

Joshua C. Hall · Sara Harper *Editors*

# Economic and Political Institutions and Development

 Springer

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ISBN 978-3-030-06048-0      ISBN 978-3-030-06049-7 (eBook)  
<https://doi.org/10.1007/978-3-030-06049-7>

Library of Congress Control Number: 2019933566

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This Springer imprint is published by the registered company Springer Nature Switzerland AG.  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# **Acknowledgements**

We would like to thank the Center for Free Enterprise at West Virginia University for support for this project.

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# Chapter 1

## The Dictator's Knowledge Problem



Charity-Joy Acchiardo

### 1.1 Introduction

How does a dictator remain a dictator? This question has captured the attention of a number of social scientists. Their explanations usually incorporate a variety of variables to explain the calculations the dictator must make to maintain his power. He carefully analyzes his country's economic situation and monitors the pulse of public sentiment when deciding his best course of action. Ever mindful of the threats to his power, he skillfully balances policies of redistribution and repression that maximize his utility and avert revolution. However, a powerful regime and peaceful society are not always so easily reconciled.

Take for instance, Zine El Abidine Ben Ali, former leader of Tunisia. After 24 years of successfully maintaining his hold on power, he was forced to flee Tunisia in the wake of mounting riots and demands for the removal of his regime, setting off a violent chain reaction in the region. Events like those of the Arab Spring illustrate that indefinitely remaining in power is not as easy as the models might predict.

One familiar with current economic models of dictatorship may well believe the dictator's troubles are over. The dictator need only solve a simple utility maximization problem! However, this requires that the dictator has complete knowledge of the variables that enter his calculation. It is at this point the limits of equilibrium models in addressing the dictator's true problem become evident. The models rely on the assumption that the dictator and his regime have complete information in order to achieve an equilibrium where they maintain power. Yet, in a scenario of incomplete information, as reality dictates, no such solution is attainable (Ikeda 1990). The real problem is how the dictator finds the information so critical to his survival.

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The market-process view of price theory is well suited to address this issue, since its focus is on the way individuals make decisions in non-equilibrium situations and how their interactions with one another generate the information they need. When one reexamines the dictator's problem in this light, they find that he engages in a process of information discovery similar to that of buyers and sellers in a market of priced goods. However, the information he needs is not relayed by monetary prices, so he must rely on alternative information mechanisms.

Below, we will look at the features of an ideal mechanism and use that insight to analyze three different mechanisms dictators may employ. The analysis reveals that dictators may find it advantageous to use a combination of complementary mechanisms to attempt to secure the information needed to remain in power. This information is discovered and acquired under conditions where knowledge, which is often tacit and dispersed among many people, is constantly evolving.

In addition to extending the application of the principles of market process theory to nonmarket situations, this analysis contributes to the literature discussing institutional arrangements within dictatorships. The function of specific institutions, particularly those more commonly associated with democracy, has been a subject of debate for some time. Recently, some scholars have explored the informational uses of these institutions (Abdukadirov 2010; Congleton 2001; Escribà-Folch 2009; Gandhi 2008; Gandhi and Przeworski 2006, 2007; Moore and Salloukh 2007; Smith 2005). Here, we will analyze the suitability of certain institutional arrangements as mechanisms that facilitate the discovery of and adaptation to new information that guides the actions of both dictator and citizens. This also provides an alternative explanation for the puzzling presence of democratic institutions in stable dictatorships. Exploring the processes and mechanisms by which dictators discover the information they require to allocate their resources towards reward and repression can help us understand the durability of this form of government, even in the wake of the "Third Wave" of democratization, and evaluate interventionist efforts to encourage transitions to democracy.

To begin with our analysis, we will briefly overview of the relevant literature. Then, we will examine the nature of the dictator's knowledge problem in detail. From there, we will be prepared to analyze three different information mechanisms dictators may use to guide their decisions: legislatures, business and professional associations, and protests.

## 1.2 The Literature: Separate Pieces of the Same Puzzle

Authoritarian regimes account for most of the governments in world history. Following the "third wave" of democratization in the 1980s and 1990s, many scholars were hopeful that authoritarianism would be replaced with more representative forms of government. However, it has become increasingly apparent that many governments once classified as "transitional" are still clearly authoritarian despite adopting some "democratic" institutions (Carothers 2002; Diamond 2002). While

many scholars continue to focus their research on the determinants of democratic transition, a few have begun to explore the more common scenario, an enduring authoritarian government. The long-term survival of these regimes depends on the ruling regime's ability to discover and adjust to the plans of others who either support or undermine the regime. Equilibrium models are useful in identifying what information is needed, but an alternative approach is required to study how constantly evolving information is continually discovered and acquired when it is dispersed among many people.

Economists have proposed a number of models to describe the calculations a dictator must make to maintain power (Acemoglu and Robinson 2012; De Mesquita et al. 2003; Haber 2006; Olson 1993, 2000; McGuire and Olson 1996; Tullock 1987; Wintrobe 1990, 1998). These models share common characteristics. They are equilibrium models in which the dictator, operating with complete information, chooses an optimizing strategy that maximizes benefits and minimizes costs. In each model, the dictator chooses some form and quantity of reward and repression subject to his budget constraint in order to limit opposition and gain support. These models are useful in identifying the information required by the dictator, but by assuming this information is known, they divert attention from the true locus of activity—discovering the information needed to make these decisions.

Some of these economists do acknowledge the seriousness of the problem that incomplete information poses for the dictator. For example, Tullock (1987, 2005) writes about the drawbacks of employing a secret police force, a common method of obtaining information in dictatorships. Rewards offered for information incentivize citizens to become informants even if they do not have the most reliable information, yet those who have to report directly to the dictator often withhold information that would upset him and jeopardize their own safety. Wintrobe (1990, 1998, 2012) draws from Tullock's work to expound upon the effects of repression on the willingness of citizens to reveal their true preferences toward the dictator and his policies. An increase in repressive action adversely affects the dictator's access to the information he requires resulting in the "Dictator's Dilemma." Kuran (1989, 1995, 1997) present an in-depth model of citizens' public and private preferences and the role they play in their calculation to support or oppose the dictator. Information on private preferences unknown by both citizens and dictator contribute to the volatility of the regime to revolutionary "sparks". These studies emphasize that the dictator's problem is not simply one of performing the correct calculations. His lack of knowledge severely impedes his ability to successfully decide his optimal course of action and leaves him vulnerable; thus, much of his effort is devoted to discovering the knowledge he requires.

The "knowledge problem," as Hayek (1945, p. 524) called it, is not particular to dictators. It is the same "economic problem of society [that] is mainly one of rapid adaptation to changes in the particular circumstances of time and place." Hayek goes on to explain how monetary prices convey this knowledge to buyers and sellers resulting in the coordination we observe in markets. Kirzner (1963) later provides a step-by-step explanation of how buyers and sellers participate in the market process to adapt to new information about their respective preferences and discover the ever-

changing market clearing price of a commodity. Dictators, however, choose between alternatives whose relative values are dependent on changes in citizen preferences that are *not* reflected directly in monetary prices. Chamlee-Wright and Myers (2008) show that in the absence of price, alternative mechanisms, though not as efficient as monetary prices, relay information of time and place to guide allocation decisions. Their analysis is directed toward nonprofit organizations yet has useful application to the dictator's knowledge problem to identify key characteristics of information mechanisms.

Recently, a number of authors have begun to explore how different institutions may be used as information mechanisms. Their work has been motivated by the puzzling existence of democratic institutions in stable dictatorships. One prevalent view has been that the existence of certain institutions is an indicator that a country is transitioning to democracy (Huntington 1991; North et al. 2009). However, it has become increasingly apparent that many regimes once classified as transitional have remained steadfastly authoritarian despite the adoption of democratic institutions. Some maintain that democratic institutions are useless except as a facade of legitimacy (Carothers 2002; Lust-Okar 2009) while others acknowledge their role in stabilizing the regime (Brownlee 2002, 2007; Magaloni 2008). Recently, the capacity of these institutions to generate information has captured the interest of some scholars (Abdukadirov 2010; Congleton 2001; Escribà-Folch 2009; Gandhi 2008; Gandhi and Przeworski 2006, 2007; Moore and Salloukh 2007). The analysis provided in this chapter illuminates the specific features that contribute to their information generating capacity and shows that these features can be generalized across institutions. In this way, the strengths and weaknesses of particular mechanisms can be categorized and the complementarity of different institutional arrangements becomes apparent.

It is not the question of which model he should use to guide his decisions that keeps the dictator awake at night. Instead, he is troubled by his lack of knowledge about the threats to his power. A more complete explanation of this problem and the actions the dictator takes to resolve it can be provided by synthesizing the different strands of literature presented above. Rational choice models identify the information that comprises the dictator's ultimate calculation, while market process theory elucidates the discovery process and the specific operation of certain institutions functioning as information mechanisms that allow him to engage in such calculations.

### 1.3 The Dictator's Knowledge Problem

The dictator faces a complex decision when choosing the best way to allocate his resources in order to maintain power. He uses his resources to either repress citizens or reward them. His goal is to keep the citizen's perception of the relative cost of supporting the regime below that of supporting the opposition. He needs to know what combination of reward and repression will best achieve this goal at the least

cost to him. To gain support and maintain his position of power, he first needs to know the calculations his citizens make when deciding whether or not to support him and the magnitude of the threat they pose should they choose to oppose him. Following that, he needs to know which method of obtaining support is the most effective, least cost alternative. The long-term survival of his regime depends on his ability to discover this information.

Discovering the information he needs is not a one-time event. The information is not available as static values that are unknown simply because they have not yet been discovered. It is generated by interactions between the dictator and those he rewards or represses, and it changes with each subsequent exchange. Therefore, it is necessary for the dictator to engage in an ongoing process of discovery.

Kirzner (1963, p. 122, emphasis in original) gives a simple explanation of a similar problem. He describes the process buyers and sellers engage in to discover new information that helps them converge on a market-clearing price, a price that emerges out of this interaction. A buyer places a bid for a commodity based on its marginal utility to him and “the lowest price that he *believes* sufficiently high to induce sellers to sell.” Most of the time he will offer a bid that is either too high or too low due to his uncertainty regarding the seller's inclinations. He discovers the latter error when the seller refuses to sell the commodity, and he is forced to revise his bid upward. The former error is found by those who are aware of lower prices elsewhere. If they take advantage of this opportunity for arbitrage, their actions will move the price towards equilibrium; however, that precise point continually adjusts to changing circumstances and the preferences of buyers and sellers, so the process is ongoing.

In the context of dictatorship, without complete information, the dictator is unable to make the precise calculation necessary to optimally reward or repress. Instead, he must propose a “bid” to obtain support for his regime. He offers as much reward and repression as he *believes* will be sufficiently high to induce citizens to give him their support. Like the buyer in Kirzner's example, his lack of complete information will cause him to err in one direction or the other. His interactions with citizens in this process reveal valuable information about their preferences and the direction of his error so that he may adjust his plans to better secure his hold on power. The dictator does not have as informative and efficient a mechanism as price is to buyers and sellers in the market; nevertheless, there are other mechanisms available to him that transmit some of the information he requires.

In order to effectively analyze these mechanisms, we must first understand the fundamentals of the dictator's problem. The first step to unraveling the knowledge problem is to examine the information he needs and why it is necessary for his decision-making. There are three, broad categories of information required by the dictator: who supports and opposes him, which means of garnering support will best achieve his desired ends, and what are the exogenous variables that bear on his decision. These, and the process of discovering and adjusting to this information, are discussed in Sect. 1.3.

### 1.3.1 *Who Supports and Who Opposes?*

It comes as no surprise that a dictator needs to know who supports him and who does not. He needs to know both numbers and identity. A particular person or group of people may pose a greater threat than another. His task is to ensure that those with greater resources or influence, and thus, greater capability to overthrow him, remain supportive of the regime. This task is not so straightforward as it would seem, due to what Wintrobe (1998) dubs the “Dictator’s Dilemma.” The dictator does not want to allow public opposition that would threaten the security of his regime, so he takes measures to ensure that it is eliminated either by co-opting the opposition or forcibly silencing it. This does not resolve the issue of finding out who *privately* opposes to the regime. Knowing this is the case, the dictator assumes a certain percentage of his population secretly opposes him, yet he has difficulty identifying who they are, because he incentivizes them, via actual or threatened repression, to hide those preferences.

Kuran’s (1989, 1995) analysis of revolutions provides a useful distinction between the private and public preferences of citizens towards a regime. The former is described as the preference a citizen would express on a secret ballot. The latter is the preference he reveals to those around him. When determining this preference, a citizen takes into account the benefit he will receive from others because of his position for or against the regime. This will depend on the number of people who share that preference and their ability to defend it. A general’s preference will carry more weight in the citizen’s decision than a peasant’s, because the general will have more influence over whether or not a regime maintains power. A citizen must estimate the private preferences of his fellow citizens, since public preferences are not reliable indicators of private ones in an environment where you may be harshly punished for revealing opposition to your leaders. For this reason, he may greatly over or under estimate actual private preferences regarding the regime. Overestimating citizen preference against the regime can be quite costly, so it is reasonable to assume that the citizen will be conservative in his estimation of opposition strength. Thus, this information asymmetry between citizens often works to the advantage of the dictator. For this reason, it is important to him to maintain a public appearance of support for the regime.

There is a problem with this strategy, though, from the standpoint of the dictator. Discouraging public displays of opposition means that opposition that does exist will be kept private and, consequently, will be much more difficult to detect. Why do private preferences matter as long as public support is maintained? There is always a chance that private preferences will be revealed. What Kuran (1989) describes as a “spark,” an unexpected incident that compels some to reveal their private preferences against the regime, will cause others to consider that they may have underestimated the extent of opposition and, therefore, the potential to overthrow the regime. Thus, private preferences are an important consideration for the dictator. To the extent he knows of them, he can better calculate the potential threat and take action to reduce it.

### ***1.3.2 Which Means of Support?***

Should a dictator be as repressive as his resources allow (Tullock (1987) advocates for this)? Or is he instead compelled to act as a benevolent “stationary bandit” in order to maximize his long-term wealth and accrue sufficient resources to protect his citizens and himself from other bandits (McGuire and Olson 1996; Olson 1993, 2000)? Perhaps he should use his resources to co-opt potential opposition (De Mesquita et al. 2003; Gandhi 2008; Lust-Okar 2009). How much do his personal preferences factor into his decisions (Wintrobe 1998)? Choosing between reward and repression to gain the support a dictator needs is a critical decision. The varying long and short-term costs associated with each impact the survival of his regime. The dictator needs to understand the costs of the method he chooses to employ both in terms of resource use and how his actions will affect his citizens’ calculus and the ramifications this will have on his long-term capability to stay in power.

Consider a simple illustration of the decision the dictator faces and what information he needs to best achieve his ends, whether they be for power or prosperity. The dictator knows of a citizen who poses a threat to him in some way. Perhaps this potential opponent is well liked among the population or is a very cunning military strategist. The dictator may determine he can either quietly make him disappear or promote him as a way of increasing his net benefit of supporting the regime. The initial outlay may be less for one option than the other, but this is only one component of his decision. He must also look at how this will affect the actions of this particular citizen and others who support him, which may necessitate further action on the part of the dictator to ensure continued support. If the dictator chooses to promote the citizen, he will need to expend resources to make sure the new promotee does not take advantage of his position to threaten the dictator. If the dictator executes or imprisons the citizen, this will also have an effect on other citizens as they incorporate this new information on the relative price of supporting the opposition into their calculations. The demonstrated physical costs of supporting the opposition causes them to revise their estimate upward. At the same time, if the dictator’s action violates their sense of justice, the psychological costs of supporting the regime will also increase. The dictator’s action sets off a chain of reactions.

The dictator cannot possibly know how each citizen will respond, but he needs to be aware of how his actions change the relative price of supporting him versus the opposition. Repression encourages people to hide their preferences against the regime, making it more costly for the dictator to detect them. If it is perceived as unduly harsh or unjust, it may also increase the number of people who privately oppose the regime. Rewarding citizens for supporting the regime leads to increased effort towards political entrepreneurship and can incentivize activities detrimental to economic growth. The interaction between the dictator’s choices and his citizens’ responses will be discussed in greater detail.

### ***1.3.3 Exogenous Factors***

There are a third set of variables that enter the dictator's decision and may be considered exogenous to the dictator/citizen exchange. These variables, unique to the time and place of each particular situation, affect the costs of repression and reward. For instance, regimes that rely more upon the productivity of their citizens rather than abundant natural resources may find a higher cost associated with repression (Escribà-Folch 2009; Gandhi and Przeworski 2007; Smith 2005). Ethnic, religious, and geographical divisions that have led to the creation of strong minority groups may make coopting them a less costly alternative than continuously suppressing protests. Regimes that receive significant funding from international donors will need to consider how their actions will affect future aid (Brownlee 2002). Even if they are not dependent on aid, their actions may affect relationships with their international trading partners. Additionally, natural disasters, political instability in neighboring countries, and other exogenous shocks affect the resources available to the dictator as well as the payoff to the citizen from choosing to support the regime versus the opposition. Though not the focus of this analysis, these factors are important to be aware of. The dictator must be alert to how they shift the equilibrium "price" of supporting his regime and adjust his actions accordingly.

### ***1.3.4 The Dictator–Citizen Relationship***

The next step in understanding the dictator's knowledge problem is to recognize how the information he requires is dependent on his interactions with his citizens. Since the information he incorporates into his decisions is incomplete, he must adjust his calculations when new information is discovered. His actions reveal information to his citizens who then adjust their calculations and corresponding actions, which, in turn, reveals new information to the dictator. The very process of discovery and adjustment changes the information; thus, it is an ongoing feedback loop between dictators and citizens. This process helps the dictator detect errors in his calculations that threaten the durability of his regime.

Through their interactions in the market, buyers and sellers discover that their bids are either too high or too low. Repeated interactions allow them to learn from their mistakes and adjust their bids towards the market-clearing price. Since it is the process itself that generates new information, market actors must continually engage in this learning process to converge towards the new price.

The dictator and citizens face the same type of knowledge problem as buyers and sellers in the marketplace. The dictator does not know the exact "price" that is required to secure the support he needs, and citizens do not know exactly how much the dictator is willing or able to offer in terms of both reward and repression. As they interact with one another, they begin to uncover this information and adjust their calculations accordingly.



Imagine a scenario where a citizen expresses his dismay at a new law imposed by the dictator. The dictator needs to know the amount of reward or repression that will “buy” this citizen’s support. There are certainly variables he may already be aware of that will factor into his decision to make a bid, such as economic performance, the physical resources of this potential opponent, etc. Indeed, the dictator’s response will vary depending on *who* this individual may be, but because he lacks information about this individual’s private preferences, he will not know whether the amount he offers is sufficient until he actually makes his bid and observes the response of the citizen. Suppose the citizen is brought to the local police station to be interrogated regarding his brazen actions. What is his response to police intimidation? Does the citizen desist, or are harsher measures required? If the citizen does not change his behavior, the dictator knows that his bid was insufficient. If, in contrast, the citizen does change his behavior, the bid was sufficient, but the dictator still does not know if he could have offered less, perhaps a small fine, and elicited the same response. Additionally, the citizen, as well as others who learn of this interaction, will gain new knowledge as well. They now know the dictator is willing and able to offer at least this amount of repression, and will factor this into their decisions to exhibit opposition in the future. Both the dictator and citizens gain new information through this interaction and adjust their calculations accordingly.

The necessity of knowing if your bid was sufficient, from the point of view of the dictator, is clear. The dictator must be able to obtain a certain level of support to stay in power. However, it is also beneficial to learn if he has erred in the other direction by offering too high a bid. This is most easily seen by considering what may happen at the extreme. Consider a dictator that deploys his full forces in response to every display of opposition no matter how minor. At some point, it will be abundantly clear that the marginal benefit of one more tank is much less than the cost to deploy it. If he continues, he will quickly exhaust his resources and, relatedly, his ability to stay in power. Instead, he uses the information available to him to assess the situation and does what he calculates as necessary to maintain power and legitimacy.

Information about where the minimum “price” lies is also important because both repression and reward take their toll on the economic activities of citizens. Entrepreneurial talent is channeled away from productive market activities towards strengthening political ties that can provide protection from harsh treatment or higher returns in the form of pecuniary rewards and political favors (Baumol 1990). This is detrimental to economic performance and affects the resources available to the dictator and his ability to reward or repress in future periods (McGuire and Olson 1996; Olson 1993, 2000). Declining economic performance also reduces the benefit of supporting the regime and the relative price of supporting the opposition (Acemoglu and Robinson 2012; Kuran 1989; Wintrobe 1990). The dictator concerned with the longevity of his regime must include these factors into his decision.

Excessive repression can actually work against the dictator’s intentions and increase the relative price of supporting the regime. Besides the immediate physical costs associated with overestimating the required level of reward or repression, there are psychological costs that affect the private preferences of citizens (Kuran 1989).



The perceived injustice of repression or favoritism can increase these costs for the citizen, thereby increasing the relative price of supporting the regime. Wintrobe (1990) also describes opposing effects from repression. The substitution effect of repression refers to how the relative price of opposing the regime increases as the level of repression is intensified for participating in such activities. This effect normally dominates; however, increased levels of repression lower individuals' overall income, which decreases the benefit of supporting the regime. This income effect counters the substitution effect, and bears more weight as the level of repression increases.

Discovering information about private preferences is particularly problematic. As mentioned earlier, information on these preferences is important because it can alert the dictator to the potential volatility of the population to "sparks" that ignite revolutionary action. This information is also valuable to citizens who use it to estimate the relative price of supporting the dictator. Their estimate of the cost incurred by opposing the regime varies directly with their estimate of the level of support for the regime. Therefore, the dictator prefers they remain ignorant of any anti-regime sentiments. This complicates the discovery process as the dictator searches for ways to find the information he needs about private preferences without also revealing this information to citizens.

The dictator does not have complete information; therefore, he must choose whether to reward or repress based on estimates of the variables included in his decision. His actions evoke reactions by his citizens that reveal information and help him detect errors in his estimates. Errors are costly; therefore, the dictator is incentivized to discover them and adjust his actions. The specific feedback mechanisms he uses to aid him in this discovery and the way in which citizens interact with them are discussed in the following section.

#### **1.4 Feedback Mechanisms to Resolve the Dictator's Knowledge Problem**

In his seminal essay, "The Use of Knowledge in Society," Hayek (1945) describes the function of prices as a marvel. Prices coordinate the plans of buyers and sellers by consolidating and relaying the knowledge dispersed throughout society that is needed to calculate the costs of different alternatives. Actors in non-priced environments lack this marvelous mechanism, yet they are not left entirely without guidance when deciding between alternatives. Different means of discovering information, though less efficient than prices, direct their actions. This section will examine the features of monetary prices that make them such excellent information mechanisms and apply this insight to evaluate the effectiveness of three alternative mechanisms used to inform the decisions of dictators: legislatures, professional associations, and protests. The analysis reveals that the dictator may benefit from employing a combination of mechanisms whose collective strengths mitigate their individual weaknesses.

How do prices address the “economic problem of society” and allow for “rapid adaptation to changes in the particular circumstances of time and place” (Hayek 1945, p. 524)? There are five features of that make it an excellent mechanism to solve this problem: Prices...

1. Convey local knowledge.
2. Consolidate this knowledge.
3. Relay new knowledge quickly.
4. Allow low-cost participation in the adjustment process.
5. Incentivize participation.

Local circumstances will affect the supply and relative price of different factors of production, but it is not necessary for the user of these factors to know those circumstances. The price is sufficient to convey the knowledge of relative scarcity that he needs to calculate its use. Through this mechanism, the relevant information is consolidated and relayed in a timely manner. It is costly to ignore this information and risk a shortage or glut of resources. For that reason, buyers and sellers are highly incentivized to participate in the adjustment process.

As discussed in Sect. 1.3, dictators need knowledge regarding the relative prices of reward and repression and the relative price of supporting the dictator as perceived by his citizens. This knowledge is dispersed among his citizens. He requires mechanisms that continuously reveal this changing knowledge in an easily accessible and consolidated form. This is not in itself an easy task; however, it is further complicated by the fact that the dictator has additional considerations when choosing a mechanism. Two features are added to his ideal mechanism:

6. Maintain the regime's legitimacy.
7. Relay information asymmetrically.

It is imperative that the dictator's actions do not jeopardize his position or his citizens' perception of the regime's legitimacy. Legitimacy can be associated with either the ability of the regime to maintain control or the level of citizen support (Tullock 2005). By this definition, a regime not supported by its citizens remains legitimate as long as it is capable of maintaining its hold on power. Likewise, the regime may not have this ability, but it is still legitimate if citizens support its claim to rule (Tullock 2005, p. 225). Furthermore, if the first condition exists but citizens believe otherwise, they will be more likely to attempt to overthrow the regime, requiring costly measures on the part of the dictator to subdue the opposition. If the opposite is true, the regime can maintain power despite its inability to adequately defend itself. Thus, the *perception* of legitimacy is important.

Closely related to legitimacy, information asymmetry, in this context, refers to the desirability of keeping citizens ignorant of others' private preferences as discussed in Sect. 1.3. This again goes back to influencing citizens' perceptions of the regime. If they perceive that the regime has capable defenses and a wide base of support, their estimate of the relative price of opposition will be higher. It benefits the regime to hide information about its weaknesses and the level of discontent among the population.

The seven features listed above are interrelated. The ability to relay local knowledge in a timely manner is dependent on the incentives and costs associated with utilizing a particular information mechanism. However, the features specific to dictators, maintaining legitimacy and information asymmetry, often counteract the features relating to participation, weakening the effectiveness of the mechanism. Evidence of these tradeoffs will become apparent as the specific mechanisms are discussed below.

In addition to differences in the degree to which they possess the various features characteristic of monetary prices, the dictator's information mechanisms also vary in the type of information they convey. Some are better suited to help him discover the minimum reward required for certain support. Others more efficiently reveal private preferences.

### ***1.4.1 Legislatures***

Dictators are characterized by their ability to control the people around them in order to maintain their hold on power, yet almost 70% of dictatorships in existence between 1946 and 2008 had elected legislatures (Cheibub et al. 2010). Why would a dictator voluntarily agree to share his power with a large group of legislators? Is his use of democratic institutions just a show to curry favor with those who espouse such ideals? Certainly, this could be a means of coopting his competition, but its usefulness extends beyond handing out political favors to a select group of elite citizens. A legislatures' capacity to provide the dictator with relevant information regarding the conditions in his country and the effectiveness of particular policies in generating support for the regime is extremely valuable to him (Boix and Svulik 2013; Congleton 2001; Gandhi 2008; Gandhi et al. 2003), and the presence of a legislature has been shown to be correlated with longer political survival (Aksoy et al. 2012; Boix and Svulik 2013; Gandhi and Przeworski 2007). In fact, the informational capacity of legislatures was one of the primary benefits Stalin anticipated from the Supreme Soviet. "In our Soviet country we must evolve a system of government that will permit us with certainty to anticipate all changes, to perceive everything that is going on among the peasants, the nationals, the non-Russian nations, and the Russians; the system of supreme organs must possess a number of barometers which will anticipate every change, register and forestall... all possible storms and ill-fortune." (Stalin quoted in Towster (1948)).

How well do legislatures exhibit the five features of an ideal information mechanism? The legislative process provides the dictator with increased knowledge of local preferences and conditions through discussions of and requests for particular legislation. The information is not presented separately by each individual; rather, it is consolidated in the form of a bill, budget item, etc. It is not an especially fast process, since it takes time to propose and negotiate taxes, subsidies, special projects, and other policies. Moreover, participation in this process

is costly. In addition to the time and effort expended by those participating directly in the process, it often requires significant resources to participate indirectly by strengthening connections with those who can influence legislation. Participation is highly incentivized, though, by the distribution of political favors for those who participate in the process. Even those who are not likely to be the recipients of many political favors, like those belonging to minority political parties, may be incentivized to participate simply because it is one of the few legally sanctioned outlets they have to voice their objections to proposed policy and negotiate their interests (Aksoy et al. 2012; Lust-Okar 2009; Phillips 2008; Schwedler 2006). Though this is not an expedient mechanism, it is useful to the dictator to learn something about the expectations of his citizens in terms of minimum distribution of resources and maximum acceptable tax burden and other consequences, especially in a relatively stable environment.

In regards to the two additional features specific to dictatorships, legislatures are an especially attractive information discovery mechanism. They both maintain the regime's legitimacy and allow information flows that alleviate some asymmetries while preserving others in a manner beneficial to the dictator. The legislative process allows different groups with competing interests to voice their dissent to policy and request changes in a manner approved by the regime. Thus, they can disagree with the dictator without portraying defiance. Additionally, the dissemination of information regarding committee proceedings and similar reports can be controlled. Much of the population will be unaware of compromises or concessions the regime might make. On the other hand, those directly involved in the process, will gain more accurate information about the regime and its budgetary constraints. This information, along with the institutional constraints of the legislative process, gives credibility to the regime's commitments to reward supporters and has a stabilizing effect on the regime as these rewards are tied to its survival (Gandhi and Przeworski 2007). Furthermore, the dictator can participate in the process through agents rather than directly. If a mistake is made, blame rests on the unlucky legislator or councilmember while the integrity of the dictator remains intact. The combination of strength in these two features, as well as the first, second, and fifth, allow the dictator to gain information on the private preferences of citizens and bargain towards an equilibrium price in a manner that doesn't threaten the legitimacy of the regime and allows fairly good control over information flows to citizens.

The operation of the Sejm, the legislature of the People's Republic of Poland, demonstrates an information feedback process between citizens and the state. Though the authority of the Sejm was severely limited under communism, there are indications it was not simply a "rubber stamp" legislature. Deputies (legislators) were valued for their access to local information and used their knowledge to suggest amendments to regime-sponsored policies (Olson and Simon 1982). Local People's Councils were established to work with Sejm deputies and allow the legislature to "adjust national plans to particular territorial and local needs" (Gripp 1973). Under communist rule, the number of special committees in the Sejm rose, which was subsequently accompanied by an increase in the number of

bills committees amended or blocked (Olson and Simon 1982). The legislative committee structure allowed information to be shared and negotiations to be made in a manner the regime could control.

In Yemen, members of Parliament are keenly aware of their deliberate informational role and the legislature's ability to "serve as a gauge of public opinion—as an early warning system for mounting tension in society" (Phillips 2008, p. 81), they recognized and responded to growing public tension over laws concerning compulsory military service, a situation that had not been addressed by the regime. Many more men were entering the age where 2 years of service was required than the army could accommodate, and the existing law required them to pay for either an exemption or a postponement. The move to suspend the law was initiated by members of parliament, and Saleh's regime was happy to take credit and boost public sentiment in their favor (Phillips 2008). The Yemeni parliament served its purpose as an early warning system and helped the regime "buffer out some of the excesses of its policies" (Phillips 2008, p. 83). The regime learned information about the direction of citizen preferences, and gained more accurate information regarding the extent of action that had to be taken to secure citizen support.

### ***1.4.2 Business and Professional Associations***

Business and professional associations are another mechanism employed by dictatorial regimes to learn more about citizen preferences. Sometimes, such as in the former USSR, the state taps the capacity of existing organizations to provide "a reliable communications system . . . with specialized knowledge of local conditions" (Friedgut 1979, p. 16). In many Middle Eastern countries, these associations are recognized for their access to information and are the outcome of "deliberate political strategies . . . by ruling regimes bent on ensuring their survival in power" (Moore and Salloukh 2007, p. 69). Associations are included in policy-making specifically for the information they contribute as well as their ability to relay information back to their constituencies.

Business and professional associations maintain numerous local chapters. Citizen involvement at that level provides the association with knowledge specific to different localities. The association serves as a channel to consolidate this information and relay it upward. Though communicating through the association's hierarchy takes some time, associations with an established channel to the state will likely be heard before groups with no such connection. Therefore, it is to citizens' advantage to make use of these associations as it provides them some voice, even in situations where the regime exerts significant control over the association's activities. The fact that the association is sanctioned by the regime makes participation less costly than other means of making preferences known (i.e. protests) and regime's willingness to include association members in policy-making incentivizes participation.

In addition to the benefits outlined above, associations that have been authorized by the regime do not threaten its legitimacy simply by their existence. Though there is evidence of a certain level of autonomy in these organizations (Moore and Salloukh 2007; Saich 2000; Unger 1996), it is to the benefit of both the regime and the association to coordinate efforts and limit public displays of contention. In terms of information asymmetry, the general population has more access to the activities of business and professional associations than the activities of the legislature, but the information associations receive about the regime is also more limited.

China has embraced the idea of business associations as “bridges” providing “two-way flows of information” between citizens and state officials (Foster 2002). Foster studied these associations in Yantai, China and found that most were created by the state in conjunction with more market-oriented reforms. While business owners gained some autonomy over operating decisions, the associations allowed the state to keep an eye on their activities and monitor any trends that could threaten the security of the regime. As Chinese business associations have evolved, they have become more adept at relaying the preferences of their constituencies and influencing policy (Pearson 1997; Saich 2000; Unger 1996). Through these communications, the regime learns what measures are needed to “buy off discontent” and can more effectively allocate resources to prevent more forceful opposition (Pearson 1997).

### ***1.4.3 Protests***

Protests are considered one of the more volatile threats to the dictator. They undermine the legitimacy of his regime (Goldstone et al. 2004; Tullock 1987, 2005) and cause other citizens to revise their estimates of the strength of the opposition upwards (Kuran 1989, 1995). On the other hand, potential participants struggle to overcome free rider problems and are reluctant to face the consequences of joining a protest. It may be surprising, then, to find that protests can be used as valuable information mechanisms.

We often recall images like those of the Tiananmen Square Massacre or the more recent, violent reactions to the protests of the Arab Spring when we think of the consequences of voicing dissent in dictatorships, but the reality is that public demonstrations are not that uncommon in many regimes (Lust-Okar 2009; Moore and Salloukh 2007; Shirk 2007; Tanner 2004). In such situations, there are informal norms that define the limits of permissible protest. O'Brien (1996) uses the term “rightful resistance” to describe protests where participants profess to support the ideals espoused by the regime and complain instead of particular conditions that are contrary to those ideals. In this way, they cannot be accused of opposing the dictator; rather, they are holding his agents accountable to the regime's own rhetoric. The repercussions of participating in these kind of protests are often less severe than

displaying outright defiance (Shirk 2007; Tanner 2004), and the dictator can learn valuable information about citizen preferences and negotiate an acceptable “price” for their support.

Joining a protest is costly to the citizen, even if he does not expect to suffer severe consequences at the hand of the regime. Thus, if he has chosen to participate in the protest, this informs the dictator that the citizen perceives the relative price of supporting the regime to be low and the potential level of opposition among the population relatively high. Protestors communicate information about specific issues that is often moderately consolidated in the form of a list of demands. Protestors may also provide a more accurate measure of public sentiment than state intelligence agents who are reluctant to relay negative reports to the dictator. However, the primary advantage of the protest *qua* information mechanism is the speed in which it relays changes in citizen preferences.

While protests expediently capture the attention of the regime and force the dictator to negotiate in some manner, whether it is through repression or concessions, they have obvious weaknesses in the dictator-specific features listed above. The severity of penalties for protesting will affect citizens’ decisions to participate; yet, they cannot be lessened to the degree that the regime’s legitimacy and its ability to effectively deal with the opposition is questioned (Tullock 1987). Information asymmetry is also difficult to preserve. Protests may be carefully monitored, contained, and censored from media reports, but because of their public nature, there will be a large number of witnesses who may also share the information they have learned with others. These weaknesses make protests a precarious mechanism.

An example of this mechanism in action is found in accounts of the Gafsa mining protest that occurred in Tunisia during 2008. Prior to this event, Ben Ali’s regime allowed peaceful displays of opposition on a limited basis. Participation tended to be low due to the fact that police recorded names of dissenters who then became the targets of police harassment or found their employment opportunities suddenly curtailed (Garon 2003). Nevertheless, penalties were not so severe as to deter all public voicing of opposition. In 2008, citizens complaining of unfair hiring practices by the Gafsa Phosphate Company whose managers were conspicuously connected with the regime, participated in hunger strikes, marches, and sit-ins. Police were deployed to secure the area and ensure that the events remained contained within the town limits in which they occurred. Reporters were not allowed access to the area, and witnesses were not allowed to leave. However, it was not until 3 months after the initial demonstrations that Ben Ali decided to launch a major repression campaign, which was mainly a response to escalating violent outbursts. Army troops were brought in; police made numerous arrests, and protest leaders were sentenced to several years in prison. However, Ben Ali tempered the upward adjustment in repression with promises of new jobs and infrastructure in the region (Gobe 2010).

This incident demonstrates careful calculation and negotiation on the part of both the regime and protesters. The limits of Ben Ali’s tolerance were steadily tested until protesters learned the point at which repression would increase enough to raise the cost of opposing the regime beyond what they were willing to bear. Their willingness to protest gave Ben Ali information on how valuable their demands were

to them relative to supporting the regime. He gained knowledge about the level of repression that was required to “buy” public support as well as the level of reward citizens perceived to be fair compensation.

This type of protest has long been observed in authoritarian regimes of the Middle East and North Africa, but it is a growing phenomenon in China. After Tiananmen Square, the regime was wary of similar incidents occurring that had the same potential for turning the tide of public sentiment against the regime. Their strategy changed to more peaceful tactics. They began to take the side of the protestors and blamed local authorities for not resolving citizens' grievances. This change in the relative price of protesting led to an increase in protests. In 1993, China's police recorded 8700 “mass incidents.” That number steadily increased, reaching 74,000 in 2004 (Shirk 2007). Officials keep detailed records of protests, where they occur, the demographics of participants, and outcomes. In this way, they have been able to measure trends in public sentiment such as the level of unrest among the rural, peasant population, a particular concern of the regime (Shirk 2007; Tanner 2004). They can also learn what actions they must take to gain the support of disgruntled citizens. For instance, in 2005, thousands of villagers around Dongyang voiced their dissatisfaction with the pollution from nearby chemical plants by setting up camp on the roads and blocking traffic in the region for several weeks. Officials and protestors worked out a compromise to close some of the plants (Shirk 2007). This seems like an unlikely feedback loop, but it benefits both the regime and citizens. It relays information of local conditions to regime officials as well as information to citizens about the regime's willingness to make concessions.

#### ***1.4.4 Is One Mechanism Better than Another?***

In order to allocate their resources in a manner that promotes the survivability of their regime, dictators need information. They need to learn the preferences of their citizens so they know the quantity and costs of the resources necessary to gain their public support. They also need to be alert to changes in those preferences and respond expeditiously. Legislatures, associations, and protests are three feedback mechanisms that provide the dictator with information that helps him more effectively and efficiently allocate resources, yet each exhibits different strengths and weaknesses:

- Legislatures support the legitimacy of the regime and retain significant control over potentially damaging information flows to citizens; however, they are slow to transmit changes in local knowledge and participation is limited.
- Business and professional associations attract participation from a greater number of citizens, but their hierarchical nature can also slow the communication of information.



- Protests quickly relay local information and changes in public preferences, yet they undermine the legitimacy of the regime. Additionally, controlling information flows is increasingly difficult with the growing use of cell phones and social media sites.

No single mechanism is capable of transmitting information as efficiently as monetary prices convey changes in local knowledge. For this reason, a dictator may find it advantageous to employ a combination of mechanisms to mitigate their individual weaknesses.

## 1.5 Conclusion

Standard economic models of dictatorship provide a good starting point for analyzing the decisions dictators must make to stay in power. They highlight the importance of specific factors that affect relative price calculations—supporting versus opposing the regime from the citizen’s perspective and rewarding versus repressing citizens from the dictator’s perspective. However, since the variables in these calculations are assumed to be known, the models do little to explain the behavior of citizens and dictators to discover this information. It is in an environment of uncertainty that they make these decisions, and this is the situation that must be analyzed.

In this context, it is the discovery of information relevant to the dictator’s survival that drives his actions. He is not preoccupied with specific calculations; he is obsessed with what he does not know about the security of his position (Tullock 1987). Institutional arrangements that at first appear counterintuitive to the principles of dictatorship make sense when one realizes the primacy of the dictator’s knowledge problem. Arrangements more commonly associated with democracies, those that allow representation and free speech, are particularly useful as information feedback mechanisms. It should not be surprising that many dictators seek to manipulate these institutions to obtain their informational benefits while still maintaining control over citizens’ actions.

Analyzing specific information feedback mechanisms provides insight into the stability of different dictatorial regimes. Here, we have examined three mechanisms: legislatures, business and professional associations, and protests. These mechanisms imperfectly relay information about local conditions that helps the dictator more efficiently allocate resources and maintain power. Each one has specific strengths and weaknesses; therefore, a combination of mechanisms is required to provide more robust information flows to the dictator.

Standard economic models of dictatorship are limited in their capacity to address the processes dictators engage in to discover the information relevant to their decision-making; thus these critical economic activities have been largely ignored by economists. Reexamining the dictator’s problem under conditions of imperfect knowledge leads to interesting questions about his behavior and reveals possible explanations for some of his seemingly counterintuitive actions. Further research

on the institutional arrangements employed by dictators to inform their allocation decisions and keep them apprised of changes in citizen preferences could provide insights into questions about the stability of different regimes, the effects of international efforts to promote democratic institutions, and the existence or absence of particular institutions.

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# Chapter 2

## The Economic Reconstruction of Iraq



Christopher J. Coyne and Rachel Coyne

### 2.1 Introduction

This chapter analyzes the economic reconstruction of Iraq following the 2003, U.S.-led invasion. In general, economic reconstruction includes building and rebuilding physical infrastructure and services and fundamentally reforming institutions and policies related to economic activity in the wake of conflict. In the context of Iraq, economic reconstruction was an important part of the broader Iraqi reconstruction effort, which also focused on the reconstruction of legal, political, and social institutions. Until handing over sovereignty to Iraqis in June 2004, the U.S. oversaw all aspects of economic reconstruction. Following the transfer of sovereignty, the U.S. has remained heavily involved in efforts to rebuild the economy in a variety of ways.

The results of economic reconstruction efforts have been mixed at best. Following the invasion, Iraq's economy came to a virtual standstill. The removal of sanctions, coupled with heavy investment by the U.S., generated positive results in some macroeconomic indicators. For example, since the fall of Saddam Hussein, estimates of annual economic growth rates in Iraq range from 4% to 17% (Beehner 2007). Given the devastation following the war, as well as the state dysfunction stemming from the Hussein regime, any positive economic growth must be counted as a success. Further, significant amounts of Iraqi debt have been forgiven, Iraqi currency has been reformed, and some markets have been opened to international trade, allowing for the importation of cheap goods from China and other countries (Beehner 2007).

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Despite these improvements, there are significant concerns regarding the long-term robustness of Iraq's economy. External aid has been a critical factor in economic recovery, and it remains to be seen whether Iraq's economy can be self-sufficient when this support is reduced or ended. Two other major concerns are unemployment—currently around 50%—and the continued prevalence of corruption. Where job creation has taken place, it has largely been in the public sector (Gunter 2009). This poses several problems. First, the creation of additional public sector jobs without significant changes to the existing “culture of corruption” could potentially exacerbate the magnitude of the corruption problem. Second, wealth creation takes place through innovation in the private sector. By focusing on the creation of public sector jobs over private sector jobs, Iraq's government is failing to provide adequate incentives for productive entrepreneurs to start new businesses or expand existing businesses. A key factor stifling private initiative is the burdensome regulation on private business (Gunter 2009). Third, the increase in public sector employment, coupled with the fall in oil prices, has put enormous strain on the national budget. The budget of the Iraqi government is largely driven by revenues from petroleum exports and external support. With the recent fall in oil prices, petroleum revenues have decreased sharply, putting increasing pressure on the national budget. The absence of an environment conducive to private business has limited the tax base, further straining the budget. Gunter (2009) argues that this pressure will place a hard constraint on the further expansion of public sector jobs, making it even more important to focus on providing incentives for private business.

