrorism. In this regard, since the data used in this thesis only accounts for the targets of transnational terrorism, further research should also look into the relationship between domestic terrorism and the origin of transnational terrorism.

This thesis has also showed that literature on collective political violence is applicable to the phenomenon of terrorism. It especially seems that literature on rational choice and opportunity can in a large degree contribute to the understanding of transnational terrorism. Moreover, examinations on the relationship between civil war and domestic terrorism would be a natural step forward in this regard.

It was show that the three countries that have experience most domestic terrorism was located in Latin America, while this was only the case for one of three countries that had experienced most transnational terrorism. This suggests that countries that experience a

high rate of domestic terrorism do not necessarily experience the highest rates of transnational terrorism. Thus, differences in the geographical locations of domestic and transnational terrorism need to be addressed in further research.

It is not enough to compare domestic and transnational terrorism on the societal level. It is also important to account for the individual level and the group level. Psychological factors may for instance explain why some individuals choose to perform domestic attacks, while they refuse to seek foreign targets. Moreover, addressing the dynamics of different groups both in the same country and on different sides of the boarder will enhance the field of terrorism research.

Peru, Colombia, and El Salvador are the three countries that have experienced most domestic terrorism. These countries are in a large degree associated with drug trafficking. It thus seems natural that this form of organized criminal activity and domestic terrorism are associated with each other. Although, this is not new (see Feldmann & Perälä, 2004), this thesis suggests that the work on this field needs to be further addressed. One way to further explore this phenomenon, is to connect the studies of domestic and transnational terrorism to the resource curse literature (see Watts, 2004). It is important to differentiate between domestic and transnational terrorism also in this regard. Scientists can look into the relationship between drug trafficking and domestic terrorism, and, further, how this influences transnational terrorism.

Finally, research on transnational terrorism needs to focus on a dyadic design. Building cross-country studies on transnational terrorism using a monadic approach, explores only fractions of the full picture. It is not enough to know that countries with a higher rate of GDP per capita or higher levels of democracy are more prone to experience transnational attacks, scientist also need to look into who the attackers are. Although it is plausible that poor countries are the ones that attack rich countries, we cannot prove this unless a dyadic approach is applied. Since domestic terrorism is endogenous to the country that experiences it, a monadic approach is suitable, this is, however, not the case for transnational terrorism.

7.2 Policy Implications

Interestingly, both domestic and transnational terrorism are in a large degree associated with a country's regime type. For domestic terrorism, semi-democratic states have both higher rates and a higher probability of experiencing incidents. Transnational terrorism is associated with higher rates of democracy. These findings suggest that both states and the international community need to focus on their political institutions in order to deal with the phenomenon of terrorism. Since higher rates of democracy actually encourage transnational terrorism, this poses a dilemma. Strong and secure states needs to be built. Yet, the threat of terrorism cannot go on the expense of important features of a democracy like a free press and relatively open borders.

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9 Appendices

9.1 Appendix A

Table A1: Empirical cross-country studies on the determinants of domestic terrorism

Author(s)	Data Set	Coverage	Method	Dependent	Main results		
					Economic	**Political**	**Socio_Cultural**
Abadie (2006)	WMRC-GTI	186 countries, 2003/4	Cross-section OLS and lV	Natural logarithm of WMRC GTI (Terrorism Risk)	No significant association between terrorism and poverty.	Political freedom reduce terrorism	Linguistic fractionalization encourage terrorism
Blomberg and Hess (2008a)	RAND	179 countries, 1998-2003	Poisson	Number of domestic terror incidents per year	Higher income discourages terrorism in both poor and rich countries.	Greater levels of democracy are positively related to terrorism (Polity lV).	Linguistic fractionalization encourage terrorism. Religious fractionalization discourage terrorism. Level of education encourage terrorism
Piazza (2011)	GTD	172 countries, 1970-2006	NBNR	Number of domestic terror incidents per year	(1) Minority economic discrimination is a significant positive predictor on terrorism, (2) Countries with higher levels of economic development experience more domestic terrorism than do poorer countries.	(1) Regime age is a negative predictor of terrorism. (2) Political participation is a negative predictor of terrorism.	Level of population encourage terrorism

Findley and Young (2011)	GTD	149 countries, 1970-1997	NBNR	Number of domestic terror incidents per year.	(3) High income inequality (GINI index) encourages terrorism. Higher GDP pr. Capita encourages terrorism.	Presence of independent judiciary decreases terror incidents. Terror more likely in low democracies and autocracies. Terrorism is not more likely in states that have a strong central government Regimes in transition are more prone to experience domestic terrorism.	Level of population encourage terrorism.
Sambanis (2008)*	MIPT, STATE	1997 - 2002. 133 Countries	MLOGIT	Number of domestic incidents per year.			Level of population encourage terrorism

*= Also studies transnational terrorism.

Table A2: Empirical studies on the determinants of transnational terrorism (by target).

Author(s)	Data Set	Coverage	Method	Dependent	Main results		
					Economic	**Political**	**Socio-Cultural**
Blomberg, Hess and Weerapana (2004)	ITERATE	127 Countries, 1968-1991	Markov Process	Number of terror incidents (targets)	High income countries experience more terrorism. Economic contractions increase the probability of terrorism.	Democracies are more prone to experience terrorist attacks.	
Bravo and Dias (2006)	MIPT	86 Countries, 1997-2004	OLS	Number of incidents per year.	High level of HDI reduces terrorism.	The number of international organization memberships of country increases terrorism. The existence of a pluralist political system decreases terrorism.	The number of ethnic groups increases terrorism. Education reduces terrorism.
Burgoon (2006)	ITERATE, MIPT	115 countries, 1991-1998 1998-2003 1975-1995	NBR	Number of incidents per year	A country's welfare efforts are negatively correlated with terrorism.	Democracies decrease terror in cross-sectional analysis, but increases in pooled model.	Population encourage terrorism.
Drakos and Gofas (2006)	MIPT	139 Countries. 1985-1998	NBR	Number of incidents per year	Relatively open economies tend to experience lower activity of terrorism.	Democracies host more transnational terrorism.	Population density increases the risk of terrorism.
Krueger and Laitin (2008)	STATE	150 countries., 1997-2002	NBR	Number of incidents per year	GDP per Capita increases terrorism.	Civil liberties are not significant.	Population increases terrorism.

Li and Schaub (2004)	ITERATE	112 countries, 1975-1997	NBR	Number of incidents per year	Economic development of the country and its top trading partners reduces the number of terrorist incidents inside the country.	Democracy increases terrorism.	
						Government capability positively correlated to terrorism.	
Tavares (2004)	ICT	Number of countries not reported, 1987-2007	OLS	Number of attacks or casualties per 10 million inhabitants.	Rich countries (GDP pc) are most prone to suffer attacks.	Political rights are not significant.	A young population concentrated in urban areas increases the risk of terrorism.
					GDP per Capita growth is positively correlated with terrorism.	Democracies are less vulnerable than other countries.	Linguistic fractionalization increases terrorism.
Piazza (2006)	STATE	96 countries, 1986-2002	OLS	Number of incidents per year	No significant relationship between any of the measures of economic development (GDP growth, HDI, unemployment rate, inflation) and terrorism can be determined.	The number of parties in the national legislature increase terrorism.	Ethno-Religious diversity is positively correlated with terrorism.
Blomberg and Hess (2008b)	ITERATE	179 countries, 1968-2003	GAT	Number of incidents per year	GDP per Capita increases terrorism.	Democracy increases terrorism.	
					Globalization (trade/GDP and an index of integration such as trade or participation in the WTO) increase terrorism.		

Campos and Gassebner (2009)	MIPT	130 countries, 1968-2004	NBR	Number of incidence per year	Per Capita GDP, population size and foreign aid are found not to be consistently important in explaining international terrorism	Proximity to the U.S matters (measured as the share of votes cast in the UN general assembly that are in the line with the U.S vote.	
					GDP per Capita is not significant for incidences, but increases fatalities.	Political freedom increases terrorism.	Level of urbanization increases terrorism.
						Being a member of OECD increases terrorism.	
Dreher and Fisher (2010)	MIPT	109 Countries, 1976-2000	NBR	Number of incidents per year	Fiscal decentralization reduces terrorism.	Political proximity to the U.S. Increases terrorism.	
						Political decentralization is not significant to terrorism.	
Dreher and Gassebner (2008)	MIPT	1975 - 2001, 116 Countries	NBR	Number of incidents per year	GDP per Capita is not significant.	Political proximity to the U.S. Increases terrorism.	
						Political freedom change reduces terrorism.	
						Government fractionalization increases terrorism.	
Eubank and Weinberg (2001)	ITERATE	1980 - 1987, 159 Countries	CHI	The frequency of terrorist events occurring. (Target and Origin)		Terrorist violence more common in the stable democracies then either insecure or partial ones.	

Eyerman (1998)	ITERATE	1968 - 1986, 154 countries	NBR	Count of international terrorist events (target)	GDP per Capita increases terrorism.	Established democratic states are less likely to experience terrorism, and newly founded democracies are more likely to experience terrorist activity.
					The ration of the actual taxes collected to the potential taxes that could be collected by a state reduces terrorism.	
Koch and Cranmer (2007)	ITERATE	68 countries, 1975-1997	NBR	Number of incidents per year.	Level of trading development reduces terrorism.	Established democratic states are less likely to experience terrorism. Governments of the left are more likely to be attacked than governments on the right or in the center.
Li (2005)	ITERATE	1975 - 1997, 119 countries	NBR	the annual number of transnational terrorist events that occur in a country (target)	GDP per Capita is negatively correlated with terrorism.	Democratic participation reduces terrorism.
						Government constraints, subsuming the effect of press freedom, increase the number of incidents. Proportional representation system experiences fewer incidents than either the majoritarian or the mixed system.