Finally, there are major concerns over state capacity regarding the provision of security, as well as the staffing and maintenance of reconstructed infrastructure. U.S. officials have recently expressed concern that there are not enough qualified Iraqis to staff reconstructed facilities once Americans leave the country (Williams 2009). The fear is that in the absence of trained staff to maintain and operate facilities, basic services will not be provided to Iraqi citizens, leading to economic stagnation. In the extreme, the lack of basic services, in conjunction with high unemployment, could lead to a backlash by Iraqi citizens.

In what follows, we trace the foundations and trajectory of the economic reconstruction of Iraq, explaining how early reconstruction efforts fell prey to four reconstruction traps identified by Coyne and Mathers (2010) and Coyne and Pellillo (2011). These traps include: (1) the credible commitment trap, (2) the political economy trap, (3) the bureaucracy trap, and (4) the fatal conceit trap. In applying these traps to the Iraq reconstruction experience, our purpose is twofold. First, we illuminate why the efforts to rebuild Iraq's economy have largely failed to meet their goals. Second, we provide forward-looking policy recommendations for Iraq's economy which avoid the pitfalls created by these traps.

This chapter proceeds as follows. The next section provides an overview of the U.S. occupation and economic reconstruction of Iraq. Section 2.3 applies four reconstruction traps to the early economic reconstruction of Iraq. We discuss how the dynamics of each trap hampered efforts to rebuild Iraq's economy and has made more recent reconstruction efforts more difficult. Section 2.4 concludes with the policy implications of the analysis.

## 2.2 Background on the Economy and Economic Reconstruction of Iraq

### 2.2.1 *Iraq's Prewar Economy*

Under the Hussein regime Iraq was a mixed economy. Approximately a third of the labor force was employed in public jobs—government, military, state-owned enterprise—while the rest worked in the private sector. The private sector in Iraq was largely informal which constrained the extent of trading networks and economic activity (Looney 2006; Foote et al. 2004). For the most part, private sector jobs were limited to small-scale production such as agriculture and self-employment. While the government allowed the price of most goods to freely fluctuate, it did require that private firms act in accordance with the government's "national plan." The government also controlled the prices and revenues of refined oil products and centrally controlled the rationing of food to all citizens. Prior to the Iran-Iraq War in the 1980s and the first Gulf War in 1991, Iraq's economy was one of the more developed in the Middle East (Crocker 2004, p. 74). However, several interrelated factors negatively affected Iraq's economic fortunes starting in the 1980s.

The first was the corruption that was rampant in the government. Iraq's government was a rent-seeking apparatus where elites secured resources and wealth at the expense of the broader society. Rent seeking is an inherently unproductive activity that focuses on redistributing existing resources to those in favorable positions. As such, rent-seeking behavior contributes nothing to growth and instead is harmful to the process of wealth creation. At the extreme, rent seeking can bankrupt a country (Olson 1982). Rent seeking extended beyond Saddam Hussein's inner group and was rampant across all of Iraq's ministries, as well as the secret police (Foote et al. 2004). Corruption was magnified as significant resources were allocated to finding ways of subverting the UN sanctions placed upon the Iraqi government in August 1990 (Allawi 2007).

The second factor was the aforementioned informal activity which was a substantial part of the country's overall economy. This informal activity was due to dysfunctional institutions, corruption, and the threat of public expropriation which put severe limits on the extent of the market. For example, in order to obtain a legal business license, applicants had to wait up to a year and had to go through a screening process to see if they had any relatives or acquaintances belonging to what were considered opposition groups (Foote et al. 2004). This, as well as other barriers, provided a disincentive for citizens to participate in the above-ground economy.

Third, a lack of public investment in basic infrastructure and services negatively affected Iraq's economic development. Over time, the lack of investment led to a stagnation in both human and physical capital (Foote et al. 2004). This was further exacerbated by the physical destruction of the first Gulf War, during which infrastructure such as electric grids and telecommunication networks were targeted by coalition forces.

Fourth, the sanctions imposed under Section 41 of the UN Charter, which lasted for 12 years, had significant negative effects on Iraqi citizens while failing to achieve the goal of changing the behavior of the government. Targeting sanctions on leaders was extremely difficult, as government officials found means of avoidance, which shifted most of the costs onto Iraqi citizens (Del Castillo 2008). The Oil-for-Food program, which allowed the Iraq government to use the profits from oil sales to purchase food and other humanitarian goods for its citizens, was intended to offset the negative effects of the sanctions. However, the program was fraught with corruption and abuse, and government officials were able to profit from the program while the sanctions continued to impose significant costs on Iraqi citizens (Foote et al. 2004; Del Castillo 2008). In addition, the Oil-for-Food program distorted local incentives by discouraging local food production because of the increased food imports (Foote et al. 2004).

The final factor negatively affecting Iraq's economy was the government's fiscal instability. The majority of government income came from oil revenues, yet these funds were sporadic at times given disruptions to oil markets in the country during the Iran-Iraq war and later UN embargoes. Widespread poverty and the significant underground economy meant that internal taxation constituted a very small percentage of government revenues. International debt markets were able to offset some of the lost revenue for several years, but ultimately the government turned to printing money to pay for its operations. Between 1989 and 1994, inflation rose from 6% to 500% (Foote et al. 2004). Further, it is estimated that Iraq's foreign debt totaled \$125 billion at the time of the U.S. invasion (Del Castillo 2008).

In sum, when the U.S. entered Iraq in 2003, they found "... an economy that essentially needed to be rebuilt from scratch, crushed by decades of wars, sanctions, and atrophy due to Saddam's neglect of the population's needs" (Crocker 2004).

### ***2.2.2 The Governing Body of Iraq's Initial Economic Reconstruction***

The Office for Reconstruction and Humanitarian Affairs (ORHA) was established on January 20, 2003, two months prior to the U.S. invasion of Iraq, to serve as a transition administration following the overthrow of the Hussein regime until a new government could be democratically elected (Rathmell 2005). The ORHA consisted of four departments to oversee humanitarian relief, reconstruction, civil administration, and finance. Jay Garner, a retired U.S. Army Lieutenant, was appointed as the initial director and was put in charge of overseeing the Iraq reconstruction effort.

The ORHA was replaced by the Coalition Provisional Authority (CPA) on April 21, 2003. Garner remained in charge of the CPA until early May, when he was replaced by L. Paul Bremer. Among the explanations for Garner's removal was that the ORHA failed, under his leadership, in its mission to provide security and basic

public services (Allawi 2007; Del Castillo 2008). There was also tension over the “de-Ba’athification” process which involved removing members of the Baath party from positions of public service (Bennett 2003). The ORHA was never officially dissolved, but its staff and activities were absorbed by the CPA.

Under UN Security Council Resolution 1483, passed on May 22, 2003, the CPA was made the legitimate governing and security authority of Iraq. In addition to granting the CPA executive, legislative, and judicial authority over Iraq, Resolution 1483 lifted all sanctions against Iraq. The CPA, under the leadership of Bremer, was the central administrative body through which economic reconstruction was carried out. Peter McPherson, former President of Michigan State University and current chairman of Dow Jones & Co., served as the CPA’s Director of Economic Policy for four months and oversaw many of the reforms associated with economic reconstruction, including currency and banking reform, as well as the CPA’s plan to privatize Iraq’s state-owned enterprises.

### ***2.2.3 Economic Reconstruction***

Immediately after the war, Iraq was plagued by widespread looting, theft and arson generating damages estimated at \$12 billion (Diamond 2005; Rathmell 2005). Government buildings were set ablaze, records pertaining to the operation of the Iraqi government were stolen or destroyed, and many top Iraqi bureaucrats fled fearing repercussions from the U.S. The result was disorder and chaos surrounding the arrival of the members of the ORHA. Upon arriving in Baghdad, the members of the ORHA hastily attempted to keep the remaining Iraqi bureaucrats involved in order to maintain basic government operations. They were successful in some cases, but the result of this expediency was that the ORHA had to empower Iraqi officials, who had not been vetted, with decision-making which contributed to ongoing corruption (Allawi 2007). The creation of the CPA further contributed to the confusion regarding the operation of the government, ultimately resulting in a “perpetuation of a system with ingrained working habits and practices, overseen by a bureaucracy that was fundamentally little different from its predecessor” (Allawi 2007).

The CPA was the centerpiece of the broader reconstruction effort and its scope was defined by 12 Regulations which were “. . . instruments that define the institutions and authorities of the Coalition Provisional Authority” (Coalition Provisional Authority 2003). Regulation 1, signed by Bremer on May 16, 2003, established the mission and authority of the CPA indicating that it “shall exercise powers of government temporarily in order to provide for the effective administration of Iraq” (Coalition Provisional Authority 2003). It also gave Bremer the executive, legislative and judicial authority required to achieve the objectives of the CPA. Regulation 1 did not indicate how long the CPA would remain in this role.

The CPA attempted to utilize the remnants of the Hussein-era government to carry out its efforts. Each ministry had a team of advisors who were supposed to



serve as liaisons between Iraqis and the CPA. However, in many cases the role of the advisors mutated into that of an administrator possessing decision-making power, as compared to liaison working with Iraqis in these ministries (Allawi 2007). The CPA also worked to set up local governing structures to ensure that centralized decisions regarding the reconstruction could be implemented throughout the country. CPA-appointed administrators were placed in charge and controlled local finances, while possessing key decision-making power. While local neighborhood elections were held, the higher provincial councils "... were seen as tools of the occupation and were not considered as either representative or democratically elected" (Allawi 2007). This highlights a broader issue that the CPA faced. The U.S. characterized the occupation as an exercise in liberation and self-determination. At the same time, self-determination at the local level often ran counter to the goal of establishing an effective central government. The result was that the post-war government hierarchy remained largely unchanged from the Hussein-era government, including the perpetuation of the norm that locals were not to make decisions that ran counter to the dictates of the central government for fear of the repercussions. This had the unintended effect of preventing the emergence of self-governing mechanisms at the local level.

As for the specifics of the economic reconstruction, the U.S. government, operating through the CPA, had a vision of reconstructing Iraq's economy based on "free market" principles including privatization, reduced government intervention, and openness to foreign investment and trade (King 2003). The CPA introduced these reforms in the form of 100 orders that were "...binding instructions or directives to the Iraqi people that create penal consequences or have a direct bearing on the way Iraqis are regulated, including changes to Iraqi law" (Coalition Provisional Authority 2003).

The CPA orders covered a wide range of issues and activities. For example, Order 1 declared the "de-Ba'athification of Iraqi Society" while Order 2 dissolved the Iraqi army and intelligence service. Order 12 suspended all tariffs, duties, taxes, and surcharges for goods imported or exported from Iraq. Order 17 granted immunity from Iraqi legal processes to members of the CPA, as well as to foreign contractors. Currency reform was addressed by Order 18, which provided for the independence of the central bank, and Order 43, which called for the introduction of the new Iraqi Dinar. Many consider currency reform to be one of the few major successes of the economic reconstruction (Crocker 2004; Allawi 2007; Del Castillo 2008), although there is not complete consensus on this point (Hanke and Sekerke 2004). Order 49 reduced the tax rate on Iraqi corporations from 40% to a flat rate of 15%.

Four of the CPA orders dealt with banking reform. The first was the previously mentioned Order 18, which suspended the old banking laws and created an independent central bank. The second, Order 20, established the Trade Bank of Iraq to manage the funds from the Development Fund for Iraq and to assist Iraqi businesses finance imports. The third, Order 40, opened the previously state-run banking system to foreign banks and established rules regarding capitalization and management. Order 40 was later rescinded with the issuance of Order 94, which provided updated laws and rules for Iraq's private banks.

Order 39 established the guidelines for foreign investment and called for the privatization of state-owned enterprises (SOEs). The SOEs posed a particular problem for the CPA and, in many ways, illustrate the broader problems with the economic reconstruction effort. As discussed in the previous section, most private economic activity in Iraq was small-scale and took place in the informal economy. Prior to the invasion, the almost 200 SOEs were major sources of employment as well as the main providers of public services and consumer products, accounting for 90% of Iraq's industrial production (Reconstruction 2009). In the wake of the invasion, many of the SOEs were closed due to looting and rioting. The CPA initially made the decision to freeze the assets of the SOEs while severely limiting subsidies, because they were viewed as inefficient remnants of the Hussein era which should be quickly privatized. While it is true that the SOEs suffered from significant corruption and inefficiency, they constituted a central part of the country's economic activity. The initial decision to keep the SOEs closed negatively affected economic recovery and eventually led the CPA to change course regarding the privatization of SOEs. In July, only four months after the initial invasion, the CPA provided funding to SOEs producing goods contributing to the reconstruction effort. By the end of the summer, about one-third of the SOEs had been reopened (Reconstruction 2009).

At the time the 100 orders were being written and issued, there was debate within the CPA about the vision for Iraq's economy, as well as the best means of achieving that vision (Reconstruction 2009). A similar debate was taking place among academics and those in the media. The Economist (2003) called the CPA orders a "wish-list that foreign investors and donor agencies dream of for developing markets." Others, such as Nobel Laureate Joseph Stiglitz (2004), noted that the economic reforms in Iraq were "...an even more radical form of shock therapy than pursued in the former Soviet World," which would cause problems similar to those experienced in eastern Europe and the Soviet Union following the collapse of communism.

Due to the situation in Iraq, as well as administrative limitations facing the CPA, not all of the orders were actually implemented. For example, security concerns and opposition by Iraqi citizens forced the CPA to shelve its plans to end oil and food subsidies and to privatize state owned oil enterprises as per Order 39 (Weisman 2004). This included reestablishing the nationalized food distribution network originally implemented under the Hussein regime. Ironically, the CPA later claimed the food distribution network as a success, although achieving this goal ran counter to the original reconstruction plans, which called for ending the distribution network (Allawi 2007). This highlights one of the fundamental tensions facing occupiers, not only in Iraq, but in many post-conflict economic reconstructions. Occupiers need to develop policies that simultaneously meet short-run needs while also providing the foundations for a market system over the long-run. As the aforementioned example illustrates, this can be a difficult balance to achieve.

As noted in Sect. 2.1, Iraq's economy has achieved positive growth. However, the initial CPA orders have failed to generate widespread benefits as the Iraqi economy has struggled to recover following the initial invasion and war. A report by The World Bank (2006) emphasized that "oil production and exports have yet to reach

prewar levels, and nonoil sectors remain sluggish. High unemployment, poverty, and weak social protection systems dominate public concerns and threaten the fragile democracy.” The report also noted that 8–10% of the Iraqi population was living in absolute poverty while another 12–15% of the population was vulnerable to falling into that category (The World Bank 2006).

Although it is too early to pass judgment on Iraq’s long-term performance, it is far from clear that reconstruction efforts have established the foundations of a sustainable market economy. As noted in the Introduction, reconstructed institutions continue to be fragile and reliant on external support, while violence and corruption continue to be a real concern for citizens and investors (The Economist 2009d,c). Moreover, onerous business regulations have constrained the expansion of the private sector (Gunter 2009). It should be noted that there has been some foreign investment in Iraq. A central issue will be whether these investments yield adequate returns and whether further large-scale investment will be made after the U.S. presence is further reduced (The Economist 2009a). Also unresolved is the role that foreign investment will play in Iraq’s oil industry in the absence of an established oil law (The Economist 2009b).

By early 2004, the CPA had largely abandoned its original agenda for sweeping market reforms, instead focusing on smaller reconstruction projects and the political transition (Reconstruction 2009). On June 29, 2004, the CPA ended its operations when it turned sovereignty over to Iraqis. Despite the transfer in sovereignty, the U.S. has remained heavily involved in the economic reconstruction of Iraq. In addition to the provision of security, the U.S. has provided significant development support, including aid (monetary and humanitarian) and technical expertise. For example, the United States Agency for International Development (USAID) continues to oversee a wide variety of reconstruction projects in Iraq and plays an important role in overseeing the Iraq Reconstruction and Relief Fund, which was established by the U.S. Congress in 2003 to aid the reconstruction of Iraq.

In order to avoid past pitfalls in the future and to understand what is feasible in Iraq, we need to grasp what went wrong with the early economic reconstruction of Iraq. To accomplish this goal, the next section applies the reconstruction traps developed by Coyne and Mathers (2010) and Coyne and Pellillo (2011) to the economic reconstruction of Iraq. In illuminating what went wrong with the CPA’s efforts to reconstruct Iraq’s economy, these traps also provide insight into forward-looking policies to avoid similar pitfalls in the future.

## **2.3 The Traps of Economic Reconstruction in Iraq**

### ***2.3.1 The Credible Commitment Trap***

Reforms, which are central to economic reconstruction, are agreements to change behaviors in future periods. In order for reforms to be effective, policymakers must

have the incentive to deliver instead of renegeing on their promise. The ‘credible commitment trap’ occurs when reform efforts associated with reconstruction fail to appreciate the importance of incentives for directing action (Coyne and Mathers 2010; Coyne and Pellillo 2011). Such reforms are doomed to fail because they neglect the importance of signaling a credible commitment on the part of policymakers so that citizens buy in to the reform.

The credible commitment problem can be understood as follows. Without a binding commitment to reforms that is credible, policymakers may have an incentive to renege on the announced reform in future periods. Credibility becomes an issue when there is a disjoint between those holding power (policymakers) and the beneficiaries of announced reforms (citizens) because policymakers can renege on their promise down the line and citizens have limited recourse when they do so (Acemoglu and Robinson 2005). Anticipating this behavior on the part of policymakers, citizens must be confident that the political elite will deliver on their promise in order to buy into the reform in the first place.

Solving the credible commitment problem is not simply a matter of establishing constraints on the activities of policymakers. To initiate successful reforms policymakers must simultaneously establish constraints and send a strong signal to citizens that they are sincere in their commitment to reform. Once a credible signal is sent it can create sustainable change based on the repeated dealings between policymakers and citizens. Credible commitment problems have plagued the economics reconstruction of Iraq (Coyne and Boettke 2009). There are at least three significant barriers that prevented the emergence of credible reforms in Iraq.

The first are indigenous religious and ethnic divisions in Iraq. Successful reforms needed to satisfy members of Iraq’s major ethnic groups—the Arabs and Kurds—and religious groups—the Shi’a and Sunni Muslims. The tensions in Iraq go beyond the major religious and ethnic groups discussed above. In addition to the issues with inter-group interactions there are also intra-group tensions that create problems for reforms. For example, there are various intra-group factions in the broader Sunni and Shi’a groups in Iraq at both the national and local levels. Further, Shi’a political leaders are divided into at least four major sub-parties and there are factions within those sub-parties (Fearon 2007). Given the historical tensions between these groups, and sub-groups, compromise and consensus around reforms has proven difficult because many citizens do not view those in power, who are outside their circle of trust, as credible.

In addition to contributing to the failure of reconstruction efforts, the absence of a solution to the credible commitment problem also threatens the achievement of sustained peace. In general, when political leaders lack credibility they cannot make binding promises to potential insurgents (Keefer 2008). The absence of credibility makes the likelihood of continued insurgency that much more likely. This in turn, has contributed to the inability of occupiers and reformers to carry out other aspects of the economic reconstruction such as building infrastructure.

The second barrier to overcoming the problem of credible commitment in Iraq is the dynamics of the U.S. occupation. In addition to interaction between the indigenous groups and sub-groups within Iraq, these same groups also interact

with the occupiers. In addition to expectations regarding how other indigenous groups would act, those in Iraq also had expectations regarding the actions of the occupiers. Along these lines, Diamond (2005) has noted that, “Deep local suspicions of U.S. motives combined with the memory of Western colonialism. . . generate a massive lack of legitimacy for the occupation authority.” As such, many Iraqis have responded with resistance to the efforts of the occupiers. In the context of the CPA’s policies, given the suspicion of Iraqis toward the U.S., many Iraqi citizens failed to view the CPA’s economic reforms as credible which contributed to their failure.

This highlights the importance of perceptions in reconstruction. In order to be successful, occupiers must not only ensure that incentives are aligned so that announced reforms are credible over time, but also ensure that indigenous citizens view the reform and incentives in a manner which is legitimate and sincere. Given differing perceptions based on historical experiences and cultural differences, this can be difficult. In the case of Iraq, “Part of the problem was that Garner and Bremer never comprehended how Iraqis perceived them. . . Thus the coalition never grasped, for example, the fact that, although most Iraqis were grateful for having been liberated from a brutal tyranny, their gratitude was mixed with deep suspicion of the United States’ real motives (not to mention those of the United Kingdom, a former colonial ruler of Iraq). . .” (Diamond 2005). The result is that many of the reforms announced by the U.S. lacked credibility in the eyes of Iraqis and therefore failed to take hold. In general, when occupiers fail to understand the underlying belief systems of indigenous citizens, including how those citizens perceive and interpret the occupiers and the proposed reforms, reconstruction efforts are more likely to fail.

The third barrier to solving the credible commitment problem in Iraq is the presence of “regime uncertainty” which refers to the stability, or lack thereof, of rules and institutions. When regime uncertainty exists, both domestic and foreign exogenous actors cannot be confident in the stability of rules over time. The economic reconstruction in Iraq has suffered from, and contributed to, regime uncertainty in numerous instances. For example, some of the orders passed by the CPA included the possibility of “adoption or replacement” by future Iraqi governments (Looney 2004). There were also issues of the legality of the economic reforms implemented by the CPA (Eviatar 2004). Specifically, there was debate over whether the drastic changes in laws regarding economic activity fell under the purview of The Hague Regulations and Geneva Convention. Further, as discussed in the previous Sect. 2.2 the CPA changed course regarding state-owned enterprises, among other policies, which created further uncertainty regarding announced reforms and the actual actions of the CPA.

In sum, in order to buy into the reforms associated with economic reconstruction, Iraqi citizens need to be confident that reforms are binding and will not be undermined by other citizens, the new government in Iraq, and the governments and citizens of other countries. For the reasons discussed above, this confidence has largely been absent contributing to the failure of economic reconstruction to date. The credible commitment trap in reconstruction is a multi-pronged problem. First, reformers (i.e., politicians, occupiers, etc.) must have the incentive to deliver on

their promises and they must effectively signal to citizens that those incentives are credible. Second, reformers must ensure that citizens perceive the signal sent in a manner which communicates credibility. Absent the appropriate incentives and the appropriate credible signal, reforms will fail. Going forward, reformers in Iraq must ensure that reforms are viewed as credible by Iraqi citizens.

### 2.3.2 *The Political Economy Trap*

Economic and political reconstructions are intertwined because political institutions affect economic activity and vice versa. To understand this, consider that political institutions characterized by corruption and unchecked power will stifle economic activity because citizens will have a disincentive to invest, innovate, and trade. The “political economy trap” refers to the idealized view of politics and democracy which pervades reconstruction efforts (Coyne and Mathers 2010; Coyne and Pellillo 2011). This romanticized view is problematic because it ignores the status quo in the country being reconstructed, as well as the potential costs of democracy.

In addition to focusing on constructing a market economy, reconstruction efforts typically aim to construct the foundations of a democratic political system. Consider, for instance, the mission of the recently created U.S. Office for the Coordinator for Reconstruction and Stabilization (S/CRS), which is charged “To lead, coordinate and institutionalize U.S. Government civilian capacity to prevent or prepare for post-conflict situations, and to help stabilize and reconstruct societies in transition from conflict or civil strife, so they can reach a sustainable path toward peace, democracy and a market economy.”<sup>1</sup> Unfortunately, focus is typically placed on the benefits of democracy, while the potential costs and harms of democratic political systems are neglected.

Democracy is a means of selecting outcomes, not an end in itself. In its ideal form, democracy is a means of self-governances whereby the preferences of citizens are communicated through the voting process, and the winners of elections are constrained through a set of checks and balances. In reality these ideal conditions do not exist. Arrow (1950) showed that no voting system can unambiguously aggregate preferences across voters. Further, creating appropriate checks and balances is no easy task, and social scientists and practitioners lack the knowledge of how to design effective constitutional rules that will stick over the long run. This is because formal institutions, such as constitutions, must be grounded in informal customs and belief systems, which are largely beyond the reach of policy (Boettke et al. 2008). Absent effective constraints, democracy can produce illiberal outcomes—political and economics—that can do real harm.

Recognizing that the ideal model of democracy is an inappropriate starting point shifts focus to the importance of the status quo. All reforms must start from the ‘here

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<sup>1</sup>See the S/CRS official website: <http://www.crs.state.gov/>.

and now' by recognizing the status quo and the associated constraints (Buchanan 1975, 2004). The status quo is characterized by existing formal institutions (constitutions, laws, regulations, government organization, etc.), vested interests, and existing informal institutions (norms, belief systems, etc.). Although the status quo varies from case to case, in all instances it creates constraints which limit what can be achieved.

The failure to appreciate the status quo has contributed to the failure of reconstruction in Iraq. Ba'athist government institutions had been in place for over three decades. This included both national institutions, such as ministries, and local government institutions. In addition to the formal government, there was a complex "shadow" government, including the secret police and intelligence and Saddam Hussein's inner circle. Instead of rebuilding government institutions from scratch, the CPA decided to remove certain people from the government, through the process of de-Ba'athification, while maintaining the existing government apparatus. The logic behind this decision was that working within established institutions would minimize disruptions following the invasion. In reality, this created problems for the broader reconstruction effort for at least two reasons (Allawi 2007).

First, given the sheer size of the Hussein government, the CPA did not have enough competent staff to operate the government machinery. As noted earlier, following the invasion, many Iraqi government officials fled or were removed through the de-Ba'athification process. The structure of the Hussein government was highly centralized such that "...the removal of ministers did not simply allow subordinates to take over and carry on" (Rathmell 2005). This meant that the staffing issue facing the CPA was not only one of numbers, but also one of context-specific knowledge regarding government operations (Rathmell 2005).

The second problem was that corruption increased. While corruption was a way of life under Saddam Hussein, the secret police and intelligence services served as a check on its magnitude. Under Saddam Hussein, it was smarter for officials to continually engage in small-scale corruption to avoid drawing the attention of the police. When the police and intelligence services were disbanded, this check was removed and corruption ran rampant. The CPA lacked the resources to effectively run the government, let alone to monitor and punish corruption. The result was that while Ba'athists were removed from government positions, the status quo of corruption remained the same. As one senior U.S. State Department official noted, corruption in Iraq is "real, endemic and pernicious" (DeYoung and Pincus 2007). The norm of corruption hampered both economic and political reconstruction.

Another implication of the political economy trap is that there is often a tension between the dual goals of establishing democratic political institutions and constructing the foundations of a market economy. Those carrying out the reconstruction want to implement their plan to reform the economy. However, allowing for self-determination through democracy often leads to demands by citizens that run counter to these plans. When this happens it presents a conundrum because implementing reconstruction plans requires either preventing democratic participation or ignoring the results. Denying political participation, or ignoring the outcomes of participation, is tantamount to denying political liberties and self-



determination, which are important aspects of reconstruction efforts. In describing the situation in Iraq, Klein (2004) captured this dilemma when she wrote, “On one side are the occupation forces. On the other are growing movements demanding economic and voter rights in Iraq.” What Klein is highlighting is the tension between the goals of occupiers and the demands of Iraqi citizens.

To provide a concrete example, consider the tensions between the goals of the CPA and the calls for elections by Grand Ayatollah al-Sistani, the highest ranking Shi’a Muslim scholar in Iraq (Wong 2004). In June 2003, al-Sistani issued a fatwa urging Iraqis to push for general elections. This put the CPA in a bind because they wanted to have oversight over the design and content of the constitution (Allawi 2007). At the same time, by ignoring al-Sistani’s calls for elections the U.S. would clearly be choosing the imposition of its vision over democratic participation. The CPA ultimately abandoned its plans to appoint a body to write a constitution. This had real effects on political and economic reconstruction because a constitution that was viewed as legitimate by Iraqis would have provided a foundation for a permanent government, which would have provided predictability and stability encouraging economic activity.

One potential solution to the dilemma between political and economic reconstruction is to prioritize one over the other. Del Castillo (2008), a proponent of this approach, notes that “. . . should a conflict arise between peace (political) and development (economic) objectives, the first one should be paramount at all times. Because peace is a precondition for sustainable development, all actors should recognize and accept that political priorities will often constrain economic policymaking.” To the extent this approach is followed, it places important limits on the scope and scale of economic reconstruction efforts. Large-scale and first-best reforms (e.g., privatize all state-owned-enterprises, remove all trade barriers, etc.) are unlikely to be feasible because of the tensions between political participation and economic reconstruction described above.

In Iraq, no matter what strategy is pursued going forward, discussions of reconstruction must shift focus away from assuming an ideal form of democracy and instead focus on finding realistic mechanisms to resolve the political economy trap. Reformers must understand and appreciate the status quo and the tradeoffs between political and economic reconstruction.

### ***2.3.3 The Bureaucracy Trap***

The reconstruction of Iraq has been criticized for a lack of effective planning and coordination among the agencies involved. This has led to numerous calls for improved coordination between bureaucratic agencies (Reconstruction 2009). However, focusing solely on improved coordination between agencies fails to appreciate what bureaucracies can realistically achieve in the context of economic reconstruction. The “bureaucracy trap” is the overreliance on bureaucracies for the design and implementation of reconstruction plans (Coyne and Mathers 2010;



Coyne and Pellillo 2011). Reconstruction efforts fall prey to this trap when policymakers fail to recognize the limits of bureaucratic activity. Avoiding this trap involves an understanding of the incentives and constraints faced by bureaucrats who hold non-elected positions in government.

Government bureaus receive their budgets from elected officials in order to provide goods and services to citizens. Budgets are allocated based on relationships with legislators, as well as on the needs of the bureau. In this regard, each bureau is competing with other agencies over a limited budget. The incentives created by this process result in predictable behaviors. First, bureaus will expend resources lobbying legislators to establish relationships and convince them that their services are needed in greater amounts than currently exist. This typically involves investing resources in signaling the relative importance of one bureau over others. Second, bureaus will tend to exhaust their entire appropriated budgets while continually seeking to increase their budgets in order to increase the size of the agency. Third, government bureaucracies do not face the same feedback mechanisms as private firms—profit/loss, capital markets—and therefore struggle to gauge the effective allocation, and reallocation, of resources to high-return uses (Mises 1983). Further, in addition to be judged on funds spent, bureaucracies are typically judged on other readily observable outputs which don't necessarily coincide with long-run economic development (Easterly 2002).

How does this influence the reconstruction process? Bureaus involved in reconstruction efforts will lobby legislators to secure the biggest possible portion of the reconstruction budget and associated power. This creates an important tension in reconstruction efforts. Agencies are supposed to be united in the common goals of reconstruction, but they are also competing with one another for money. This leads to efforts to carve out a niche that differentiates one agency from the others in order to secure a larger part of the fixed budget. Each bureau has its own agenda, which may clash with the agenda of other agencies as well as with the overarching goal of achieving a successful reconstruction. These tensions can generate perverse outcomes in the larger reconstruction process. Further, there is constant pressure to spend down the appropriated budget which runs counter to ensuring that costs are minimized while benefits are maximized. Finally, there is an emphasis on easily measurable outputs which may not contribute to the long-term goals of the reconstruction. For example, focusing on hospitals and schools constructed as an indicator of success means little if this infrastructure cannot be used by citizens because of a lack of security or lack of qualified staff.

The realization that bureaus are in a constant competition helps explain the confusion and infighting before and during the reconstruction of Iraq. Phillips (2009) notes that in planning for the reconstruction, "Relations between the Office of the Secretary of Defense (OSD) and the State Department became increasingly acrimonious. U.S. officials vied for control over the Iraq policy." Similarly, Diamond (2005) indicates that "A number of U.S. government agencies had a variety of visions of how political authority would be reestablished in Iraq. In the bitter, relentless infighting among U.S. government agencies in advance of the war, none of these preferences clearly prevailed."

This logic also offers insight into the widely reported waste associated with the reconstruction effort as bureaus attempted to exhaust their allocated budget to signal effective performance. Waste and inefficiency was magnified because of the absence of effective feedback and accountability mechanisms (Glanz 2006). For example, consider the \$644 million “Community Stabilization Program” (CSP) in Iraq, which was suspended due to fraud and waste. The program was intended to weaken the insurgency by paying Iraqis to perform public services. However, an audit by the USAID’s Inspector General found significant bureaucratic inefficiencies resulting in fraud due to overbilling and payments to “phantom” employees. Perhaps most shockingly, the audit noted that “millions of dollars” from these projects were fraudulently going to insurgents, as well as to corrupt community leaders and CSP representatives. Amazingly, the U.S. appears to have been providing funding to the very insurgents it was fighting. Not surprisingly, one of the key recommendations of the audit was improved coordination between CSP officials, USAID officials, and military personnel (UO of the Inspector General 2008).

Given these issues, it is easy to see why there are calls for increased coordination and bureaucratic reorganization to centralize reconstruction decision making. In theory, a centralized hierarchy would overcome issues of competing agendas and visions for reconstruction efforts. However, even if reorganization is effective in solving this problem, increased centralization creates an entirely new set of problems. Bureaus are typically operated by rigid rules established at the top of the hierarchy and passed down to the lower levels. While centralization does offer a unified vision for reconstruction, it also constrains the flexibility of those further down the hierarchy. This is problematic in the case of reconstruction because those who are on the ground often need flexibility to react to local conditions. This flexibility, however, runs counter to the rigidity associated with hierarchical bureaucracies. These tensions were evident in Iraq, as indicated by Rathmell (2005) who notes that “bureaucratic politics in Washington also noticeably affected the CPA; the rising influence of the National Security Council (NSC) over Iraq policy in late 2003, for instance, led to increasing reporting requirements from Baghdad.” The increased layers of bureaucracy reduced the flexibility of CPA operations in Iraq and limited how staff could react to changing conditions.

The gap between the dictates of the CPA and what military personnel were experiencing in Iraq is another example of this logic. The removal of members of the Baath party from positions of public service placed the military dealing with the daily operations of Iraq in the precarious position of determining how to deal with the fired Baathists. In the hopes of incorporating the Baathists into the reconstruction process, some members of the military ignored the dictates of the CPA in order to create employment programs and grant local exemptions to former Baathist party members. The CPA viewed these efforts as undermining their authority while the military viewed the CPA as being out of touch with the actual conditions in Iraq (Chandrasekaran 2006; Ricks 2006).

The bureaucracy trap becomes a problem when reconstruction efforts are overly reliant on bureaucratic design and implementation of reconstruction plans. The bureaucracy trap does not indicate that bureaucracies can never achieve their goals,

but it does mean that there are limits on what bureaucracies can achieve. Continued focus on improving coordination ignores these constraints and the limits of what bureaucracies can actually achieve in post-conflict situations.

The main takeaway for future efforts in Iraq is that those involved in reconstruction must be cognizant of the limits of bureaucratic activity. Success will require not only an appreciation of these constraints, but a strategy which strikes a balance between the involvement of numerous agencies and clear limits on the extent of bureaucratic activities. Also important is ensuring that adequate accountability and feedback mechanisms are in place. As the experience with the bureaucratic delivery of foreign aid indicates, such mechanisms are critical although they are often difficult to establish (Easterly 2002, 2006).

### ***2.3.4 The Fatal Conceit Trap***

While the bureaucracy trap emphasizes the incentives and constraints facing bureaucrats, the ‘fatal conceit trap,’ focuses on the knowledge problem involved in economic reconstruction (Coyne and Mathers 2010; Coyne and Pellillo 2011). The fatal conceit is the presumption that “man is able to shape the world around him according to his wishes” (Hayek 1988). Economic reconstruction attempts to design a market economy based on the plans of those carrying out the reconstruction. This fundamentally assumes that planners can possess the knowledge to design a market economy; the reality is they cannot (Coyne and Mathers 2010). Attempts to plan and implement markets through economic reconstruction efforts ignore the complex chain of experiments, choices, errors, and informal institutions which must emerge for functioning markets to operate. Markets are not planned, but instead are largely the result of emergent norms and institutions which lead to increased interaction and exchange.

As noted earlier, the reconstruction of Iraq led to comparisons to the debate over shock therapy following the collapse of communism (Stiglitz 2004). The idea behind shock therapy, as compared to gradualism, was that comprehensive economic reforms needed to take place all at once because reforms in one area would fail if not complemented by reforms in other areas. The problem with shock therapy was that it fell prey to the fatal conceit trap by assuming that the entire economy could in fact be reformed, and that planners could possess the necessary knowledge to design and carry out comprehensive reforms.<sup>2</sup> As Murrell (1993) noted, “this top-down policy [shock therapy] is considered viable because the knowledge of how to create market institutions is viewed as readily available and easily implemented.” In order to carry out these large-scale, top-down reforms, planners had to abstract from complex context-specific intricacies such as historical experiences, informal institutions, and local belief systems, because there was no

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<sup>2</sup> For a discussion of shock therapy that appreciates these knowledge problems, see Boettke (1993).

way for them to accumulate this information in any meaningful way. This implies that although reforms differ in magnitude, all reforms are partial because there is no way to plan and reform an entire economy at once.

The issue then becomes the scale of reforms and the conditions under which it is more likely that mistakes will be made or corrected. The knowledge problem, and related potential for negative unintended consequences, is likely to be minimized with smaller-scale reforms (Coyne and Mathers 2010; Coyne and Pellillo 2011). However, this runs counter to the standard approach taken in reconstruction efforts, which typically rely on plans for widespread and sweeping reforms intended to implement an entire free market economy.

In the case of Iraq, the CPA attempted to dictate the foundations of a free-market economy through its 100 orders. The underlying assumptions were that these reforms would be effectively implemented and that they would sustain and operate in the desired manner. These assumptions neglected not only the reconstruction traps discussed above, but also the array of complementary informal institutions necessary for well-functioning markets.

For example, a large literature discusses the importance of trust and social capital for facilitating impersonal exchange, which is a necessary requirement for increases in the extent of the market and economic development (Fukuyama 1996; Knack and Keefer 1997; Woolcock 1998). In the case of Iraq, “one of the main impediments to a formal market... is the absence of trust at most levels... Not only did Ba’athism hamper the emergence of a market economy, it corrupted the judicial and legal institutions needed to create and nurture trust” (Looney 2006). The process of de-Ba’athification may have removed party members from positions of public service, but it could not undo the damage done to the informal institutions necessary for a functioning market economy. Changes to embedded informal institutions, such as trust, are typically beyond the reach of reforms and policies (Fukuyama 1995). As discussed earlier Sect. 2.3, the status quo constrains what reforms can achieve. Since issues of trust impact practically all interactions, the existing situation in Iraq placed real constraints on what reformers could accomplish in terms of economic reconstruction. The CPA was either unaware of these issues or choose to ignore them as it attempted to implement sweeping market reforms. In either case, there was a significant gap between what reformers wanted to achieve and what they could achieve, given the realities in Iraq.

Like many economic reforms, the reforms underpinning the Iraq economic reconstruction have been based on the orthodox model of complete markets found in a majority of economics textbooks. This frictionless model is based on core assumptions including perfectly informed market participants, well-defined and enforced property rights, and the presence of the informal institutions—e.g., norms, trust, organizational forms, etc.—that are so important in the development and maintenance of economic relationships. Similar to the idealized model of democracy discussed earlier in Sect. 2.3, problems arise when the orthodox model is used as a foundation for policy because the assumptions of the model imply a perfect market which does not, and cannot, exist in an imperfect world.

The only solution to the fatal conceit trap is a deeper appreciation for what can and cannot be rationally designed through human reason. As subsequent economic reforms are undertaken in Iraq, policymakers must be careful not to be overly reliant on the model of complete markets. Smaller scale reforms, which appreciate the limits of human reason, are more likely to succeed.

## 2.4 Conclusion: Implications for Policy

The reconstruction traps identified by Coyne and Mathers (2010) and Coyne and Pellillo (2011) provide insight into why past efforts to rebuild Iraq's economy have been unsuccessful. These failures provide important lessons that should inform future policies and reforms. First, reforms must be credible. In addition to ensuring that reforms provide the appropriate incentives to policymakers and citizens alike, reformers must also send a clear signal that the reform is credible. For example, Rodrik (1989) notes that in order to send a clear signal, reformers may need to overshoot and go beyond what they would normally do in order to signal that they are, indeed, credible. Reforms that are not clearly credible should be postponed or reformulated, since it is likely that they will be ineffective.

Second, prior to implementation, reformers must understand the status quo and how it influences the feasibility of potential reforms. Reformers must also appreciate the trade-off between a commitment to citizen participation through democracy and broader economic reconstruction efforts. As noted above, in some cases democratic participation can undermine broader economic reforms and vice versa. Understanding the relationship between politics and economic reforms is crucial to adopting effective reforms.

Third, instead of focusing solely on improving coordination between bureaucratic agencies, reformers need to appreciate the limits of bureaucratic activities. This includes ensuring that there are clear mechanisms ensuring accountability and feedback. The absence of such mechanisms will result in waste and inefficiency.

Finally, reformers must recognize the limits of human reason and design reforms accordingly. The more complex the reform, the less likely it is that reformers possess the knowledge necessary to effectively implement change.

A concrete example will illustrate these implications. As noted in the Introduction, Iraqi citizens are currently burdened by onerous regulations that stifle private business. Consider, for instance, the World Bank's annual "Doing Business" index which measures how burdensome business regulations are in each country. In 2010, Iraq ranked number 153 out of 183 rated countries. Easing business regulation is one area where meaningful reform could be undertaken while avoiding the traps discussed in this chapter.

For example, if business regulations were removed, a credible commitment could be sent to citizens by permanently closing the bureaus or agencies that previously enforced those regulations. This approach would also overcome the bureaucracy trap, since these reforms limit bureaucratic activity by removing them

from the process of regulating private business. Moreover, reforms to ease the cost of doing business would appreciate the status quo, which currently consists of a disincentive to engage in private enterprise and an incentive to engage in corruption to avoid burdensome regulations. At the same time, these reforms would not tax the knowledge of reforms because they would entail removing existing regulations instead of designing complex interventions in the hopes of fixing Iraq's economy. Reforms to reduce the cost of establishing or expanding private business would not only appreciate, and avoid, the reconstruction traps discussed in previous sections, but they would also contribute to overcoming the persistent problems of unemployment and corruption that have plagued Iraq. Similar logic should be applied to other reforms associated with economic reconstruction in Iraq.

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# Chapter 3

## Foreign Intervention and Global Public Bads



Christopher J. Coyne and Matt E. Ryan

### 3.1 Introduction

A growing literature emphasizes the significant benefits associated with the provision of “global public goods” (Kaul et al. 1999, 2003a). Like traditional public goods, global public goods are defined by the characteristics of non-rivalry and non-excludability. However, global public goods have the additional spatial characteristic of extending “. . . across countries and regions, and across rich and poor population groups, and even across generations” (Kaul et al. 2003b). Examples of global public goods include disease prevention; environmental sustainability; information; political, economic and social stability; and international communication and transportation networks. As these examples indicate, global public goods can be both tangible (e.g., infrastructure or the environment) and intangible (e.g., economic, political and social stability).

A central conclusion of this literature is that the concerted efforts of international organizations (the IMF, regional development banks, NGOs, UN, World Bank, World Trade Organization, etc.) and governments from around the world are required for the adequate provision of global public goods. This includes foreign interventions in the forms of foreign aid and foreign military interventions to correct “global public bads.”

For example, Cook and Sachs (1999) and Jayaraman et al. (1999) explore the role of foreign aid in the provision of global public goods. Ferroni (2000) calls for reforms in delivery of foreign aid to provide global public goods in a

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more effective manner. Ferguson (2004) and Lal (2004) call for the United States to embrace its role as an empire to ensure global stability. According to these authors, stability requires the provision of global public goods in the form of a stable world monetary order, clear and enforced rules regarding international trade and finance, and protection against state failure and rogue states. They conclude that the United States is in the best position to create such stability. Mendez (1999) discusses the importance of UN peacekeeping forces in providing the global public good of peace, while Collier (2008) concludes that properly timed foreign military interventions can generate global stability through the prevention of military coups. Mitchener and Weidenmier (2005) and Ferguson and Schularick (2006) analyze historical cases of foreign intervention by the United States and Britain and highlight the resulting global public goods generated by military intervention and the announced willingness to use military force under certain circumstances.