Plümber and Neumayer (2010)	ITERATE	150 countries, 1968-2003	NBR	Number of terrorist incidents per year		Joint membership in an alliance encourages terrorism. Democracy is not significant.	The population level is positively correlated with terrorism.
Piazza (2008a)	STATE	153 countries, 1986-2008	NBR	Number of incidents per year	Economic freedom and HDI is not significant.	The level of democracy is positive correlated with terrorism. State failure encourage terrorism.	Population is positively related to terrorism. A Muslim country is more prone to host terrorism.
Piazza (2008b)	ITERATE	197 countries, 1973-2003	NBR	Number of incidents per year.	Level of HDI increases terrorism.	Democracies are more likely to be a target. The level of executive constraint increase terror. Regime durability reduce terror.	Level of population is positively correlated with terrorism. Homogeneity reduce terror.
Weinberg and Eubank (1998)	STATE, RAND	175 Countries, 1994-1994	CHI	Number of incidents.		Terrorist events are substantially more likely to occur in free and democratic settings than in any of the alternatives. Countries which underwent regime change in the period under consideration were more likely to experience terrorism than countries which did not.	

Kurrild-Klitgaard, Justesen and Klemmensen (2006)	ITERATE	121 countries, 1996-2002	BLR	Number of incidents per year	GDP per Capita increase terrorism. Trade openness reduce terrorism.	Political rights increase terrorism (inverse U-shape)	
Braithwaite and Li (2007)	ITERATE	112 countries, 1975-1997	NBR	Number of terrorist incidents per year	GDP per Capita reduce terrorism. Government capability (percentage index of a state's share of the world's total population, GDP per Capita, GDP per unit of Energy, military power and military expenditures.	Level of democracy increase terrorism. Interstate conflict increase terrorism.	Population level increase terrorism.
Sambanis (2008)	MIPT, STATE	133 Countries, 1997-2002	MLG	Number of incidents per year	GDP per Capita is not significant.	Democracy reduce terrorism.	Population level increase terrorism. Religious fractionalization reduce terrorism. Ethno-linguistic fractionalization increase terrorism.

Table A3: Overview countries and total amount of terrorist incidents.

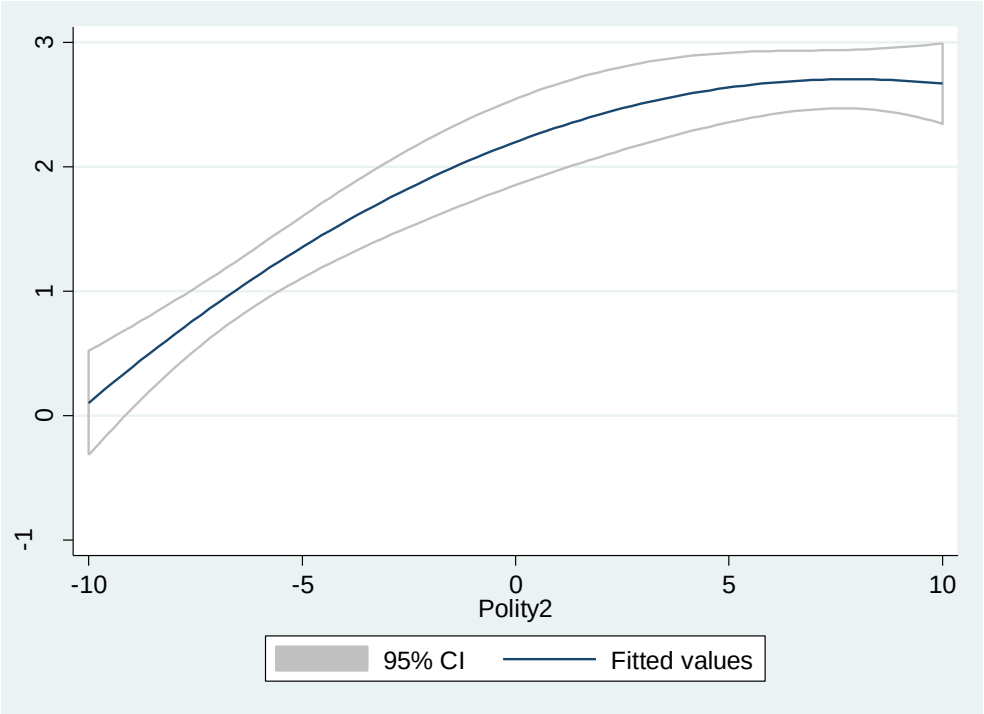
Country	Years	Domestic Incidents	Transnational Incidents	Country	Years	Domestic Incidents	Transantional Incidents
Afghanistan	1970-2007	573	229	Latvia	1991-2007	7	3
Albania	1970-2007	45	12	Lebanon	1970-2007	512	598
Algeria	1970-2007	1,111	123	Lesotho	1970-2007	16	6
Andorra	1970-2007	0	1	Liberia	1970-2007	7	11
Angola	1975-2007	279	71	Libya	1970-2007	9	5
Argentina	1970-2007	431	244	Lithuania	1991-2007	3	3
Armenia	1991-2007	9	3	Luxembourg	1970-2007	9	1
Australia	1970-2007	32	25	Macedonia	1991-2007	59	6
Austria	1970-2007	47	52	Madagascar	1970-2007	12	5
Azerbaijan	1991-2007	28	4	Malawi	1970-2007	3	0
Bahrain	1971-2007	25	8	Malaysia	1970-2007	24	12
Bangladesh	1972-2007	433	27	Mali	1920-2007	20	4
Belarus	1991-2007	3	1	Malta	1970-2007	9	4
Belgium	1970-2007	37	87	Mauritania	1970-2007	2	4
Belize	1970-2007	1	5	Mauritius	1970-2007	1	0
Benin	1970-2007	5	2	Mexico	1970-2007	228	140
Bhutan	1970-2007	1	0	Moldova	1991-2007	4	14
Bolivia	1970-2007	229	51	Mongolia	1970-2007	0	0
Bosnia	1992-2007	56	47	Montenegro	2006-2007	0	0
Botswana	1970-2007	6	0	Morocco	1970-2007	9	17
Brazil	1970-2007	116	81	Mozambique	1975-2007	134	37
Bulgaria	1970-2007	24	6	Myanmar (Burma)	1970-2007	153	12
Burkina Faso	1970-2007	3	0	Namibia	1970-2007	87	23
Burundi	1970-2007	180	27	Nepal	1970-2007	213	23
Cambodia	1970-2007	121	76	Netherlands	1970-2007	30	62
Cameroon	1970-2007	9	3	New Zealand	1970-2007	5	7
Canada	1970-2007	16	21	Nicaragua	1970-2007	756	110
Cape Verde	1975-2007	0	0	Niger	1970-2007	17	12

Central African Republic	1970-2007	4	5	Nigeria	1970-2007	64	64
Chad	1970-2007	14	12	Norway	1970-2007	2	8
Chile	1970-2007	1,774	237	Oman	1970-2007	0	0
China	1970-2007	92	23	Pakistan	1970-2007	1,504	237
Colombia	1970-2007	4,218	962	Panama	1970-2007	89	28
Comoros	1975-2007	4	0	Papua New Guinea	1975-2007	39	22
Congo Brazzaville	1970-2007	9	10	Paraguay	1970-2007	12	5
Congo Kinshasa	1970-2007	39	24	Peru	1970-2007	4,648	371
Costa Rica	1970-2007	19	37	Philippines	1970-2007	1,443	322
Croatia	1991-2007	11	29	Poland	1970-2007	19	9
Cuba	1970-2007	16	7	Portugal	1970-2007	58	40
Cyprus	1970-2007	53	41	Puerto Rico	1970-2007	12	93
Czech Republic	1993-2007	9	2	Qatar	1971-2007	1	2
Denmark	1970-2007	12	23	Romania	1970-2007	1	4
Djibouti	1977-2007	8	3	Russia	1991-2007	538	82
Dominican Rep	1970-2007	73	9	Rwanda	1970-2007	66	27
East Timor	2002-2007	5	0	San Marino	1970-2007	0	0
Ecuador	1970-2007	131	60	Saudi Arabia	1970-2007	14	30
Egypt	1970-2007	422	55	Senegal	1970-2007	50	6
El Salvador	1970-2007	3,045	266	Serbia	2006-2007	0	0
Equatorial Guinea	1970-2007	1	0	Seychelles	1970-2007	0	0
Eritrea	1993-2007	0	2	Sierra Leone	1970-2007	33	22
Estonia	1991-2007	6	1	Singapore	1970-2007	2	3
Ethiopia	1970-2007	44	61	Slovak Republic	1993-2007	11	1
Fiji	1970-2007	11	2	Slovenia	1991-2007	4	1
Finland	1970-2007	4	0	Solomon Islands	1978-2007	0	1
France	1970-2007	693	335	Somalia	1970-2007	114	132
Gabon	1970-2007	3	1	South Africa	1970-2007	1,359	47
Gambia	1970-2007	3	0	Spain	1970-2007	2,095	431
Georgia	1991-2007	67	24	Sri Lanka	1970-2007	1,316	115
Germany	1970-2007	304	405	St. Lucia	1979-2007	0	0