While the existing literature mainly focuses on the benefits of foreign intervention, a complete understanding of intervention requires a consideration of the associated benefits and costs. To date, the costs or “public bads” associated with foreign interventions have been largely neglected. We seek to fill this gap in the existing literature. Our central thesis is that interventions intended to generate global public goods can, and often do, generate global public bads. Global public bads have significant negative effects across time and space.

We identify the dynamics of unintended consequences as the mechanism through which global public bads emerge. This dynamic emerges due to the disconnect between the simplicity of interventions and the complexity of the system being regulated. The necessary simplicity of government interventions is due to the knowledge constraint facing policymakers. The context specific knowledge underpinning the numerous institutions of social and economic interaction is not available to policymakers in a form that can be effectively incorporated into interventions. Relatively simple interventions in a complex system yield unintended, and often undesirable, results in the form of public bads. As the degree of complexity in the underlying system increases, so too do the unintended consequences of exogenous interventions. These issues are especially relevant in foreign interventions which attempt to manipulate a global system characterized by a complex array of economic, political, cultural, and social forces interacting simultaneously. Given the simplicity of foreign interventions relative to the complexity of the global system being regulated, negative unintended consequences can be expected to be significant.

Foreign intervention entails the use of the power of members of international organizations and governments to address perceived problems in other societies. In addressing these problems, foreign interventions aim to construct a preferable state of affairs from the standpoint of those intervening. To narrow our analysis, we focus on the potential negative unintended consequences of two types of foreign interventions—foreign aid and foreign military interventions. Both types of interventions aim to manipulate outcomes in other societies. Detailed case

studies of the Democratic Republic of the Congo, Afghanistan and Pakistan provide evidence of global public bads which may emerge through these types of foreign interventions.

We proceed as follows. Section 3.2 discusses the conceptual issues of public goods and public bads. Also discussed is the relationship between foreign interventions and the dynamics of unintended consequences. Section 3.3 provides empirical evidence in the form of case studies to support and illuminate our central argument. Section 3.4 concludes with the implications of our analysis.

## 3.2 Global Public Goods, Global Public Bads and Unintended Consequences

A public good refers to a good that is non-rivalrous and non-excludable. Nonrivalry indicates that consumption of the good by one individual does not reduce the availability of the good for consumption by others. Nonexcludability means that once a good is provided, individuals cannot be prevented from consuming the good. Theory indicates that public goods will be undersupplied on private markets due to inefficiencies associated with pricing and free riding. Where these inefficiencies exist, the result is a market failure.

Until recently, the analysis of public goods did not consider the geographic aspects of the issue. This has changed as “global public goods” have become an important part of the broader discussions of public goods (Kaul et al. 1999; Sandler 1997; Kaul et al. 2003a). Conceptually, global public goods have the same defining characteristics as traditional public goods. However, the concept of global public goods also includes a consideration of spatial aspects by recognizing that public goods often have benefits across geographic borders. For example, the prevention of communicable disease in one country has benefits which positively impact those living in other countries.

Closely connected to the notion of global public goods is the concept of global public bads. A bad reduces utility so, all else held constant, individuals would prefer to have less of a bad as compared to more. Like public goods, public bads are nonexcludable and nonrivalrous and therefore can adversely impact a significant number of people. Similarly public bads, like public goods, can also have a global aspect, meaning that they can impact individuals across geographic borders. Where global public bads exist there is an argument for external intervention to remedy the situation through the provision of global public goods. For example, the public bad of political or social conflict in one society can impose significant costs on other societies leading to regional instability. In such an instance, foreign interventions resulting in peace and stability would be a global public good since it would benefit an entire region.

As in the case of traditional public goods, theory indicates that global public goods will be undersupplied leaving room for external intervention to correct for

the failure. Within nation states, the task of providing what are determined to be public goods often falls to the state. However, the issue of global public goods provision presents a problem because of the absence of universal agreement on a sovereign world government to coordinate the provision of such goods. Given this, the literature on the topic concludes that the concerted efforts of international organizations and governments from around the world are required to provide global public goods. These global efforts entail foreign interventions through monetary and humanitarian aid, as well as a commitment to the use of military force when necessary, to ensure that global public goods are adequately provided.

We recognize that international interventions can generate benefits. However, we also recognize that interventions intended to do good can fail or generate significant bads. Interventions have unintended consequences and those consequences can have real negative effects. As such, when considering foreign interventions to provide global public goods, the negative unintended consequences of those interventions must be considered.

How can interventions motivated by good intentions generate bad outcomes? Global public bads can emerge from interventions intended to provide global public goods due to the dynamics of unintended consequences. Merton (1936) identified “ignorance” and “error” as two of the main causes of unintended consequences. Ignorance refers to the fact that individuals act based on only partial knowledge of a complex world. Limited knowledge results in a wide array of unintended outcomes because individuals are unable to fully anticipate the consequences of their actions. Closely connected is the prevalence of error which entails misjudging the facts or incorrectly forecasting the future. As an example of error, Merton provides the common assumption that “. . . actions which have in the past led to the desired outcome will continue to do so” (Merton 1936). This indicates that we must consider the decision making processes through which interventions emerge, including the ignorance of policymakers and likelihood of error.

Interventions emerge in the context of the political decision making process. Public choice scholars have made clear that political decisions do not take place in neutral settings (Downs 1957; Buchanan and Tullock 1962; Bruenan and Buchanan 1985). Instead, political systems suffer from issues of rational ignorance, perverse incentives, poor feedback mechanisms, and misaligned time horizons. In addition to the issues of incentives and information, a related strand of literature considers how the political decision making process deals with context specific knowledge that is dispersed among millions of individuals across an array of economic and social relationships and processes (Sowell 1980; Ikeda 2002; Boettke et al. 2007; MacKenzie 2008). Knowledge is broader than the notion of information because in addition to those things that can be articulated (i.e., “book knowledge”) knowledge also entails an understanding “of the particular circumstances of time and place” (Hayek 1945; Boettke 2002). Knowledge is the result of experience and practice and therefore cannot be easily articulated, whereas information can be readily communicated across time and space.

A specific example will help to illuminate the concept of knowledge. Bernstein (1992) demonstrates how diamond traders are able to successfully operate using

a complex set of signals, cues, bonding mechanisms, and informal rules which facilitate cooperation. The specifics of the social and economic processes within which these diamond traders operate are an example of context specific knowledge. The diamond trade would not function nearly as well if random outside traders were placed in the same setting. We can observe cooperation between traders and identify general mechanisms that facilitate coordination, but being able to successfully participate in the diamond trade would require context specific knowledge.

Since contextual knowledge of time and place cannot be easily articulated, it cannot be obtained or incorporated by those working within political institutions to design policy. The result is that context specific knowledge must be excluded from government interventions. As Sowell (1980, pp. 171–172) indicates, when government intervenes in economic and social interactions it “. . . substitutes its own decisions in the form of more explicitly articulated knowledge, in either words or statistics. Articulation, however, can lose great amounts of knowledge.”

The ultimate result of the political decision making process is policies that are simple relative to the underlying system they aim to influence. Since policymakers must abstract from reality, the policies they produce cannot reflect the underlying complexity of the processes they attempt to manipulate. Negative unintended consequences emerge due to this disconnect between the simplicity of policy and the complexity of reality.

Unintended consequences can emerge in a number of ways. For example, unintended consequences may emerge in areas unrelated to the target of the intervention. In this case, even where an intervention is successful in one area it may generate unintended consequences in other areas of the broader system. Under an alternative scenario, the emergence of unintended consequences may completely undermine the goal of the initial intervention or even make the initial situation worse than before the intervention.

Conceptually, the negative unintended consequences of intervention can be both internal and external. Internal unintended consequences take place within the area targeted by the intervention. For example, Friedman (2001) shows how the negative unintended consequence of the “nonwaiverable warranty of habitability” is to make both tenants and landlords worse off. This law, which requires that landlords include certain features (e.g., heating, hot water, etc.) on their properties, is intended to benefit tenants. However, the unintended consequence of the law is that it leads to an increase in rent which ultimately harms the poorest tenants. In this example, unintended consequences adversely impact those who are supposed to be made better off by the initial intervention.

In contrast, external unintended consequences occur outside the area targeted by the intervention. An example would be the era of prohibition in the United States. In shifting the incentives of those in the alcohol industry, prohibition had negative unintended consequences on the broader society in the form of increased organized crime.

It is important to note that negative unintended consequences are different from the traditional notion of “negative externalities” discussed by economists. A key aspect of negative externalities involves the calculation of the deadweight loss

caused by the externality. This calculation allows one to compare the suboptimal outcome to the equilibrium outcome. In contrast, the negative unintended consequences of intervention cannot be measured since it would require the measurement of a counterfactual involving the comparison of potential actual events to what may have happened absent the intervention (Ikeda 2002). The inability to engage in this calculation means that it is extremely difficult, if not impossible, for those designing interventions to factor unintended consequences into their decision calculus.

The logic of unintended consequences has important implications for the analysis of foreign interventions to provide global public goods. While foreign interventions are intended to generate a preferable state of affairs, they are based on relatively simple plans compared to the complexity of the system being manipulated. Further, these interventions take place in a global system characterized by a myriad of independent and overlapping social, economic, legal and political processes. These processes are grounded in context specific knowledge which cannot be understood in a manner that can effectively inform the design and implementation of foreign interventions. We should expect that this disconnect between policy and reality will result in significant negative unintended consequences.

### **3.3 Evidence of the Negative Unintended Consequences of Foreign Intervention**

#### ***3.3.1 Method and Case Selection***

Our core contention is that the foreign interventions aimed at providing global public goods can also generate global public bads. The following case studies serve to illuminate this process as well as some of the resulting bads. The case method is preferable given our focus on understanding and illuminating the causal processes through which interventions generate negative unintended consequences. The case studies were selected because they entail an array of foreign interventions by various international parties and governments to provide global public goods. They also illuminate several of the negative unintended consequences of foreign interventions.

The first case focuses on the Democratic Republic of the Congo. The history of the Congo involves interventions by the United Nations and several foreign governments including Belgium, France and the United States. According to Martelli (1966) these interventions were an “experiment in world government” which set a precedent for future interventions of a similar nature. From this standpoint, the interventions in the Congo represent a concerted effort to provide global public goods in the form of stability and peace. As such, this case can provide valuable insight into present calls for foreign interventions to provide similar global public goods.

The cases of Afghanistan and Pakistan are considered jointly. Our analysis of Afghanistan begins right before the Soviet invasion of 1979. The U.S. responded by intervening in Afghanistan indirectly through the Pakistani government. The stated goal was to provide the global public good of stability by preventing the spread of Soviet power and ideology. These interventions had lasting negative unintended consequences for both Afghanistan and Pakistan that are still evident today on a global scale. As such, this joint case illustrates how interventions in one country can have significant negative unintended consequences in other countries and also how these bads can persist over time.

In each case we focus on tracing the process through which negative unintended consequences emerged as a result of foreign intervention. In doing so, we refrain from making normative judgments about the motivations behind the decision to intervene and instead focus on outcomes of those interventions.

### ***3.3.2 Democratic Republic of the Congo***

Present day Democratic Republic of the Congo has experienced conflict for well over a century. European exploration of territory began in 1870s and it was acquired by King Leopold II of Belgium in 1885 (Gondola 2002). Leopold profited from the Congo's rubber industry which included brutalizing the local population with violence to meet specific rubber quotas (Hochschild 1999). Leopold's reign ended in 1920 when the Belgian government took control of the territory. Although the Belgian government did make investments in infrastructure, it reinforced many of Leopold's paternalistic policies including the absence of political rights and other freedoms for Congolese citizens. This treatment of the Congolese underpinned the violent backlash that occurred following independence (Gordon 1962; Wrong 2000; Gondola 2002).

Following the independence of the Republic of the Congo from Belgium in 1960, a coalition government was formed with the election of Patrice Lumumba as Prime Minister and Joseph Kasa-Vubu as President. Despite the efforts to create a stable government, conflict soon emerged. In the absence of a trained and effective indigenous police force, Belgian military officers remained in the country after independence. This seemed logical given the need for law and order in the Congo. However, the Congolese army's resentment about the continued Belgian presence led to violence against Belgian soldiers and citizens. The violence was reinforced by the return of additional Belgian troops sent to quell the violence, provide order, and protect Belgian citizens (Gordon 1962; Martelli 1966; Weissman 1974).

In addition to the violence of the rebellion, the crisis also had the impact of weakening the already fragile credibility of the new government and its ability to effectively govern the country. This caused problems because various leaders and groups throughout the country saw the conflict as an opportunity to secure rents by challenging government leaders for positions of power and leadership. For example, only a few days after the violent conflict began, the southeast province of

Katanga, under the leadership of Moïse Tshombe, seceded from the Congo (Gordon 1962; Martelli 1966). This placed additional pressures on Lumumba's government because the Katanga province was one of the most developed in the country and included a significant portion of the country's natural resources (Gondola 2002).

Attempting to overcome the violence and credibility crisis, Lumumba requested the assistance of the United Nations. The UN responded by establishing the United Nations Operation in the Congo (UNOC) (Martelli 1966). Similar to the earlier Belgian intervention, the UN operation aimed to stabilize the country. It is interesting to note that the justification for the UN intervention sounded similar to more recent calls for foreign intervention to provide global public goods. Along these lines, UN Secretary-General Dag Hammarskjöld stated that "new countries often have to make basic decisions which are likely to determine for many years the pattern of their national life as well as their relations to the rest of the world." Because of this, Hammarskjöld noted that aid from the international community "is likely to yield high returns and reduce the cost of the transition to the countries concerned, as well as to the world economy" (Gordon 1962). In other words, the intervention by the UN aimed to provide global stability through peaceful integration into the world system.

As part of the UN resolution, Belgian forces were requested to leave the country while the UN committed to provide the needed military support to the Congolese government. While the UN mission did reduce violence in the short run, it did not succeed in creating long term stability or in peacefully integrating the Congo into the global system. A key reason the UN intervention failed was because "... difficulties arose out of the complexities of a situation disintegrating rapidly from causes beyond the control of the authorities. . . ." (Gordon 1962). In other words, the relative simplicity of the UN intervention could not anticipate, or effectively deal with, the complexity of the actual situation.

Tensions soon emerged between Lumumba and UN officials. The UN refused to use force against Katanga to end its secession, stating it was not part of the UN resolution. Lumumba wanted the UN forces to actively end the Katanga secession and unify the country (Martelli 1966). With an ineffective domestic army and the refusal of the UN to support the invasion of Katanga, Lumumba turned to the Soviet Union for assistance.

The Lumumba–Soviet partnership concerned the U.S., which feared the spread of Soviet power and ideology (Schatzberg 1991). As a result of this concern, the U.S. shifted its support from Lumumba to President Kasa-Vubu and Mobutu Sese Seko, a military leader and political aid to Lumumba (Gordon 1962; Weissman 1974). The resulting power struggle between the three men, partially fueled by the proxy fight between the Soviet Union and United States, led to the further deterioration of the already weak Congolese central government. Kasa-Vubu publically dismissed Lumumba as the country's prime minister. Lumumba quickly followed by publically dismissing Kasa-Vubu as president and calling for army to rise against him. The result was chaos with no clear national leader (Martelli 1966).

The country's army fractured and Lumumba was eventually captured by soldiers loyal to Mobutu. Following Lumumba's assassination, the UN moved to ensure the



power vacuum would not lead to further chaos (Martelli 1966). A subsequent UN resolution (Security Resolution 146) granted the UN the right to use force to end the secession of Katanga and restore peace to the country. After approximately two years of UN-led military operations, Katanga was finally brought under the control of the UN and reunified. In 1964, with the battle for Katanga over, the UN withdrew its troops and officially ended its mission in the Congo.

The UN initially intervened in the Congo to provide the global public goods of stability and peaceful integration. It was unable to remain neutral and, contrary to its Charter and the resolutions regarding the Congo, became involved in influencing internal affairs. In doing so, “the United Nations helped to prolong the state of instability in the Congo and made the settlement of its internal conflicts more difficult, thus defeating its own purpose of building a strong and united country. . .” (Martelli 1966). This instability continues to the present day and has negatively impacted the broader region. As such, in its effort to provide global public goods, the UN unintentionally generated global public bads. Despite the UN’s disengagement from the Congo, the U.S. would remain involved for several decades.

Following the exit of the UN, Moise Tshombe, the former leader of Katanga, assumed the position of Prime Minister and Kasa-Vubu remained president. However, his reign as prime minister would be short lived. In 1965, with the backing of the CIA, Mobutu seized power from Kasa-Vubu through a bloodless coup. Tshombe fled the country after being charged with mutiny for his role in the succession of Katanga. The U.S. saw Mobutu as a source of stability for the country and also as a key ally in preventing the spread of communism in the broader region. From the standpoint of the U.S., a Mobutu led Congo could serve as a central hub for U.S. initiatives and interests in region. Mobutu’s regime, which ruled from 1965–1997, did create a semblance of stability in the Congo. However, the means through which order was maintained was brutality and violence against Congolese citizens. While the U.S. intervention did provide the “good” of stability, the unintended consequence was the enforcement of the status quo which included violence against the country’s citizens.

After assuming power, Mobutu moved quickly to consolidate his position. He abolished political parties and centralized the state by reducing the number of provinces. Over his 32 year reign, Mobutu would become known as one of the world’s most corrupt and brutal dictators. Mobutu’s government nationalized the country’s industries as well as the workers’ union and media. Mobutu coercively squashed all potential threats to his position of power through arrests and public hangings. In 1971, as part of a broader campaign of cultural awareness, Mobutu renamed the country “Zaire.” In the late 1970s, rebels from Angola twice tried to overtake Mobutu’s regime. However, both rebellions were suppressed with military and logistical support from Belgium, France and the United States. In both cases, the only reason Mobutu was able to stay in power was because of external military and financial support.

In addition to the brutal violence of the Mobutu regime, under his leadership Zaire plummeted into economic ruin. There were few, if any, infrastructure investments and the national currency was largely destroyed through inflation. Starvation



was a widespread problem. As of 1997, Zaire was in debt at a level equivalent to 200% of its annual GDP. Further, Zaire's GDP in 1997 was the equivalent of its 1958 GDP level. During the same period the country's population tripled (Adelman and Rao 2004).

In the absence of a domestic tax base, Mobutu had to rely on other sources of income. One source of income was Zaire's rich stock of natural resources which include cobalt, coltan, copper, diamonds and gold. Along the lines of the well known "natural resource curse," these assets provided Mobutu with a readily available source of income without having to provide basic services and infrastructure to Zaire's citizens.

Mobutu's second source of income was foreign aid from the international community. Despite the fact that the violent and corrupt nature of Mobutu's regime was well known to the international community, he was able to secure significant foreign aid throughout his rule. At one point President George H. Bush described Mobutu as "our [the U.S.'s] best friend in Africa" (Boustany 1997). Indeed, Zaire spent 74% of the 1976–1989 period in IMF programs (Easterly 2006). It is estimated that during his reign Mobutu received \$20 billion in foreign aid from the international community and governments around the world (Easterly 2006, p. 150). Little, if any, of this aid was used to improve the country or the position of Zaire's citizens. Instead, Mobutu used it to fund his vast network of bribes and to increase his personal assets which were estimated to be worth \$4 billion in the mid 1980s and even greater at the time of his death (Burns et al. 1997).

Following the end of the Cold War, the usefulness of Mobutu to the west diminished. After decades of support the international community, including Belgium, France, the U.S., the IMF, and the World Bank severed its connections with regime. Without external support to prop up his regime, Mobutu's control of Zaire country eroded. In 1997 he was displaced as president and forced to flee country.

Like the United Nations, the U.S. initially became involved in the Congo to provide "global public goods." A 1963 U.S. government document listed the objectives of U.S. involvement in the country which included the "establishment of a unified and independent state" that was capable of "political stability" and "economic and social development" as well as the "prevention of Soviet penetration and extension..." (United States Agency for International Development 1963). Over two decades later, in 1987, another government document noted that continued U.S. involvement in the country was necessary to "Promote regional stability..." and "Encourage continued economic reform and growth..." (United States Agency for International Development 1987). Despite these motivations, the interventions in the Congo generated significant global public bads. John Stockwell, a CIA official who served in the Congo summed up the U.S. intervention in the Congo as follows:

...the CIA intervention there was an unmitigated disaster. The United States subverted democracy in the Congo. We participated in the assassination of a prime minister that was democratically elected, Patrice Lumumba. Then we installed in power Joseph Mobutu [sic], who is still the dictator. We have run the country into a debt of \$6.2 billion. . . In the Congo today 25 percent of the people are starving, while Joe Mobutu has a personal fortune of about \$4.5 billion (Schatzberg 1991).

Today the Democratic Republic of the Congo remains one of the most corrupt, violent and economically underdeveloped countries in the world. The country has been plagued by civil war and numerous attempted coups against political leaders. To the extent that earlier foreign interventions were successful in achieving short-term stability, the long-term result has been political and social instability for the country and broader region.

The conflicts in the Congo have spilled over to bordering countries leading to regional instability. For example, in 1998 war broke out between the Congo and Rwanda. The conflict lasted until 2004, and during the course of the conflict Zimbabwe, Angola, Uganda and Namibia all became involved. The death toll of the conflict is estimated to be 5.4 million (Coghlan et al. 2007). The UN and international community have intervened numerous times to establish some semblance of peace. To date these efforts, like those that preceded them, have failed to achieve the desired ends. The stability of the Congo and neighboring countries remains extremely fragile.

### ***3.3.3 Afghanistan and Pakistan***

In July 1973, former Afghan Prime Minister Mohammad Sardar Daoud Khan overthrew Zahir Shah via military coup. Daoud quickly moved to abolish the monarchy and constitution and named himself president and prime minister of the new republic. Daoud's rule was characterized by widespread corruption and he used force against citizens when necessary to maintain stability and his position of power (Maley 2002). As Prime Minister from 1953 to 1963, Daoud had established relations with key leaders in the Soviet Union. Once president, he was able to utilize these preexisting relationships to secure funding and aid from the Soviets. In addition to aid from the Soviets, Daoud also received aid from the United States. It is important to remember that during this time the Soviet Union and United States were involved in the Cold War. Only within this context can one understand the delivery of aid to Afghanistan. From the standpoint of the Soviet Union and United States, the purpose of this aid was to influence Daoud in their favor. As such, Afghanistan was a proxy war for the broader Cold War that was taking place. Indeed, this desire to influence political outcomes would ultimately lead to subsequent military interventions in the region.

Daoud's rule was short lived. Five years after he took office he was overthrown by an opposition party, the People's Democratic Party of Afghanistan (PDPA). Nur Mohammad Taraki, a leader of the PDPA, assumed the position of president and prime minister and renamed the country the Democratic Republic of Afghanistan. Taraki made a number of drastic reforms aimed at secularizing the country. He also maintained a close relationship with the Soviet Union which was the main external supporter of the Taraki regime. In addition to the provision of monetary aid, the Soviets sent resources to aid in the development of infrastructure and for the exploration of natural resources.

Ultimately, the Taraki regime was unable to consolidate its power due to the unpopularity of its reforms and its public relationship with the Soviet Union, both of which many Afghans viewed as being anti-Muslim. Protests, some violent, were met with strong resistance by Taraki and his Soviet supporters. Pockets of resistance continued to push back against the government leading to an increasing number of violent incidents. The growing violence culminated in the assassination of Taraki in 1979 (Bradsher et al. 1983; Kakar 1995; Maley 2002; Vogelsang 2002).

Prime Minister Hafizullah Amin, who had also been a leader in the PDPA against Daoud, assumed power after Taraki's assassination. However, the Soviet Union quickly became disillusioned with Amin. The KGB became aware of secret meetings between Amin and American diplomats and became concerned with a potential Amin-U.S. alliance (Coll 2004). Fear of U.S. influence and control of the region led to the Soviet's decision to invade and replace Amin. The Soviet invasion began in December 1979 and soon Amin had been assassinated and replaced with Babrak Karmal who was sympathetic to the Soviet agenda (Bradsher et al. 1983; Kakar 1995; Coll 2004).

The United States watched closely as events unfolded in Afghanistan. U.S. officials saw the growing conflict in Afghanistan as a unique opportunity to damage their Cold War adversary. Further, precedent for U.S. intervention in the Persian Gulf was well established. In the early 1940s, President Franklin Roosevelt had publicly stated that the stability and protection of Saudi Arabia was critical for American interests and world peace. In 1947, President Harry Truman put forth the "Truman Doctrine" which indicated that the U.S. would provide military support to countries to prevent the spread of communism. The willingness of U.S. political leaders to engage in foreign military interventions to prevent the spread of communism was reiterated in the "Eisenhower Doctrine" in 1957 and the "Nixon Doctrine" of 1969.

This precedent served as the foundation for the "Carter Doctrine" put forth by President Jimmy Carter in 1980 following the Soviet invasion. The Carter doctrine restated the commitment of the U.S. government to use military force to protect its interests in the Persian Gulf while ensuring regional stability. It was this doctrine that provided the foundation of U.S. interventions in the region during the Soviet invasion (Leffler 1983; Klare 2004).

At least rhetorically, the U.S. justification for intervening in Afghanistan following the Soviet invasion was grounded in the logic of global public goods. The U.S. viewed its efforts against the Soviet Union as providing a global public good through world stability and the end of communist power and ideology. The Soviet invasion of Afghanistan was one element of that broader war effort. Along these lines, President Jimmy Carter noted that "The Soviet invasion of Afghanistan is the greatest threat to [world] peace since the Second World War" (Urban 1988). The U.S. sought to overcome this global public bad by intervening to provide the global public good of world peace and stability.

Despite their desire to intervene in Afghanistan, U.S. political leaders wanted to avoid direct military intervention if possible. The main reason for this hesitation was that the U.S. was preoccupied with the Iranian revolution as well as the humiliation

from the takeover of its Tehran Embassy (Maley 2002). In order to avoid direct intervention, the United States was forced to ally with another military dictator and Islamic fundamentalist, General Zia-ul-Huq.

In 1977, Zia had assumed power from Prime Minister Zulfikar Ali Bhutto through a bloodless coup, although he later had Bhutto executed. Zia ruled through a combination of fear and force, establishing military courts and having opposition leaders and supports tortured and imprisoned. The United States entered into an agreement with Zia whereby the United States would funnel money and weaponry through Pakistan's Inter-Services Intelligence Agency (ISI), which would then distribute the aid and weapons directly to the Afghani rebels (the mujahedeen) (Coll 2004; Kinzer 2007).

The Soviet war in Afghanistan lasted until 1989. The United States continued to support the mujahedeen through the ISI with monetary aid and weaponry for the duration of the conflict. To provide some concrete figures, in 1984 the United States sent the mujahedeen \$200 million in aid. This number increased to \$470 million in 1986 and \$630 million in 1987 (Kinzer 2007). In addition to the United States, Saudi Arabia also played a key role in financing the mujahedeen. The United States sought the Saudis assistance in the war against the Soviets and they agreed to match each dollar of U.S. funding. Zia was also rewarded for assisting the United States. In the 1980s, the United States provided Zia's regime with \$6 billion for its assistance in the effort against the Soviets (Coll 2004).

With the Soviet withdrawal from Afghanistan, it appeared that the United States intervention had succeeded in its goals. Indeed, the funding from the United States as well as that from Saudi Arabia played a central role in the success of the mujahedeen against the Soviets. However, there were several negative unintended consequences that would not become apparent for several years after the end of the war.

Following the exit of the Soviet Union, Afghanistan was left with a fragile government. Mohammad Najibullah was elected president in 1986 and remained in the position after the Soviet withdrawal. However, his government was weak and eventually collapsed. Despite the fact that the United States government was aware of the weakness of the Najibullah government, it turned its attention away from Afghanistan to other aspects of combating the Soviet Union which were deemed to be more important for U.S. interests and global stability (Coll 2004; Bhutto 2008).

With Soviet troops no longer in the country, the Afghani rebels turned against the Najibullah government. Najibullah was able to survive for three years with the financial support of the Soviet Union, but eventually he was forced to resign in 1992. His resignation left a power vacuum in the country as the various warlords turned against each other seeking to gain control of the capital of Kabul. After several years of civil war, the Taliban emerged as the dominant force in Afghanistan in 1996. The Taliban created a space for the training and development of al-Qaeda which was responsible for carrying out the September 11th attacks against America. Subsequently, the Taliban government was overthrown with the 2001 U.S. invasion

of Afghanistan (Nojumi 2002; Coll 2004; Kinzer 2007). Given this background, we can identify at least two significant negative unintended consequences from the U.S. intervention in Afghanistan.

The first was the creation of a power vacuum in Afghanistan resulting in a weak and failed state which threatened global stability years after the initial intervention. Although not the intention, the actions of the United States created the environment for the emergence of a brutal regime in the Taliban. This generated numerous public bads. On the one hand the Taliban generated significant internal public bads within Afghanistan. The brutal methods of the regime against Afghani citizens have been well documented (Assembly 1999; Bhutto 2008). Simultaneously, the rise of the Taliban created global public bads as well. One manifestation of this global public bad was the Taliban's provision of a safe haven to the al-Qaeda organization which allowed them the freedom to train and also plot various attacks around the world (Katzman 2008). This global public bad became event with al-Qaeda terrorist attacks around the world, culminating in the 2001 terrorist attacks in the United States. This led to the subsequent intervention by the United States in Afghanistan that same year.

A second negative unintended consequence was the proliferation of weapons both within Afghanistan and beyond. As noted, the U.S. provided significant weaponry to the mujahedeen in the war against the Soviets. Among these weapons were assault rifles, grenade launchers, mines and other explosives, and anti-aircraft weaponry. When the war ended, the weapons not only remained in Afghanistan, but were dispersed around the world.

As one example of this, consider the global proliferation of Stinger missiles following the Soviet invasion. The Stinger is a portable surface-to-air anti-aircraft missile which the U.S. provided to the mujahedeen to combat Soviet aircraft. While the Stingers were effective in the war against the Soviets, at war's end they remained dispersed throughout Afghanistan (Bhutto 2008). Since then they have spread around the world. Since the end of the war, U.S. issued Stinger missiles have been either found or used in attacks in Bosnia, Iran, Iraq, Libya, Palestine, Qatar, Tajikistan, North Korea, and Zambia. Further, international authorities have stopped plans by the Irish Republican Army, the Medellín Cartel, Croatian rebels, Armenia, Azerbaijan, and Chechen secessionists to purchase the missiles on the black market. Imperfect estimates of missing Stinger missiles range from 300–600 and U.S. government reports have indicated that there may be over 300 still in Afghanistan alone (Kuperman 1999). As the proliferation of Stinger missiles indicates, the supply of weaponry by the United States generated a global public bad by unintentionally providing weapons that have contributed to global conflict.

The use of Pakistan as a means of indirect intervention by the United States against the Soviets also had negative unintended consequences. For one, the U.S. intervention contributed to the internal political instability that exists to this day. U.S. monetary aid allowed Zia, a military dictator to consolidate and solidify his

position of power. As Bhutto notes, “The United States, fixated on defeating and humiliating the Soviets in Afghanistan, embraced Zia and the ISI as surrogates; the United States’ attention was riveted exclusively on Afghanistan, disregarding the war’s impact on internal political factors in Pakistan” (Bhutto 2008).

The support of the United States for military dictators in Pakistan is not limited to Zia. In testimony before the U.S. Congress, Husain Haqqani, the Pakistani Ambassador to the United States, noted that since 1954 the U.S. has given \$21 billion in aid to Pakistan. Of this total, \$17.7 supported military dictators (Robinson 2008). While the United States government has been able to purchase the support of these dictators for foreign policy goals, it has also had significant negative unintended consequences. Monetary and military aid creates rents which increase the payoff to consolidating and maintaining positions of power. The continued delivery of this aid has increased corruption in the Pakistani government and military as the elite seek to secure the foreign aid windfall. It has also distorted the evolution of political institutions in Pakistan by solidifying the position of dictators.

The instability created by U.S. interventions in Pakistan has resulted in several global public bads. For example, it is widely recognized that much of the aid the U.S. has provided to Pakistan has been allocated to military programs aimed at India—a nemesis of Pakistan, but an ally of the United States (Robinson 2008). From this standpoint the U.S. has contributed to a global public bad in the form of regional instability against India, which it considers to be a strong ally.

The instability in Pakistan is even more troubling since it possesses a nuclear arsenal. In 1999, Pervez Musharraf seized the presidency through a military coup. The previous governments had attempted to develop nuclear weapons, and as a result the United States imposed strong economic and military sanctions. These sanctions continued after Musharraf assumed power along with U.S. criticisms for Musharraf’s lack of commitment to democracy and human rights.

However, with the beginning of the “war on terror” in 2001, the U.S. shifted its position and become an ardent supporter of Musharraf. Like Zia before him, the U.S. was willing to look the other way regarding the numerous bads generated by Musharraf. Sanctions have been lifted and the United States has again provided significant military and monetary aid to Musharraf’s regime. For example, consider that Pakistan was the world’s largest recipient of foreign aid in 2002, receiving \$2.1 billion (Easterly 2006). The country’s government has received over \$10 billion in aid since 2001 (Robinson 2008). This support has allowed Musharraf’s government to maintain its position of power with international legitimacy despite issues of corruption, the suppression of democracy, the rule of law and individual rights, nuclear proliferation, and connection to terrorist networks, including close connections with the Taliban. In their effort to generate global public goods through the war on terror, the U.S. has generated global public bads by supporting the Pakistani government.

### 3.4 Conclusion

A complete analysis of foreign intervention requires an appreciation of both the associated “goods” and “bads.” Our central contention is that foreign interventions intended to generate global public goods can also generate significant global public bads. These negative unintended consequences emerge due to the dynamics of unintended consequences resulting from the knowledge constraints on policymakers designing the interventions.

The foreign interventions in the Democratic Republic of the Congo, Afghanistan and Pakistan illustrate some of these bads. They can be generalized as follows:

1. Foreign intervention often creates a client ruling elite who are oppressive and corrupt. These elite rarely have an interest in economic development because of the potential political competition which would threaten their position of power. As a result, the elite rarely make basic investments in their country and its citizens. As the cases considered illustrate, the continued presence of these elite can create regional instability.
2. The spoils of foreign intervention create rents associated with political power. This increases the payoff to securing and consolidating these political positions. In countries with weak political institutions, this has the effect of increasing violence and corruption as competing groups seek power and those holding power seek to maintain their position. This violence can be internal, but can also spill over to surrounding countries and societies.
3. Foreign interventions distort and prevent the emergence of spontaneous orders by imposing an exogenous plan on indigenous citizens. This often sets a precedent where force and violence become the central means of social and political change. To the extent that this dynamic emerges, the result will be the threat of regional or global instability.
4. Due to the dynamics of unintended consequences, the achievement of short-term stability will often result in long-term instability. This long-term instability is a result of the negative unintended consequences of the initial intervention. Further, instability will often spill over to other societies and may lead to subsequent interventions which will generate further unintended consequences. Consider that the chaos that characterizes many weak, failed and conflict-torn states is the consequence of previous interventions.
5. Foreign interventions often impose unintended, yet significant costs on ordinary citizens. External support for the ruling elite often leads to violence, brutality and economic underdevelopment. As such, interventions which achieve success in one area (e.g., stability of the ruling elite) can generate significant costs in other areas (e.g., brutality against citizens, outsiders, and regional instability).

This list is far from complete, but it does highlight some of the global public bads that can result from well-intentioned interventions to provide global public goods.

The dynamics of unintended consequences does not, by itself, lead to the conclusion that international organizations and governments should never engage

in foreign interventions. Refraining from intervention can have costs as well. It does, however, lead to the conclusion that those considering foreign interventions should be extremely humble in both the decision to intervene and in the design of interventions. Given the complexity of the global system, compared to the necessary simplicity of foreign interventions, negative unintended consequences are likely to emerge and be significant.

Our analysis also indicates that global public bads are not the result of resource (e.g., monetary resources, planning and organization) constraints on policymakers. Negative unintended consequences result from the inability of policymakers to obtain and incorporate context specific knowledge into interventions. As such, additional resources or increased efforts at coordinated planning will not overcome the fundamental problem of negative unintended consequences. The negative consequences of foreign intervention do not reflect inadequate resources, but instead the fundamental inability of policymakers to possess the knowledge necessary to achieve the ends they ultimately desire.

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# Chapter 4

## Property Rights and Economic Development: The Case of Sub-Saharan African Countries



Julie Lohi

### 4.1 Introduction

The importance of institutions in the process of economic development has been emphasized in the field of development economics, especially after the publication of *Institutions, Institutional Change, and Economic Performance* by the Nobel Laureate Douglass North (North 1990). North (1991, p. 97) defines institutions as “humanly devised constraints (formal and informal) that structure political, economic and social interactions.” Institutions mainly affect the economic outcomes through the economic incentives they alter in citizens to engage in productive activities. Both, informal and formal constraints (institutions) are shown to have strong effects on economic performances. For instance, informal institutions related to social capital such as norms, civic cooperation and trust are shown to be associated with stronger economic performance (Knack and Keefer 1997; Putnam 1993).

Nevertheless, particular attention has been devoted to the impacts of formal institutions on economic development. On one hand, some researches focus on the correlation between economic development and political risk factors including government stability, democratic accountability, bureaucracy, and corruption. There is a consensus that economies prosper in the environments where political institutions constrain government actions (Rodrik et al. 2004). Acemoglu et al. (2003) show a strong correlation between corporate governance and political governance. Faria and Mauro (2009) argue that weak institutions can deteriorate foreign direct investment (FDI) and consequently the economic progress. Their supporting argument is that before investing in a country, a foreign firm considers the degree of political tension,

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transparency in the corporate sector, and the probability of exposure to corruption. Shleifer and Vishny (1993) and Mauro (1995) warn that corruption lowers economic performance. Works like Barro (1997) and Easterly and Levine (1997) and Keefer and Knack (2002) show that government stability and government spending are crucial to economic prosperity.

On the other hand, the emphasis is on property rights institutions. North (1990) argues that countries where property rights are well defined, secured and enforced by state laws tend to experience higher economic performances. According to North, secured and enforced private property rights reduce transaction costs in exchange and produce economic incentives, given the expectations that assets will not be expropriated. In fact, the presence of an efficient judicial system to enforce the third party interests (contracts) generates investment incentives which lead to competition, technological innovations and new opportunities. Secured private property rights are argued to induce more investment in physical and human capital (Jones 1981), whereas, human capital is an important determinant of growth (Romer 1990).

Although the correlations between property rights and economic outcome have received great attention, different measures of property rights are used in the literature and the sample countries on which they are examined differ across papers. For instance, under the assumption of an overlapping generation, Zak (2002) constructs a growth model in which property rights are unsecured and costly to enforce. In the model, the proxy for weak property rights is the access of workers to expropriation technology by which they can accumulate resources from the capital owners (i.e., violate the property rights of the owner). Zak (2002) finds that the imperfect protection of property rights reduces growth and perpetuates poverty. Acemoglu et al. (2001) uses settler mortality as a proxy for property right institutions and estimate the impacts of these institutions on income per capita.

Despite the unanimity about the effects of property rights on economic performance, the magnitude of these effects has not yet been measured, at least for the exclusive sample of SSA countries. Studying the effects of property rights on the basis of regional average or by grouping all developing countries in a single sample can be misleading. Such averages mitigate the wide heterogeneity between countries within regions and across regions regarding the levels of property rights and the degrees of their enforcement. For a particular region like SSA, there exist large differences in the level and the legal enforcement of property rights across the countries. On one extreme, in SSA, Zimbabwe has the lowest average property rights score (21.66) over the period from 1995 to 2007.<sup>1</sup> On the other, Botswana has the largest average (70) over the same period. Different levels of property rights exist in between.

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<sup>1</sup>I use the property rights score database by the “Heritage Foundation” in this paper. The component “property rights” of the economic freedom database refers to private property rights creation and protection by state enforced laws. Property rights scores are assigned from zero to one hundred, with higher scores indicating greater existence and enforcement of private property rights.

SSA countries are subdivided to identify the magnitude of the effects of property rights on the total factor productivity (TFP), and to see whether the sizes of the effects vary or are uniform across income groups and property rights levels. The paper uses a model in which TFP depends on human capital and different institutional measures including property rights.<sup>2</sup> This model allows identifying the effects of property rights on TFP relative to that of the human capital and the other institutional measures. Twenty SSA countries are grouped into sub-samples by the property rights benchmark and by income level benchmark.<sup>3</sup> The model estimation is performed on the whole sample and the sub-samples.

This paper estimates how different institutions affect the TFP because the TFP has been pointed out in the literature to explain most of the variation in the development gap across countries. In fact, a number of papers in the field of development economics question whether the cross-country differences in per worker income stem from the differences in factor input or the differences in the TFP (that is the difference in the efficiency of the use of these factor inputs). To assess whether the factor input or output accounts the most for income disparity, the development accounting quantifies the relationship where income is a function of factor input and output:  $\text{Income} = F(\text{input}, \text{TFP})$  (Caselli 2005). The empirical finding suggests at the unanimity that the total factor productivity accounts for more than 50% of the development gap (Denison 1962; Denison and Poullick 1968; King and Levine 1994; Easterly and Levine 2001; Caselli 2005). Given the importance of the TFP in the process of growth, any determinant factor to the TFP would also be determinant in explaining the development gap or economic growth differences. Thus, I examine whether property rights and other institutional measures matter to the change in the TFP. In addition, the total factor productivity includes the labor productivity. Therefore, it can be used to describe the production function; whereas, the process of growth depends on the shape of the production function (Barro and Sala-i Martin 2003).

The choice of the SSA countries for this analysis stems from three main reasons. The first is the wide heterogeneity that exists among SSA countries in respect to property rights and income. The second reason is the overall lower average property rights of SSA compared to that of other regions. From 1995 to 2010, the lowest average regional property rights score was recorded in SSA. The third reason is that

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<sup>2</sup>Political risks indicators—variables from the international country risk guide database (ICRG) and some economic freedom variables—property rights and government spending.

<sup>3</sup>The average regional property right score from 1995 to 2007 is used as the property rights benchmark based on which the countries are subdivided into two sub-samples: the lower and the upper benchmark sub-samples. The average regional property rights score from 1995 to 2007 is equal 42.92. Countries with average property right score below this average are classified in the lower benchmark sub-sample. Those with the average score greater than the benchmark level are grouped in the upper benchmark sub-sample. The benchmark for the income sub-samples is the average regional income per capita over the period from 1995 to 2007. This average is 2767 using World Development Data (WDI). Countries with the average income per capita less than the regional average are grouped in the lower income sub-group and those with the average RGDP per capita greater than the regional average are classified in the upper income sub-sample.

SSA lags in terms of the per capita GDP over time. The average regional GDP per capita and the average regional property rights scores are distinctly lower in SSA relative to those of other regions. I examine the magnitude of the effects of property rights on TFP for the sample of 20 SSA countries using data over the period from 1995 to 2007. Note that 1995 is the year when the first data on property rights were made available. The countries included in the analysis are those with full data over the entire period.

The main contribution of this paper is to show the sizes of the effects of property rights on the TFP across different income groups and different levels of property rights in SSA. Results show that in SSA the change in private property rights has a positive and strong effect on the TFP. As the total factor productivity is an indicator of economic growth, this correlation between private property rights and the TFP suggests that property rights reforms in SSA will enhance the economic growth in the region. The remainder of this paper is organized as follows: Sect. 4.2 gives an overview of the history of the emergence of property rights. Section 4.3 provides the data description and the model. Section 4.4 presents the results and their interpretation while Sect. 4.5 concludes the paper.

## 4.2 The History and the Point of Divergence in the Paths of Nations' Development

The evolution of legal property rights and taxation in America and Great Britain (common law countries) can be traced throughout diverse agreements, declarations, and the philosophical views of Thomas Hobbes (1588–1679) and John Locke (1632–1704).<sup>4</sup> For Hobbes (1651), property rights protection must be enforced by a strong sovereign, while Locke supports that property rights are morally above any government claim. According to Locke (1689), by applying their labor to things of nature, one could acquire property rights. Even though these two philosophical views are diametrically opposed, both authors agreed that property rights protection must be the objective of any society. The basis for the civic law can be found in the Napoleonic code adopted during the French revolution of 1789–1795. This code constitutes the constitutional document for the French and other civic law countries. The civic law is simply the expansion of state power and is opposed to custom and common law. However, under both, the common and the civic laws, property rights are well defined and have been the driving force of economic expansion in Europe and North America.

The effective existence of property rights gives economic incentives; it is a fundamental stimulus for citizens to engage in productive activities. Burke (1912, p.

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<sup>4</sup>The agreement of the people (1649), the English declaration of rights (1689), the Virginia Bill of Rights (1776), the Declaration of Independence (1776), the Northwest Ordinance (1787), and the U.S. Constitution (1787).

51) wrote the following: "... The power of perpetuating our property in our families is one of the most valuable and interesting circumstances belonging to it, and that which tends the most to the perpetuation of society itself. It makes our weakness subservient to our virtue; it grafts benevolence even upon avarice." This thought endorses the multiplicative incentive that property rights provide. When one has the legal rights on her asset(s) and knows that these assets can be legally transferred to her children, she will have incentive to work hard to increase her stocks of assets, to enjoy it and leave valuable bequest to her future generations. The type of property rights philosophy that was nourished in the West and North America is what allowed and continue to ensure economic expansion in these regions.

Even though there were many similarities between earlier societies of Europe and Africa, the ideology of property rights as a social need was not developed in many Sub-Saharan African societies. This discrepancy makes a huge difference in the paths of economic developments between SSA and the other regions. For instance, about more than 200 years earlier, some African kingdoms like the kingdom of Aksum (Munro-Hay 1991) (the actual Ethiopia) and the kingdom of "Kongo" (the actual Democratic Republic of Congo), were as much as powerful and rich as the then Great Britain. The Aksum kingdom especially had its own written language and was able to mint coins and successfully traded with some other regions (Munro-Hay 1981). During these eras, in the most prosperous African and European kingdoms the social structures tended to be more absolutist and based on slavery and serfdom institutions. However, the path of the nations' history diverged from the point where reforms in social organization took place in Europe and expanded to North America while in Africa the absolutism continued to reign.

Great Britain's 1640 civil war and the revolution of 1688 drove the demise of slavery, serfdom and all types of social and political absolutism. The end of absolutism in Europe, allowed the emergence of property rights, labor market institutions and people's accession to lands. These new ideologies and mentalities in Europe spilled over to America. The access to lands and the introduction of property rights institutions created competition and the incentives to improve the properties and receive the most fruits of them (Robinson 2010).

Robinson (2010) argues that as slavery, serfdom and absolutism continued in Africa, no economic incentive for property improvement was created. In contrast, people tend to work less to reduce the amount of their labor that will be expropriated by the rulers. There were no incentive to stimulate research and discoveries. In this contest Acemoglu et al. (2005) stated that industrialization did not take place where extractive institutions were established. Citizens have no incentive to engage in creative activities as they will not enjoy the fruits of their efforts. But, the rulers (expropriators) are less likely to come up with ideas that generate new technologies. Expropriation or lack of property rights explains why Africans took the opposite development path compared to Europeans.<sup>5</sup> The history and some investigations

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<sup>5</sup>Robinson (2010) wrote "... to have become more prosperous, the Kongolese would need to have saved and invested in plows, for example. But this would not have been worthwhile in that any

on contemporaneous African countries endorse the fact that property rights are nascent and still weakly secured in different points of SSA region. For instance, Joireman (2007) points that property rights are not well defined in SSA and argues that customary laws and the status of women are the main impediment to property rights enforcement in the region. The lack of strongly enforced property rights might explain the lower level of incomes across the region.

## 4.3 The Model and Data Description

### 4.3.1 Data Description

The analysis in this paper covers a panel of twenty (20) SSA countries from 1995 to 2007.<sup>6</sup> The variables used are real GDP, the attainable education as a proxy for the human capital or technology, capital stock and different sets of institutional quality measures. Summary statistics are provided in Table 4.1.

The choice of countries and the data period is driven by the data availability. Countries included are those with data available on key variables over the entire

**Table 4.1** Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
$Log(TFP_{it})$	258	2.5	0.5	0.9	4.5
$log(Y_{it}/L_{it})$	260	8.5	0.8	7.1	10.3
$log(Educ_{it})$	260	1.4	0.6	-0.1	2.2
$log(PR_{it})$	247	3.7	0.4	2.3	4.2
$log(GSP_{it})$	247	4.4	0.2	3.8	4.6
$log(K_{it}/L_{it})$	258	5.7	1.0	3.6	8.3
$GST_{it}$	260	8.9	1.8	3.3	11.1
$SEC_{it}$	260	4.1	1.4	1.5	8.0
$ET_{it}$	260	3.6	1.0	1.5	5.0
$IC_{it}$	260	9.0	1.6	1.3	12.0
$EC_{it}$	260	10.2	1.4	4.6	12.0
$cor_{it}$	260	2.4	0.9	0.0	5.0
$Bur_{it}$	260	1.4	0.9	0.0	3.5

extra output they produced by using plows and wheels would have been expropriated by the king and his lords. Many people's property rights were highly unsecured; many moved their villages away from roads so as to reduce the incidence of plunder." In these circumstances, parliaments, rather than creating patent laws, were motivated to fight the king and defeat absolutism.

<sup>6</sup>Botswana (BWA), Cameroon (CMR), Gabon (GAB), Gambia (GMB), Ghana (GHA), Ivory Cost (CIV), Kenya (KEN), Malawi (MWI), Mali (MLI), Mozambique (MOZ), Namibia (NAM), Niger (NER), Republic of Congo (COG), Senegal (SEN), Sierra-Leone (SLE), South Africa (ZAF), Tanzania (TZA), Togo (TGO), Uganda (UGA), Zambia (ZMB), Zimbabwe (ZWE).



period. “Property rights” is the main institutional variable of interest in this paper. The data on property rights is retrieved from the Heritage Foundation’s economic freedom database.<sup>7</sup> The methodologies used to compute the property rights scores are complex and reflect property rights creation and enforcement. The details about the computation can be found at the institution’s website.

The variables—government stability, ethnic tension, internal and external conflict, bureaucracy, and corruption are the political risk components and they are retrieved from the International Country Risk Guide “ICRG.” The measurement methodologies of these variables can be found on the ICRG’s website. All the indexes of the economic freedom, and the ICRG are compiled using complex methodologies including statistical models to give sufficient credibility to the data (see the different sources of these indexes).

Capital stock data is constructed using the perpetual inventory equation:

$$K_{it} = I_{it} + (1 - \delta)K_{it-1} \quad (4.1)$$

where  $K_{it}$  is the current capital stock of country  $i$ ;  $K_{it-1}$  is the capital stock of the previous period.  $\delta$  is the depreciation rate of capital.  $I_t$  is the current real aggregate investment in purchasing power parity and it is computed as follows:

$$I_{it} = RGDP_{it} \times POP_{it} \times KI_{it} \quad (4.2)$$

where  $RGDP_{it}$  is the real income per capita (Laspeyres),  $POP_{it}$  is the current population of country  $i$  and  $KI_{it}$  is the investment share in total income. The perpetual inventory method is a method of updating data that has been widely used in the literature. For instance, Caselli and Feyrer (2007) used the perpetual inventory equation to update the data on capital stock for countries. Barro and Lee (2013) uses this methodology to assess the current flow of adult people added to the existing stock of the educational attainment. The depreciation rate is set at 6% following the literature. The initial capital stock is computed as:

$$K_{i0} = I_{i0}/(g_{it} + \delta) \quad (4.3)$$

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<sup>7</sup>The Heritage Foundation defines property rights as: an assessment of the ability of individuals to accumulate private property secured by clear laws that are fully enforced by the state. Property rights measures the degree to which a country’s laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private properties will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. The scores of property rights are ranked from zero to hundred. The more certain the legal protections of properties in a country, the higher the country’s PR score. Similarly, the greater the chances that the country’s government will expropriate properties, the lower score the country’s PR score. Intermediate scores are attributed to countries that fall between two categories.

where  $I_{i0}$  is the value of investment series in the first year. In general, the average geometric growth  $g_{it}$  is computed as the average growth rate between the first year of data availability and 1970. The reason is before the 1970, capital stocks were roughly at their steady state (Solow 1956). However, for the SSA countries the first year of data availability is 1950. Thus,  $g_{it}$  is calculated between 1950 and 1970.

The data on the investment share in total income is taken from the Penn World Tables (PWT, Version 7). For the data on the human capital, I use the updated educational attainment data by Barro and Lee (2013), for the population aged 15 and plus. The data on the real GDP, labor force and population are retrieved from the World Bank's world development indicators (WDI). All variables are purchasing power parity (PPP) converted to allow international comparison. The indexes are in level value.

### 4.3.2 The Models

The model estimated in this paper correlates is the model where the TFP in a country is a function of the human capital available, the degree of property rights, government spending, socioeconomic conditions, corruption, the extent of internal and external conflicts, bureaucracy and government stability. This model is estimated to examine the effects of property rights on the total factor productivity (TFP) across the property rights groups and income groups of SSA. I first compute the TFP based on Coe and Helpman (1995) as follows:

$$\log(A_{it}) = \log(Y_{it}) - \alpha \log(K_{it}) - (1 - \alpha) \log(L_{it}) \quad (4.4)$$

where  $A_{it}$  is the total factor productivity,  $Y_{it}$  is the output,  $K_{it}$  is the capital stock, and  $L_{it}$  is the labor force. The magnitudes of the coefficients of capital and labor are found in the literature to be:  $\alpha = 1/3$  and  $(1 - \alpha) = 2/3$ . To assess the effects of property rights on TFP, Eq. (4.5) below is estimated using the fixed effects estimation methodologies across the property rights groups and the income groups. Table 4.2 presents the estimation results.

$$\begin{aligned} \log(A_{it}) = & \gamma_1 \log(Educ_{it}) + \gamma_2 \log(PR_{it}) + \gamma_3 \log(GSP_{it}) + \gamma_4 GST_{it} \\ & + \gamma_5 Cor_{it} + \gamma_6 SEC_{it} + \gamma_7 IC_{it} + \gamma_8 EC_{it} + \gamma_9 Bur_{it} + \epsilon_{it} \end{aligned} \quad (4.5)$$

where  $\log(A_{it})$  is the log of the total factor productivity,  $Educ_{it}$ ,  $PR_{it}$ ,  $GSP_{it}$ ,  $GST_{it}$ ,  $Cor_{it}$ ,  $SEC_{it}$ ,  $IC_{it}$ ,  $EC_{it}$ ,  $ET_{it}$  and  $Bur_{it}$  represent respectively the educational attainment (used as a proxy for the human capital), property rights, government spending, government stability, corruption, socioeconomic condition, internal conflict, external conflict, ethnic tension, and bureaucracy of country  $i$  at time  $t$ .

**Table 4.2** The effects of property rights on the total factor productivity

Variable	Property rights groups			Income groups	
	Whole	Upper	Lower	Upper	Lower
	$\log(TFP_{it})$	$\log(TFP_{it})$	$\log(TFP_{it})$	$\log(TFP_{it})$	$\log(TFP_{it})$
$\log(Educ_{it})$	1.0*** (0.20)	1.0** (0.30)	1.1*** (0.35)	1.5** (0.61)	1.0*** (0.33)
$\log(PR_{it})$	0.2*** (0.08)	0.3** (0.13)	0.2** (0.09)	0.2*** (0.07)	0.2* (0.11)
$\log(GSP_{it})$	0.02 (0.19)	0.13 (0.23)	-0.25 (0.35)	0.18 (0.22)	-0.15 (0.28)
$ET + it$	-0.2*** (0.03)	-0.1** (0.04)	-0.3*** (0.05)	-0.2*** (0.06)	-0.2*** (0.04)
$Bur_{it}$	-0.1* (0.04)	0.01 (0.06)	-0.01 (0.06)	0.05 (0.1)	-0.1 (0.05)
$SEC_{it}$	0.05*** (0.02)	0.1*** (0.03)	0.02 (0.03)	-0.03 (0.04)	0.1*** (0.02)
$Cor_{it}$	0.05* (0.03)	-0.03 (0.04)	0.11*** (0.04)	0.001 (0.04)	0.06 (0.04)
$EC_{it}$	0.03 (0.02)	0.04* (0.02)	-0.001 (0.03)	-0.01 (0.04)	0.03 (0.02)
$IC_{it}$	0.02 (0.01)	0.01 (0.02)	0.04* (0.02)	0.1** (0.03)	0.01 (0.02)
$GST_{it}$	0.01 (0.01)	-0.001 (0.02)	0.1*** (0.02)	-0.01 (0.02)	0.01 (0.01)
Const.	0.3 (1.13)	-0.9 (1.65)	1.3 (1.75)	-1.5 (1.56)	0.9 (1.54)
Obs.	246	138	108	62	184
$R^2$	0.20	0.15	0.42	0.40	0.22
Groups	20	11	9	5	15

Notes: All regressions include country fixed effects. Heteroscedasticity-consistent standard errors in parentheses

\* indicates statistical significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level

The choice of the institutional variables included is driven by the collinearity between the variables. Moreover, I include variables upon consideration of the omitted variables bias and model specification error issues. The question of the consistency of the parameter estimates is one of the recently debated issues over the results of empirical analyses—especially when dealing with panel data analysis and the effects of one variable on another. The inconsistency of parameter estimates can stem from the existence of simultaneity, endogeneity or omitted variables within the panel (Stock and Watson 1993; Baltagi 2010). The debate over the inconsistency of parameters has led for instance Coe et al. (2009) to revise Coe and Helpman (1995) in examining the effects of research and development (R&D) capital on factor productivity. The new econometric methodologies recently

employed to deal with these issues are the panel co-integration techniques. Coe et al. (2009) argue that panel co-integration increases the consistency of the parameter estimates and provides robust coefficient to the simultaneity, endogeneity or omitted variables problems. The authors perform the unit root and co-integration tests of the dependent and independent variables. The unit root test allows using the first difference of the dependent variable if the null hypothesis of unit root is not rejected.<sup>8</sup> The co-integration test captures whether there is a long-run stable relationship between the dependent variable and the independent variable(s) within the panel of countries. Given the possibility of eventual simultaneity, endogeneity or omitted variables problems within the panel, I performed the unit root and co-integration tests for the variables used in Eq.(4.2) specified above using the methodologies of Levin et al. (2002) and Pedroni (2001). Based on the econometric tests results, Eq.(4.2) is estimated using the fixed estimation methodology.

#### 4.4 Results and Interpretation

The investigation on property rights across Sub-Saharan African (SSA) countries reveals the importance of property rights in the economic performance of SSA countries. Across the sub-groups classified by property rights levels and income levels, property rights have a positive and statistically significant effect on the total factor productivity (TFP). Property rights explain at least 0.2% of the variation in TFP in SSA. This effect is economically large. Given the standard deviation of 0.4 in the log of property rights in SSA, a 1-standard deviation in the change in property rights leads to 0.08 proportionate rise or 8% increase in the TFP.

Within the classification by property rights levels, the change in property rights explain 0.3% of the variation in the total factor productivity (TFP) under the upper sub-sample and 0.2% for the lower sub-sample, both at 95% confidence. For the classification by incomes, a 1% increase in property rights is associated with 0.2% increase in TFP for both sub-income groups. However, for the upper income group, this effect is at a 99% level of statistical confidence while for the lower sub-sample the effect is at a 90% level of confidence (Table 4.2).

The estimation results show two important facts about property rights in SSA. First, there is a difference in the effects of property rights on TFP across the sub-groups within each classification type. Secondly, the differences in these effects are not very large between the sub-groups within each classification type and between the two classification types. In fact, the estimation result reveals a remarkable pattern of the effects of property rights on the TFP between the sub-samples within each classification parameter. Within the classification by income level, the significance

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<sup>8</sup>The null hypothesis of unit root is rejected if the test statistic is significant (Levin et al. 2002; Im et al. 2003; Coe et al. 2009).

of the effect of property rights on the TFP decreases from the upper sub-group to the lower one, but the size of the effect remains constant (0.2% at 99% significance for the upper sub-sample and 0.2% at a 90% level of confidence). In the classification by property rights levels, even though the statistical significance does not vary, the size of the effect of property rights on the TFP decreases from the upper sub-sample to the lower sub-sample (0.3% at a 95% level of confidence in the upper sub-sample and 0.24% at a 95 level of confidence for the lower sub-sample) (Table 4.2). There seems to be pronounced effects (in the magnitude or the statistical significance) of property rights on TFP where property rights are relatively better and where incomes are relatively higher. In contrast, the effects are either lower statistically or in magnitude in countries with lower income and countries with lower levels of property rights (lower sub-samples under both types of classification).

These changes in the effects of property rights on TFP across the lower and the upper sub-samples highlights two important facts. First, in countries with relatively higher incomes, property rights have significant impacts on the TFP. From this first fact, it is ambiguous whether property rights are contributing to the growth of the TFP or whether the effects are due to the income level. This fact suggests that relatively higher income countries have better property rights or countries with better property rights have better incomes. Whether higher income leads to better property rights or better property rights provide higher income is hard to untangle and is uncovered in this paper. It might be the case that both matter. The second fact is that better defined and secured private property rights have higher impacts on TFP. This second fact clearly sheds light on the importance of private property rights in the growth of TFP. Thus, property rights reforms will highly contribute in enhancing economic growth in SSA.

Despite the differences in the effects of property rights on TFP across countries within SSA, these differences are not too large; both between the groups within the same classification and across the classifications. This second remark from the investigation results points out that SSA there is no big difference in income levels across SSA countries and the levels of property rights do not vary too much across countries within this region. This revelation on the non-large difference in income and property rights in SSA together with the fact property rights matter for the growth of TFP, answer the question why the SSA countries lag in economic development. Indeed, most of the SSA countries have lower incomes (15 countries out of 20 countries in the data sample have their average income per capita below the regional average) and weakly defined and enforced private property rights (about half of the countries have an average property rights below the regional average. The averages of the others slightly surpasses the regional average.).

Even though not too large, the variation in the effects of property rights on the TFP across the sub-income and property rights groups in SSA are an indication that property rights matters for growth. Countries with relatively higher property rights experience higher effects on the growth of the TFP. Given the finding of previous empirical works emphasizing that TFP explains most of the variations in the cross country differences in income per worker, the strong and positive correlation

between property rights and TFP demonstrates that property rights reforms will enhance growth in SSA. Most importantly, these reforms are needed in most countries in the region.

The overall results of this paper highlight that property rights are important determinants in the process of economic development in SSA. The access to enforced private property rights will accelerate the economic growth of SSA countries. In practice, the effect of property rights enforcement on growth has been experienced in Botswana. In fact, Botswana has experienced substantially high growth relative to other SSA countries in recent years. Although different factors might have contributed to this success, many economists believe that the private property rights protection policy of Botswana is the main driver of its high growth. Devarajan et al. (2003, p. 554) write that “the government consistently made it clear that it would protect private property rights.” The paper states further that the political stability in addition to the relative low corruption and press freedom made Botswana attractive for investment. In short, private property rights enforcement matters in stimulating investment and hence the economic growth.

## 4.5 Conclusion

This paper mainly shows that the lack of property rights is an impediment to the economic growth of Sub-Saharan African (SSA) countries. Improving property rights would significantly increase the total factor productivity (TFP) within the SSA region in general. Even though some differences exist, the countries in SSA do not differ to a large extent in their incomes and property rights levels. Moreover, the income and property rights levels are lower in the region. Given the finding of this paper, that property rights are important determinants of TFP growth and the finding of previous works that TFP accounts for a large proportion of the development gap across countries, this paper recommends private property rights reforms in SSA. The creation of private property rights and their enforcement by clear state laws would contribute to SSA’s economic growth.

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# Chapter 5

## Oil and Economic Development in the MENA Region: Why Institutions Matter



Mohammed Akacem

### 5.1 Introduction

This chapter addresses the dilemma facing a number of oil exporting countries that despite the vast oil riches, their economies perform worse than countries with no resource wealth. The idea that resource rich countries are doomed to fail because of the presence of the so-called resource curse is rejected.<sup>1</sup> The presence of oil—or any other resource for that matter—has nothing to do with the slow growth of these resource rich economies. Rather, it is due to the institutional deficit and the timing of the oil discovery.

If an abundance of resource wealth causes countries to experience slower economic growth, it would be difficult to explain the experience of Norway. Even more telling is the experience of Singapore which managed to surpass the rich oil economies in the Middle East in terms of GDP per capita despite having zero resource wealth. Norway and Singapore are in effect the “control” countries to refute the resource curse theory.

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This chapter draws and relies on an earlier version which appeared in the Middle East Paper Series of the National University of Singapore under the title “The Myth of the oil curse in Arab oil exporting economies: Evidence from Norway & Singapore” (Akacem 2015) and other research by the author and others such as Akacem and Cachanosky (2017), Akacem and Miller (2015) and Akacem and Geng (2015).

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<sup>1</sup>The resource curse theory posits that resource rich countries do worse than resource poor countries. This is true for the MENA region. Moreover, it has been shown that non-oil economies within MENA do better than oil economies. See Abed (2003).

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After a review of the literature and an analysis of the data on governance and institutional capacity, an oil privatization model is presented as a way to address the suboptimal economic performance of the oil Middle East and North Africa (MENA) economies. While the oil privatization policy is a radical departure from the present state of affairs, it will be argued that the status quo is unsustainable. The Arab Spring and the events in Libya, Egypt and presently Iraq and Syria have shown that patience with the status quo has ran its course.

## 5.2 Review of the Literature

The literature on the resource curse is extensive. The purpose here is to review a few of the main articles on the resource curse and explore the institutional deficit in the oil rich Middle East in order to propose a policy fix. Given that the stated purpose of this chapter is to dispute the existence of an oil curse, an effort is made to juxtapose the main ideas of the curse theory with the empirical evidence that will show it to be untenable.

The consensus is that the majority of oil producers have not benefited greatly from their oil riches. In fact, in some cases it has made matters worse. Former Saudi Arabian oil minister Ahmed Zaki Yamani wished his country had stumbled on water rather than oil when he said "...I wish we had discovered water" (Ross 1999). A former Venezuelan oil minister who was one of the architects of the formation and emergence of OPEC, was more blunt in regard to the ills brought on by the black gold. In 1975 he stated that "I call petroleum the devil's excrement. It brings trouble... Look at this locura—waste, corruption, consumption, our public services falling apart. And debt, debt we shall have for years" (The Economist 2003). It is only fair to ask that if the oil riches bring "trouble", would not having it have provided the necessary incentive for countries to do better?

Sachs and Warner (1995) looked at 97 countries to test the impact of natural resource wealth on economic growth and development. They found that "resource-poor economies often vastly outperform resource-rich economies in economic growth" (Sachs and Warner 1995). While the empirical evidence in general supports this finding, it is also true that countries with no resource wealth outperform resource rich countries. Singapore is a prime example as we will show later in the chapter. Moreover, Norway, an oil rich country has done well in terms of economic growth and development. It is important to note, that despite Sachs and Warner's results that the presence of natural resources alone is not the culprit, just as the lack of resource endowment does not prevent countries from doing well. Institutions may have a lot to say about the difference in economic growth between the resource rich and the resource poor.

Acemoglu and Robinson (2012) put the emphasis on the primacy of institutions. In essence, for them, institutions matter. In fact, they claim that institutions help us understand why nations fail.<sup>2</sup> They go on to state that nations fail because of the presence of extractive economic institutions. Acemoglu and Robinson (2012, p. 372) state that:

Nations fail today because their extractive economic institutions do not create the incentives needed for people to save, invest and innovate. Extractive political institutions support these economic institutions by cementing the power of those who benefit from the extraction. Extractive economic and political institutions, though details vary under different circumstances, are always at the root of this failure.

This is particularly relevant to oil economies in the MENA region because of the presence of extractive institutions while Norway chose the path of inclusive institutions.<sup>3</sup> Acemoglu and Robinson (2012, pp. 68–69) go on to state that:

Inclusive economic institutions, such as those in South Korea or in the United States, are those that allow and encourage participation by the great mass of people in economic activities that make the best use of their talents and skills and that enable individuals to make the choices they wish. To be inclusive, economic institutions must feature secure private property, an unbiased system of law, and a provision of public services that provides a level playing field in which people can exchange and contract; it also must permit the entry of new businesses and allow people to choose their careers.

Michael Ross has written extensively on the role that oil plays in hindering the democratic process. He looks at three effects: the “rentier effect”, the “repression effect” and the “modernization effect”. As alluded to earlier, given that oil revenues flow directly to the governments in the oil MENA region, the need for taxation disappears and with it the need to be accountable to their citizens.<sup>4</sup> In essence, the phrase “no taxation” leads to “no representation”. Such an argument is refuted by the experience of Norway an advanced oil economy where the oil revenue flows to the government and yet it does not fall in the trap of no representation. Quite the contrary, it scores among the top countries in the various indices published by the World Economic Forum.<sup>5</sup>

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<sup>2</sup>In Sachs (2003) he makes the case that while institutions matter, they are not the only thing and somewhat dilutes their importance.

<sup>3</sup>Acemoglu and Robinson (2012) define the term “inclusive economic institutions.” They argue that: “Inclusive economic institutions require secure property rights and economic opportunities not just for the elite but for a broad cross-section of society (p. 69).” Also, “inclusive economic institutions foster economic activity, productivity growth, and economic prosperity (p. 69).” “Inclusive economic institutions create inclusive markets, which not only give people freedom to pursue the vocations in life that best suit their talents but also provide a level playing field that gives them the opportunity to do so (p. 70).”

<sup>4</sup>Not all Arab oil economies operate this way. Algeria, for example, has an extensive tax structure despite being dependent on oil for its foreign currency earnings. This mostly applies to the members of the GCC in the Gulf.

<sup>5</sup>The *Global Competitiveness Report* and *The Global Human Capital Report* among others.

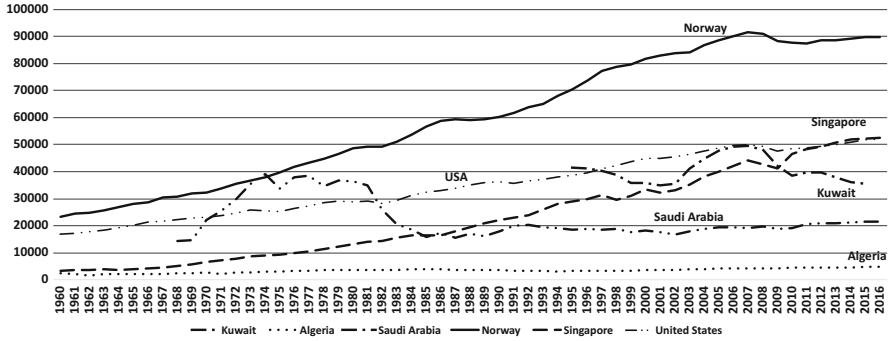


Fig. 5.1 GDP per capita (constant 2010 \$US). Data Source: World Bank (2017)

Singapore, with zero resource wealth and a city state, had outperformed rich countries in the oil MENA region. As we can see in Fig. 5.1 where per capita GDP for Norway, Singapore and some Arab oil-exporting countries with Venezuela are plotted.<sup>6</sup>

It is interesting to compare GDP per capita between the US and Singapore. In 1960, GDP per capita in the US was 5 times that of Singapore. By 2016, Singapore had a slightly higher per capita income than that of the US and without any resource wealth. In 1968 Saudi Arabia’s GDP per capita was 2.75 higher than that of Singapore but by 2016, Singapore’s per capita income was two and one half times greater than that of Saudi Arabia’s.<sup>7</sup>

Like Singapore, Norway did well but in this case, despite the presence of oil. In other words, oil wealth did not prevent it from achieving high rates of economic growth and development. The presence of solid institutions must certainly explain both the success of Singapore and that of Norway. Norway’s per capita income was almost twice Saudi Arabia’s in 1968 and more than four times in 2016. Oil, then, does not explain the lackluster performance of the Middle Eastern oil producers.

Subramanian (2011) notes that oil wealth does impede the building of sound governments as well as solid institutions. Subramanian (2011) notes that:

The history of economic development suggests that in rent-ridden countries, governments have little incentive to create strong institutions. The state is relieved of the pressure to tax its citizens and has no incentive to promote the protection of property rights as a way of creating wealth. As for the citizens themselves, because they are not taxed, they have little incentive and no effective mechanism by which to hold government accountable.

The citizens of the rich Gulf states, as an example, do not face much in terms of taxation and as a result the understanding is that “no taxation” implies no

<sup>6</sup>We added Venezuela in this figure even though it is not part of the oil MENA region to highlight the extreme case of that country having the largest oil reserves and yet having the second lowest per capita GDP in the group.

<sup>7</sup>1968 is the first year with data on GDP per capita for Saudi Arabia.

representation.<sup>8</sup> Subramanian is partially correct in implying that citizens in these rich countries may not have an incentive to hold their governments accountable. However, the fact there are no mechanism for these citizens to make their displeasure known to the powers that be and hold these powers accountable, the Arab Spring may have changed that assumption (Akacem and Miller 2015).

The *Arab Human Development Report* argues that rentier states have no accountability towards their citizens (United Nations Development Program 2004). In sum, their view lines up with our oil privatization model whose goal is to reestablish the link between the government and the governed.

In the rentier state, therefore, government is absolved of any periodic accountability, not to mention representation. As long as the rent continues to flow, there is no need for citizens to finance government and thus expect it to be accountable to them. On the contrary, when the flow of rent depends on the good will of influential outside forces, as in the case of some Arab countries, the right to accountability passes to those who control the flow of rent, instead of remaining with citizens, who are turned into subjects (United Nations Development Program 2004, p. 152).

The report goes further and implies that Arab oil economies are “black hole” states, where “the executive apparatus resembles a ‘black hole’ which converts its surrounding social environment into a setting in which nothing moves and from which nothing escapes” (United Nations Development Program 2004). Ross has modulated his argument about the negative impact of oil by stating that it does have a positive effect via the supply of public goods such as education and health by the government. However, while this is true, the quality of these services have been less than desirable. One particular problem in most of the oil MENA countries is the unemployment which impact a large segment of the youth. More importantly, the education system has not always produced graduates with skills that match the demand in those economies.

Another aspect of oil economies is the large defense spending as a fraction of GDP. Humphreys et al. (2007) point to this phenomenon and the data confirm this in the oil MENA region. Even though countries in MENA are major military powers, in some years, they spend more than the United States. Figure 5.2 shows defense spending from 2000 to 2015. Saudi Arabia defense spending is three times that of the United States while Norway and Singapore (oil and non-oil economy) spend less than oil MENA.

In 2002, The World Bank’s World Development report covered the “accountability and responsiveness of state institutions” issue. Feedback and accountability are important in allowing the citizens to channel their feedback to the government. The World Bank states that the voice and accountability variable captures the “perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.” (Kaufmann et al. 2010). Once again, Norway scores well in this area, the oil MENA region does not. This reflects the inclusive economic

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<sup>8</sup>Gulf states refer to the following countries, Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Bahrain and Oman. These are member of the Gulf Cooperation Council, or the GCC. They are endowed with larger resource wealth and relatively smaller populations.

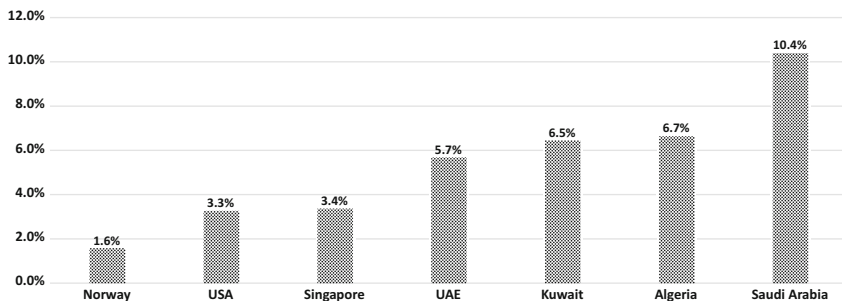


Fig. 5.2 Military expenditure as a % of GDP in 2016. Data Source: World Bank (2017)

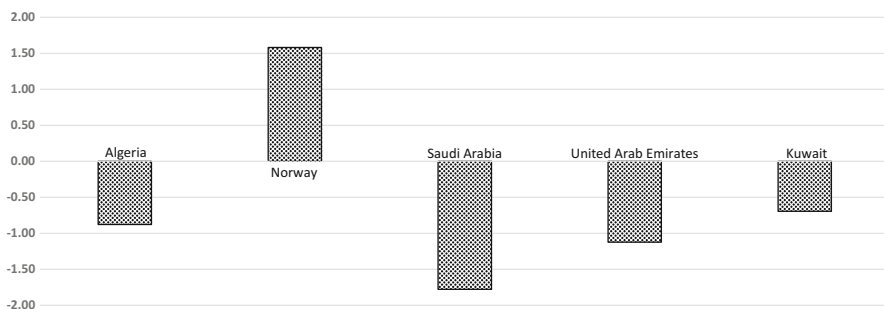


Fig. 5.3 Voice and accountability in 2016. Data Source: Kaufmann et al. (2010)

and political institutions in Norway. Data for the MENA countries in Fig. 5.3 reflects the presence of extractive economic and political institutions.

So far, the evidence shows that despite having oil, Norway does well and Singapore with no oil does relatively well as well. Something other than oil must be at play. Alexeev and Conrad (2009, p. 586) points to some factor “X”:

The role of X has been played by the Dutch disease, civil conflict, rent seeking, neglect of human capital development, decline in saving and investment, and increase in income inequality, among other factors. Recently, deterioration of institutions appears to have emerged as the most popular interpretation of phenomenon X.

Karl’s (2007) contention that oil impedes “the appearance of democracy” is not totally accurate. This paper will show that oil alone does not do this and rather it is the flow of oil revenue to central governments together with the absence of inclusive institutions that impedes democracy.

We end this section on the literature review with a quote from Larsen (2006) that examined the economic growth history of Norway compared to its neighbors. Much as Alexeev and Conrad (2009) discovered, Larsen (2006, p. 605) notes that something other than oil is at play. The author argues that:

In the 1960s, Norway lagged behind its Scandinavian neighbors in the aggregate value of economic production per capita, as it had for decades. By the 1990s, Norway had caught up with and forged ahead of Denmark and Sweden. When and why did Norway catch up? The discovery and extraction of oil in the early 1970s is usually suggested as the explanation.

But oil alone cannot explain Norway's growth, since Sachs and Warner (2001) show that resource gifts often reverse growth, making oil a curse, not a blessing. Moreover, there is the possibility of contracting the Dutch Disease, which involves a rapid and substantial contraction of the traded goods sector. This article explains how deliberate macroeconomic policy, the arrangement of political and economic institutions, a strong judicial system, and social norms contributed to let Norway escape the Resource Curse and the Dutch Disease for more than two decades.

In other words, Norway improved and surpassed its Scandinavian neighbors because of the institutional changes that took place. The author claims that oil alone does not tell the whole story. The question now is how can oil MENA emulate the experience of Norway? We now propose a way out of the "black hole" states in MENA.

### **5.3 Oil Privatization as a Counter Argument to the Resource Curse**

No government will give up a source of revenue such as that afforded by oil or other natural resources. However, we argue that while what we propose is may face strong opposition, it is nevertheless worth considering for the simple reason that the status quo is unsustainable. In the 1950s, the oil majors controlled every aspect of oil production and distribution while the sovereign governments received payments with not much say in oil policy. In the 1970s, things changed drastically with the change of property rights from the oil majors to the oil producers. Now, oil revenues flowed in great abundance directly to the governments and while the oil majors had a high discount rate, that changed with the change in ownership.<sup>9</sup>

The change in property rights did not improve the lot of the average citizen in the oil MENA region. The evidence is the Arab Spring which surprised everyone. Even rulers such as Kaddafi in Libya who was ruthless, Mubarak of Egypt and Ben Ali in Tunisia were toppled.<sup>10</sup>

The proposed oil privatization plan is meant to be a catalyst that addresses the institutional deficit that plagues the oil MENA region. Governments in the region do benefit from the plan in one important respect: distributing oil revenue directly to the people will save the governments from potential backlash from their citizens in times when oil markets are soft—as in the present. They can easily

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<sup>9</sup>We argue that the oil majors had a high discount rate which translated in a faster depletion rate, knowing full well that the oil producers' government will someday nationalize oil. Once the property rights changed hands, the new owners were not in a rush to deplete their oil wealth at the same rate.

<sup>10</sup>Granted that only Libya is an oil economy out of the three countries listed, the point here is that the status quo became untenable and three presidents were toppled.

deflect blame since oil revenues are distributed directly to the citizens. The Arab oil exporting countries in the region have sustained themselves for decades by buying the peace with oil and gas proceeds and showering their population with generous subsidies.

So far, we showed that the resource curse theory is said to inhibit economic growth and development. Yet, the experience of Norway and the US (the Saudi Arabia of the early oil years), have done well. Moreover, Singapore which has zero resource wealth, outperforms the oil economies of MENA. Neither the presence of oil or the lack of it matters. The answer lies in the fact that both Norway and the US discovered oil *after* having established a proper regulatory and institutional environment with an independent judiciary, the rule of law, protection of property rights and a clearly defined political and economic system that did not exclude anyone.

The MENA region, on the other hand discovered oil *before* having established a proper institutional environment (Tsui 2005). Only now have some of them attempted to create the proper environment, allowing for a very limited degree of political openness. However, the economic and political institutions are not yet inclusive enough (Acemoglu and Robinson 2012), which explains why these countries continue to be mired in sub-par economic development. Despite the ‘Arab Spring’ and the varied responses by the governments of the region, extractive economic and political institutions continue to dominate the landscape, limiting the potential of these economies.<sup>11</sup>

Since it has been established that inclusive economic and political institutions are clearly the answer for any nation to prosper and grow, how can the Arab oil exporting countries transition to that state?

## 5.4 The Oil Privatization Plan

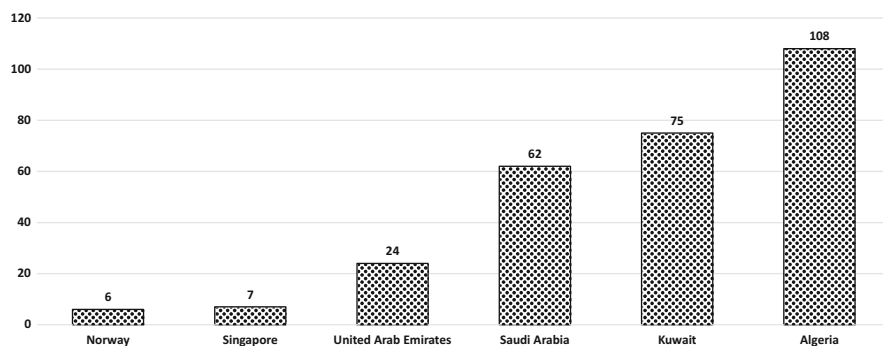
The oil privatization idea was first explored in 2003 (Akacem and Miller 2003).<sup>12</sup> While the resource-curse literature cited in the early part of this paper made it clear that resource wealth was bad, we argue that the problem is not the resource itself but who the beneficiaries of the resource wealth are: the government or its true owners, the citizens and the institutional context prevailing at the time.

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<sup>11</sup>The term extractive is used as defined in Acemoglu and Robinson (2012, p. 372).

<sup>12</sup>The plan calls for direct payments to the citizens. One channel could be a new board that replaces the existing one but with direct input and involvement of the citizen owners. The payments will be net of what is needed for the oil company to cover its expenses. This is the same as with a private oil company. The only difference in this case is that the citizens are the shareholders.





**Fig. 5.4** Corruption perception index rank, 2016. Data Source: Transparency International (2016)

The oil privatization plan, or direct cash transfers (Moss 2011) as some call it, is a radical approach to the ills of the resource curse. Milton Friedman had a similar view but in the context of government owned entities in general. Friedman (1988, p. 577) stated:

My own favorite form of privatization is not to sell shares of stock at all but to give government-owned enterprises to the citizens. Who, I ask opponents, owns the government enterprises? The answer invariably is, ‘The public.’ Well, then why not make that into reality rather than a rhetorical flourish? Set up a private corporation and give each citizen one or one hundred shares in it. Let citizens be free to buy and sell shares.

The goal behind the plan is essentially an attempt to “starve the beast”. In this instance, the beast is the government. This plan is simply to reroute the oil payments to the citizens instead of the governments.

Access, control and disposal of oil revenues by central governments in the Middle East is a fundamental problem that needs a radical solution.<sup>13</sup> Consequently, finding a way to shut off the revenue pipeline to the government would be a start. Starving the governments of funds will force them to resort to other means of raising revenue and perhaps in the process be more accountable to their citizens. More importantly, it will address the problems of corruption and misappropriated funds (see Fig. 5.4).<sup>14</sup> Data on corruption shown in Fig. 5.4 highlights the difference that the proper law-abiding institutions make when it comes to spending oil revenues without any checks and balances.

<sup>13</sup>This of course is not limited to Arab oil countries. Venezuela is another example. Despite having the largest oil reserves, its economy is in shambles and the institutions have been decimated by the current government.

<sup>14</sup>It is not clear that the recent rounding up of members of the Saudi royal family and businessmen in the guise of fighting corruption is what is needed here. The consensus about this drastic move by the Saudi authorities is that it is perhaps more about consolidating power than fighting corruption. The fundamental problem remains the flow of oil revenues to the central government that elicits rent seeking and the siphoning of public funds made worse by the lack of transparency.

Starving the beast is technically more applicable to developed countries and not necessarily oil dominant economies. Given that the main source of revenue in these economies is the tax base, it is argued that if one were to cut taxes, it follows that the government is starved of funds and would necessarily reduce spending. Unfortunately, given the nature of democracies, this rarely happens. Instead, governments resort to borrowing.<sup>15</sup>

Countries in the oil MENA region are limited by the lack of financial instruments that would allow them to issue securities and raise funds internally.<sup>16</sup> Of course, they could resort to the printing press, but the inflationary consequences are dire (El Watan 2017). This then would require these countries to seriously consider reforming their tax system to fund budget deficits and economic development.

Adopting a rational tax system would constitute the link that would connect the citizen taxpayer to the government. The latter would need the consent of the taxpayers before embarking on spending programs and this will give voice and accountability to the stakeholders whose money is being spent (Subramanian 2011).

## 5.5 Plan Implementation

There are two approaches here.<sup>17</sup> The first and most appealing is to distribute shares to the citizens per Milton Friedman's (1988) noted approach to privatizing government entities. The new citizens' owners will be free to trade these shares in the open market. Share prices will reflect world oil market conditions as well as oil reserves conditions and any factor that impacts the future value of oil.

While this approach is the most direct way to distribute the oil revenue as well as allows the market to set the price of shares free of any government control, it faces a downside. The market for the oil shares has the potential to be cornered by individuals whose source of funds is questionable. Some individuals and families may be tempted to sell because they need the money right away not realizing the value of the future stream of payments that will accrue to them.<sup>18</sup> Another

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<sup>15</sup>For example, the United States. Despite the call for fiscal restraints, the government resorts to borrowing to cover its deficits year in and year out.