Ghana	1970-2007	12	1	Sudan	1970-2007	53	42
Greece	1970-2007	426	287	Suriname	1970-2007	28	15
Grenada	1970-2007	2	1	Swaziland	1970-2007	8	2
Guatemala	1970-2007	1,033	325	Sweden	1970-2007	18	25
Guinea	1970-2007	7	1	Switzerland	1970-2007	36	59
Guinea-Bissau	1974-2007	5	0	Syria	1970-2007	65	26
Guyana	1970-2007	15	1	Tajikistan	1991-2007	75	26
Haiti	1970-2007	132	27	Tanzania	1970-2007	1	7
Honduras	1970-2007	158	87	Thailand	1970-2007	601	56
Hungary	1970-2007	29	8	Togo	1970-2007	37	7
Iceland	1970-2007	0	1	Trinidad	1970-2007	11	4
India	1970-2007	2,944	255	Tunisia	1970-2007	7	8
Indonesia	1970-2007	260	55	Turkey	1970-2007	1,651	282
Iran	1970-2007	354	119	Turkmenistan	1991-2007	0	0
Iraq	1970-2007	1,502	392	UAE	1971-2007	5	9
Ireland	1970-2007	27	34	Uganda	1970-2007	165	50
Israel	1970-2007	891	78	Ukraine	1991-2007	20	3
Italy	1970-2007	916	383	United Kingdom	1970-2007	1,472	108
Ivory Coast	1970-2007	9	21	United States	1970-2007	929	253
Jamaica	1970-2007	16	13	Uruguay	1970-2007	38	30
Japan	1970-2007	293	42	Uzbekistan	1991-2007	12	4
Jordan	1970-2007	23	44	Vanuatu	1970-2007	0	2
Kazakhstan	1991-2007	3	4	Venezuela	1970-2007	121	77
Kenya	1970-2007	67	20	Vietnam	1976-2007	0	0
Kiribati	1970-2007	0	0	West Bank and Gaza	1990-2007	592	45
Korea North	1970-2007	1	0	Yemen	1990-2007	65	59
Korea South	1970-2007	9	9	Zambia	1970-2007	31	9
Kosovo	1970-2007	1	74	Zimbabwe	1970-2007	47	21
Kuwait	1970-2007	22	23				
Kyrgyzstan	1991-2007	10	3	**Total**		**46,001**	**10,605**
Laos	1970-2007	9	4				

9.2 Appendix B

Figure B1: Quadratic Prediction Plot of Democracy and Transnational Terrorism



9.3 Appendix C

Table C1: Pearson's correlation test

	Population	Country Size	GDP per Capita	GDP Growth	GINI Index	Trade Openness	Democracy	Durability	Ethnic Frac.	Urbanization	Education	Population Growth
Population	1.0000											
Country Size	0.7424	1.0000										
GDP per Capita	-0.0134	-0.0190	1.0000									
GDP Growth	0.1184	0.0676	-0.0243	1.0000								
GINI Index	-0.1199	0.0986	-0.3044	-0.0211	1.0000							
Trade Openness	-0.6004	-0.5872	0.0050	0.0264	-0.0863	1.0000						
Democracy	-0.1106	-0.1666	0.5901	-0.0579	-0.1135	0.1181	1.0000					
Durability	0.2191	0.2493	0.5435	0.0107	-0.1744	-0.1881	0.3149	1.0000				
Ethnic Frac.	-0.0235	0.1776	-0.2262	-0.0759	0.2586	0.0311	-0.0295	-0.0871	1.0000			
Urbanization	-0.0483	0.0968	0.7797	-0.0754	-0.1706	-0.0293	0.4875	0.3265	-0.0759	1.0000		
Education	-0.0642	-0.1014	0.6934	-0.0167	-0.4790	0.2173	0.5178	0.3018	-0.1927	0.6860	1.0000	
Population Growth	0.0842	0.2086	-0.3438	-0.0231	0.4770	-0.2348	-0.3709	-0.0416	0.1875	-0.3966	-0.6835	1.0000

9.4 Appendix D

Table D1: Comparison between the final test and a final test with only democracy in the inflated model