<sup>16</sup>Now that it cannot simply be covered by oil and gas revenues.

<sup>17</sup>The proposed sale of 5% of the Saudi oil state owned company ARAMCO through an IPO is not what we have mind here. The proceeds from the sale will be collected by the government and it will dispose of it as it sees fit with no feedback from the stakeholders further reinforcing the status quo. More importantly, there was no consultation or an attempt to assess the mood or the opinion of the general public—theoretically the owners of the company—regarding the proposed sale of a share of one of the biggest oil company in the world.

<sup>18</sup>In a free society, citizens should be able to dispose of their wealth the way they see fit. Putting limits on what the citizen can do with his/her shares is somewhat elitist but one needs to put this in the context of the region and the ultimate goal of the oil privatization plan. In order to empower the citizens to benefit fully from their oil wealth under this new plan, they must be able to own the shares and have a say. Allowing the shares to be sold immediately would render our privatization plan obsolete.

question relates to who can buy these oil shares? Should non-citizens be allowed to participate in this market? If so, could this usher the slow return of the oil majors?

The second approach could consider two solutions. One would be for the citizens to own the shares and not ever sell them. This would answer the cornering of the market problem as well as dominance by outsiders or even major oil companies. Another would have a date by which the citizens can sell their shares, say after 10 years for example, to allow the market to mature and for the market to appropriately price the value of the oil shares. This would be the more plausible option and would safeguard the freedom of the citizens to dispose of their shares as they please.

The transition to a share distribution system to allocate oil revenues to the rightful owners is simple. The existing national oil company would switch from being government owned to citizen owned, much like any large company with shareholders.<sup>19</sup> The new board would be filled with elected citizens and will oversee the oil production and pricing policy much like the previous board did. In fact, some of the existing members who are citizens could serve on the same board. The new structure will be more open and will be able to be more transparent with data on oil revenue, sales, etc. . . .

The proposed model is not new. The state of Alaska in the US is already doing something that resembles our proposed oil privatization plan. Citizens who reside in Alaska for the whole year receive a payment from the Alaska Permanent Fund. The proposed citizens' board would do the same.

There is a major difference, however, between our privatization plan and the Alaska plan. While the source of revenue of the state of Alaska are royalty payments, our plan generates revenue from the proceeds of oil sales.

The advent of the 'Arab Spring' has upended all of the assumptions concerning the durability of leaders in the oil MENA region. It has also tested the patience of the population in the area. Critics of the plan who would argue that it is not practical or will never be implemented given the entrenched power of the regimes. To this, we note that no one foresaw the toppling of either former president Ben Ali of Tunisia nor Qaddafi of Libya or even Mubarak of Egypt. Things that were seen as impossible occurred. The Arab Spring was the "black swan" of the century in the Middle East. In other words, the status quo can neither continue nor be sustained.

A benefit of the plan will accrue to the governments and will help usher stability in the volatile region of the Middle East. They will not be blamed when and if oil revenues fall since the citizens are now in control. Furthermore, the oil revenue distribution and payments will be accepted at face value because the shareholders

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<sup>19</sup>Early on in 2003, when these ideas were developed for this privatization plan, and to give more choices to the citizens, we looked at competing oil companies owned by the citizens instead of only one. The existing national oil company (depending on size and how many oil wells it owns) would be split into two or three companies with control of approximately the same amount of oil reserves and production capacity. To enhance the choice for the citizens, they can now opt to select shares of company A vs company B depending on how fast or slow these wish to deplete their reserves thus answering the different revenue needs of the different segments of the population. A single oil company run by a citizen board is the most practical in the short run until the institutional environment catches up.

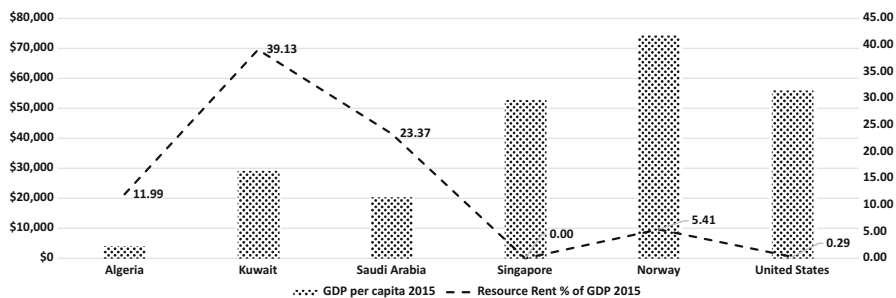
(citizens) are in control and are aware that fluctuations of these payments is due to oil market fluctuations and not some nefarious plan by the government.

A direct benefit of the proposed plan is the empowerment of the citizenry in the Arab oil exporting countries. No longer would governments make unchecked decisions regarding how to dispose of the oil revenue and what to spend the oil proceeds on. The citizens will now have the power to decide how and where the money is spent and will reflect their priorities and not those of the government. Given the data shown in this chapter on corruption, rerouting oil revenues away from governments would immediately cut wasteful spending. Corruption will diminish and oil projects will no longer be funded from oil revenues but indirectly through taxation of the oil dividends.<sup>20</sup> There is ample evidence of the abuse and misuse of oil revenues by national oil companies from Algeria to Brazil related to capital flight and kickbacks dealing with the oil sector (El Watan 2015; PBS 2009).<sup>21</sup>

Singapore and Norway prove that the existence of oil or the lack of it does not really matter when it comes to corruption. In other words, oil wealth does not necessarily translate into wasteful spending and misappropriation of funds. The lack of institutions does. Both of these countries score in the top ten list when it comes to the lack of corruption.

This approach to managing oil wealth would also address the sectarian divide that plagues the region. Possibly, once oil revenues are distributed equally on a per capita basis regardless of sect (Shia vs Sunni) or tribal affiliation, no one will have an incentive to damage the oil infrastructure.

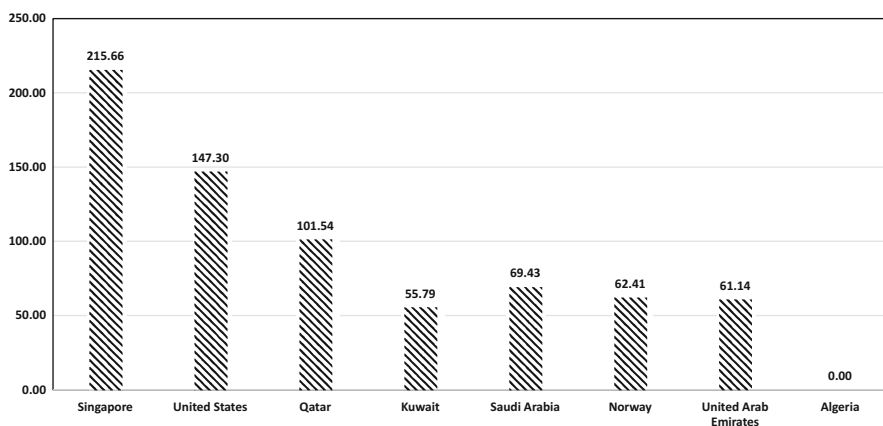
The Gulf states derive the most rent from oil as a percentage of GDP as shown in Fig. 5.5 but without the needed check and balances that our plan would provide.



**Fig. 5.5** Resource rent as a % of GDP and GDP per capita, 2015. Data Source: World Bank (2017)

<sup>20</sup>Oil dividends distributed to the citizens will be taxed like any capital gains in other countries.

<sup>21</sup>Figure 5.4 is evidence of the misuse of funds. Singapore, a non-oil economy and Norway outperform the oil economies of the Middle East. The corruption perception index clearly shows the difference between countries that have solid institutions and those that do not. The literature on the subject notes the corruption that is made possible by the presence of oil and in the absence of adequate institutions. PBS (2009) covers the Saudi Arabian case. Another instance is related in El Watan (2015), where the then prince Mohammed bin Salman bought the Serene, a 440-foot yacht for 550 million dollars (Mazzetti and Hubbard 2016).



**Fig. 5.6** Market capitalization of listed companies as a % of GDP. Data Source: World Bank (2017). Note: Data for Kuwait is for 2012 and Algeria has no market capitalization to speak of as there was no data entry for all the years posted by the World Bank

Interestingly, the countries that have the highest resource rent as a percentage of GDP have lowest GDP per capita compared to Singapore (that has zero), Norway and the United States whose resource rent is in the single digits, proof that institutions do matter.

Despite the challenges of the plan, the Arab Spring has changed the landscape and what is achievable in the region. It is a new environment which gives a chance for a consideration of our proposed plan. Moreover, the events that unfolded in Tunisia, Libya, Egypt, Yemen, Syria and Iraq are proof that the status quo is not delivering, therefore placing great pressure on the region to consider its alternatives. World oil markets and the surge in US oil production through shale changed world oil markets in ways that no one predicted. The result is added pressure on the Gulf and other Arab oil producers to seriously rethink the present state of affairs.

Data on market capitalization as a fraction of GDP is shown in Fig. 5.6. Singapore leads the group by far at 215% of GDP. Other than Qatar, the rest of the oil producers are below 100% with Algeria with zero. An added benefit of the introduction of oil shares is the positive impact it will have on the financial market. A smaller fraction is fully engaged in the equity market. The proposed plan could be the catalyst to allow the region's markets to reach operational efficiency.<sup>22</sup>

Oil MENA must look to the US or Singapore as a model for the post oil era. An advanced equity market allows companies to diversify their sources of funds and not rely solely on banks. The net result will be to move these oil producers away from relying too much on the oil sector. Foreign investors will be tempted to invest

<sup>22</sup>Financial markets are at different levels of maturity in the region with Gulf countries being ahead of the rest of oil MENA.

as well in an effort to diversity internationally thus bringing foreign savings and lessening the chance to resort to printing press. This figure shows how far behind they are compared to Singapore, a non-oil economy, and where they may be after the oil runs out. Even with the presence of oil, a solid equity market offers a lot of benefits to the oil economies and will help the dis-engagement of governments in the Arab oil producing countries from the economy.

The proposed share distribution system through a rerouting of oil revenue away from the government and directly to the citizens will benefit and spur the growth of equity markets in the MENA region. The new oil income will be invested in domestic (or foreign) stock markets (The Economist 2014).

## 5.6 Conclusion

The oil privatization plan is needed now more than ever. It may take time but it needs to be given serious consideration. The ‘Arab Spring’ has caused the political tectonic plates to shift from under the Arab oil exporting countries regime’s feet. Oil alone is not at the root of the region’s problems and there is no such thing as a resource curse. We have shown how Norway, despite oil, has done well by its citizens while Singapore, despite having no oil or other natural resources for that matter, has outperformed the oil MENA region. Singapore highlights the fact that a country does not need resource wealth to do well. But it does need strong institutions and a clearly defined set of rules, such as the protection of property rights, rule of law, an independent judiciary and a free press among others, to excel on the economic development front. Oil MENA must avoid extractive economic and political institutions to allow their economies to grow uninhibitedly.

It is vital that oil producers in the MENA region seriously consider the outlined plan in this chapter and start thinking beyond the oil era. In order to achieve this, serious efforts should be taken to disengage the region’s governments from the collection of oil revenues and instead consider the empowerment of their populations by distributing oil revenues directly to them. The economic growth and development of the region has lagged behind other regions with far less oil wealth or none at all. This chapter has shown that oil wealth can greatly add to a country’s economic development as the experience of Norway has shown. But it has also shown that countries without any natural resource wealth, such as Singapore, can perform better than those countries, such as in MENA, with an abundance of oil and gas wealth. The oil privatization model will, we hope, be a path to institutional change that could usher the building of inclusive economic and political institutions. It will not be easy. But it is worth a try because the present state of affairs is not sustainable.

The argument that some civilisations are unsuited to democracy has been used from Taiwan to South Africa: it seldom holds water for long. The Arab Spring has so far been mainly a mess. But to condemn Arabs to political servitude is no answer. It only delays the explosion (The Economist 2014).

**Acknowledgements** The author wishes to thank Professor Ahmed A. Ahmed, Gulf University of Science & Technology, Kuwait for his input and feedback and Dr. John L. Faulkner, formerly with the Environmental Protection Agency, Washington, DC, USA for reviewing the draft chapter and for his comments and feedback.

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# Chapter 6

## Do Remittances Promote Financial Inclusion?



Durga P. Gautam

### 6.1 Introduction

The provision of financial services has been considered as one of the most useful mechanisms for reducing poverty in developing countries. In recent years, financial inclusion—the share of the population that uses financial services delivered by the regulated financial institutions—has received much attention from the development community. Financial inclusion focuses attention on the need to bring previously excluded people under the umbrella of financial institutions (Conroy 2008). More specifically, full financial inclusion is described as a condition in which everyone who can use them has access to a range of quality financial services at affordable prices, with convenience, dignity, and consumer protections, delivered by a range of providers in a stable and competitive market to financially capable clients (Center for Financial Inclusion 2017). The inclusive financial system that offers a wide range of services including savings, credit, payment, and insurance is expected to provide several benefits to poor households and rural communities in almost every economy (Demirguc-Kunt and Klapper 2013).

According to the World Bank (2017), an estimated 2 billion adults worldwide don't have a basic account and more than 50% of adults in the poorest households are unbanked. In most developing countries, financial services are available to only a minority of the population. Mainstream for-profit financial institutions have largely ignored the segment of the market that includes the low income and poor households, as well as small- and medium-sized enterprises, often called the “missing middle” (Fund 2006). In the context of Africa, fewer than a quarter of adults have an account with a formal financial institution and that many adults use informal methods to save and borrow (Demirguc-Kunt and Klapper 2013). The

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J. C. Hall, S. Harper (eds.), *Economic and Political Institutions and Development*,

[https://doi.org/10.1007/978-3-030-06049-7\\_6](https://doi.org/10.1007/978-3-030-06049-7_6)

major reasons for being unbanked typically include extreme poverty, higher costs, longer travel distance, and often-burdensome requirements associated with opening a formal account (World Bank 2013).

Having an access to a transaction account is the first step toward broader financial inclusion since it allows people to store money, and send and receive payments. As accountholders, individuals are more likely to use other financial services, such as credit and insurance, to start and expand businesses, invest in education or health, manage risk, and cope with financial shocks, which can improve the overall quality of their lives. Several studies have shown that greater access to formal credit and savings instruments are conducive to starting a business, productive investment, and economic self-sufficiency (Ashraf et al. 2010; Duflo et al. 2010; Karlan and Zinman 2010). The World Bank Group considers financial inclusion as a primary means to reduce extreme poverty and boost shared prosperity, and has put forward an ambitious global goal to reach Universal Financial Access (UFA) by 2020 (World Bank 2017).

In addition to persistent market imperfections, developing countries are characterized by unique socio-economic dimensions including extreme income inequality and income volatility. Addressing these social adversaries require risk-diversification, consumption smoothing, and inter-generational financing of investment. It is, therefore, not too hard to see why the saving and credit instruments are so critical in such communities. As migrant remittances are likely to have important effects on each of these socio-economic dimensions, their impact on the economy and in particular, on financial inclusion are likely to be quite large.

Although the economic literature has paid greater attention to the effects of remittances on consumption (Adams and Page 2005; Rempel and Lobdell 1978), investment and growth (Dupas and Robinson 2009; Giuliano and Ruiz-Arranz 2009; Yang 2005), poverty (Lopez et al. 2007; Adams and Page 2005; Gupta et al. 2009), and financial development (Aggarwal et al. 2011), their potential impact on financial inclusion has relatively been ignored. In this essay, we take up the question of whether the inflow of international remittances promotes financial inclusion in the recipient economies. Since an increased level of financial inclusion can support both economic efficiency and equality, remittances may have a significant impact on economic development through their contribution to financial deepening and more equitable distribution.

When households receive remittances, the first thing they usually do includes paying off loans owed. As remittances are sent in installments with varying frequency, recipient households would like to store the money in a safer place so as to use it once needs arise. The households may use the money to purchase goods and services such as basic necessities, durable items and luxury goods, and to pay utility bills. The money could be used to pay for children's school fees and uniform, books, and other similar items. Households may need to put some money aside to pay doctor's bills in case family members get sick. By adding to remittances income over time, the recipient family can accumulate funds to buy housing or to finance business investment. In sum, remittances may increase households' demand

for savings accounts, payment and insurance services, and credit instruments. On the flip side, however, remittances may drive up consumption spending, lower savings, and reduce the demand for financial products and services because the persistence inflow of remittances might provide households insurance against future income shocks. Moreover, depending on the prevailing social norms and practices and the current level of financial development, the demand for traditional means of financial services may appear more relevant with the rise in remittance inflows, thereby lowering the scope of formal financial institutions.

Using household-level survey data for El Salvador, Anzoategui et al. (2014) find that remittances enhance financial inclusion by promoting the use of deposit accounts. But they do not find any significant effect of remittances on the demand for and use of credit from formal institutions. They claim that remittances could potentially affect financial inclusion in several ways. The fixed costs of sending remittances can make these flows lumpy. As a result, households possess excess cash for some period of time. This may lead to an increased demand for deposit accounts from formal financial institutions. Similarly, the processing of remittance transactions between senders and receivers may provide financial institutions with several pieces of financial information about the recipient households that might make those institutions better willing and able to extend loans to otherwise opaque borrowers. However, if remittances help relax the financing constraint faced by such households, the demand for credit instruments might fall with the rise in remittances.

In their analysis of financial inclusion in China and other BRICS countries, Fungáčová and Weill (2014) use the World Bank Global Findex database for 2011 to show that borrowing through family or friends is the most common way of obtaining credit in all the BRICS countries, but other channels for borrowing are not very commonly used by individuals in China. Since India and China (both being members of the BRICS) are the two largest remittance-receiving countries in the world, this finding may suggest that remittance inflows could be a major source of funds for individual borrowers in many developing countries. In this respect where remitted funds, instead of being deposited into a bank account, could be lent out directly by the recipient families. These families, in essence, tend to serve as informal financial intermediaries in the community where they would supply smaller loans to local borrowers periodically. As a consequence, there are some chances that remittance inflows may even have the potential of reducing the demand for formal bank accounts in remittance-receiving countries.

On the other hand, various regulations imposed by many migrant sending and destination countries and by the Financial Action Task Force (FATF), the international standard-setting body for Anti-Money Laundering and Combating Financing of Terrorism (AML/CFT), have made it increasingly difficult and cost ineffective for migrant workers to send money back home by using formal financial systems (Vlcek 2006). These measures to increase financial transparency are likely to create disincentives for both money senders and receivers to use formal services (De Koker and Jentzsch 2013). Thus, the increasing amount of remittance inflows to the developing countries via informal methods could have further detrimental effects on financial inclusion through the reduction of personal accounts at formal institutions.

Given the conflicting scenarios regarding the effects of remittances on financial inclusion, in this article we attempt to explore empirically the potential association between remittances and the use of financial services by individuals and households across countries. In particular, we focus on whether remittance inflows promote the demand for and use of deposit accounts, savings, and credit by examining the effects of remittances on the indexes representing the fraction of individuals within a country who possess a deposit account, have saved a part of their income, and have borrowed money from formal financial institutions (e.g., commercial and saving banks, credit unions, and credit cooperatives).

The rest of this essay is organized as follows. The next section presents our empirical approach and highlights the importance of semiparametric partially linear model (PLM) in our analysis. Section 6.3 describes the data and method of computing financial inclusion indexes for the response variables. The empirical findings are discussed in Sect. 6.4 and Sect. 6.5 concludes.

## 6.2 Empirical Methodology

We investigate the relationship between remittances and financial inclusion by analyzing the following semiparametric partially linear model:

$$\text{Financial inclusion}_i = g(Z_i) + X_i' \beta + u_i, \quad i = 0, 1, \dots, n. \quad (6.1)$$

We estimate model (6.1) by controlling for a set of key socio-economic, financial, and legal origin variables that the literature has found more relevant to inclusive finance (Anzoategui et al. 2014). In Eq.(6.1),  $X_i$  represents a  $p \times 1$  vector of regressors,  $\beta$  is a  $p \times 1$  vector of unknown parameters, and the functional form of  $g(Z_i)$  is left unspecified.

Model specification (6.1) is described as semiparametric because it contains both finite-dimensional (i.e., parametric) component and infinite-dimensional (i.e., nonparametric) component. The data is assumed to be i.i.d. with  $E(u_i|X_i, Z_i) = 0$ , and we allow for a conditionally heteroskedastic error process  $E(u_i^2|x, z) = \sigma^2(x, z)$  of unknown form. Model (6.1) specifies the conditional mean as linear in  $X_i$  but nonlinear in  $Z_i$  (remittances). Our goal is to estimate  $\beta$  and  $g(\cdot)$  consistently and to obtain the confidence intervals. Since  $g(\cdot)$  is unconstrained, the identification condition is that elements of  $X_i$  cannot be collinear with any function of remittances. This means that an intercept term cannot be identified in a partially linear model and is excluded from it. Model (6.1) can be estimated semiparametrically using the method of Robinson (1988).

The issue of parameter heterogeneity is very important in a cross-country empirical study to make the analysis more policy relevant. This is more of a concern when it comes to the functioning of financial institutions across countries and providing a wide array of financial products and services to the diverse population.

Our empirical analysis focuses on the semiparametric partially linear model (Li and Racine 2007; Robinson 1988) because this approach allows us to study the nonlinearity and heterogeneity in partial effects of remittances on financial inclusion across a large cross-section of countries. Since we do not have enough data to apply a fully nonparametric model, the partially linear model appears to be a useful choice to deal with the unknown functional form in Eq. (6.1) with respect to remittances. Another major benefit of using the partially linear model is that it can also handle the dummy explanatory variables included in the model.

One strong assumption we are willing to make in terms of Model (6.1) is that no reverse causality exists from financial inclusion to remittance inflows. Our assumption is based on the fact that many poor countries with extremely limited access to financial services are also the top recipients of remittances. For example, as a share of GDP, in 2011 Tajikistan was the largest recipient of remittances that accounted for 47% of its GDP; but according to the Global Findex, in the same year only 2.5% of Tajik people aged 15 or above had access to a bank account. Similar situations are found to exist in many other top remittance-receiving countries including Kyrgyz Republic (only 3.7% people had access to a bank account in 2011), Egypt, Moldova, and Haiti. As such, it does not seem realistic to believe that a country with higher level of financial inclusion will receive a large inflow of remittances.

Finally, since we also estimate parametric versions of the partially linear model (6.1), we use the estimates from the linear models as robustness checks to our estimated coefficients from the semiparametric estimation. The traditional method may also help us compare our results directly with those in the literature.

## 6.3 Data

### 6.3.1 Description of Variables and Sources

The data on financial inclusion variables come from the World Bank Global Financial Inclusion (The Global Findex) database for 2011 (Demircuc-Kunt et al. 2011). In our analysis, formal financial institutions refer to a bank, credit union, another financial institution (e.g., cooperative, microfinance institution), or the post office (if applicable). We estimate model (6.1) by controlling for a set of key socio-economic, financial, and legal origin variables represented by the matrix  $X$  that the literature has found more relevant to inclusive finance (Anzoategui et al. 2014).

Our response variables represent two key aspects of financial inclusion: “access” and “usage” of formal financial services. In general, access and usage are considered to be the two most basic dimensions of financial inclusion. Access refers to the ability to use the services and products offered by formal financial institutions. Determining levels of access may require identifying and analyzing potential barriers to opening and using a bank account. Rather than using any intangible

measures of access, we use the “percentage of respondents having an account at a formal financial institution” within a country to incorporate the access dimension in our measure of financial inclusion.

Similarly, usage refers to the depth or extent of financial services and product use. Determining usage requires gathering details about the regularity, frequency and duration of use over time (Demirguc-Kunt and Klapper 2013). With respect to the usage dimension, we use two separate measures of the use of financial services in each country: (1) the “percentage of respondents who report saving or setting aside any money by using an account at a formal financial institution in the past 12 months” and (2) the “percentage of respondents who report borrowing any money from a formal financial institution in the past 12 months”. For all of the three measures of financial inclusion described above, we will use (1) the aggregated data for each country in our dataset, and (2) the disaggregated data for the rural sector of each of those countries.

The control variables designated by matrix  $X$  in Eq.(6.1) include real GDP per capita (in constant US\$ 2010), school enrollment (primary school enrollment (% of gross)), population density (people per square kilometer of land area), bank branches (commercial bank branches, per 100,000 adults), private credit (domestic credit to private sector (% of GDP)), and mobile subscription (mobile cellular subscriptions, per 100 people). These variables representing the prevailing socio-economic and financial situation within a country come from *World Development Indicators* (World Bank 2011).

The variable of interest is the inflow of remittances (personal remittances, received (% of GDP)). Remittances are defined as the sum of worker’s remittances, compensation of employees, and migrant’s transfers in the balance of payments of the recipient country. The aggregated data for remittances also come from WDI. The variables representing country specific characteristics include legal origin variables (defined in terms of binary variables for British common law, Socialist/Communist laws, and French, Germany, and Scandinavian commercial codes) and religion variables (defined as the percentage of the population in a country that belongs to a given religion). Both legal origin and religion variables are obtained from the Center for International Development at Harvard University (CID).

Our cross-sectional dataset consists of 107 countries based on the availability of data on remittances. A detail description of the data and variables is included in Table 6.1. The dataset is available from the author upon request.

### 6.3.2 *Indexes of Financial Inclusion*

The dependent variable “financial inclusion” in our regression model given by Eq. (6.1) is computed using the approach similar to the ones adopted by the United Nations Development Programme (2016 HDR 2016) for the computation of some well-known development indexes such as HDI (Human Development Index) and HPI (Human Poverty Index). Accordingly, the index of financial inclusion (IFI) for

**Table 6.1** Variable description, sources, and summary statistics

Variable	Description	Source	Mean	Std. Dev.
Deposit account	% of respondents having an account at a formal financial institution (FI)	Global Findex	45.86	32.06
Deposit account rural	% of respondents having an account at a formal financial institution (FI), rural	Global Findex	43.08	32.89
Reported saving	% of respondents who reported saving by using an account in the past 12 months	Global Findex	18.36	16.26
Reported saving rural	% of respondents who reported saving by using an account in the past 12 months, rural	Global Findex	16.90	16.31
Reported borrowing	% of respondents who reported borrowing from a FI in the past 12 months	Global Findex	9.86	6.20
Reported borrowing rural	% of respondents who reported borrowing from a FI in the past 12 months	Global Findex	9.92	6.88
Remittances	Personal remittances, received (% of GDP)	WDI	4.40	7.03
GDP per capita (in log)	GDP per capita (constant 2010 US\$)	WDI	3.67	0.67
Population density	People per sq. km. of land area	WDI	140.14	197.76
School enrollment	Primary school enrollment (% of gross)	WDI	105.30	13.66
Bank branches	Commercial bank branches (per 100,000 adults)	WDI	19.05	18.66
Private credit	Domestic credit to private sector (% of GDP)	WDI	55.98	47.18
Mobile subscription	Mobile cellular subscriptions (per 100 people)	WDI	96.65	37.00
Legal origin (British)	Binary variable for British common law	CID	0.24	0.43
Legal origin (Socialist)	Binary variable for Socialist common law	CID	0.21	0.41
Legal origin (German)	Binary variable for German common law	CID	0.02	0.16
Legal origin (French)	Binary variable for French common law	CID	0.48	0.50
Legal origin (Scandinavian)	Binary variable for Scandinavian common law	CID	0.02	0.16
Catholic	% of the population that belongs to Catholic (1980)	CID	33.59	38.09
Muslim	% of the population that belongs to Muslim (1980)	CID	24.27	35.80
Protestant	% of the population that belongs to Protestant (1980)	CID	8.86	17.68
Other denominations	% of the population that belongs to other religions (1980)	CID	33.26	32.78

Original data values reported. # Obs: 107

each country can be computed first by calculating a dimension index,  $d_i$ , for a given dimension of financial inclusion as

$$d_i = \frac{A_i - m_i}{M_i - m_i}; \quad 0 \leq d_i \leq 1. \quad (6.2)$$

where,  $i = 1, 2, \dots, n$ ;  $A_i$  =actual value of dimension  $i$ ;  $m_i$  =lower limit for dimension  $i$ , given by the observed minimum for dimension  $i$ ;  $M_i$  =upper limit for dimension  $i$ , given by the observed maximum for dimension  $i$ . However, in our analysis, we will consider the lower 5% decile value for  $m_i$  and the upper 95% decile value for  $M_i$  to minimize the effects of outliers on the parameter estimates.

After calculating the dimension indexes,  $d_i$ , for various dimensions of financial inclusion in a country, the comprehensive index of financial inclusion (IFI) for the country,  $i$ , can be constructed by the following procedure:

$$IFI_i = 1 - \frac{\sqrt{(1 - d_1)^2 + (1 - d_2)^2 + \dots + (1 - d_n)^2}}{\sqrt{n}}; \quad (6.3)$$

$$0 \leq IFI_i \leq 1.$$

Finally, to ensure that the index ranges from  $-\infty$  to  $+\infty$  while still preserving the order, the “financial inclusion” index can be derived from Eq. (6.3) as

$$Financial\ inclusion_i = \ln\left(\frac{IFI_i}{1 - IFI_i}\right) \quad (6.4)$$

In the present analysis, however, we consider three different indicators of formal financial services separately, rather than a composite index of overall financial inclusion for a given country. For a single indicator of a financial product or service, it does not matter whether we use a dimension index obtained from Eq. (6.2) or employ the value of the index derived from Eq. (6.4). Since we would lose some data points while taking square roots or natural logarithms through Eqs. (6.3)–(6.4), we will pick up the indexes given by Eq. (6.2) directly for each of the three dimensions of financial inclusion described in Sect. 6.1.

## 6.4 Empirical Findings

### 6.4.1 Semiparametric Estimates

Tables 6.2 and 6.3 present the results of estimating the semiparametric partially linear model (6.1). All models in this section are estimated in R (Racine 2009) using the local-linear estimator and second-order Gaussian Kernel.

In Table 6.2, columns (2) and (3) report the estimates for both parametric component and nonparametric component respectively of estimating model (6.1)

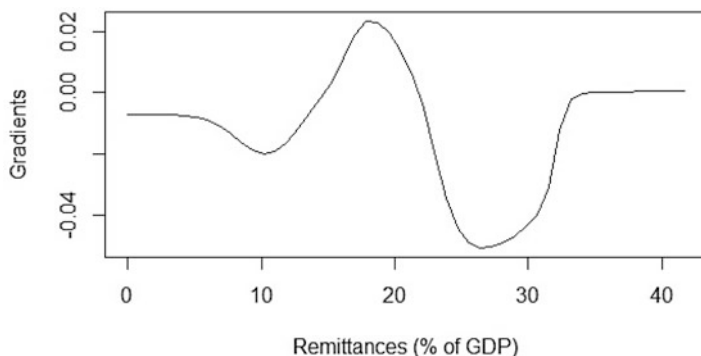


**Table 6.2** Remittances and financial services: semiparametric regressions

Variable	Bank account		Reported saving		Reported borrowing	
	Linear	Nonlinear	Linear	Nonlinear	Linear	Nonlinear
Remittances		-0.00708 (0.00361)		-0.00327 (0.00082)		0.04266 (0.01397)
Real GDP per capita	0.32473 (0.03555)		0.26787 (0.04047)		0.14460 (0.05534)	
Population density	0.00025 (0.00007)		0.00027 (0.00008)		0.00012 (0.00011)	
School enrollment	0.00093 (0.00117)		0.00105 (0.00133)		0.00315 (0.00182)	
Bank branches	0.00313 (0.00104)		0.00158 (0.00119)		0.00224 (0.00163)	
Legal origin (Socialist)	0.02259 (0.04714)		-0.26728 (0.05366)		-0.00945 (0.07337)	
Legal origin (French)	-0.11702 (0.03752)		-0.19448 (0.04271)		-0.17344 (0.05840)	
Legal origin (German)	0.10752 (0.09427)		0.1820 (0.01073)		-0.18811 (0.14673)	
Legal origin (Scandinavian)	0.17185 (0.09636)		0.39047 (0.01096)		0.38274 (0.14999)	
Number of observations	107		107		107	
R <sup>2</sup>	0.83		0.74		0.46	

Notes: Bootstrap standard errors in parentheses. Remittances represent the nonlinear component in all semiparametric regressions. Only the median value (50th percentile) from the distribution of estimated partial coefficients on remittances are reported

for bank account as a response variable, along with their corresponding bootstrap standard errors. The high value of the model fit (i.e., R-squared = 0.83) indicates that our empirical model is well-specified, and is able to explain much of the variation in the dependent variable. Looking at the nonparametric component, we find that the coefficient estimate on remittances is negative and statistically significant (at typical 5% level of significance). Although all quartile coefficient estimates are negative and significant, we report only the median (50th percentile) value from the distribution of parameter estimates with respect to remittances. However, the entire partial effects of remittances across remittance-receiving countries are presented graphically in Fig. 6.1. The result suggests that remittances lead to a significant decline in the demand for deposit accounts from formal financial institutions, and there is substantial heterogeneity in their effects across countries. In particular, the partial effects of remittances on the demand for deposit accounts appear to be negative and statistically significant at the low and high levels of remittances (measured as a share of GDP), but they are found to be positive in between.



**Fig. 6.1** Semiparametric estimates of remittances for bank accounts: partial effects of remittances

Since higher level of income (or of economic development) is often associated with developed financial system (Aggarwal et al. 2011), the positive and statistically significant impact of real GDP per capita on bank accounts is expected. Similarly, both higher population density and greater number of commercial bank branches have a positive and significant impact on households' demand for bank accounts as expected. The school enrollment (a proxy for education/literacy) appears with a positive estimate, but it is not statistically significant (in contrast, Anzoategui et al. (2014) find a positive and significant impact of an educational variable on bank accounts). Whereas the French legal dummy has a negative and significant coefficient estimate, the Scandinavian dummy has a positive and statistically significant impact on having a formal account, both of which are expected outcomes. We find, in essence, that these results hold across all of our model specifications, both parametric and semiparametric, and that they are fully consistent with the findings in the development/finance literature.

In this study, we are primarily interested in examining the impact of remittances on the key accessibility as well as usage dimensions of financial inclusion separately across the recipient countries. Columns (4)–(7) report the model estimates when reported saving and reported borrowing are the dependent variable respectively. In column (5), remittance inflows are found to have a negative and statistically significant impact on the reported frequency of individual saving by using an account at formal institutions; in column (7), these inflows are found to have a positive and statistically significant effect on the reported frequency of individual borrowing from formal institutions.

It is interesting to see whether the choice of data dimension makes any difference. Moreover, given the possibility that the rural sector is the birth place of many migrants, it is useful to look closely at the relationship between remittances and the demand for financial services in the rural sector of the economy. This analysis is expected to shed light on the difference in financial behavior of households in the rural region from that of the aggregate economy. In Table 6.3, we estimate the semiparametric model (6.1) using the data for the rural sector across remittance-

**Table 6.3** Remittances and financial services: semiparametric regressions (rural sector only)

Variable	Bank account rural		Reported saving rural		Reported borrowing rural	
	Linear	Nonlinear	Linear	Nonlinear	Linear	Nonlinear
Remittances		−0.01033 (0.00351)		−0.00532 (0.0009)		0.04498 (0.02336)
Real GDP per capita	0.30528 (0.03788)		0.25085 (0.04108)		0.11836 (0.05852)	
Population density	0.00025 (0.00008)		0.00030 (0.00008)		0.00020 (0.00012)	
School enrollment	0.00092 (0.00125)		0.00105 (0.00135)		0.00350 (0.00193)	
Bank branches	0.00379 (0.00111)		0.00178 (0.00121)		0.00311 (0.00172)	
Legal origin (Socialist)	0.01135 (0.05023)		−0.23654 (0.05447)		−0.01751 (0.07760)	
Legal origin (French)	−0.11397 (0.03998)		−0.17135 (0.04336)		−0.17507 (0.06176)	
Legal origin (German)	0.11367 (0.10045)		0.16671 (0.10893)		−0.20070 (0.15518)	
Legal origin (Scandinavian)	0.20649 (0.10268)		0.44260 (0.11135)		0.35905 (0.15863)	
Number of observations	107		107		107	
R <sup>2</sup>	0.81		0.73		0.42	

Notes: Bootstrap standard errors in parentheses. Remittances represent the nonlinear component in all semiparametric regressions. Only the median value (50th percentile) from the distribution of estimated partial coefficients on remittances are reported

receiving countries. We find that the results from this sectoral analysis are not essentially different from what we have found for the aggregate economy. While these results contradict with the findings of Anzoategui et al. (2014), we believe it is convenient to perform usual parametric analysis as robustness checks before drawing further conclusion, which we will carry out in the next section.

### 6.4.2 Parametric Estimates

To strengthen our understanding of the potentially differential impacts of remittances across various financial products and services, we now ignore the notion of

nonlinearity and heterogeneity in partial effects of remittances across countries, and pursue linear parametric estimation of the model (6.1). The resulting OLS estimates are presented in Tables 6.4 and 6.5.

From columns (2–7) in Table 6.4, we find that while the estimates on all control variables appear with expected sign and significance in almost every case, the linear estimates with remittances are found to be negative and statistically significant only in the model of bank accounts, thereby supporting the evidence that remittance inflows produce adverse effects on financial inclusion through their negative impacts on the households' demand for or use of deposit instruments from formal institutions. The fit of the model remains higher and the estimates for both the aggregate economy and the rural sector are virtually identical. What these findings tend to suggest is that although the effect of remittances could be homogeneous across different regions within each country, they do not behave in the same fashion across a variety of financial products and services offered by formal institutions. This becomes evident when we compare the resulting estimates on remittances in Table 6.4 with Tables 6.2 and 6.3. Whereas, for the model of bank accounts, both semiparametric and parametric coefficient estimates for remittances are negative and statistically significant; for the models of reported saving and reported borrowing, the linear estimates may or may not even retain their signs but lose their statistical significance at all practical levels of convenience. Moreover, the value of R-squared appears to decline significantly when the dependent variable is reported borrowing.

In Table 6.5, we report estimates for the variations in linear model specification. Following the literature, we first replace the legal dummy variables by religion variables (Abdih et al. 2012), and present the results in column (2). The outcomes from this estimation do not indicate any change in earlier scenarios. The estimates associated with remittances are still statistically significant, all coming up with a negative sign. We employ mobile subscription (per 100 people) as a proxy for infrastructural development by replacing the real GDP per capita in column (3), and as a proxy for financial sector development, we employ private credit (domestic credit to private sector (% of GDP) by replacing the bank branches variable in column (4). The results show that both of these variables have a positive and statistically significant impact on the demand for deposit accounts as expected. When we employ religion variables instead of legal dummies in column (5), along with private credit and mobile subscription as explanatory variables in the specification, we find no change in estimation results.

Taken together, our empirical findings evidently suggest that remittance inflows do influence financial inclusion across the remittance-receiving countries. This effect, however, tends to rely on the choice of financial instruments rather than sectoral differences within an economy. Nonetheless, the findings from our empirical study are in contrary to the results of Anzoategui et al. (2014) who use household-level survey data for El Salvador to examine the impact of remittances on financial inclusion. They show that remittances promote the use of deposit accounts, but these transfers do not have a significant effect on the demand for and use of credits

Table 6.4 Parametric regressions: OLS estimates

Variable	Bank account		Reported saving		Reported borrowing	
	Aggregate	Rural	Aggregate	Rural	Aggregate	Rural
Remittances	-0.00525*** (0.00181)	-0.00493** (0.00194)	-0.00118 (0.00166)	-0.00156 (0.00183)	-0.00251 (0.00270)	-0.00330 (0.00288)
Real GDP per capita	0.34865*** (0.03381)	0.33307*** (0.03832)	0.26680*** (0.04794)	0.25097*** (0.05120)	0.11086** (0.05016)	0.09062* (0.05196)
Population density	0.00025*** (0.00006)	0.00025*** (0.00008)	0.00027*** (0.00009)	0.00029*** (0.00009)	0.00027 (0.00017)	0.00030 (0.00018)
School enrollment	0.00132 (0.00087)	0.00129 (0.00089)	0.00071 (0.00099)	0.00071 (0.00097)	0.00306** (0.00122)	0.00335*** (0.00125)
Bank branches	0.00317** (0.00124)	0.00381*** (0.00136)	0.00167 (0.00139)	0.00188 (0.00145)	0.00323 (0.00195)	0.00377** (0.00200)
Legal origin (Socialist)	-0.01575 (0.04929)	-0.02663 (0.05029)	-0.25354*** (0.05598)	-0.22205*** (0.05700)	0.00927 (0.07949)	0.00846 (0.08662)
Legal origin (French)	-0.13639*** (0.03202)	-0.13328*** (0.03358)	-0.19061*** (0.04682)	-0.17067*** (0.04694)	-0.16957*** (0.06185)	-0.17404** (0.06608)
Legal origin (German)	0.08685* (0.04975)	0.09566 (0.05855)	0.19017** (0.07480)	0.17361 (0.10734)	-0.21116 (0.15483)	-0.21311 (0.14540)
Legal origin (Scandinavian)	0.13488** (0.05278)	0.16819*** (0.05669)	0.38708*** (0.08836)	0.44022*** (0.09955)	0.40555*** (0.12540)	0.37294*** (0.12132)
Constant	-0.98093*** (0.15715)	-0.95780*** (0.17206)	-0.65301*** (0.21010)	-0.64560*** (0.21903)	-0.34759* (0.19915)	-0.32695 (0.19969)
Number of observations	107	107	107	107	107	107
R <sup>2</sup>	0.83	0.81	0.74	0.72	0.38	0.36

Notes: Robust standard errors in parentheses. 'Aggregate' represents the given variable/data for a country as a whole, whereas 'rural' represents the variable/data only for the rural sector

**Table 6.5** Variations in parametric regression: robustness checks

Variable/model	Dependent variable: bank account				
	(1)	(2)	(3)	(4)	(5)
Remittances	-0.00353* (0.00182)	-0.00517*** (0.00190)	-0.01250*** (0.00235)	-0.01237*** (0.00230)	-0.00972*** (0.00234)
Real GDP per capita	0.36969*** (0.02949)	0.34268*** (0.03169)			
Population density	0.00028*** (0.00004)	0.00022*** (0.00006)	0.00031*** (0.00011)	0.00023** (0.00009)	0.00024*** (0.00008)
School enrollment	0.00030 (0.00092)	0.00172** (0.00082)	-0.00032 (0.00113)	0.00071 (0.00102)	-0.00103 (0.00125)
Bank branches	0.00286** (0.00123)		0.00837*** (0.00146)		
Private credit		0.00149*** (0.00046)		0.00373*** (0.00060)	0.00342*** (0.00054)
Mobile subscription			0.00226*** (0.00066)	0.00196*** (0.00067)	0.00249*** (0.00062)
Legal origin (Socialist)		0.03211 (0.05307)	-0.03959 (0.07151)	0.09172 (0.07612)	

Legal origin (French)		-0.09315*** (0.03170)	-0.15353*** (0.04646)	-0.04101 (0.04310)	
Legal origin (German)		0.01843 (0.05607)	0.27253*** (0.06280)	0.10193 (0.09428)	
Legal origin (Scandinavian)		0.07090 (0.06356)	0.33673*** (0.07377)	0.18127* (0.10667)	
Catholic	-0.00333*** (0.00079)				-0.00195* (0.00107)
Muslim	-0.00327*** (0.00076)				-0.00309*** (0.00112)
Other denominations	-0.00162** (0.00077)				-0.00217* (0.00114)
Constant	-0.77375*** (0.16613)	-1.04803*** (0.13253)	0.18454 (0.14538)	-0.00953 (0.12289)	0.34895* (0.18695)
Number of observations	107	107	107	107	107
R <sup>2</sup>	0.84	0.84	0.68	0.68	0.67

Notes: Robust standard errors in parentheses. Consistent with the findings in the literature, our results are robust to replacing legal origin variables by religion variables

from formal financial institutions. This discrepancy in results could have emerged either due to the differences in country-specific characteristics or because of the differences in data dimensions.

Finally, it seems very plausible that the recipient of remittance transfers in many countries might be attracted more toward informal financing methods. Demirguc-Kunt and Klapper (2013) claim that the use of informal and community-based saving methods (e.g., rotating saving clubs) are very widespread (such as in Cameroon, Nigeria, and Kenya). When individuals receive persistent remittance inflows, the informal means of saving might have become more popular than formal methods, thereby causing a decline in the demand for or use of deposit instruments. Moreover, rather than demanding deposit accounts from banks and other formal institutions, remittance-recipients might have loaned out the monies informally to their relatives, friends, or even neighbors with the hope of getting higher returns as formal banks usually pay a very low rate of interest on deposits. In addition, the increasing costs of remittance transfers through formal system and the burdensome regulations imposed by many migrant sending and destination countries might have created disincentives toward the households' demand for formal financial services in these countries (De Koker and Jentzsch 2013).

## 6.5 Concluding Remarks

Broad-based access to affordable formal accounts is regarded as a hallmark of an inclusive financial system, the absence of which can contribute to persistent income inequality and slower economic growth (Demirguc-Kunt and Klapper 2013). In this essay, we have examined the potential association between remittances and financial inclusion in a large cross-section of remittance-receiving countries. In particular, we have analyzed whether remittance inflows promote the demand for and use of deposit accounts, savings, and credit by examining the effects of remittances on the indexes representing the fraction of individuals within a country who possess a deposit account, have saved a part of their income, and have borrowed money from formal financial institutions.

Our results show that remittances lead to a significant decline in the demand for deposit accounts from formal financial institutions, but they do not have a significant and robust effect on the demand for credit from these institutions. The results also show that remittances have no significant impact on the frequency of saving or setting money aside by using a formal account. These results are robust to using different methods of estimation and alternative model specifications. Furthermore, by considering the issue of parameter heterogeneity in the cross-section of countries and taking advantage of the semiparametric partially linear model that allows for nonlinearity, we find that there is substantial heterogeneity in partial effects of remittances on financial inclusion across countries. In particular, the partial effects of remittances on the demand for deposit accounts appear to be negative and



statistically significant at the low and high levels of remittances (measured as a share of GDP), but such effects are found to be positive in between these two extremes.

One key implication of our findings concerns the impact of remittances on financial sector development. Some authors argue that remittances enhance the financial sector size and efficiency through their interaction with the government ownership of banks (Cooray 2012). Our results suggest that remittance inflows can have a detrimental effect on financial sector development through their negative impacts on the households' access to and use of deposit accounts from formal financial institutions. This effect may arise either due to the increasing costs of transferring remittances through formal system, or because of the onerous regulations imposed by many migrant sending and destination countries, and also by the Financial Action Task Force (FATF) for Anti-Money Laundering and Combating Financing of Terrorism (AML/CFT) to increase financial transparency, all of which have created disincentives toward the use of formal services (De Koker and Jentzsch 2013). The popularity of informal and community-based saving methods (e.g., rotating saving clubs) in many African countries such as Cameroon, Nigeria, and Kenya may corroborate these findings. It seems, therefore, increasingly difficult to achieve the global goal of Universal Financial Access (UFA) by 2020 if no reforms are introduced to encourage both senders and receivers to channel remittances through the formal system.

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# Chapter 7

## The Impact of Democracy on the Transition Through the Middle Income Range



Whitney Buser and Joseph Connors

### 7.1 Introduction

Perhaps the most remarkable economic story during the past 30 years is the rapid growth of the developing world. Poverty rates declined significantly in China, India, and many other countries. Per capita GDP increased and continues to grow at a high rate in many countries, especially in China. The convergence hypothesis suggests that this growth will continue, but will slow as countries approach the income level of the developed world. Several recent papers question this view and suggest that the growth rate of many rapidly expanding countries will soon slow. This research suggests that there is a range along the income curve at which the growth rate of countries slows and does not increase until various structural reforms occur (Fatás and Mihov 2009). This research suggests two key components of the structural reform: democracy and economic freedom. It is argued that countries will be unable to increase per capita GDP beyond a particular threshold unless transitions to democracy occur. This paper empirically examines this assertion.

Eichengreen et al. (2011) find evidence that economic growth slows in rapidly developing countries when per capita income reaches approximately \$15,000–17,000 in PPP adjusted constant 2005 international dollars. They find little evidence that democratic reforms are needed to transition past this income threshold. However, they do indicate that countries more open to international trade maintain higher growth rates during this transition period. Fatás and Mihov (2009) refer

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to this income barrier as a “Great Wall” and argue that market based reforms are needed to transition to higher income levels. They suggest that the income threshold is closer to \$12,000, lower than that found by Eichengreen et al. (2011).

Winiecki (2012) argues that democratic reforms are in fact necessary for a country to transition past this income threshold. He predicts that the growth rates of non-democratic countries will slow as they approach the threshold. Moreover, if structural democratic reforms do not occur, countries will be unable to transition past the income threshold. If correct, these views suggest that India, Brazil, and Chile will continue to develop at this per capita income level, but that China and Russia will not unless reforms take place.

This paper finds empirical support for this view. When countries approach the income threshold, those that are more democratic have a higher probability of crossing the threshold than those that are more autocratic.

## 7.2 Democracy, Economic Freedom, and Growth

Previous empirical research indicates that the relationship between political institutions and economic growth is weak (Tavares and Wacziarg 2001). However, there are compelling theoretical arguments that suggest a positive link between growth and democracy. In general, democracies have constitutional constraints on the exercise of government power, which limits the expropriation of private property. Such constraints strengthen property rights, reduce uncertainty, lead to increased rates of investment, and provide an environment more hospitable to entrepreneurship. This facilitates economic growth and prosperity. Weingast (1995) suggests that federalism, market preserving federalism specifically, is the important aspect of democracy that leads to economic growth. Buser (2011) also underscores the growth effects of market preserving institutions in federalism. More autocratic regimes do not have these constitutional protections and are more likely to have less secure property rights and hence lower growth rates and income levels.

Moreover, democracies are more stable over long time horizons because the transfer of power between competing groups and leaders is handled through an orderly and predefined process. This reduces the uncertainty accompanying long-term investments. While non-democratic regimes can be stable during a leader’s tenure, the transfer of power after their death or coup is often unstable. Protests, violence, and even civil wars are often the result. The uncertainty of future violence as well as the potential that future rulers will confiscate the property of those who oppose them can lead to decreased levels of investment, entrepreneurship, and lower growth rates.

However, there are also some adverse elements of democracy. Taxes that transfer income from taxpayers to non-taxpayers can reduce the incentive to work and invest. The democratic political process is susceptible to interest groups and rent seeking. Lastly, political decisions in democratic countries tend to be shortsighted. Policy choices that lead to immediate benefits with costs that materialize later are generally

preferred. Promising goodies in the short-run is a much easier way for politicians to win elections than pursuing long-term policy goals. These factors—transfers, interest group lobbying, and shortsightedness of the political process—lead to higher taxes or higher debt or sometimes both. This reduces the incentive to invest and discourages entrepreneurship. Autocratic regimes can, in theory, limit the effects of these factors. In practice, however, autocratic regimes may not be less susceptible to these factors.

These conflicting attributes of democracy may explain its weak statistical relationship with growth in the existing literature. Results from earlier empirical research, however, found a more robust relationship. For example Scully (1988) and Barro (1991) found that democracy had a significantly positive impact on growth. Using the Gastil index of political rights and civil liberties, which is now the Freedom House index, they found that more democratic countries had higher rates of economic growth. While this index is considered a measure of democracy, the authors used it primarily as a proxy for economic institutions as no such measure existed at the time. In later work, Barro (1997) found a non-linear relationship. Movements toward democracy were growth enhancing to a point, but growth reducing thereafter providing possible evidence for democracy's shortcomings.

More recent literature indicates that a weak relationship between democratic political institutions and growth is a result of accounting for the impact of economic freedom (Knack and Keefer 1995; Dawson 1998; Gwartney et al. 1999; Wu and Davis 1999). Economic institutions—e.g. economic freedom—are a significant determinant of long-run growth (Acemoglu et al. 2001; Berggren 2003; Hall and Lawson 2014). However, economic and political institutions are not necessarily distinct from one another. Recent empirical studies have found a statistically significant relationship between political and economic institutions. Lawson and Clark (2010) found preliminary evidence that movements toward economic freedom were related to a country's level of political freedom. Others found a statistically significant relationship between political and economic institutions with Granger causality tests (De Haan and Sturm 2003; Dawson 2003; Pitlik and Wirth 2003; Vega-Gordillo and Alvarez-Arce 2003; Aixalá and Fabro 2009). Farr et al. (1998) did not find a direct link between political and economic institutions. However, they indicated that economic freedom leads to higher income levels, which corresponds to increased political freedom. This result is consistent with Lipset (1959) who suggested that higher income levels would lead to increases in political freedom. While Rigobon and Rodrik (2005) used a different measure—a rule of law measure was used as a proxy for economic freedom—and a different estimation technique, they found that democratic political institutions had a positive impact on the rule of law. Taken as a whole, this literature suggests that political and economic institutions are interrelated.

This literature argues that institutions are important for long-run prosperity. This paper examines the argument of whether these institutions are necessary for countries to cross real per capita income thresholds ranging from \$8000 to \$15,000. Winiecki (2012) argues that economic freedom alone is not sufficient. Political freedom is also needed to transition to higher per capita income. Fatás and Mihov

(2009) make a similar argument. They construct a measure of good institutions that incorporates aspects of both economic freedom and democracy. With this index they argue that good institutions become important as countries approach this income threshold. This is tested in the following sections.

### 7.3 Empirical Framework

Prior research typically uses growth rates or the natural log of per capita GDP as the dependent variable. In this analysis the dependent variable is no longer continuous, but becomes a binary. Prior to crossing the threshold the dependent variable is zero. When a country crosses the threshold the dependent variable becomes one. Using this dependent variable the analysis is simple. Does democracy have any impact on the probability that a country crosses the per capita income threshold?

$$\text{AboveIncomeThreshold}_{it} = \alpha + \theta \text{Democracy}_{it-10} + \phi X_{it} + d_t + u_{it} \quad (7.1)$$

$$\text{AboveIncomeThreshold}_{it} = \alpha + \beta \Delta \text{Democracy}_{it} + \phi X_{it} + d_t + u_{it} \quad (7.2)$$

Due to the binary nature of the dependent variable, OLS regressions would be inappropriate. Therefore, these regressions use a probit model. Equations (7.1) and (7.2) are the primary equations in this analysis. The dependent variable is the binary described above. The subscript represents country,  $i$ , and period,  $t$ . The variable  $\text{Democracy}_{it-10}$  is the level of democracy at the start of the decade. The other control variables are contained in  $X_{it}$  and  $d_t$  represent the time dummies while  $u_{it}$  is the white noise error term. A variation of Eq. (7.1) was also used. Instead of the level of democracy, the average during the prior decade was used. For example, when examining the 1970s, the level regressions would use the democracy rating in 1970 while the regressions with averages would use the average during the 1960s. In Eq. (7.2) the institutional variable is no longer the level at the start of the decade, but the change during the current decade. Each equation investigates a slightly different aspect of the hypothesis. The first tests whether countries that are more democratic are more successful at crossing the income threshold. The second equation tests whether countries experiencing democratic transitions are more successful crossing the threshold.

Controlling which countries are included in this analysis is crucial. Once a country successfully crosses the income threshold it is dropped from the analysis in subsequent periods. The hypothesis is primarily concerned with factors that lead countries to cross the income threshold. When a country's income becomes high enough it is no longer relevant for the analysis. Countries at the lower end of the income spectrum are also excluded from the analysis. Only countries that can realistically cross the income threshold during the decade are included for that time period. This ensures that we have a reasonable sample of countries with which to test the hypothesis. There are three income thresholds tested in this analysis. The first is \$15,000 and is close to the threshold suggested by Eichengreen et al.

**Table 7.1** Summary statistic

Income level	Variable	Obs	Mean	St. Dev.	Min	Max
\$15,000	Initial democracy	70	0.19	8.14	-10	10
	Average democracy	50	0.21	8.24	-10	10
	Change in democracy	68	0.74	4.46	-14	16
\$10,000	Initial democracy	90	0.43	8.03	-10	10
	Average democracy	64	-0.43	7.77	-10	10
	Change in democracy	88	0.86	4.90	-14	18
\$8000	Initial democracy	96	0.46	7.94	-10	10
	Average democracy	67	-1.20	7.27	-10	10
	Change in democracy	94	0.55	4.80	-14	18
Controls	Tropicar	112,749	0.54	0.48	0	1
	Pop100 km	12,749	0.55	0.40	0	1
	Airdist	12,749	4.05	2.41	0	10

(2011).<sup>1</sup> The others are \$10,000 and \$8000. The lower income cut off for inclusion in the sample was calculated based upon an annual 3% real growth rate during the period. Countries with incomes above this cutoff could possibly transition across the threshold during the subsequent decade. For the thresholds of \$15,000, \$10,000, and \$8000 the lower cutoff is \$11,160, \$7441, and \$5952, respectively.

The income data is from the Penn World Tables. It is per capita income in PPP adjusted 2005 international dollars. The series is chain linked and spans the period 1950–2010. The measure of democracy comes from the Polity IV index. The polity index measures the degree to which a country is considered democratic or autocratic. Countries are rated on a scale from -10 to 10 with -10 indicating full autocracy and 10 full democracy. The data span the period 1950–2010.

The analysis also controls for the impact of geographic and locational factors. Gallup et al. (1999) demonstrated that various geographic factors impact economic outcomes. Three variables from that study are widely used in the literature and are included here. The first is the percentage of a country's population that lives within 100 km of the coast. This measure captures the ability of a particular country to access ports and sea routes and hence international markets. The second is the percentage of a country's land area in the tropics. This variable captures the harshness of the disease and agricultural environment. Temperate zones have a much lower incident of insect borne diseases and a more hospitable agricultural environment than do the tropics. The last variable is the closest air distance in kilometers from a country to one of three major markets: New York, Tokyo, or Rotterdam. This variable is designed to capture the ability of a country to access international markets. The cost of participating in these markets is higher when goods must be transported over a greater distance.

Table 7.1 lists the summary statistics for these variables. The statistics for the democracy variable is divided into three groups, one for each threshold. The

<sup>1</sup>The mean value of the threshold was \$16,740 while the median was \$15,058.

countries analyzed for each of the thresholds are slightly different. In general, the democracy statistics are similar across these three groups. The only noticeable difference is that the mean value for the average level of democracy during the decades is lower than the mean value for the level at the start of the decade. The results include additional discussion on this difference.

## 7.4 Results

Table 7.2 lists the probit regression results of the impact of the level of democracy on the probability of crossing the various income thresholds. The values for democracy were standardized for all regressions in this table. Therefore, the marginal change for the coefficients listed for the democracy variable are a change of one standard deviation. The unit of analysis here is a decade. Thus, the dependent variable is a one if the country crossed the income threshold during the decade. In this table the various sets of columns contain the results for thresholds \$15,000, \$10,000, and \$8000 respectively in constant 2005 international dollars.

The first two columns of Table 7.2 contain regressions where the primary variable of interest is the standardized Polity IV democracy index at the start of the decade. In each regression the democracy measure is positive and significant at the 5% level. A

**Table 7.2** The impact of the initial level of democracy on the probability of crossing a per capita income thresholds (probit), 1950–2010

Dependent variable: Binary indicating per capita income above threshold						
Independent variable	\$15k		\$10k		\$8k	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy rating, prior decade	0.65** (0.26)	0.64** (0.28)	0.58*** (0.21)	0.53** (0.22)	0.54*** (0.18)	0.50*** (0.18)
Tropical location (% area in tropics)	-1.71** (0.80)	-1.69** (0.77)	-2.21*** (0.60)	-2.15*** (0.58)	-0.97** (0.39)	-0.94** (0.39)
Coastal population (% within 100 km)	1.05* (0.55)	1.05* (0.56)	0.95* (0.49)	0.97** (0.49)	1.39*** (0.40)	1.48*** (0.42)
Distance to markets <sup>a</sup>	-0.06 (0.07)	-0.06 (0.07)	-0.07 (0.07)	-0.07 (0.07)	-0.13 (0.06)**	-0.14 (0.06)**
Region dummies	No	Yes	No	Yes	No	Yes
R <sup>2</sup> (adjusted)	0.60	0.60	0.38	0.39	0.38	0.38
No. of observations	70	70	90	90	96	96

Notes: All regressions include time dummies

Heteroskedastic robust standard errors clustered by country are listed in parenthesis

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively

<sup>a</sup>The minimum air distance in thousands of kilometers from a country to any one of the following major markets: New York, Tokyo, or Rotterdam



one standard deviation higher polity index at the beginning of the decade increases the z-score of crossing the \$15,000 income threshold by 0.65 and 0.64, respectively.

The signs of the three geographic and locational variables are consistent with economic theory, but not all are significant. The tropical location variable is negative and significant at the 1% level indicating that countries in tropical regions have a much lower probability of crossing the income threshold. The variable for the percentage of the population within 100 km of the coast is positive and significant at the 10% level. Countries closer to navigable water ways have easier access to trade routes and are better able to take advantage of the gains from trade. The air distance to major international markets is negative, but not significant. Each regression includes time dummies for each decade and the standard errors listed are robust to heteroskedasticity and clustered by country.

The next two sets of columns in Table 7.2 display the results for the lower thresholds. The level of democracy is significant at the 1% level in all regressions, but one, which is significant at the 5% level. The coefficients on the level of democracy are similar. Each indicates that a one standard deviation higher democracy rating increases the probability of crossing the income threshold.

Table 7.3 is similar to Table 7.2 except that the average democracy rating in the prior decade is used instead of the level at the start of the decade. The results are similar, but much less significant. The results for the \$15,000 threshold indicate that a higher average level of democracy increases the probability of crossing. However, the results for the \$10,000 and \$8000 threshold, while positive, are insignificant.

**Table 7.3** The impact of the average level of democracy in the prior decade on the probability of crossing various per capita income thresholds (probit), 1950–2010

Dependent variable: Binary indicating per capita income above threshold						
Independent variable	\$15k		\$10k		\$8k	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy rating, prior decade average	1.09*** (0.33)	1.09*** (0.34)	0.16 (0.23)	0.17 (0.23)	0.28 (0.25)	0.28 (0.25)
Tropical location (% area in tropics)	-3.64*** (1.39)	-3.64*** (1.36)	-1.98*** (0.53)	-2.00*** (0.55)	-0.75* (0.41)	-0.76* (0.42)
Coastal population (% within 100 km)	1.60*** (0.61)	1.60*** (0.61)	1.08* (0.59)	1.09* (0.60)	1.90*** (0.49)	1.91* (0.49)
Distance to markets <sup>a</sup>	0.32** (0.16)	0.32** (0.16)	-0.09 (0.09)	-0.09 (0.09)	-0.14** (0.07)	-0.14** (0.07)
Region dummies	No	Yes	No	Yes	No	Yes
R <sup>2</sup> (adjusted)	0.67	0.67	0.32	0.32	0.39	0.39
No. of observations	50	50	64	64	67	67

Notes: All regressions include time dummies

Heteroskedastic robust standard errors clustered by country are listed in parenthesis

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively

<sup>a</sup>The minimum air distance in thousands of kilometers from a country to any one of the following major markets: New York, Tokyo, or Rotterdam

One interpretation of these results is that the average level of democracy appears to have a much smaller impact on the probability of crossing the income threshold. An alternative interpretation is that it is easier to cross the lower income thresholds. Therefore, democracy is less important for achieving growth at lower income levels. This interpretation is consistent with the results of the first table. With lower income thresholds the probabilistic impact of democracy is lower. An additional factor that may influence these results is low average level of democracy for the \$10k and \$8k threshold group. The summary statistics highlight this data anomaly. The mean level of democracy for these two groups in the prior decade is lower than the level at the start of the decade. This suggests that countries with lower income levels, on average, have lower average levels of democracy and that democracy is less important for the lower income thresholds.

Instead of the level, the focus of Table 7.4 is on changes in democracy. The first two columns list the impact of changes in democracy on the probability of crossing the income threshold during the same decade. Thus, in this specification the change in democracy measure is for the contemporaneous decade. The change in democracy variable not significant in any of the specifications. The only consistent result is the significance of the level of democracy. Again, the results indicate that the higher the level of democracy at the beginning of the period, the higher the probability of crossing the threshold. The insignificance of the change variable could be a result of

**Table 7.4** The impact of a change in democracy on the probability of crossing various per capita income thresholds (probit), 1950–2010

Dependent variable: Binary indicating per capita income above threshold						
Independent variable	\$15K		\$10K		\$8K	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	-0.05	0.26	-0.15	-0.06	-0.25	-0.14
10 year change	(0.18)	(0.20)	(0.17)	(0.16)	(0.15)	(0.14)
Democracy rating, prior decade		0.73 *** (0.28)		0.58 *** (0.21)		0.52 *** (0.18)
Tropical location (% area in tropics)	-2.00*** (0.52)	-1.46* (0.81)	-2.20*** (0.46)	-2.20*** (0.58)	-1.04** (0.42)	-1.02** (0.42)
Coastal population (% within 100 km)	1.38*** (0.49)	0.84 (0.52)	1.21** (0.49)	0.84* (0.51)	1.64*** (0.42)	1.34*** (0.41)
Distance to markets <sup>a</sup>	-0.09 (0.07)	-0.05 (0.06)	-0.09 (0.07)	-0.08 (0.07)	-0.15*** (0.05)	-0.14** (0.06)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (adjusted)	0.50	0.60	0.31	0.38	0.31	0.38
No. of observations	68	68	88	88	94	94

Notes: All regressions include time dummies

Heteroskedastic robust standard errors clustered by country are listed in parenthesis

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively

<sup>a</sup>The minimum air distance in thousands of kilometers from a country to any one of the following major markets: New York, Tokyo, or Rotterdam

the slow impact of changes in institutions. One would expect that an improvement in democratic institutions would take time to have a measurable effect on economic outcomes.

## 7.5 Conclusion

The hypothesis that political reforms facilitate a transition past various per capita income thresholds is supported by these results. Countries that are more democratic have a higher probability of crossing the income threshold in a decade than countries that are less democratic. Interestingly, the importance of democracy is less significant the lower the income threshold. This suggests that institutional changes become more important for increased per capita income growth.

There are important implications associated with this hypothesis. China and India are rapidly approaching the income threshold. China will reach this income threshold at the end of the current decade, before India. However, if this hypothesis is correct then Chinese growth will stagnate and India will have a higher probability of crossing the threshold and continuing the convergence process than China.

This research can also be extended in two ways. First, this analysis did not control for or exclude oil rich countries. Many of these countries are autocratic, yet have high per capita income. This high income level is a result of oil wealth and is generally not a reflection of the average income level of the typical citizen. Removing these countries from the analysis will most likely strengthen the impact of democracy.

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# Chapter 8

## Religion and AIDS in Sub-Saharan Africa: Unbundling Religious Institutions



Amanda Mandzik and Andrew T. Young

### 8.1 Introduction

An estimated 34 million people suffer from HIV worldwide, and although the sub-Saharan African region accounts for only 12% of the global population, 68% of HIV positive individuals reside in sub-Saharan Africa (Joint United Nations Programme on HIV/AIDS and others 2011). In 2010 alone, AIDS claimed 1.2 million lives in sub-Saharan African countries (International HIV & AIDS Charity 2011). The loss of life and health is especially destructive to a region of the world that is characterized by a lack of economic development.

HIV is neither an airborne nor a waterborne virus, and unlike other devastating viruses (e.g., Malaria), HIV does not transmit across human populations via contact with other species.<sup>1</sup> The evolution of the HIV/AIDS pandemic is, therefore, almost exclusively determined by human interactions. The institutions governing those interactions are therefore of first-order importance to understanding the pandemic. As the “rules of the game in a society” (North 1989), institutions shape the incentives—the relative costs and benefits—that individuals face in deciding how to act and interact with others.

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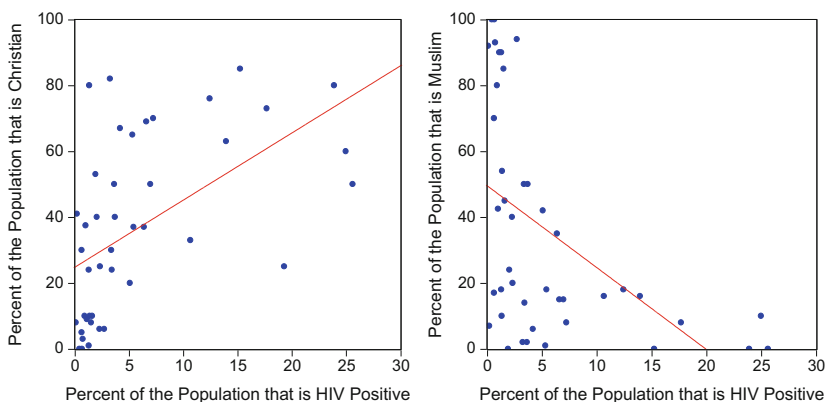
<sup>1</sup>It is commonly believed that HIV did initially jump the species barrier in Western or Central Africa to the human population from another primate species.

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Religions represent particular bundles of institutions, and this paper explores the role of religions in the sub-Saharan HIV/AIDS pandemic. There are compelling prima facie reasons to believe that religious institutions are critical to understanding this pandemic. Figure 8.1 plots, using data from the year 2000, HIV prevalence rates against, separately, Christian and Muslim population shares. Christianity positively correlates with HIV rates while Islam negatively correlates with HIV rates. Best-fit OLS regression lines are included in Table 8.1 and the estimates of the slopes are both statistically significant at the 1% level. Eyeballing the scatter plots suggests that the relationships may be log-linear and columns 1 and 2 of Table 8.1 report the



**Fig. 8.1** Relationship between Sub-Saharan HIV prevalence and religious affiliation. Notes: panels plots HIV prevalence rates against the rates of Christian (left) and Muslim (right) religious affiliation. OLS best-fit regression lines are included in each graph. HIV prevalence is the 2000–2009 average % of people ages 15–49 infected. Muslim % of population from the *CIA Factbook*, 1990–2009 average (based on availability of yearly data)

**Table 8.1** Preliminary pooled regressions of (log) Sub-Saharan HIV rates on religious affiliation

	(1)	(2)	(3)
log(CHRISTIAN+1)	0.470*** (0.071)		0.351*** (0.113)
log(MUSLIM+1)		-0.355*** (0.075)	-0.135 (0.119)
Constant	-0.073 (0.214)	2.433*** (0.276)	0.664 (0.683)
F-statistic		–	31.372***
R <sup>2</sup>	0.383	0.329	0.436
Countries	43	42	42
Observations	86	84	84

Notes: White HAC-consistent standard errors are in parentheses and \*, \*\*, \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively. F-statistic is for a test of joint insignificance of the regressors

bivariate regression results.<sup>2</sup> The  $R^2$ s are both greater than 0.340. Either religion variable accounts for more than a third of the variation in sub-Saharan cross-country HIV rates. Column 3 of Table 8.1 reports results from a regression of HIV rates on both religious variables. The coefficient estimates are again positive for the Christian share, negative for Muslim share, and statistically significant in both cases (though now at the 10% level in the case of Muslim).

Neither religion (at least in its major variants) is known to explicitly advocate “high risk” behavior such as intravenous drug use, prostitution, promiscuity, or homosexuality.<sup>3</sup> The puzzle, then, is how these respective frameworks structure human interactions and lead, directly or indirectly, towards relatively higher or lower occurrences of infection. In other words, we seek to unbundle Christianity and Islam in a way that identifies institutional components (e.g., sexual norms) that are likely to affect the relative rates of HIV infection.<sup>4</sup> Having done so, we construct a panel of data on up to 43 sub-Saharan African countries that includes proxies for these institutional components. Using this data, we attempt to empirically assess which of these are important determinants of cross-country variation in sub-Saharan HIV rates. In doing so we include various additional controls that are suggested by the literature: population density, urban population shares, GDP per capita levels, date of first recorded HIV case, and a country’s latitude.

We proceed as follows. Section 8.2 provides some brief background on the HIV virus and the sub-Saharan HIV/AIDS pandemic. In regards to the role of religion in this pandemic, we review the contributions of previous researchers in Sect. 8.3. In Sect. 8.4 we unbundle Christianity and Islam into what we believe to be relevant institutional components and then, in Sect. 8.5, we describe a data set constructed to include proxies for those components. An empirical analysis of the role of these component institutions is found in Sect. 8.6. Concluding discussion follows in Sect. 8.7.

## 8.2 The Sub-Saharan African HIV/AIDS Pandemic

Human immunodeficiency virus (HIV) is the retrovirus that causes acquired immunodeficiency syndrome (AIDS). The retrovirus functions by converting its own genetic template (viral RNA) to the host organism’s genetic information (host DNA) while using the host cells’ energy and chemical resources for this replication

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<sup>2</sup>The Christian and Muslim population shares have 1 added to them before taking logs to account for observations where the reported share is zero.

<sup>3</sup>To be clear, “high risk” in this context only refers to the likelihood of the virus spreading through the human contact associated with the behavior.

<sup>4</sup>As North (1989) stresses, institutions include “rules, enforcement characteristics of rules, and norms of behavior”. For example, there can be large differences in effect between, e.g., premarital abstinence norms across religions. One way that we address this in the empirical analysis that follows is by controlling for a measure of the strength of social regulation of religious mores.

process (Marlink and Kotin 2004). The DNA of a host cell becomes integrated with the viral DNA leaving the host cell invisible to the immune system. Upon infection, the mutation of host cells occurs rapidly, although the HIV virus may remain dormant for some time. As the HIV virus progresses into advanced stages, the condition turns into AIDS, which ultimately is the condition that results in the deterioration of the immune system. Consequently, AIDS deaths typically result from opportunistic infections and tumors that the body could normally fend off.

The African strain of the AIDS virus was first officially identified in 1983 among several African patients treated in Belgium and France (Carael 2006). Experts now believe, however, that the virus has been present in humans for a considerably longer time. In particular, there is a consensus that HIV was transferred from chimpanzees to humans in Central Africa at some point between the 1930s and 1940s (International HIV & AIDS Charity 2013). HIV has been traced to stored human blood from 1959, and it is likely that the first epidemic occurred in Kinshasa of the Democratic Republic of Congo in the 1970s (Denis 2006; International HIV & AIDS Charity 2013). Geographically, the virus began to spread in the early 1980s within the central band of the continent stretching from West Africa to the Indian Ocean, and it progressively moved southward at the end of the decade (UNAIDS, WHO 2003). In 1990, the Sub-Saharan HIV prevalence rate was 2.5%, and this rate increased steadily until 2000 when it reached 5.95% (World Bank 2013). Despite campaigns to curtail the virus' spread, the 2011 prevalence rate was still a disturbingly high 4.9% (World Bank 2013).

Although the virus has permeated throughout Africa, the severity of the epidemic varies widely depending on region. The northern and western regions have remained relatively less affected while southern countries have been the most devastated. At the peak of the epidemic in 2000, the southern countries of Botswana and Swaziland experienced HIV prevalence rates of 26% and 22.3%, respectively, whereas the HIV prevalence rate was 1% or less in the northern countries of Mauritania, Niger, Sudan, and Senegal (World Bank 2013).

Initially, the African HIV/AIDS epidemic was met with unresponsiveness both regionally and globally (International HIV & AIDS Charity 2013). Little was known about the virus, and African governments were not only weak but faced more immediate political problems including civil war (Lewis 2006). Moreover, the taboo sexual nature of HIV/AIDS transmission created stigmas that resulted in rejection and censure of scientific evidence by some African leaders (Denis 2006). For example, in Zimbabwe, doctors were not permitted to reference AIDS on death certificates. Also, under President Mobutu, press members in the Congo were prohibited from publicly discussing AIDS until 1987 (International HIV & AIDS Charity 2013).

The worsening of the crisis in the 1990s forced countries to make the issue a national priority (Carael 2006). Globally, the world responded with the creation of UNAIDS in 1995 as a Joint United Nations Programme on HIV/AIDS and began to take an active role in assisting the Sub-Saharan African region (UNAIDS 2013).



Currently, there is an antiretroviral treatment that can be administered to patients daily to allow HIV patients to live longer. Antiretroviral drugs (ARVs) are not a cure for HIV/AIDS, but they slow the progression of HIV to AIDS permitting patients to live relatively normal lives (International HIV & AIDS Charity 2012). While the cost of the treatment was prohibitively high when it was first introduced in 1996, over time, as a result of the introduction of generic versions, price competition, and pressure from organizations, the treatment for an individual is now available at a cost of \$64 per year—or 18¢ a day.

Despite the decline in the cost for ARVs and great strides made in its availability, currently, only 49% of Africans infected with HIV are receiving the treatment (International HIV & AIDS Charity 2012). This is a reflection of sub-Saharan Africa as among the poorest regions of the world. According to the World Bank, in 2008, 47.5% of the sub-Saharan African population was living on \$1.25 a day, and 69.2% of the population was living on \$2 a day (World Bank 2013). In 2012, the sub-Saharan GDP per capita was \$1,433 in comparison to the United States' GDP per capita of \$49,965 (World Bank 2013).

The antiretroviral treatment is not a cure for HIV/AIDS, nor is such treatment universally available, so preventive measures offer the most effective means for addressing the epidemic. One of the goals of this study is to trace the cultural channels of the infection from the knowledge of the proximate causes. Direct HIV transmission results from shared bodily fluids during birth, breast-feeding, sexual intercourse, drug injection with shared equipment, or contaminated blood transfusions (Marlink and Kotin 2004). However, because “poverty in Africa precludes drug use” and homosexuality is uncommon in this region of the world, AIDS is chiefly transmitted through sex between men and women and, as a consequence, perinatally to infants (Fredland 2001). Therefore, this study will look at the reasons that some groups may be more or less likely to expose themselves to the kind of contact that would put them at risk for acquiring HIV.

### **8.3 Previous Studies of HIV/AIDS and Religion in Sub-Saharan Africa**

There are only a handful of empirical studies on the relationship between religion and the HIV/AIDS pandemic in sub-Saharan Africa. None of these studies are undertaken by economists.

Gray (2004) reports that Muslim population shares are negatively related to HIV prevalence rates in sub-Saharan Africa. As potential explanations, he points to elements of the Islamic moral code: prohibitions on premarital and extramarital sex, as well as alcohol. Gray's survey of a small number of country case studies also suggests that the Muslim practice of male circumcision may be important for hindering the virus' spread. While Gray suggests underlying links between HIV prevalence and Islamic religious institutions, he presents no explicit evidence of their relevance or lack thereof.

In a study incorporating an array of economic, social, political, cultural, and regional factors as explanatory variables, Tiruneh (2009) concludes that interactions between religious affiliation and other controls account for most of the variation in African adult HIV prevalence rates. He reports a significant positive correlation between southern Christian African countries and HIV rates, and a significant negative correlation between northern Islamic African countries and HIV rates. Tiruneh suggests that these results are indicative of more severe punishments for sexual transgressions within the Muslim cultures. Sharia law, which dictates Islamic moral code and religious law, allows for physical punishments including whipping and stoning. In contrast, while “Christianity prohibits pre- and extra marital sex, there is no legal enforcement to such 8 practices” (Tiruneh 2009). Furthermore, commercial sex is most prevalent in the southern African countries that are predominantly Christian (Tiruneh 2009).<sup>5</sup>

Hargrove (2008) notes the lower rates of HIV prevalence in Muslim versus Christian countries in sub-Saharan Africa. He reports evidence that circumcision rates are an important determinant of HIV prevalence but that controlling for them does not eliminate the significant, negative correlation between Muslim population share and HIV prevalence. He suggests that this may be due in part to the strong family coherence among the Muslim cultures that contrasts with the migratory work patterns of southern Africans who are predominantly Christian. However, Hargrove presents no explicit evidence on this hypothesis. Furthermore, the only additional controls that he includes are regional (West/Central, East, and South) dummy variables.

## 8.4 Unbundling Religious Institutions

Although the literature shows a link between Islam and decreased HIV/AIDS rates, the extant analyses of underlying institutional determinants are incomplete at best. In this paper we seek to explore a more comprehensive set of potentially relevant religious institutions. Both Christianity and Islam teach that followers should avoid sexual promiscuity, one of the most common channels of HIV transmission. Paul’s first letter to the Corinthians counsels Christians to “flee from sexual immorality” (1 Corinthians 6:18, New International Version; likewise, a passage from the Qur’an warns that one should “not approach unlawful sexual intercourse” (Surat Al-‘Isra’ 17:32). Despite these clear commands, unsafe heterosexual relations remain the

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<sup>5</sup>McIntosh and Thomas (2004) also explore economic and societal determinants of HIV prevalence. However, they study a broader cross-country sample (which does, of course, include sub-Saharan Africa). They also report that predominantly Muslim countries had lower prevalence rates. However, they also find that Orthodox Christianity also negatively correlates with the prevalence of HIV infection. Drain et al. (2004) explore a large number of socioeconomic determinants for 122 developing countries. However their results are almost exclusively from univariate regressions and are therefore difficult to interpret.

prominent means of transmission of the epidemic in sub-Saharan Africa (De Waal and Whiteside 2007; Fredland 2001). Therefore we elaborate on institutions that may affect either the probability of unsafe contact or the probability that unsafe contact transmits the HIV virus.

### **8.4.1 Male Circumcision**

Since the 1980s, scientists have hypothesized that male circumcision decreases the risk of HIV transmission, and recent medical studies have provided supporting evidence. Clinical trials in South Africa, Uganda, and Kenya have shown that circumcision reduces men's risk of sexual HIV transmission by approximately 50% and up to 60% (AIDS Vaccine Advocacy Coalition 2007). It is hypothesized that removal of the male foreskin eliminates a concentrated area of cells that are targeted by HIV in the early stages of infection. Furthermore, circumcision may reduce the likelihood of genital ulcers as an HIV risk factor, and the procedure eliminates the possibility that small tears in the foreskin will make it easier for the virus to enter the body (Morris and Wamai 2007). Although the Qur'an does not explicitly require circumcision of males, Muslims are the largest single religious group to traditionally circumcise males (Rizvi et al. 1999). Circumcision evolved as a ritual for cleanliness, but it has since become intrinsically incorporated into Islamic culture as an initiation into the Muslim faith (Morse 2002). Depending on the family, region, and country, circumcision may be performed symbolically at various landmarks in a Muslim boys' youth: on the seventh day after birth, at the age of seven, after being able to recite the entire Qur'an, or during puberty. Muslim support for the practice has been strengthened by evidence suggesting it is effective as a preventive measure against infection and disease (BBC 2009).

Of course, circumcision does not offer 100% protection against HIV infection (Bonner 2001). Furthermore, the association between circumcision and decreased infection has led to the concern that circumcision "might substitute, tragically, for other efforts such as condom use and behavioral modifications" (Silverman 2004). However, the practice of male circumcision in Muslim communities predates the HIV/AIDS pandemic. Therefore, circumcision rates can be reasonably taken as exogenous potential determinants of prevalence rates. The role of Muslim circumcision draws a significant distinction from Christian cultures in the Sub-Saharan African region. Whereas Muslims continue to practice this time-honored tradition, male circumcision is not nearly as prominent within the Christian populations of Africa (Williams et al. 2006). Furthermore, some Christian missionaries have attempted to end the tradition of circumcision because the rites "were bound up with so much 'pagan' culture" (Becker 2007).

### **8.4.2 Regulation of Religious Mores**

Another factor that has been suggested as a link to lower HIV prevalence rates in Muslim populations is the institution of Sharia (Islamic) Law (Tiruneh 2009). In contrast to the pursuit of a secular government, “Muslims believe the separation of religion and state lead to moral decadence in society, therefore only Sharia, divine injunctions and positive law, can curb moral decline” (Sindima 1998). Consequently, the Islamic worldview holds that religious law should become the state law. Muslims uphold traditional values forbidding fornication, and trespassers are subject to punishments specified by the Qur’an. Clearly, this creates a greater incentive to follow Islamic moral code that is not present in many Christian communities. The decrease in promiscuous behavior may contribute to the lower prevalence of HIV.

Aside from the threat of physical and judicial enforcement, it is possible that some religious communities are more effective at enforcing their religious sexual rules than others by means of a socially perceived obligation or peer pressure. A religious community with the ability to influence the behavior of both members (and non-members) may effectively impact the prevalence of religious sexual transgressions. For this reason, a stricter or more conservative society would be expected to see lower levels of HIV prevalence.

### **8.4.3 Condom Use**

The use of condoms is a specific and straightforward means of preventing the spread of HIV. Traditionally, the Catholic Church has been outspoken in its opposition to the use of condoms to control the spread of HIV (Benagiano et al. 2011). However, condom usage has also been passionately debated within Islamic communities, and Muslim clerics and leaders have led campaigns against the promotion of condoms (Moszynski 2008). Nevertheless, several sub-Saharan country governments have adopted the AIDS/HIV prevention slogan: “ABC: Abstinence, Be Faithful, and Use a Condom” and have seen considerable increases in condom use according to the United Nations Population Fund (Deegan 2009). UNAIDS, UNFPA, and WHO have released the official position statement that “the male latex condom is the single, most efficient, available technology to reduce the sexual transmission of HIV” (UNAIDS 2009). However, some experts argue that “consistent condom use has not reached a sufficiently high level... to produce a measurable slowing of new infections in the generalized epidemics of Sub-Saharan Africa” (Potts et al. 2008).

### **8.4.4 Alcohol**

Accepted wisdom warns that alcohol in excess lowers inhibitions and may lead to risky behavior including unsafe sex. Heavy episodic drinking is higher in

Africa than anywhere else in the world (World Health Organization and others 2011). Furthermore, crime statistics from South Africa indicate that alcohol plays an important role in the occurrence of rape. In 1996, according to the Crime Information Centre, alcohol or drugs played a role in over 25% of reported rape cases in the Western Cape and in 36% of those in the Northern Cape of South Africa (Deegan 2009). Northern Africa tells a different story about the consumption of alcohol, however. Strict adherents of the Muslim faith abstain from alcohol as the Qur'an asserts that "intoxicants... are but defilement from the work of Satan" (Surat Al-Maidah 5:90). Globally, abstention from alcohol is highest in the Northern African Muslim countries (World Health Organization and others 2011). In our sample of sub-Saharan African countries (see Sect. 8.5) the pairwise correlation between Muslim population shares and alcohol consumption per capita is  $-0.0405$  and statistically significant at the 1% level.

## 8.5 Data

We construct a panel for up to 43 sub-Saharan African countries where average HIV prevalence is recorded for two periods: 1990–2000 and 2000–2010. The dependent variable of interest is the (log) HIV\_PREVALENCE rate (UNAIDS, WHO 2003).

Average CHRISTIAN and MUSLIM population shares for the two periods are based on the available 1990–2009 yearly estimates from the CIA Factbook. We also consider the alternative measures reported in La Porta et al. (1999). These measures are based on data going back to 1980 and do not give us any variation across the two time periods of our panel. However, they allow us to decompose Christianity into protestant PROTESTANT\_LLSV and Catholic CATHOLIC\_LLSV shares. Since the religious composition of a population often varies slowly, being able to make the distinction between protestant and Catholic populations might be worth that cost.

We consider four variables as proxies for relevant religious institutions. The first of these is adult (15+ years) ALCOHOL yearly consumption per capita. This data are from the WHO and we use 1990–2000 and 2000–2008 averages. That being stated, we expect ALCOHOL to be associated with unsafe sexual behavior and, therefore, positively related to HIV\_PREVALENCE.