	Model 43	Model 44		Model 45	Model 46
	Original	**Democracy**		**Original**	**Democracy**
Count Model			**Count Model**		
Population	1.010***	1.266***	Population	0.345***	0.462***
	(0.116)	(0.0656)		(0.0535)	(0.0423)
Country Size	-0.315***	-0.387***	Country Size	-0.133**	-0.0910*
	(0.0913)	(0.0586)		(0.0435)	(0.0397)
GDP per Capita	0.351*	0.477***	GDP per Capita	0.369***	0.491***
	(0.152)	(0.105)		(0.0487)	(0.0457)
GDP Growth	-0.0762***	-0.0677***	Trade Openness	-0.0184***	-0.0168***
	(0.0177)	(0.0142)		(0.00160)	(0.00154)
Democarcy	0.0824***	0.0406**	Democracy	0.0388***	0.0309**
	(0.0249)	(0.0140)		(0.00871)	(0.0111)
Democracy2	-0.0173***	-0.0176***	Democracy2	-0.00953***	-0.0111***
	(0.00371)	(0.00287)		(0.00199)	(0.00191)
Durability	-0.00585*	-0.0107***	Durability	-0.00972***	-0.0122***
	(0.00260)	(0.00212)		(0.00162)	(0.00147)
Population Growth	0.224**	0.140*	Ethnic Frac.	0.837***	0.408*
	(0.0732)	(0.0644)		(0.234)	(0.190)
Urbanization	0.0175	0.0200***			
	(0.00916)	(0.00533)			
Eduaction	-0.0279***	-0.0212***			
	(0.00459)	(0.00394)			
Ethnic Frac.	0.639	0.897**			
	(0.524)	(0.319)			
Constant	-12.13***	-16.73***	Constant	-4.772***	-7.993***
	(1.730)	(1.021)		(0.922)	(0.667)
Inflated Model			**Inflated Model**		
Population	-0.661*		Population	-2.826	
	(0.292)			(1.519)	
Country Size	-0.0626		Country Size	-1.066	
	(0.194)			(0.615)	
GDP per Capita	-0.422		GDP per Capita	-2.792	
	(0.374)			(1.782)	
GDP Growth	-0.000117		Trade Openness	-0.0327	
	(0.0388)			(0.0274)	
Democracy	-0.0489	-0.270***	Democracy	-0.0303	-0.260***
	(0.0677)	(0.0343)		(0.0585)	(0.0488)
Democracy2	0.00682		Democracy2	0.0318	
	(0.0112)			(0.0479)	
Durability	0.0192**		Durability	0.0684	
	(0.00630)			(0.0456)	
Population Growth	0.209		Ethnic Frac.	9.053	
	(0.119)			(4.883)	
Urbanization	0.00489				
	(0.0298)				
Eduaction	-0.0277				
	(0.0155)				
Ethnic Frac.	0.425				
	(1.045)				
Constant	1.628***	1.714***	Constant	1.287***	1.332***
	(0.0694)	(0.0470)		(0.0552)	(0.0523)
Observations	2793	2793	Observations	3617	3617

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05, ** p<0.01, *** p<0.001

To compare between the different techniques for analyzing count models, namely the negative binomial regression and the zero-inflated negative regression, I have utilized the COUNTFIT function in STATA written by Long and Freese (2006).

Figure D1: Model fit analysis

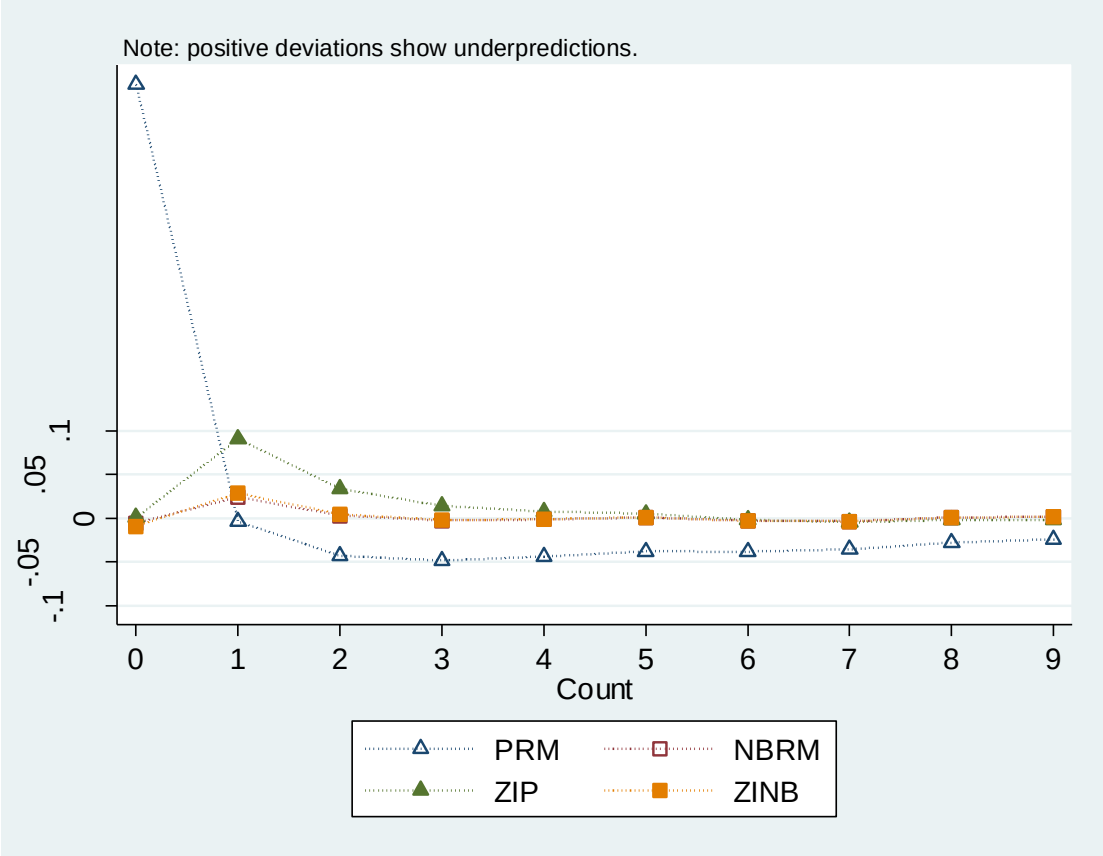


Figure 8 plots the residuals from a model containing all the presented variables. It compares the main techniques for analyzing count variables. Namely, Poisson Regression (PRM), Negative Binomial Regression (NBRM), Zero-inflated Poisson (ZIP), and Zero-inflated negative binomial regression (ZINB). The chosen technique is desired to be as close to zero a possible. Here, it is clear that the NBRM and ZINB are vastly closer than PRM and ZIP.

Table D2: Count model comparison

NBRM		BIC=-20344.269	AIC= 3.861	Prefer	Over	Evidence
vs	ZINB	BIC=-20421.258	dif= 76.989	ZINB	NBRM	Very strong
		AIC= 3.837	dif= 0.024	ZINB	NBRM	
		Vuong= 4.547	prob= 0.000	ZINB	NBRM	p=0.000

Figure 9 displays a comparison between the negative binomial regression model (NBRM) and the zero-inflated model (ZINB) along different measures of fit. The first measure is the Bayesian information criterion (BIC). According to Long and Freese, "[w]hen $BIC^1 - BIC^2 < 0$, the first model is preferred. When $BIC^1 - BIC^2 > 0$, the second model is preferred" (2006, p. 113). Thus, with a difference of 76,989 in favor of the ZINB model, the evidence is very strong. AIC stands for Akaike's information criteria, and states that "the model with the smaller AIC is considered the better-fitting model" (Long & Freese, 2006, p. 112). In this regard, the ZINB model has a slightly lower AIC-value than the NBRM, and thus supports the decision to utilize a zero-inflated technique.

Greene (1994) suggests using a Vuong test for non-nested models. If Vuong is greater than the critical value of 1.96, the second model is preferred. In this case V (NBRM|ZINB) = 4.547, and thus favors a Zero-inflated negative binomial regression approach (Long, 1997, p. 248).

9.5 Appendix E

9.5.1 Domestic terrorism

Table E1: Logistic model of domestic terrorism and economic variables

	Model 47	Model 48	Model 49	Model 50
Population	0.478***	0.466***	0.494***	0.495***
	(0.0325)	(0.0571)	(0.0335)	(0.0581)
Country Size	-0.118***	-0.0644	-0.131***	-0.0730
	(0.0245)	(0.0412)	(0.0248)	(0.0415)
GDP per Capita	0.0774***			0.126**
	(0.0216)			(0.0430)
GINI Index		0.0101		0.0149*
		(0.00528)		(0.00591)
GDP Growth			-0.0190**	-0.0183
			(0.00612)	(0.0103)
Time Since Last Dom.	-0.153***	-0.214***	-0.162***	-0.211***
	(0.0186)	(0.0375)	(0.0189)	(0.0383)
_spline1	0.000686**	0.00110***	0.000654**	0.00103***
	(0.000211)	(0.000285)	(0.000210)	(0.000277)
_spline2	0.0143***	0.0158***	0.0136***	0.0147***
	(0.00203)	(0.00312)	(0.00196)	(0.00316)
_spline3	-0.0070***	-0.0084***	-0.0066***	-0.0079***
	(0.00119)	(0.00174)	(0.00116)	(0.00175)
Constant	-6.661***	-6.874***	-6.102***	-8.400***
	(0.422)	(0.769)	(0.399)	(0.958)
Observations	5184	1773	5141	1734