For the remainder of our institutional variables, we unfortunately must rely entirely on cross-sectional variation. However, they all represent cultural practices that likely vary slowly over time. We consider MALE\_CIRCUMCISION rates based on the 2003 estimates reported by Williams et al. (2006). We expect that MALE\_CIRCUMCISION decreases the likelihood of the virus spreading during sexual intercourse and, therefore, is negatively related to HIV\_PREVALENCE.

We employ an index of the social regulation of religion SOC\_REG\_RELIGION that is described and coded in Grim and Finke (2007). This index measures the "general social attitudes toward religion and the actions of social movements and religious institutions toward other religious groups, especially new, foreign, or minority religions" (Grim and Finke 2007). It is based on answers to 5 questions

included in the surveys conducted by the US State Department for its International Religious Freedom Reports. Specifically, these questions gauge (a) societal attitudes toward other or nontraditional religions, (b) relations between different religious communities, (c) social attitudes to conversations about other religions, (d) whether attitudes and/or edicts of a clerical establishment discourage proselytizing, and (e) whether established religions attempt to shut out new religions (Grim and Finke 2007). We anticipate using this variable to capture the “religiosity” of a given country and the potential for social pressure to adhere to religious commands of the predominant faith, be it either Christian or Muslim. We expect that a “stricter” society will exhibit lower levels of (HIV\_PREVALENCE) as a result of fewer risky sexual encounters. This variable is particularly relevant for Islamic populations with Sharia Law. We take the average of values reported for 2001, 2003, and 2008.

Finally, we include a variable measuring male CONDOM use as a percentage of the male population ages 15–24. This data comes from the World Bank, and we take the average yearly values available from 1990–2009. While the data span both the 1990–2000 and 2000–2010 time periods of our panel, the reporting for individual years is sparse and idiosyncratic across countries.<sup>6</sup> Therefore we treat CONDOM as fixed across time periods. Our prior is that condom use will impact HIV\_PREVALENCE negatively. However, it is also possible that condom use decreases the perceived riskiness of sexual intercourse and leads to a more than offsetting increase in intercourse. In that case the effect on the spread of HIV could be positive.

For additional controls we begin by following Gray (2004) and consider population density (POP\_DENSITY), the urban population share URBAN, GDP per capita GDP\_PC, and year of a country’s first recorded AIDS FIRST\_CASE. Intuition might at first suggest that POP\_DENSITY and URBAN are negatively related to HIV\_PREVALENCE. Both variables are positively related to the number of people that a given individual can expect to come into contact with. However, The Food and Agriculture Organization (FAO) of the United Nations reports that AIDS is increasingly becoming a greater threat in rural areas than cities (Food and Agriculture Organization of the United Nations 2013). According to FAO, “many urban dwellers and migrant labourers return to their village of origin when they fall ill” (Food and Agriculture Organization of the United Nations 2013). Similarly, while there are numerous reasons to think that GDP\_PC correlates negatively with HIV\_PREVALENCE (e.g., higher incomes are associated with more education about the nature of HIV, its transmission, and its prevention) there may actually be a higher rate of risky sexual contact amongst the wealthy. This may be related to the fact that the wealthy tend to have better access to health care and therefore, all else equal, perceive infection as less costly. Indeed, existing studies report a positive correlation between HIV and income and wealth (Mishra et al. 2007; Shelton et al.

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<sup>6</sup>For examples, Benin only has a recorded observation for 2001 (31.7%); Ghana has recorded observations for 1998 (31%), 2003 (44.5%), and 2008 (40.1%); Liberia has a single recorded observation for 2007 (18.6%).

2005). Additionally, we include the LATITUDE of a country's geographic center to account for the stark contrast in HIV prevalence between Northern and Southern Africa (Hargrove 2008; Tiruneh 2009).

Summary statistics, descriptions, and sources for all of the above variables are provided in Table 8.2. Table 8.3 then provides a correlation matrix for the HIV prevalence, religion, and institutional variables. Unsurprisingly, CHRISTIAN (MUSLIM) correlates positively (negatively) with HIV\_PREVALENCE. Also, three of the institutional variables have the expected correlation with HIV\_PREVALENCE (CIRCUMCISION, ALCOHOL, and SOC\_REG\_RELIGION). However, CONDOM's pairwise correlation with HIV\_PREVALENCE is positive (0.54). Without putting too much stock in a simple pairwise correlation, this is consistent with the availability of condoms increasing the quantity of sexual intercourse demanded and/or the misuse or ineffectiveness of condoms in preventing HIV transmission. (As it turns out, CONDOM is not a statistically significant correlate once other variables are controlled for—see below in Sect. 8.6.)

## 8.6 Empirical Analysis

In this section we report the results of regression analyses. We first explore the associations between HIV prevalence and religious affiliations in our 1990–2010 panel of sub-Saharan African countries. Once we establish the religion/prevalence partial correlations that are robust to our control variable set (Table 8.4), we proceed to an analogous exercise using our institutional variables (Table 8.5). Since we are interested in what underlying institutions drive the negative (positive) correlations between Muslim (Christian) affiliation and HIV prevalence, we explore whether or not the inclusion of particular institutional variables renders religious affiliation insignificant in a regression (Table 8.6).

### 8.6.1 *Religious Affiliation and HIV Prevalence*

We first consider the empirical relationships between religious affiliation and HIV prevalence. All variables enter regressions in natural log form. In the case of religious affiliations, we add one to variables before taking logs to avoid problems with observations of zero. Table 8.4 reports the results of ordinary least squares (OLS) regressions of the log HIV prevalence rate on religious affiliation along with our control variables. Columns (1) and (2) use the religion variables obtained from the more recent CIA Factbook data with and without period fixed effects respectively. These results establish that the expected positive and significant (at the 1% level) relationship between CHRISTIAN and HIV\_PREVALENCE is robust to including MUSLIM and the additional control variables. A 1% increase in a country's Christian population share is associated with, all else equal, an increase in

Table 8.2 Summary statistics

Variable	Description	Source	Mean	Std. deviation	Countries
HIV PREVALENCE	% of people age 15–49 infected w. HIV	UNAIDS and WHO	5.253	6.171	43
CHRISTIAN	% Christian	CIA Factbook	37.035	26.772	43
MUSLIM	% Muslim	CIA Factbook	35.655	33.808	42
CHRISTIAN_LLSV	% Christian	La Porta et al. (1999)	36.310	28.274	41
MUSLIM_LLSV	% Muslim	La Porta et al. (1999)	31.950	34.335	42
PROTESTANT_LLSV	% Protestant	La Porta et al. (1999)	14.202	15.291	41
CATHOLIC_LLSV	% Catholic	La Porta et al. (1999)	21.581	20.503	42
POP_DENSITY	People per sq. km of land	World Bank	71.606	108.936	43
URBAN	Urban pop. (% of total)	World Bank	34.640	15.650	43
GDP_PC	GDP per capita, PPP	World Bank	1965.638	2619.193	43
FIRST CASE	First reported case of AIDS	AVERT, WHO, UNAIDS	1985	1.544	42
LATITUDE	Country latitude	GIS WorldMapper	-0.436	14.388	43
ALCOHOL	Alcohol consumption (litres)	WHO	3.247	3.290	43
MALE_CIRCUMCISION	Prevalence of male circumcision	Williams et al. (2006)	64.400	31.590	40
SOC_REG_RELIGION	Social regulation of religion index	ARDA	2.729	2.634	43
CONDOM	Prevalence of male condom use	World Bank	35.356	14.910	30



**Table 8.3** Correlation matrix of HIV prevalence, religion variables, and institution variables

	HIV.	MUS_L	MUS	CH_L	CH	CATH	PROT	M_CIR.	ALC	SOC_R	COND
HIV PREVALENCE	1.00										
MUSLIM_LLSV	-0.57	1.00									
MUSLIM	-0.54	0.97	1.00								
CHRISTIAN_LLSV	0.56	-0.82	-0.84	1.00							
CHRISTIAN	0.63	-0.80	-0.81	0.94	1.00						
CATHOLIC_LLSV	0.25	-0.63	-0.67	0.78	0.69	1.00					
PROTESTANT_LLSV	0.63	-0.63	-0.63	0.75	0.75	0.18	1.00				
MALE_CIRCUMCISION	-0.70	0.58	0.59	-0.73	-0.80	-0.51	-0.60	1.00			
ALCOHOL	0.19	-0.31	-0.28	0.20	0.32	0.29	0.01	-0.30	1.00		
SOC_REG_RELIGION	-0.27	0.13	0.11	-0.03	0.02	0.12	-0.18	0.17	0.32	1.00	
CONDOM	0.51	-0.30	-0.27	0.27	0.29	-0.13	0.56	-0.21	0.10	-0.32	1.00

**Table 8.4** Regressions of (log) Sub-Saharan HIV rates on religious affiliation with benchmark control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
log(CHRISTIAN+1)	0.418*** (0.121)	0.418*** (0.122)					
log(MUSLIM+1)	0.019 (0.147)	0.015 (0.149)					
log(CHRISTIAN_LLSV+1)			0.226** (0.105)	0.230** (0.106)			
log(MUSLIM_LLSV+1)			-0.098 (0.124)	-0.097 (0.127)	-0.015 (0.104)	-0.017 (0.107)	-0.021 (0.099)
log(PROTESTANT_LLSV+1)					0.377*** (0.095)	0.374*** (0.096)	0.325*** (0.107)
log(CATHOLIC_LLSC+1)					-0.082 (0.120)	-0.078 (0.119)	-0.040 (0.121)
log(POP_DENSITY)	-0.139* (0.077)	-0.149* (0.077)	-0.088 (0.070)	-0.099 (0.070)	-0.027 (0.057)	-0.036 (0.058)	-0.058 (0.061)
log(URBAN)	-0.309 (0.221)	-0.320 (0.226)	-0.407* (0.232)	-0.426* (0.236)	-0.532** (0.228)	-0.546** (0.234)	-0.477** (0.222)

log(GDP_PC)	0.227 (0.171)	0.208 (0.177)	0.224 (0.168)	0.207 (0.173)	0.314** (0.148)	0.298* (0.155)	0.249* (0.150)
log(FIRST_CASE)	-390.222*** (123.550)	-387.497*** (123.632)	-354.001** (149.452)	-347.679** (149.991)	-389.672** (171.910)	-384.342** (176.967)	-346.52** (160.688)
log(LATTITUDE)	0.222*** (0.088)	0.222** (0.086)	0.211** (0.087)	0.212** (0.087)	0.146 (0.091)	0.131 (0.090)	0.120 (0.087)
BRIT_DUTCH							0.242 (0.207)
Period effects	No	Yes	No	Yes	No	Yes	No
F-statistic (redundant effects)		1.859		1.681		1.432	
R <sup>2</sup>	0.578	0.588	0.547	0.557	0.623	0.631	0.634
Countries	41	41	40	40	40	40	40
Observations	82	82	80	80	80	80	80

Notes: White HAC-consistent standard errors are in parentheses and \*, \*\*, \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively. Constant are included in the regressions through not reported. F-statistic is for a test of joint insignificance of the period effects

**Table 8.5** Regressions of (log) Sub-Saharan HIV rates on non-religious institutional variables

	(1)	(2)	(3)	(4)	(5)	(6)
log(ALOCHOL +1)	0.244* (0.132)	0.397*** (0.113)	0.270 (0.170)	0.270 (0.170)	0.297* (0.168)	0.315* (0.173)
log(MALE_CIRCUMCISION+1)	-0.445*** (0.108)	-0.378*** (0.121)	-0.389*** (0.101)	-0.389*** (0.101)	-0.319*** (0.107)	-0.314*** (0.109)
log(SOC_REG_RELIGION+1)	0.081 (0.167)	-0.146 (0.135)	0.032 (0.153)	0.032 (0.153)	-0.086 (0.156)	-0.094 (0.158)
log(CONDOM)	0.721*** (0.245)		0.475 (0.330)	0.475 (0.330)		
log(POP_DENSITY)			-0.101 (0.106)	-0.101 (0.105)	-0.088 (0.088)	-0.104 (0.091)
log(URBAN)			-0.200 (0.221)	-0.200 (0.221)	-0.167 (0.237)	-0.182 (0.240)
log(GDP_PC)			0.182 (0.171)	0.182 (0.171)	0.261* (0.151)	0.239 (0.157)
log(FIRST_CASE)			-138.799 (136.788)	-138.799 (136.788)	-258.408** (118.563)	-259.717** (118.008)
log(LATTITUDE)			0.051 (0.115)	0.051 (0.115)	0.126 (0.105)	0.128 (0.105)
Period effects	No	No	No	Yes	No	Yes
F-statistic (redundant effects)	1.252	0.940				
R <sup>2</sup>	0.639	0.463	0.686	0.686	0.554	0.554
Countries	29	40	29	29	39	39
Observations	58	80	58	58	78	78

Notes: White HAC-consistent standard errors are in parentheses and \*, \*\*, \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively. Constant are included in the regressions through not reported. F-statistic is for a test of joint insignificance of the period effects

**Table 8.6** Regressions of (log) Sub-Saharan HIV rates on religious affiliation and non-religious institutional variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(CHRISTIAN+1)	0.479*** (0.114)	0.478*** (0.114)	0.383*** (0.121)	0.380*** (0.122)	0.491*** (0.114)	0.490*** (0.115)	0.365*** (0.147)	0.372*** (0.148)
log(MUSLIM+1)	0.145 (0.144)	0.138 (0.148)	0.030 (0.147)	0.026 (0.148)	0.141 (0.148)	0.136 (0.150)	-0.057 (0.097)	-0.062 (0.095)
log(MALE_CIRCUMCISION+1)	-0.267* (0.140)	-0.261* (0.143)						
log(ALCOHOL)			0.246* (0.128)	0.262** (0.130)				
log(SOC_REG_RELIGION+1)					-0.279** (0.113)	-0.277** (0.113)		
log(CONDOM)							0.767*** (0.189)	0.839*** (0.187)
log(POP_DENSITY)	-0.090 (0.073)	-0.099 (0.075)	-0.177** (0.078)	-0.190** (0.077)	-0.146** (0.070)	-0.155** (0.070)	-0.029 (0.074)	-0.054 (0.079)
log(URBAN)	-0.102 (0.211)	-0.114 (0.215)	-0.305 (0.206)	-0.318 (0.211)	-0.326 (0.219)	-0.338 (0.223)	-0.302 (0.201)	-0.317 (0.201)

(continued)

Table 8.6 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(GDP_PC)	0.320** (0.142)	0.302** (0.149)	0.178 (0.151)	0.154 (0.156)	0.254 (0.158)	0.235 (0.162)	-0.019 (0.178)	-0.093 (0.205)
log(FIRST_CASE)	-171.854 (127.958)	-175.162 (127.202)	-320.238** (123.149)	-312.716** (123.514)	-400.120*** (108.340)	-397.407*** (108.059)	-317.838** (157.310)	-332.673** (158.650)
log(LATITUDE)	0.145 (0.103)	0.148 (0.102)	0.237** (0.097)	0.239** (0.097)	0.189** (0.085)	0.109** (0.083)	0.253*** (0.094)	0.263*** (0.089)
Period effects	No	Yes	No	Yes	No	Yes	No	Yes
F-statistic (redundant effects)	0.943	2.430	1.930	2.931*				
R <sup>2</sup>	0.668	0.672	0.599	0.612	0.622	0.632	0.695	0.713
Countries	38	38	41	41	41	41	29	29
Observations	76	76	82	82	82	82	58	58

Notes: White HAC-consistent standard errors are in parentheses and \*, \*\*, \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively. Constant are included in the regressions through not reported. F-statistic is for a test of joint insignificance of the period effects

the HIV positive population share of about 0.4%. (This is true whether or not period fixed effects are included. The redundancy of these effects, in any case, cannot be rejected.) To put this in perspective, the sample mean of CHRISTIAN is about 37%. Starting from that mean, a 10 percentage point increase in 17 CHRISTIAN is about a 27% increase. This would be associated with an increase in HIV\_PREVALENCE of about 11 percentage points. Alternatively, the coefficient estimate on MUSLIM is actually positive when CHRISTIAN is controlled for, but it is both small and insignificant. (This is also true with and without period fixed effects.)

Columns (3) and (4) are analogous to columns (1) and (2) except that they report regressions that substitute the La Porta et al. (1999) data for the CIA Factbook data on religious affiliation. While the coefficients on CHRISTIAN\_LLSV are smaller than those reported based on CHRISTIAN, the results for religious affiliation are not qualitatively changed. The La Porta et al. (1999) data allows us to further differentiate Christians as either protestant or Catholic (columns (5) and (6)). Apparently it is the protestant population share PROTESTANT\_LLSV that drives the significant relationship between HIV prevalence and Christianity in the sub-Saharan country sample. At face value this might suggest that Catholicism's antagonism towards condom use is not a driving factor. If Catholic antagonism towards condom use was driving the positive Christian affiliation/prevalence relationship, we would expect CATHOLIC\_LLSV to be itself positive and significant in the regressions. That the protestant population share seems to matter more is an interesting puzzle, and one about which we can only speculate. One possibility is that British and Dutch colonizers in the south of Africa brought both their (predominantly protestant) religion as well as other institutional changes (e.g., production patterns that put stress on indigenous family structures). However, column (7) reports results analogous to those contained in column (5) except that we also include a dummy variable that takes the value of 1 if a country was ever a British or Dutch colony. Not only does that dummy not enter significantly; the coefficient on PROTESTANT\_LLSV is virtually unchanged, both in terms of size and statistical significance.

Turning to the remaining control variables, both POP\_DENSITY and URBAN are negatively correlated with HIV prevalence. This is contrary to our priors. Also, the simple pairwise correlations between each of these variables and HIV\_PREV are both negative. This is consistent with findings of the Food and Agriculture Organization of the United Nations (2013) and Gray (2004) estimates for the effects of these variables are also negative (though not significant). Per capita GDP and the HIV prevalence rate are also positively correlated, consistent with the studies of Mishra et al. (2007) and Shelton et al. (2005). Gray (2004) also reports a similar positive and significant effect for sub-Saharan African countries and, though insignificant, McIntosh and Thomas (2004) estimate an effect of the same sign for a broader sample of countries. The signs of these effects maintain throughout other regressions reported below. We also note that the farther a country is from the equator, all else equal, the higher its HIV prevalence rate. Although these variables are not the focus of our study, the partial correlations associated with them may be a fruitful subject of further studies.

The remaining control variable consistently has estimated effects that are consistent with our priors and statistically significant. The later a country's first reported case of AIDS, the lower the HIV prevalence rate. In other words, all else equal, the later on the scene HIV appears, the less time it has had to increase in prevalence.

### **8.6.2 Cultural Institutions and HIV Prevalence**

Next we estimate models that relate the (log) HIV prevalence rate to variables that proxy for institutions associated with religious affiliations. The results are contained in Table 8.5.

Column (1) includes as regressors only the four institutional variables: ALCOHOL, MALE\_CIRCUMCISION, SOC\_REG\_RELIGION, and CONDOM. While the social regulation of religion index does not enter significantly, the other three institutional variables do. ALCOHOL, in line with our prior expectation, enters positively and significantly, though only at the 10% level. MALE\_CIRCUMCISION also has the expected negative estimated effect which is significant at the 1% level. These estimated effects are consistent with alcohol consumption impairing individuals' judgments regarding risky activities and male circumcision decreasing the likelihood of HIV transmission during sexual contact. Alternatively, CONDOM enters positively and significantly, which is surprising to us. A positive effect is consistent with the availability and acceptability of condoms increasing the demand for risky sexual activity to an extent that trumps the decreased likelihood of HIV transmission during "safe" sex.

However, amongst our proxies for institutions, we note that CONDOM is the most likely to be plagued by measurement error and/or reverse causality. First, CONDOM is based on self-reporting. Since, in many cultures, reporting on one's use of condoms is likely more embarrassing than reporting on, say, one's alcohol consumption, the possibility for systematic measurement error is particularly severe. Also, CONDOM has no time variation and is constructed from averaging over observations that are idiosyncratically available for the years 1990–2010. (See Sect. 8.5 above.) Unlike, say, the social regulation of religion, it is quite plausible that observation on higher condom use were caused by programmatic responses to high HIV rates. For example, the highest observed value of CONDOM is 71.5% for Namibia. For the years 1990–2000 the average rate of HIV prevalence for Namibia is 7.72%; very high (though not the highest in our sample). In 1996, the Youth Health Development Program (YHDP) was established in Namibia to promote, among other things, greater use of condoms (Fitzgerald et al. 1999). Nevertheless, the 2000–2010 average HIV prevalence for Namibia rose to 15.24%! Surely the initially high HIV prevalence rate played a role in determining the policy response. However, whether the subsequent increase in HIV prevalence was in part caused by



or despite of the YHDP and other efforts is difficult to determine based on our data.<sup>7</sup> With these caveats, we note that in all subsequent regressions including CONDOM that we report, the coefficient estimate is always positive; it is also often statistically significant.

Data availability on male condom use is quite limited relative to our sample and the column (1) regression includes only 29 countries. Therefore, column (2) reports a similar regression that drops CONDOM. This increases the number of countries to 40. However, the results for ALCOHOL and MALE\_CIRCUMCISION are qualitatively unchanged and, while the point estimates both increase (from 0.244 to 0.397 for the former; from  $-0.445$  to  $-0.378$  for the latter) neither change in a statistically meaningful way.

Columns (3) and (4) report regressions that include all four institutional variables along with our full control variable set (with and without period fixed effects, respectively). MALE\_CIRCUMCISION still enters positively and significantly at the 1% level; the point estimates ( $-0.389$  in both cases) are nearly identical to that reported in column (2) ( $-0.378$ ). CONDOM does not enter significantly into either regression, nor does ALCOHOL. Recall, however, that ALCOHOL was only marginally significant (10% level) to begin with and that the inclusion of CONDOM diminishes the sample to include only 29 countries. When CONDOM is dropped (columns (5) and (6)) the coefficient point estimates on ALCOHOL remain essentially unchanged but regain their 10% level statistical significance.

As a summary of the results from Table 8.5, the evidence points most clearly towards the practice of male circumcision as having an important and negative impact on the spread of HIV in sub-Saharan Africa. The sample standard deviation of MALE\_CIRCUMCISION is about 31.6%. Taking the smallest point estimate ( $-0.314$  from column (6)) starting from the sample mean level of HIV\_PREVALENCE of about 5.25%, an increase of the male population that is circumcised from 0% to 31.5% would be associated with the rate of HIV prevalence falling, all else equal, from 5.25% to only 1.1%. To say that this particular quantitative example should be handled with care is a considerable understatement. However, the point of introducing it is to simply emphasize that the coefficient estimates suggest a quantitatively meaningful effect. Alternatively, the evidence for an important ALCOHOL is much weaker and the coefficient estimates are quite small. (The sample standard deviation of ALCOHOL is only about 3.3L and the largest coefficient point estimate is 0.397.) CONDOM is rendered an insignificant correlate by the introduction of our control variable set; SOC\_REG\_RELIGION never enters significantly.

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<sup>7</sup>Fitzgerald et al. (1999) report that “knowledge increased significantly among intervention compared to control youth” participants in a YHDP program. However, their study does not directly link these results to HIV prevalence.

### 8.6.3 *Is Religious Affiliation Important Once Institutions Are Controlled For?*

The results reported in Tables 8.1 and 8.4 establish that while both Christian and Muslim population shares, taken individually, correlate significantly with HIV prevalence rates in sub-Saharan Africa, it is the Christianity/HIV correlation that is robust to the inclusion of both the Muslim population share and a set of other control variables in a regression. We have also identified a set of variables that proxy for specific religious institutions that might drive the relationship between religious affiliation and HIV prevalence. The next logical step is to explore whether the affiliation/prevalence correlation is robust to controlling for these institutional variables.

The results from Table 8.5 suggest that MALE\_CIRCUMCISION and perhaps ALCOHOL are relevant. However, it is still possible that CONDOM and SOC\_REG\_RELIGION are important determinants that are just hard to identify given their collinearity with other variables. Likewise, it is also possible that the omission from the institutional variables from Table 8.4 regressions leads to the statistical insignificance of MUSLIM. Therefore we report, in Table 8.6, regressions that always include both CHRISTIAN and MUSLIM population shares, as well as the full set of control variables. We introduce each of the four institutional variables separately to see how the coefficient estimates on religious affiliation change. For example, we would be interested to know if introducing ALCOHOL consumption “knocks out” the statistical significance of CHRISTIAN. If it does, this may suggest that more Christianity is associated with greater HIV prevalence because Christianity (relative to other religions) tolerates/promotes greater consumption of alcohol (and the increased risky activity that goes along with it). (As it turns out, the results reported below do not support this particular story.) For each institutional variable we report two regressions—again, one without and one with period fixed effects included.

Across the eight columns of Table 8.6 there are two immediately striking results: (i) CHRISTIAN always enters significantly (at the 5% level or better) regardless of the institutional variable that is controlled for and (ii) the coefficient estimate on MUSLIM remains statistically insignificant in all regressions. The institutional variables, taken individually, are always statistically significant, though only SOC\_REG\_RELIGION and MALE\_CIRCUMCISION are significant at the 5% level or better. The estimated coefficient signs on the institutional variables are always in agreement with those reported in Table 8.5.

Regardless of the institutional variable that is included, the CHRISTIAN population share not only enters statistically significantly but, also, the coefficient point estimate is remarkably stable. Across columns (1) through (8) the point estimate always falls in the 0.365 to 0.491 range. These estimates cannot be statistically distinguished from one another, and they all represent quantitatively meaningful effects. (See the example in Sect. 8.6 above that is given for a coefficient estimate of 0.418, right in the middle of the 0.365 to 0.491 range.)

## 8.7 Conclusions

We have analyzed a panel of up to 43 sub-Saharan countries covering the period from 1990 through 2010. We have explored the relationships between HIV prevalence and religious affiliations; in particular, the Christian and Muslim population shares. We have then asked what institutions might underlie the HIV/religious affiliation relationships. The particular institutions that we consider are plausibly associated with the Christian and/or Muslim religions.

Here we summarize and discuss what we believe to be the interesting and important conclusions to be drawn from our results.

- The prevalence of male circumcision has a large and negative effect on the spread of the HIV virus in sub-Saharan Africa.
- Despite the conjectures of previous researchers that the practice of male circumcision links Muslim populations to lower HIV prevalence, we find that correlation not to be robust to controlling for the Christian population share even when the prevalence of male circumcision is not controlled for.
- The positive correlation between the Christian population share and HIV prevalence is robust to controlling for per capita alcohol consumption, male circumcision, condom use, and an index of the social regulation of religion.
- Alcohol consumption may indeed have an intuitively plausible positive effect on risky sexual behavior and the spread of HIV, but the effect is quite small.
- There is some evidence that condom use is associated with greater HIV prevalence, but issues of measurement error and reverse causation make interpretation of the estimated effects perilous.

The robustness of Christian affiliation as a positive correlate with HIV prevalence in sub-Saharan Africa is certainly an intriguing finding. Its robustness is not only to controlling for a country's Muslim population share and our proxies for institutions; the Christian/HIV correlation is also robust to controlling for population density, the urban population shares, income per capita, the country's latitude, and the date when a case of HIV was first reported. This suggests to us that there are religious institutions—perhaps informal behavioral norms—that are part of Christianity in sub-Saharan Africa and important determinants of the spread of HIV. Unfortunately, we are clearly not controlling for those other institutions. However, while a puzzle remains, a positive contribution of our paper is to cast doubt on some of the “usual suspects” (e.g., Catholic discouragement of condom use).

While we have also confirmed the important contribution of the practice of male circumcision for hindering HIV transmission, our findings call into question the link that previous researchers have made between the Muslim religion and lower HIV prevalence based on the practice. A particularly clear finding is that, controlling for the Christian population share, the Muslim population share does not significantly correlate with HIV prevalence in a country. Yet male circumcision itself is a robust correlate and is associated with large, negative estimated effects on HIV prevalence. We do not mean to deny the basic fact that Islamic tradition strongly encourages

the circumcision of males. Rather, what is interesting is that male circumcision's negative association with HIV prevalence does not align as straightforwardly as one would expect with a country's Muslim population share. This could arise from particular methods of male circumcision that are associated with particular Muslim groups and, as well, are particularly effective in hindering HIV transmission. It could also arise from particular complementary but unobserved institutions that correlate more strongly with male circumcision than with Muslim affiliation.

The positive association of reported condom use with HIV prevalence is troubling. Our prior is that it is largely a result of reverse rather than perverse causation. Still, it would be less troubling if the estimated effects were always small and statistically insignificant. Especially given variation in sub-Saharan African HIV prevalence over a 20 year period, one would hope that programs encouraging condom use yielded negative effects on the spread of the virus large enough to prevent positive and statistically significant correlations from manifesting. We are aware of no cross-country studies of Africa that propose an effective strategy to identify and report the true effects on increased condom use on HIV prevalence. Surely this is fruitful avenue for further research.

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# Chapter 9

## Spatial Spillover Effects of Debt Relief from the Heavily Indebted Poor Countries (HIPC) Initiative



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### 9.1 Introduction

Every year, international donors provide developing nations with billions of dollars of aid to help them improve their standard of living. According to the Development Assistance Committee (DAC), \$127.3 billion of net official development aid (ODA) was disbursed in 2010. In general, foreign aid can be given as loans, grants, and debt relief. This study is about debt relief offered to countries struggling to make their debt payments. Unfortunately, many countries obtain such a large amount of loans that they are unable to pay them back without borrowing more. Eventually, their outstanding debt balance starts to threaten their economic stability. Krugman (1988) describes this condition as a debt overhang problem, which is similar to a corporation taking on so much debt that it becomes impossible to service debt payments, potentially leading to bankruptcy.

Debt overhang is an important issue because debt-ridden countries will have trouble attracting new investment, and they have to direct scarce resources to repay their oversized debt, which can influence their economic development. For example, Reinhart et al. (2012) identify lower private investment and a higher risk premium on government debt as channels through which public debt overhang leads to lower growth. To help countries saddled with high levels of debt, the World Bank and the International Monetary Fund (IMF) jointly created a new program called the Heavily Indebted Poor Countries (HIPC) Initiative. The goal of this initiative is to alleviate the debt burden of heavily-indebted countries so that these countries

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J. C. Hall, S. Harper (eds.), *Economic and Political Institutions and Development*,  
[https://doi.org/10.1007/978-3-030-06049-7\\_9](https://doi.org/10.1007/978-3-030-06049-7_9)

can accomplish the Millennium Development Goals (MDGs). These goals cover a wide array of well-being measures, such as the eradication of extreme poverty and hunger, and the combat against HIV/AIDS and malaria.<sup>1</sup> It is of great interest to policy makers to know the effects of the HIPC Initiative on the recipient countries. However, past research shows that spatial correlation should be considered when analyzing the impacts of public policy (Lacombe 2004; Hall and Ross 2010; Sobel et al. 2010; Leeson et al. 2012). When the spatial correlation parameters are not zero, then the standard estimation methods such as the least-squares method yield biased and inconsistent estimates. We test our data set and find spatial correlations across countries. We therefore use spatial econometrics to investigate the impact of the HIPC debt relief efforts.

Our paper focuses on the amount of debt relief that each country receives from the HIPC Initiative. We investigate whether this amount positively, or negatively, affects the recipient country's GDP per capita growth, and whether this effect carries over to the surrounding neighbors of the recipient country.<sup>2</sup> We employ the Spatial Durbin Model (SDM) to find the answer. The SDM regression results reveal a correlation between GDP per capita growth of neighboring countries. Furthermore, there are spillover effects of the HIPC membership on nearby countries. When country  $i$  is part of the HIPC Initiative, neighboring country  $j$ 's GDP per capita growth suffers.

Using spatial analysis to investigate international spillover effects is a relatively new contribution. Murdoch and Sandler (2002) document the long-run and the short-run effects of civil wars on income per-capita growth in the host country and its neighbors. They find that there are spillover effects to the neighboring countries. The effects are stronger in the short-run compared to the long-run. Their policy implication is that countries neighboring civil war stricken countries also need foreign assistance. Therefore, a conflict (war) is a channel through which one country's political situation can affect its neighbors' income levels.

Institutional quality represents another channel that affects income levels across countries (North 1990; Gwartney et al. 1999; Rodrik et al. 2004; Acemoglu et al. 2005; Hall et al. 2010; Young and Sheehan 2014; Hall and Lawson 2014). Kelejian and Piras (2014) use the Spatial Autocorrelation (SAC) model to examine spatial spillovers between countries in the development of institutions. They employ a counter-factual way of looking at the direct and indirect effects of spatial spillovers. The authors conclude that in the long run, governance quality spills outside of a country's borders. A possible policy implication of their paper is to encourage and incentivize institutional development in both aid recipient and neighboring countries. In a related study, Leeson et al. (2012) find spatial spillovers of both economic and political institutions. In addition to institutions, recent research

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<sup>1</sup>For more on the Millennium Development Goals, see Kimenyi (2007).

<sup>2</sup>In this study, we use real GDP as the measure of national output. Therefore, we use *GDP per capita growth rate* and *real GDP per capita growth rate* interchangeably. We also often omit the word *rate* for brevity.

also shows that foreign direct investment also has spillover effects. For example, Shepotylo (2012) provides evidence that there are spatial links in foreign direct investment (FDI) between a recipient country and its neighbors. The author argues that FDI models are misspecified when they omit spatial effects of FDI flows. The paper uses a Spatial AutoRegressive (SAR) model and finds a stronger evidence of spatial spillovers in disaggregate data.

Our paper contributes to the literature on international development by shedding light on the issue of whether HIPC debt relief brings benefit or harm to recipient countries and their neighbors. Our estimation strategy uses a spatial econometrics model based on a weight matrix that accounts for neighbors in terms of geographical location. Our main argument for spatial modeling is that debt relief may not only affect the recipient country but also its neighbors due to their proximity to each other. Our results suggest that being part of the HIPC Initiative is negatively associated with member country's economic well-being as well as the economic well-being of its neighbors.

We proceed as follows. Section 9.2 introduces the debt relief initiatives by the World Bank and the IMF. Section 9.3 describes the data and the variables used in this study. Section 9.4 outlines the model selection procedures. Section 9.5 summarizes the regression results, and Sect. 9.6 concludes the paper.

## 9.2 Background on the HIPC Initiative and the MDRI

The Heavily Indebted Poor Countries (HIPC) Initiative is a joint effort program created by the World Bank and the International Monetary Fund (IMF) to help poor nations accomplish the Millennium Development Goals (MDGs). The HIPC Initiative was launched in 1996 and was later enhanced in 1999. The Multilateral Debt Relief Initiative (MDRI) was created in 2006 to supplement HIPC countries with more financial support. The HIPC Initiative calls for voluntary debt relief by creditors. Creditors can be commercial, bilateral, such as the Paris club, and multilateral, such as the World Bank. It could serve in a creditor's interest to forgive some debt to get HIPC countries to a more sustainable debt level so that the probability of repayment might increase.

The HIPC Initiative process mainly involves two stages: the Decision Point and the Completion Point with the time between these two points referred as the *interim period*. The HIPC Initiative and MDRI provide aid and debt relief to countries that are struggling to service their debt. However, to qualify for aid provided by the HIPC Initiative and MDRI (hereafter both referred as HIPC), candidate countries must satisfy certain criteria. Once candidate countries meet the required conditions, they receive irrevocable aid that arrives in a lump sum payment. The size of the debt relief package ranges from hundreds of millions to several billions of dollars.



## 9.3 Data

We use two cross-sectional data sets in our empirical analysis. Table 9.1 presents the list of the countries in the first data set along with how much HIPC aid they received (when available). This data set has 63 countries (set A), 35 of which are HIPCs, and 28 of which are the neighbors of HIPCs. HIPCs in Table 9.1 are those that have qualified or are potentially eligible for HIPC aid as of December 2011 in Table 9.1.<sup>3</sup> The second data set includes 56 countries (set B), which contains all countries in set A except for the seven island countries. Island countries do not have contiguous neighbors. However, a rationale for including the seven island countries is technology. Since island countries have bridges, ferries, cargo ships, and planes that enable them to perform business transactions with foreign countries, they may have spatial relationships with other countries. The regressions performed on set A should be viewed as a robustness check. The estimates of spatial parameters are statistically significant in all models across the data sets, which helps confirm the robustness of the results.

### 9.3.1 Dependent Variable

Both data sets, A and B, cover the 1999–2010 time frame. The year 1999 is when the HIPC Initiative was enhanced and when countries started their reform packages to enter the decision point (and thus started receiving interim aid). The dependent variable in our study is the growth rate of real GDP per capita from 1999 to 2010 (*Growth*). We calculate this variable as the change in the log of the real GDP per capita [ $\log(\text{Ending GDP pc}) - \log(\text{Initial GDP pc})$ ] where *Ending GDP pc* is the real GDP per capita in 2010, and *Initial GDP pc* is the real GDP per capita in 1999. The real values use the base year of 2005. Across the countries in our sample, the average initial real GDP per capita is \$2812.42 while the average ending real GDP per capita is \$4211.71. We obtain the necessary data to construct the dependent variable from the World Bank's World Development Indicator database. We provide the variable definitions and the data sources for the all variables used in this study in Table 9.2.

### 9.3.2 Main Explanatory Variables

Our main explanatory variables are the average HIPC debt relief per capita (*HIPCrelief*) over the 1999–2010 period, a dummy variable indicating whether a country belongs to the HIPC Initiative (*Member*), and the duration that a HIPC

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<sup>3</sup>Uganda remained in the HIPC Initiative only for 3 months. Therefore, we did not classify it as a HIPC. However, our results are robust to the classification of Uganda as a HIPC.

Table 9.1 Country list

Name	Months	HIPC dummy	HIPC aid (in millions)	Name	Months	HIPC dummy	HIPC aid (in millions)
Afghanistan	31	1	\$1319	Kenya	0	0	\$-
Algeria	0	0	\$-	Liberia	27	1	\$4866
Argentina	0	0	\$-	Libya	0	0	\$-
Benin	32	1	\$1596	Madagascar	47	1	\$4293
Bolivia	16	1	\$4876	Malawi	69	1	\$3205
Brazil	0	0	\$-	Mali	30	1	\$2887
Burkina Faso	21	1	\$2147	Mauritania	28	1	\$1983
Burundi	41	1	\$1468	Mauritius	0	0	\$-
Cameroon	66	1	\$6202	Mozambique	17	1	\$6332
Cape Verde	0	0	\$-	Namibia	0	0	\$-
Central African Republic	21	1	\$1105	Nicaragua	38	1	\$6404
Chad	117	1	\$260	Niger	41	1	\$2252
Chile	0	0	\$-	Nigeria	0	0	\$-
Comoros	7	1	\$136	Pakistan	0	0	\$-
Congo, Dem Rep	84	1	\$16,273	Paraguay	0	0	\$-
Congo, Republic of	46	1	\$1942	Peru	0	0	\$-

(continued)

Table 9.1 (continued)

Name	Months	HIPC dummy	HIPC aid (in millions)	Name	Months	HIPC dummy	HIPC aid (in millions)
Costa Rica	0	0	\$ -	Rwanda	53	1	\$1827
Cote d'Ivoire	40	1	\$3415	Sao Tome and Principe	76	1	\$333
Dominican Republic	0	0	\$ -	Senegal	47	1	\$3320
Egypt	0	0	\$ -	Sierra Leone	58	1	\$1659
El Salvador	0	0	\$ -	South Africa	0	0	\$ -
Eritrea	0	0	\$ -	Sudan	0	0	\$ -
Ethiopia	29	1	\$6555	Suriname	0	0	\$ -
Gabon	0	0	\$ -	Tajikistan	0	0	\$ -
Gambia	84	1	\$495	Tanzania	19	1	\$6810
Ghana	29	1	\$7368	Togo	25	1	\$360
Guatemala	0	0	\$ -	Turkmanistan	0	0	\$ -
Guinea	143	1	\$800	Uganda	3	0	\$5443
Guinea-Bissau	122	1	\$790	Venezuela	0	0	\$ -
Guyana	37	1	\$2061	Zambia	53	1	\$6647
Haiti	31	1	\$1172	Zimbabwe	0	0	\$ -

Table 9.2 Variable descriptions and sources

Variable	Description	Source
Growth	$\log(\text{Ending real GDP per capita}) - \log(\text{Initial real GDP per capita})$ where Ending real GDP per capita is the final value of real GDP per capita of a country at the end of the sample period (i.e., 2010), and Initial real GDP per capita is the initial value of real GDP per capita of a country at the beginning of the sample period (i.e., 1999)	Authors' calculations from World Bank (2012)
HIPC Relief	Average HIPC interim aid per capita over 1999–2010	Authors' calculations from World Bank (2012) and International Monetary Fund (2011) annual reports
Member	Dummy variable: 1 if a country belongs to the HIPC Initiative at any point during the sample period (i.e., 1999–2010); 0 otherwise	Authors' calculations from World Bank (2012) and International Monetary Fund (2011) annual reports
Months	Total number of months that a HIPC Initiative member stayed in the interim period by the end of 2010	Authors' calculations from International Monetary Fund (2011) annual reports
Rule of Law	"The confidence that agents have confidence in and abide by the rules of society". Averaged over 1999–2010	Kaufmann et al. (2011)
Polity	Polity IV Score with +10 being more democratic and –10 being autocratic. Averaged over 1999–2010	Marshall and Jaggers (2016)
Initial GDP pc	Initial value of real GDP per capita of a country at the beginning of the sample period (i.e., 1999)	World Bank (2012)
Inflation	Growth rate of GDP deflator. Averaged over 1999–2010	World Bank (2012)
ODA	Net official development aid per capita. Averaged over 1999–2010	World Bank (2012)
FDI	Net foreign direct investment as a percentage of the gross domestic product (GDP). Averaged over 1999–2010	World Bank (2012)
Debt Service	Total debt service as a percentage of the gross national income (GNI). Averaged over 1999–2010	World Bank (2012)
Health	Ratio to health expenditures to the gross domestic product (GDP). Averaged over 1999–2010	World Bank (2012)
Conflict	Value of 1 if country is in an armed conflict, 0 otherwise. Averaged over 1999–2010	Pettersson and Wallensteen (2015)
Latitude	Absolute latitude of a country	La Porta et al. (1999)
Land Locked	Value of 1 if a country is landlocked; 0 otherwise	Authors' calculations

Initiative member has stayed in the interim period by the end of 2010 (*Months*). For a given country, we calculate the annual HIPC debt relief per capita by dividing the total debt relief in a given year (in millions of US dollars) by the population (in millions) in that year. Since 28 countries in the data set do not receive HIPC debt relief, *HIPCrelief* equals zero for these countries, which rules out the use of logarithmic transformation for this variable. Our anticipation is that *HIPCrelief* will not only impact the recipient country's real GDP per capita growth but it will also impact the surrounding neighbors' real GDP per capita growth. Therefore, we include these 28 neighboring countries in our analysis even though they are not recipients of the HIPC debt relief.

*Months* variable also allows us to measure the effect of being a HIPC member, regardless of the debt relief amount. This variable measures the time, in months, that country *i* spends in the interim period. We also use *Member* variable to measure the impact of being a member of the HIPC Initiative. This variable takes a '1' if a country is a HIPC member at any point during our sample period (i.e., 1999–2010), and a '0' otherwise. We aim to find the impact of being a HIPC member, regardless of the debt relief amount. These two explanatory variables (*Months* and *Member*) give us the non-monetary component of the membership to the HIPC Initiative.