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

Table E2: Logistic model of domestic terrorism and political factors

	Model 51	Model 52
Population	0.471***	0.530***
	(0.0332)	(0.0321)
Country Size	-0.0977***	-0.154***
	(0.0256)	(0.0245)
Democracy	0.0489***	
	(0.00533)	
Democracy2	-0.0066***	
	(0.00114)	
Durablily		-0.000541
		(0.00103)
Time Since Last Dom.	-0.144***	-0.157***
	(0.0186)	(0.0183)
_spline1	0.000734**	0.000696**
	(0.000230)	(0.000218)
_spline2	0.0138***	0.0132***
	(0.00204)	(0.00197)
_spline3	-0.0069***	-0.0066***
	(0.00124)	(0.00119)
Constant	-5.931***	-6.512***
	(0.411)	(0.391)
Observations	5110	5325

Robust standard errors in parentheses. Independent variable lagged one period.
* p<0.05 ** p<0.01 *** p<0.001

Table E3: Logistic model of domestic terrorism and socio-cultural factors

	Model 53	Model 54	Model 55	Model 56
Population	0.462***	0.476***	0.483***	0.493***
	(0.0319)	(0.0313)	(0.0388)	(0.0344)
Country Size	-0.105***	-0.111***	-0.124***	-0.134***
	(0.0241)	(0.0237)	(0.0316)	(0.0259)
Population Growth	-0.0604**			
	(0.0232)			
Urbanization		0.00619***		
		(0.00135)		
Eduaction			0.00461***	
			(0.00117)	
Ethnic Frac.				0.433**
				(0.143)
Time Since Last Dom.	-0.167***	-0.172***	-0.163***	-0.180***
	(0.0188)	(0.0187)	(0.0215)	(0.0213)
_spline1	0.000729**	0.000711**	0.000717**	0.000549***
	(0.000226)	(0.000224)	(0.000248)	(0.000161)
_spline2	0.0139***	0.0131***	0.0147***	0.0115***
	(0.00198)	(0.00197)	(0.00228)	(0.00182)
_spline3	-0.0069***	-0.0066***	-0.0072***	-0.0057***
	(0.00121)	(0.00120)	(0.00137)	(0.00101)
Constant	-5.816***	-6.387***	-6.304***	-6.298***
	(0.379)	(0.378)	(0.434)	(0.413)
Observations	5629	5596	4015	4551

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

9.5.2 Transnational terrorism

Table E4: Logistic model of transnational terrorism and economic factors

	Model 57	Model 58	Model 59
Population	0.386***	0.331***	0.316***
	(0.0326)	(0.0346)	(0.0352)
Country Size	-0.0650*	-0.116***	-0.105***
	(0.0261)	(0.0285)	(0.0290)
GDP per Capita	0.146***		0.148***
	(0.0238)		(0.0251)
Trade Openness		-0.00429***	-0.00610***
		(0.00111)	(0.00120)
Time Since Last Trans.	-0.830***	-0.868***	-0.851***
	(0.0506)	(0.0510)	(0.0523)
_spline1	0.000186	0.000122	0.000135
	(0.0000979)	(0.0000921)	(0.0000933)
_spline2	-0.0264***	-0.0281***	-0.0277***
	(0.00337)	(0.00335)	(0.00343)
_spline3	0.00703***	0.00776***	0.00759***
	(0.00131)	(0.00130)	(0.00132)
Constant	-6.148***	-3.145***	-4.076***
	(0.441)	(0.494)	(0.532)
Observations	5184	5023	4887

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001

Table E5: Logistic model of transnational terrorism and political factors

	Model 60	Model 61	Model 62	Model 63
Population	0.335***	0.334***	0.401***	0.337***
	(0.0343)	(0.0342)	(0.0326)	(0.0343)
Country Size	-0.0499	-0.0491	-0.0945***	-0.0457
	(0.0280)	(0.0279)	(0.0262)	(0.0281)
Democracy	0.0259***	0.0280***		0.0282***
	(0.00500)	(0.00540)		(0.00519)
Democracy 2		-0.00126		
		(0.00119)		
Durability			0.000777	-0.00188
			(0.00120)	(0.00126)
Time Since Last Trans.	-0.870***	-0.869***	-0.833***	-0.869***
	(0.0505)	(0.0504)	(0.0489)	(0.0504)
_spline1	0.000137	0.000137	0.000148	0.000138
	(0.000100)	(0.000101)	(0.0000998)	(0.000101)
_spline2	-0.0292***	-0.0291***	-0.0271***	-0.0291***
	(0.00334)	(0.00334)	(0.00330)	(0.00334)
_spline3	0.00811***	0.00810***	0.00741***	0.00809***
	(0.00131)	(0.00131)	(0.00130)	(0.00131)
Constant	-4.404***	-4.318***	-4.982***	-4.438***
	(0.420)	(0.425)	(0.402)	(0.420)
Observations	5110	5110	5325	5110

Robust standard errors in parentheses. Independent variables lagged one period.

* p<0.05 ** p<0.01 *** p<0.001