### 9.3.3 Additional Control Variables

The additional control variables are the rule of law index (*Rule of Law*), the polity score (*Polity*), the conflict indicator (*Conflict*), the inflation rate (*Inflation*), the net official development aid, ODA, per capita amount (*ODA*), the debt burden (*Debt Service*), net inflows of foreign direct investment (*FDI*), the public health expenditure ratio (*Health*), the absolute latitude (*Latitude*), and a dummy variable indicating whether a country is landlocked (*Land Locked*). In our econometric analysis, we use the average values for the time-varying covariates over our sample period (1999–2010).<sup>4</sup>

*Rule of Law* ranges from  $-2.5$  to  $2.5$ , with  $2.5$  being the relatively better rule (Kaufmann et al. 2011). This variable helps us control for government quality. As mentioned in Burnside and Dollar (2000), aid can be ineffective unless the recipient country has well-established institutions. *Polity* is the combined polity score from the Polity IV that grades political regimes (Marshall and Jaggers 2016). The combined polity score ranges from  $-10$  to  $+10$ , strongly autocratic to strongly democratic, respectively. *Conflict* helps us quantify the presence of wars in a country. If country *i* has battle related deaths in a year, the dummy variable takes '1', and '0' otherwise. Since we estimate cross sectional regressions, we average this dummy across time for country *i*. As a result, this averaged value captures the percentage of time that a country experienced battle related deaths during our

<sup>4</sup>All macroeconomic variables come from the World Bank.

sample period. Many poor nations have faced dictator regimes or genocide or civil war that stripped them the ability to progress. Therefore, it is important to control for the effects of such important events in our regressions.

*Inflation* is the average annual rate of inflation, calculated from the GDP Deflator, for a given country over the 1999–2010 period. The HIPC Initiative requires that recipient countries improve their macroeconomic stability, and inflation serves as a proxy for macroeconomic stability. A country with unstable inflation rate would harm its citizens by bringing uncertainty into their day to day business transactions, which, ultimately will decrease their income. We also control for *ODA*, because HIPC debt relief is not the only help that a poor country can receive. Many countries receive net official development aid as well. We further control for the size of the national debt by *Debt Service*, which captures total debt service as a percentage of gross national income (GNI).

*FDI* variable, calculated as a percentage of GDP, helps us capture inflows of funds and capital from other countries. Often, foreign direct investment is touted as a vehicle to promote productivity and economic growth. *Health* is the ratio of public health expenditures to GDP. Higher health expenditures should improve the life expectancy, indirectly contributing to the GDP per capita growth. To account for geographic characteristics, we use *Latitude* and *Land Locked*. *Latitude* is the absolute latitude of a country and it takes a value between 0 and 1, with 1 being further away from the equator (La Porta et al. 1999). *Land Locked* controls for access to a port that facilitates trade, taking the value of 1 for landlocked countries and 0 otherwise. Table 9.3 present the descriptive statistics of all the variables.

## 9.4 Econometric Models

Our goal is to estimate the direct and indirect effects of the HIPC Initiative on real GDP per capita growth. According to Elhorst (2010), if the OLS model is rejected in favor of Spatial AutoRegressive (SAR) or Spatial Error Model (SEM), then the Spatial Durbin Model (SDM) should be estimated, which takes the following form:

$$y = \rho W y + X \beta + W X \theta + \varepsilon \quad (9.1)$$

$$\varepsilon \sim MVN(0, \sigma^2 I_n)$$

Here  $n$  is the number of observations, in this case, it is the number of countries.  $y$  is an  $n \times 1$  vector of observations which contains the dependent variable, the growth rate of real GDP per capita.  $\rho$  is the spatial autocorrelation parameter.  $X$  is an  $n \times k$  matrix of independent variables.  $\varepsilon$  is an  $n \times 1$  vector of independently and identically distributed disturbance, and  $\beta$  is a  $k \times 1$  vector of regression parameters.  $W$  is an  $n \times n$ , row normalized, four-nearest-neighbors spatial weight matrix. The spatial weight matrix,  $W$ , is of geographic location, which is exogenous to the growth rate of real GDP per capita. Using a nearest-neighbor spatial weight matrix

**Table 9.3** Descriptive statistics

Variable	N	Mean	St. Dev.	Min	Median	Max
<i>63 countries sample</i>						
HIPCreief	63	257.551	488.434	0.000	86.894	2672.256
Member	63	0.556	0.501	0	1	1
Months	63	26.857	33.475	0	19	143
FDI	63	4.014	4.119	−\$5.739	2.845	22.140
Inflation	63	10.932	12.657	1.426	8.481	98.294
ODA	63	608.34	660.42	22.967	379.58	3096.56
Rule of Law	63	−\$0.730	0.615	−\$1.828	−\$0.738	1.269
Polity	63	−\$1.693	14.685	−\$65.273	1.000	10.000
Conflict	63	0.413	0.496	0	0	1
Health	63	2.553	1.131	0.004	2.435	5.869
Debt Service	63	3.785	3.391	0.090	3.062	23.175
Land Locked	63	0.286	0.455	0	0	1
Initial GDP pc	63	2812.42	3079.96	211.94	1311.01	11,747.24
Latitude	63	0.161	0.107	0.000	0.150	0.444
<i>56 countries sample</i>						
HIPCreief	56	242.00	449.76	0.00	74.75	2672.25
Member	56	0.554	0.502	0	1	1
Months	56	27.339	34.129	0	20	143
FDI	56	3.874	4.024	−5.739	2.790	22.140
Inflation	56	11.210	13.306	2.100	8.351	98.294
ODA	56	652.91	680.92	22.96	382.64	3096.56
Rule of Law	56	−0.770	0.577	−1.828	−0.765	1.269
Polity	56	−2.216	15.057	−65.273	0.409	10.00
Conflict	56	0.446	0.502	0	0	1
Health	56	2.563	1.164	0.004	2.436	5.869
Debt Service	56	3.935	3.554	0.090	3.131	23.175
Land Locked	56	0.321	0.471	0	0	1
Initial GDP pc	56	2805.02	3109.48	211.94	1316.97	11,747.24
Latitude	56	0.161	0.110	0.00	0.148	0.444

instead of a contiguity spatial weight matrix helps us deal with island countries, which do not have any connected neighbor.

$(\theta)$  is a  $k \times 1$  vector of response parameter to the interaction effects of WX. If the theta ( $\theta$ ) parameter fails the hypothesis test of  $\theta = 0$ , then SAR should be used. On the other hand, if  $\theta + \rho\beta = 0$  then the SEM should be used. We run the Spatial Durbin regression and find that the thetas, ( $\theta$ ), and the rhos, ( $\rho$ ), are not zero; therefore, we will use the SDM model. In both the model construction and the coefficient interpretation, it is important that we distinguish between direct and indirect effects. Direct effects measure how a change in the explanatory variable in location  $i$  can affect the dependent variable at location  $i$ , plus the feedback effects. Indirect effects ( $\theta$ 's) are cumulated over all neighbors of location  $i$  to other locations.

For the SDM model, we cannot simply look at the  $\beta$ 's and  $\theta$ 's for the direct and indirect effects because of feedback effects from the  $\rho$ 's. To obtain the direct and the indirect effects, we first re-state Eq. (9.1) in reduced form:

$$y = (I_n - \rho W)^{-1}(X\beta + WX\theta) + (I_n - \rho W)^{-1}\varepsilon \tag{9.2}$$

The partial derivative of  $y$  with respect to  $X$  ( $\partial y/\partial X$ ) from Eq. (9.2) gives us the direct and the indirect effects.<sup>5</sup> This partial derivative contains both  $\beta$  and  $\theta$ , implying that  $\beta$  is no longer a sufficient measure for the direct impact of  $X$  on  $y$ .

As an additional spatial model to the SDM, we also estimate the Spatial Lag of  $X$  (SLX) model, which takes the following form:

$$\begin{aligned} y &= X\beta + WX\theta + \varepsilon \\ \varepsilon &\sim MVN(0, \sigma^2 I_n) \end{aligned} \tag{9.3}$$

In terms of interpretations, the SLX model's  $\beta$ 's represent the direct effect of  $X$  while  $\theta$ 's correspond to the indirect (or spillover) effects. It is important to note that we estimate the SLX model as a supplemental model, not as an alternative model to the SDM. This is because the model selection procedure clearly points to the SDM as the preferred specification. As a final specification, we also estimate OLS regressions. We do this to highlight the differences and the similarities between the OLS results and the spatial results.

## 9.5 Regression Results

We present the SDM results for the sample of 63 countries and the sample of 56 countries in Tables 9.4 and 9.5, respectively. The spatial autocorrelation parameters,  $\rho$ 's, are statistically significant in all model variations in both tables. The  $\rho$ 's range from 0.46 to 0.75. This implies that the GDP per capita growth rate is correlated across neighboring countries. There is also evidence of spatial spillovers for one of key variables: even when island countries are included, there are significant spillovers effects of the HIPC member variable (*Member*) based on its indirect effects. The impact is negative. Hence, having a neighbor that is a HIPC country adversely affects one's GDP per capita growth. *Member* also has negative total effect. Both *HIPCrelief* and the HIPC program duration (*Months*) have statistically significant direct and total effects. For example, in the sample of 63 countries, *HIPCrelief* has  $-0.00013$  (significant at the 5% level) as the direct effect and  $-0.00012$  (significant at the 10% level) as the total effect.<sup>6</sup>

<sup>5</sup>We use R spatial packages to compute the direct and the indirect effects.

<sup>6</sup>These coefficient estimates are rounded to five decimal places whereas the coefficient estimates in Tables 9.4 and 9.5 are rounded to the four decimal places.



Table 9.4 SDM impacts—63 countries

	y = change in log(real GDP per capita)								
	Direct			Indirect			Total		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
HIPCrelief	-0.0001** (0.0001)			0.000004 (0.0001)			-0.0001* (0.0001)		
Member		-0.0670 (0.0652)			-0.1533** (0.0652)			-0.2203*** (0.0652)	
Months			-0.0020** (0.0008)			-0.0013 (0.0008)			-0.0033*** (0.0008)
Rule of Law	0.0298 (0.0501)	0.0509 (0.0500)	0.0417 (0.0508)	-0.1394*** (0.0501)	-0.0675 (0.0500)	-0.1718*** (0.0508)	-0.1096** (0.0501)	-0.0166 (0.0500)	-0.1301** (0.0508)
Polity	0.0005 (0.0019)	-0.0004 (0.0020)	0.0006 (0.0020)	-0.0022 (0.0019)	-0.0037* (0.0020)	-0.0013 (0.0020)	-0.0017 (0.0019)	-0.0041** (0.0020)	-0.0008 (0.0020)
log(initial GDP pc)	-0.0091 (0.0325)	-0.0172 (0.0379)	-0.0341 (0.0349)	-0.0582* (0.0325)	-0.1213*** (0.0379)	-0.1317*** (0.0349)	-0.0673** (0.0325)	-0.1385*** (0.0379)	-0.1657*** (0.0349)
Inflation	0.0003 (0.0018)	0.0006 (0.0019)	0.0016 (0.0019)	-0.0070*** (0.0018)	-0.0081*** (0.0019)	-0.0107*** (0.0019)	-0.0066*** (0.0018)	-0.0075*** (0.0019)	-0.0092*** (0.0019)
log(ODA)	0.0083 (0.0216)	-0.0046 (0.0220)	-0.0116 (0.0228)	-0.1027*** (0.0216)	-0.1192*** (0.0220)	-0.1418*** (0.0228)	-0.0944*** (0.0216)	-0.1237*** (0.0220)	-0.1534*** (0.0228)
FDI	0.0116* (0.0067)	0.0074 (0.0062)	0.0095 (0.0063)	-0.0100 (0.0067)	-0.0021 (0.0062)	-0.0017 (0.0063)	0.0016 (0.0067)	0.0053 (0.0062)	0.0077 (0.0063)

Debt Service	0.0026 (0.0076)	0.0001 (0.0078)	-0.0044 (0.0081)	-0.0054 (0.0076)	-0.0070 (0.0078)	0.0075 (0.0081)	-0.0028 (0.0076)	-0.0069 (0.0078)	0.0031 (0.0081)
Health	0.0605** (0.0262)	0.0414 (0.0258)	0.0497* (0.0252)	-0.0156 (0.0262)	-0.0171 (0.0258)	0.0005 (0.0252)	0.0449* (0.0262)	0.0243 (0.0258)	0.0502* (0.0252)
Conflict	0.0373 (0.0543)	0.0672 (0.0559)	0.0447 (0.0561)	0.0233 (0.0543)	-0.0759 (0.0559)	0.0535 (0.0561)	0.0606 (0.0543)	-0.0088 (0.0559)	0.0982* (0.0561)
Latitude	0.0092 (0.2291)	0.0395 (0.2349)	0.0815 (0.2375)	0.0092 (0.2291)	0.0395 (0.2349)	0.0815 (0.2375)	0.0092 (0.2291)	0.0395 (0.2349)	0.0815 (0.2375)
Land Locked	0.1216** (0.0573)	0.1365** (0.0581)	0.1425** (0.0591)	0.1216** (0.0573)	0.1365** (0.0581)	0.1425** (0.0591)	0.1216** (0.0573)	0.1365** (0.0581)	0.1425** (0.0591)
Constant	0.1024 (0.3149)	0.2796 (0.3652)	0.1046 (0.3500)	0.1024 (0.3149)	0.2796 (0.3652)	0.1046 (0.3500)	0.1024 (0.3149)	0.2796 (0.3652)	0.1046 (0.3500)
Rho	0.5**	0.75***	0.54**	0.5**	0.75***	0.54**	0.5**	0.75***	0.54**
Observations	63	63	63	63	63	63	63	63	63
R <sup>2</sup>	0.4648	0.4367	0.4159	0.4648	0.4367	0.4159	0.4648	0.4367	0.4159
Adjusted R <sup>2</sup>	0.3363	0.3015	0.2757	0.3363	0.3015	0.2757	0.3363	0.3015	0.2757

Note: Standard errors in parentheses  
 \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

Table 9.5 SDM impacts—56 countries

	y = change in log(real GDP per capita)								
	Direct			Indirect			Total		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
HIPCrelief	-0.0002** (0.0001)			-0.00003 (0.0001)			-0.0002** (0.0001)		
Member		-0.0320 (0.0705)			-0.1707** (0.0705)			-0.2027*** (0.0705)	
Months			-0.0020** (0.0009)			-0.0012 (0.0009)			-0.0032*** (0.0009)
Rule of Law	-0.0188 (0.0579)	0.0391 (0.0584)	0.0246 (0.0591)	-0.1775*** (0.0579)	-0.0985* (0.0584)	-0.1903*** (0.0591)	-0.1962*** (0.0579)	-0.0594 (0.0584)	-0.1658*** (0.0591)
Polity	0.0017 (0.0019)	-0.0001 (0.0021)	0.0009 (0.0020)	0.0016 (0.0019)	-0.0015 (0.0021)	0.0012 (0.0020)	0.0033* (0.0019)	-0.0015 (0.0021)	0.0021 (0.0020)
log(Initial GDP pc)	-0.0136 (0.0346)	0.0016 (0.0410)	-0.0280 (0.0380)	-0.0867** (0.0346)	-0.1504*** (0.0410)	-0.1556*** (0.0380)	-0.1003*** (0.0346)	-0.1488*** (0.0410)	-0.1835*** (0.0380)
Inflation	0.0006 (0.0019)	0.0009 (0.0020)	0.0018 (0.0019)	-0.0025 (0.0019)	-0.0046** (0.0020)	-0.0060*** (0.0019)	-0.0019 (0.0019)	-0.0037* (0.0020)	-0.0042** (0.0019)
log(ODA)	0.0284 (0.0242)	0.0020 (0.0254)	-0.0084 (0.0266)	-0.0763*** (0.0242)	-0.1150*** (0.0254)	-0.1325*** (0.0266)	-0.0479* (0.0242)	-0.1130*** (0.0254)	-0.1409*** (0.0266)
FDI	0.0098 (0.0071)	0.0052 (0.0072)	0.0084 (0.0071)	-0.0280*** (0.0071)	-0.0087 (0.0072)	-0.0073 (0.0071)	-0.0183** (0.0071)	-0.0035 (0.0072)	0.0011 (0.0071)

Debt Service	0.0061 (0.0081)	0.0048 (0.0085)	-0.0025 (0.0087)	0.0136* (0.0081)	-0.0061 (0.0085)	0.0088 (0.0087)	0.0197** (0.0081)	-0.0013 (0.0085)	0.0063 (0.0087)
Health	0.0613** (0.0280)	0.0335 (0.0280)	0.0494* (0.0270)	-0.0120 (0.0280)	-0.0279 (0.0280)	-0.0197 (0.0270)	0.0493* (0.0280)	0.0056 (0.0280)	0.0297 (0.0270)
Conflict	0.0473 (0.0557)	0.0691 (0.0591)	0.0289 (0.0583)	0.0092 (0.0557)	-0.1429** (0.0591)	-0.0075 (0.0583)	0.0565 (0.0557)	-0.0738 (0.0591)	0.0213 (0.0583)
Latitude	0.1256 (0.2329)	0.1472 (0.2479)	0.1806 (0.2469)	0.1256 (0.2329)	0.1472 (0.2479)	0.1806 (0.2469)	0.1256 (0.2329)	0.1472 (0.2479)	0.1806 (0.2469)
Land Locked	0.0880 (0.0602)	0.1139* (0.0618)	0.1146* (0.0628)	0.0880 (0.0602)	0.1139* (0.0618)	0.1146* (0.0628)	0.0880 (0.0602)	0.1139* (0.0618)	0.1146* (0.0628)
Constant	0.0843 (0.3507)	0.1980 (0.4170)	0.0942 (0.4084)	0.0843 (0.3507)	0.1980 (0.4170)	0.0942 (0.4084)	0.0843 (0.3507)	0.1980 (0.4170)	0.0942 (0.4084)
Rho	0.46* 56	0.73*** 56	0.6** 56	0.46* 56	0.73*** 56	0.6** 56	0.46* 56	0.73*** 56	0.6** 56
R <sup>2</sup>	0.4815	0.4294	0.4198	0.4815	0.4294	0.4198	0.4815	0.4294	0.4198
Adjusted R <sup>2</sup>	0.3368	0.2701	0.2579	0.3368	0.2701	0.2579	0.3368	0.2701	0.2579

Note: Standard errors in parentheses  
\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

We present the estimation results from the SLX model in Table 9.6. Both *Member* and *Months* have statistically significant indirect effects. However, these effects are only significant for the sample of 63 countries. Similar to the SDM, *HIPCrelief* and *Months* have statistically significant direct effects across the different samples. We present the OLS results in Table 9.7. Based on these results, ignoring the spatial properties of the data may have led to the erroneous conclusion that *Member* does not matter. However, we know from the SDM results that this variable has significant indirect effects. Similarly, the OLS results suggest that *Months* also does not matter despite having significant direct and total effects. Overall, the juxtaposition of the OLS results with the spatial results highlights the importance of modeling the spatial effects in the underlying data.

A surprising result from our analysis is the overall statistical insignificance of the variable *Conflict*. According to Murdoch and Sandler (2002), when there is a civil war in one country, its neighbors are affected too. Our results for *Conflict* has no spillover effects except in one specification. We suspect that this difference in outcome between our study and the study by Murdoch and Sandler (2002) could be due to our difference in time periods and in econometrics approaches. Their study spans from 1961 to 1990, while our study is from 1999 to 2010. Hence, there is no overlap between our sample period and their sample period. Also, they test their spillover effects using neighbors that are contiguous, while we use a nearest-neighbor spatial weight matrix. Also, the possibility exists that the severity of conflicts declined over time by reducing their effect on economic growth.

Overall, there is consistency in the SLX and the SDM models with regards to impacts of belonging to the HIPC Initiative. *HIPCrelief*, the relief per capita amount, has a negative effect on the recipient country, with no spillover. Being a HIPC member (*Member*) does not have a statistically significant direct effect on the member country, but it has a negative spillover effect onto surrounding countries. And, the length of time that a country stays in the HIPC program (*Months*) negatively affects its real GDP per capita growth. However, *Months* variable has no spillover effects.

There are several requirements for HIPC countries to complete before they finish the program. Besides maintaining macroeconomic stability, they also need to increase public health expenditures, build more schools, and decrease poverty. These attempts should help increase real GDP per capita growth. The negative results for the HIPC variables in our analysis suggests that the HIPC Initiative may be falling short of accomplishing its objectives. Nevertheless, we also acknowledge that the reasons behind the negative effects of HIPC variables could be related to the use of averaged values over 1999–2010 for all countries. The sample of countries includes those that completed the program long before 2010. Therefore, while some countries may have experienced an increase in real GDP per capita growth, others may have regressed after they exited the program.

Table 9.6 SLX regression results

Variables	Panel A: 63 countries			Panel B: 56 countries			
	(1)	(2)	(3)	Variables	(1)	(2)	(3)
HIPCrelief	-0.0002** (0.0001)			HIPCrelief	-0.0002* (0.0001)		
Member		-0.104 (0.069)		Member		-0.062 (0.095)	
Months			-0.002** (0.001)	Months			-0.002* (0.001)
Rule of Law	-0.002 (0.052)	0.014 (0.051)	0.003 (0.049)	Rule of Law	-0.048 (0.066)	-0.003 (0.068)	-0.016 (0.067)
Polity	0.001 (0.002)	-0.001 (0.002)	0.001 (0.002)	Polity	0.002 (0.002)	-0.0001 (0.003)	0.001 (0.002)
log(Initial GDP pc)	-0.004 (0.037)	-0.017 (0.040)	-0.036 (0.038)	log(Initial GDP)	-0.014 (0.046)	0.001 (0.051)	-0.030 (0.049)
Inflation	-0.0002 (0.002)	-0.0005 (0.002)	0.001 (0.002)	Inflation	0.0004 (0.002)	0.0003 (0.002)	0.001 (0.002)
log(ODA)	0.002 (0.028)	-0.018 (0.028)	-0.027 (0.026)	log(ODA)	0.028 (0.036)	-0.010 (0.037)	-0.026 (0.037)
FDI	0.015** (0.007)	0.013* (0.006)	0.014** (0.006)	FDI	0.012 (0.009)	0.008 (0.008)	0.011 (0.008)
Debt Service	0.0004 (0.008)	-0.004 (0.008)	-0.006 (0.008)	Debt Service	0.006 (0.010)	0.002 (0.009)	-0.002 (0.009)
Health	0.063** (0.029)	0.042 (0.028)	0.051* (0.026)	Health	0.063* (0.035)	0.030 (0.038)	0.044 (0.032)

(continued)

Table 9.6 (continued)

Variables	Panel A: 63 countries			Panel B: 56 countries		
	(1)	(2)	(3)	(1)	(2)	(3)
Conflict	0.036 (0.055)	0.051 (0.055)	0.049 (0.052)	0.040 (0.062)	0.043 (0.066)	0.027 (0.060)
Latitude	-0.600 (0.485)	-0.198 (0.465)	-0.167 (0.448)	-0.331 (0.654)	-0.180 (0.669)	-0.319 (0.642)
Land Locked	0.172*** (0.062)	0.197*** (0.059)	0.195*** (0.059)	0.116 (0.071)	0.166** (0.068)	0.152** (0.069)
WX.HIPCrelief	-0.0001 (0.0002)			-0.0001 (0.0003)		
WX.Member		-0.259* (0.140)			-0.224 (0.173)	
WX.Months			-0.003* (0.002)			-0.003 (0.002)
WX.Rule of Law	-0.188 (0.139)	-0.102 (0.138)	-0.244* (0.128)	-0.240 (0.186)	-0.179 (0.194)	-0.289 (0.176)
WX.Polity	-0.003 (0.006)	-0.006 (0.005)	-0.002 (0.005)	0.003 (0.006)	-0.002 (0.006)	0.002 (0.006)
WX.log(Initial GDP pc)	-0.083 (0.065)	-0.195** (0.076)	-0.213*** (0.074)	-0.097 (0.101)	-0.194* (0.101)	-0.233** (0.110)
WX.Inflation	-0.010* (0.005)	-0.014*** (0.005)	-0.016*** (0.005)	-0.004 (0.006)	-0.009 (0.005)	-0.010* (0.005)

WX.log(ODA)	-0.165** (0.073)	-0.233*** (0.071)	-0.245*** (0.069)	WX.log(ODA)	-0.099 (0.100)	-0.197* (0.100)	-0.230** (0.106)
WX.FDI	-0.013 (0.016)	-0.005 (0.016)	-0.002 (0.016)	WX.FDI	-0.034 (0.022)	-0.013 (0.025)	-0.006 (0.026)
WX.Debt Service	-0.005 (0.022)	-0.009 (0.020)	0.011 (0.021)	WX.Debt Service	0.018 (0.026)	-0.008 (0.026)	0.007 (0.025)
WX.Health	-0.005 (0.052)	-0.012 (0.051)	0.017 (0.047)	WX.Health	-0.015 (0.061)	-0.044 (0.064)	-0.025 (0.055)
WX.Conflict	-0.019 (0.143)	-0.182 (0.144)	0.017 (0.134)	WX.Conflict	-0.023 (0.207)	-0.290 (0.207)	-0.124 (0.165)
WX.Latitude	0.517 (0.701)	-0.380 (0.735)	-0.218 (0.670)	WX.Latitude	0.440 (0.937)	-0.320 (0.992)	0.007 (0.901)
WX.Land Locked	0.171 (0.146)	0.161 (0.140)	0.082 (0.148)	WX.Land Locked	0.119 (0.163)	0.206 (0.158)	0.120 (0.164)
Observations	63	63	63	Observations	56	56	56
R <sup>2</sup>	0.648	0.660	0.686	R <sup>2</sup>	0.635	0.617	0.648
Adjusted R <sup>2</sup>	0.425	0.445	0.487	Adjusted R <sup>2</sup>	0.352	0.320	0.376
Residual std. error	0.154	0.152	0.146	Residual std. error	0.163	0.167	0.160

Note: Standard errors in parentheses

Constant term is included, but not presented to save space

Dependent variable: log(Ending real GDP per capita) – log(Initial real GDP per capita)

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$



**Table 9.7** OLS regression results

Variables	Panel A: 63 countries			Variables	Panel B: 56 countries		
	(1)	(2)	(3)		(1)	(2)	(3)
HIPCrelief	-0.0001** (0.0001)			HIPCrelief	-0.0002** (0.0001)		
Member		-0.105 (0.065)		Member		-0.073 (0.071)	
Months			-0.001 (0.001)	Months			-0.001 (0.001)
Rule of Law	0.038 (0.050)	0.058 (0.050)	0.063 (0.051)	Rule of Law	0.011 (0.058)	0.046 (0.058)	0.046 (0.059)
Polity	0.002 (0.002)	0.001 (0.002)	0.002 (0.002)	Polity	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)
log(Initial GDP pc)	-0.016 (0.032)	-0.030 (0.038)	-0.008 (0.035)	log(Initial GDP)	-0.027 (0.035)	-0.028 (0.041)	-0.015 (0.038)
Inflation	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)	Inflation	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)
log(ODA)	0.044** (0.022)	0.047** (0.022)	0.044* (0.023)	log(ODA)	0.055** (0.024)	0.053** (0.025)	0.050* (0.027)
FDI	0.025*** (0.007)	0.019*** (0.006)	0.019*** (0.006)	FDI	0.022*** (0.007)	0.018** (0.007)	0.016** (0.007)
Debt Service	0.005 (0.008)	0.001 (0.008)	0.002 (0.008)	Debt Service	0.007 (0.008)	0.002 (0.009)	0.002 (0.009)
Health	0.030 (0.026)	0.018 (0.026)	0.007 (0.025)	Health	0.038 (0.028)	0.020 (0.028)	0.012 (0.027)
Conflict	0.054 (0.054)	0.057 (0.056)	0.071 (0.056)	Conflict	0.062 (0.056)	0.069 (0.059)	0.079 (0.058)
Latitude	0.009 (0.229)	0.040 (0.235)	0.082 (0.237)	Latitude	0.126 (0.233)	0.147 (0.248)	0.181 (0.247)
Land Locked	0.122** (0.057)	0.136** (0.058)	0.143** (0.059)	Land Locked	0.088 (0.060)	0.114* (0.062)	0.115* (0.063)
Constant	0.102 (0.315)	0.280 (0.365)	0.105 (0.350)	Constant	0.084 (0.351)	0.198 (0.417)	0.094 (0.408)
Observations	63	63	63	Observations	56	56	56
R <sup>2</sup>	0.465	0.437	0.416	R <sup>2</sup>	0.481	0.429	0.420
Adjusted R <sup>2</sup>	0.336	0.301	0.276	Adjusted R <sup>2</sup>	0.337	0.270	0.258
Residual std. error	0.166	0.170	0.173	Residual std. error	0.165	0.173	0.174

Note: Standard errors in parentheses

Dependent variable: log(Ending real GDP per capita) – log(Initial real GDP per capita)

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

## 9.6 Conclusion

This paper uses the Spatial Durbin Model (SDM) to investigate the effects of the debt relief efforts under the Heavily Indebted Poor Countries (HIPC) Initiative on economic growth, taking into account the spatial relationships in the data. Our sample includes both the recipient and neighbors of recipient countries. We document two key results in our empirical analysis. First, our dependent variable, the growth rate of real GDP per capita, is spatially correlated, with  $\rho$  values ranging from 0.46 to 0.75. Second, there are negative spatial spillovers effect of HIPC's membership from country  $i$ , onto its neighbor, country  $j$ , based on the indirect effect of the explanatory variable, *Member*. While our empirical approach can identify that these spillovers exist, we cannot say for sure if they are the result of the HIPC program or the debt conditions that cause a country to join the HIPC Initiative.

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# Chapter 10

## Reducing the Impact of Ethnic Tensions on Economic Growth: Economic or Political Institutions?



Atin Basu Choudhary and Michael Reksulak

### 10.1 Introduction

Economists have recently started giving a great deal of empirical and theoretical attention to ethnic divisions. One strand of the literature focuses on the impact of ethnicity on economic and social variables. For example, a rich collection of investigations reveal a complex interaction between ethnicity, institutions, conflict, and growth (Easterly and Levine 1997; Keefer and Knack 2002; Easterly et al. 2006). Generally speaking the literature in this area suggests that ethnic fractionalization and low quality institutions are highly correlated. Thus countries with high levels of ethnic fractionalization also tend to have poor institutions. These poor institutions dampen economic growth in countries with high levels of ethnic fractionalization. Our innovations speak to two areas not currently addressed.

First, these papers Easterly and Levine (1997) and Keefer and Knack (2002) and Easterly et al. (2006) tend to relate institutions to economic growth by generating an institutional index that include both economic (like the risk of expropriation) and political institutions (like voice and accountability or the rule of law). We explicitly separate political and economic institutions to investigate whether the effect of ethnic tension on growth can be mitigated by specific types of institutions. Specifically, we show that ethnic tensions do not explain variations in economic growth only in the presence of “good” economic institutions. In other words we try to find an answer to the question—as a matter of practical resource allocation, should a country’s leaders’ focus on political or economic institutions in trying to

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counter the effect of ethnic polarization on economic growth? In the process we also show that the effect of ethnic polarization on economic growth is an artifact of the multi-polar aftermath of the demise of super-power rivalry.

Second, the above mentioned studies tend to conflate ethnic fractionalization with the lack of cooperation across ethnic lines. We note, citing previous studies in this area (Collier 2000), that the mere fact of ethnic fractionalization does not lead to conflict. To counter this general criticism we explicitly use a well respected measure of the level of actual ethnic clashes.

We introduce a brief review of the most relevant literature relating ethnic fractionalization to economic growth and our place in that literature in Sect. 10.2. Our data and methodology is presented in Sect. 10.3. We state and discuss our results in Sect. 10.4. Section 10.5 concludes.

## 10.2 Ethnic Conflict, Growth and Institutions

In a classic paper Easterly and Levine (1997) find that ethnic fragmentation has a significant impact on economic growth in Africa. Easterly et al. (2006) extend this analysis to include other regions of the world as well. In both these papers, however, they argue that ethnic fragmentation (or the lack of social cohesion) has a negative impact on social institutions that provide the framework for positive economic growth. Further, Keefer and Knack (2002) suggest that polarization in a country can destabilize institutions which in turn may reduce economic growth. These papers suggest that there may be a reduced form chain of causality running from ethnic polarization to institutions to economic growth.

Mistrust generated from ethnic divisions disallows the building of cohesive institutions. Without these cohesive institutions economic growth is stunted. Rodrik (2000) points out that countries with both, weak institutions and lack of social cohesion, suffer the most from external growth busting shocks. It is noteworthy that all these papers bring out the interaction between social cohesion, institutions and economic growth. Indeed, in the words of Dixit (2004) “the empirical literature gives good support to the proposition that good governance causes higher incomes and growth.”

Our contribution to this literature lies in separating out the kinds of institutions that might mitigate the destabilizing impact of ethnic divisions on economic growth. Specifically, we suggest that institutions that promote economic freedom reduce the impact of a lack of social cohesiveness on economic growth. As expected, political institutions also influence economic growth—however they cannot reduce the impact of the lack of social cohesiveness on economic growth.

We acknowledge the causal chain suggested by Keefer and Knack (2002) and Easterly et al. (2006). However, our paper, rather than focus on this causal chain of events uses some of the same data and a similar methodology to offer a differently nuanced view of the interaction between social cohesion, political and economic

institutions and economic growth. Further, since our dataset spans the demise of the Soviet Union we also test if there is any difference to these interactions as a result of the move away from the bi-polar paradigm in international relations.

Individuals join groups because (among other reasons) within group cooperation yields benefits to these individuals. Within group co-operation can help in capturing rents (Hardin 1999). Accordingly, rent-seeking can promote the formation of competing special interest groups (Buchanan et al. 1980).

Ethnic identity provides a cost effective way to form such groups (Landa 1994). Such characteristics are easily observable, thereby lowering the cost of distinguishing insiders from outsiders. This ease of distinction makes it possible to identify non-cooperators within the group, which reduces the transaction costs of punishing these non-cooperators and rewarding cooperators. Further, a shared culture strengthened by repeated interaction provides the trust needed to support the development of stable trading networks and credit markets. Moreover, the selfish gene can also be a reciprocal altruist (Dawkins 1974)—in a sense providing an evolutionary advantage to individuals who cooperate within their ethnic group. Hence the theory that ethnic identity can generate within group cohesion is fairly well established.

The same ethnic identity that facilitates within-group cooperation (Putnam et al. 2000; Sen 2006) can also promote inter-group competition over resources (Easterly 2001) which in turn may impact economic growth.<sup>1</sup> Knack and Keefer (1997) find a link between ethnic homogeneity and economic growth—a link that operates through increased trust between people of the same ethnic background. In a later paper Keefer and Knack (2002) suggest a link between high ethnic tensions and low economic growth. Here, Keefer and Knack make a distinction between ethnic heterogeneity and ethnic polarization (this is a distinction we make as well) and suggest that social polarization arising out of ethnic differences corrode economic institutions that protect property rights and thus reduce economic growth. However, they use a measure of ethnic tensions to proxy the level of ethnic polarization in a country. Indeed, they seem to find evidence that the corrosive effect of ethnic polarization (as proxied by the ethnic tension variable) on economic institutions is robust even when a country has democratic processes. Moreover, ethnic heterogeneity leads to lower production of growth producing public goods (Alesina et al. 1999). Social polarization rooted in ethnicity could therefore preclude the possibility of building institutions that reduce the need to belong to a particular group to get access to resources. Then, both the lack of these institutions and the conflict itself would affect future growth. It is arguable that Keefer and Knack (2002) and Easterly et al. (2006) find evidence for this causal link between ethnic polarization, institutions and economic growth. However, a number of authors suggest that strong institutions can

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<sup>1</sup>Easterly (2001) illustrates this by using a cocoa plantation as an example. A country may have a growth promoting comparative advantage in the plantation—but rent seeking ethnic groups with an incentive to try and get as large a slice of the plantation pie as possible reduce the incentive of producers to increase the size of the pie. In other words, the plantation languishes and the country does not grow.

indeed generate the social cohesion—possibly across ethnic lines—that can help a country grow. Unquestionably ethnic diversity alone may not generate the level of polarization needed to stymie institutional development and therefore economic growth.

Easterly (2001) suggests that good institutions can substitute for ethnic groups in allocating resources—and have the added advantage of promoting economic growth. Heyneman (2000) proposes that education can unbind ethnic ties and “create harmony within a nation of divergent peoples” by providing information about the nature and use of social contracts as well as the consequences from breaking these contracts. Moreover, there is no evidence that conflict is inevitable with ethnic heterogeneity. Horowitz (1985) and Esteban and Ray (1994) suggest that ethnic conflict is more likely when there are a few large ethnic groups in a country rather than when there are many small ethnic groups in a country. Further, Cashdan (2001), for example, points out that there is no correlation between ethnocentrism and xenophobia. Indeed Collier (2000) finds evidence that relative ethnic homogeneity is more likely to generate conflict. In his study of African countries he finds that the probability of conflict is highest (28%) in countries with a dominant ethnic group (45–90% of the population).<sup>2</sup> This finding is echoed in Keefer and Knack (2002) who suggest that the polarization is highest when the largest ethnic group in a country has about a 37% share of the population. Thus the relationship between ethnic tension or polarization and ethnic heterogeneity increases at first with increasing heterogeneity, reaches a peak and then decreases. In countries with a large ethnic majority the minorities may be locked out of the resource allocation process and resort to violence. First of all, notice here that the minorities can be disadvantaged, and therefore resort to violence, in the resource allocation process only in the absence of good economic institutions. Second, these findings suggest that the mere existence of ethnic diversity does not imply polarization. Thus even a Herfindahl type index of ethnic fractionalization, let alone a simple percentage representation, may not capture the intensity of ethnic tensions. This, among other factors noted below, suggests the necessity of using a more direct measure of ethnic polarization. We attempt to accomplish this in our paper.

Overall, a review of the literature suggests that rent seeking entities formed along ethnic lines can be useful to individuals within those groups and consequently their formation is quite plausible. Further, the lack of social cohesion due to ethnic groupings affects institutions and therefore economic growth. However, institutions—once established—can mitigate the impact of growth reducing conflict. Indeed, the mere presence of different ethnicities in a nation does not make conflict inevitable. We propose the following question what type of institution is better suited to mitigate the impact of ethnic conflict, where it exists, on economic growth?

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<sup>2</sup>Interestingly enough Collier points out that conflict is lowest in African countries with many equally small ethnic groups, i.e., extremely diverse countries. He attributes this to the high cost of raising armies from groups that are small to begin with.

Keefer and Knack (2002) provide evidence of a causal link between ethnic polarization and institutions which protect property rights. They also show that protecting property rights has a positive impact on economic growth. This suggests that “good” economic institutions are likely to mitigate the impact of ethnic polarization on economic growth. But what is the role of “good” political institutions in generating economic growth relative to “good” economic institutions? It is this latter case that we set out to make. In other words, Keefer and Knack (2002) makes the point that ethnic polarization generates a great deal of instability in government policy which in turn has a negative impact on growth. Our point, using some of the same data, is that “good” economic institutions can reduce the impact of ethnic polarization on growth while political institutions do not. We make this point using a dataset that spans the end of the Cold War. We use this opportunity to investigate whether superpower rivalry changes the nature of the impact of ethnic polarization on economic growth. Specifically, we expect that the end of the Cold War may have unleashed forces of polarization in countries hitherto reigned in by a combination of superpower largesse and bullying. Our findings suggest this may indeed be the case since ethnic tensions have no impact on growth during the Cold War though that changes with the end of the Cold War.

### 10.3 Data and Methodology

The main country characteristics for our panel data set are retrieved from World Bank (2015). In order to analyze the various impacts of economic and political institutions on economic growth we utilize several ordinal scales compiled by others. Economic progress is measured by GROWTHPC, the annual percentage change in real GDP per capita. The latter is measured in constant 2000 dollars (GDPCONST2000PC). A proxy for human capital in a given country in a specific year is provided by PYRYEARS as supplied by Barro and Lee (2001). This variable tracks the average years of primary schooling for the part of the population that is over 15 years of age.

Table 10.1 lists variable names and short descriptions of all our measures. The detrimental results of ethnic tension on economic growth—as outlined above—have been well-established in the literature. A useful measure of such societal pressures is given by ETHTEN. This ordinal scale has a range from 0 to 6 with higher ratings being indicative of lower strains between ethnic groups within a country. This variable is proprietary to Political Risk Services, Inc. and available from the IRIS-3 file of their International Country Risk Guide. ETHTEN is a subjective variable. It is defined as “an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist.” The ICRG data documentation claims that “To ensure consistency, both between countries and over



**Table 10.1** Variable names and descriptions

GROWTHPC	GDP per capita growth (annual percentage change). Source: World Bank (2015)
GDPCONST2000PC	GDP per capita (in constant 2000 dollars). Source: World Bank (2015)
PYRYEARS15	Average years of primary schooling in the population over age 15. Source: Barro and Lee (2001)
ETHTEN	Ethnic Tensions measured on a scale from 0 to 6. Higher ratings indicate less ethnic tension. Source: Political Risk Services, Inc. (2011)
PR	Measurement of political rights on a scale from 1 to 7. Higher ratings indicate lower degrees of political rights. Source: Freedom House (2015)
CL	Civil liberties judged on a scale from 1 to 7. Higher numbers are correlated with an environment of greater liberty. Source: Freedom House (2015)
POLFREE	Is the average of PR and CL
EXPRO	Measurement of risk “outright confiscation and forced nationalization” of property on a scale from 0 to 10. Higher ratings indicate less risk or expropriation of private investment. Source: Political Risk Services, Inc. (2011)
REPGOV	Measures risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down that foreign businesses, contractors, and consultants face due to “an income drop, budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities.” Higher scores make such contract infringements less likely. Source: Political Risk Services, Inc. (2011)
ECFREE	Simple mean of EXPRO and REPGOV

time, points are assigned by ICRG editors on the basis of a series of pre-set questions for each risk component” (Political Risk Services, Inc. 2011).

Most econometric studies involving ethnicity tend to use measures of ethnic, linguistic, or religious fragmentation (Alesina et al. 2003). However measures that merely track ethnic, linguistic or other kinds of social fragmentation may not be a good proxy for the actual level of ethnic tensions.

First of all, tensions or conflict between ethnic groups are likely to be higher when there a few dominant groups than when there are a large number of small groups (Horowitz 1985; Collier 2000; Esteban and Ray 1994). The standard measures of fractionalization tend not to capture this effect (Montalvo and Reynal-Querol 2005). However, measures of ethnic polarization introduced by Reynal-Querol (2002) have a tendency to perform consistently with the theoretical expectations of Horowitz (1985) and Esteban and Ray (1994). An ethnic polarization index, rather than measure the degree of fractionalization along ethnic or other lines in a nation tends to “capture how far the distribution of the ethnic groups is from the (1/2, 0, 0, . . . 0, 1/2) distribution (bipolar)” (Montalvo and Reynal-Querol 2005). Regressions based upon this approach show that e.g. civil conflict rises with

the degree of ethnic polarization rather than the level of ethnic fractionalization. This conflict is likely to leak into the economic performance of a country suggesting that it is ethnic polarization rather than ethnic fractionalization that is more likely to affect economic growth rates (Montalvo and Reynal-Querol 2005).

Second, the notion of group identification itself is problematic for two reasons. For one there are many ways to define ethnicity. In the U.S. e.g. one may classify Hispanics as an ethnic group (e.g. in the U.S. census data and other ethnicity reporting forms) even though “Hispanics” themselves may self-identify as Dominicans or Cubans etc. In fact, Fearon (2003) argues that the “right list of ethnic groups for a country depend on what people in the country identify as the most socially relevant ethnic groupings.” This suggests that both measures of ethnic fractionalization and polarization that depend on the judgment of the measure’s creator rather than on the how the people of a country self-identify themselves are inherently flawed. In addition, this self identification itself may change with time. Fearon (2003) points out that ethnicity may be endogenous to political, economic and social variables. For example, low levels of economic growth may lead to greater self identification with an ethnic group or clan that can ensure a larger share of the shrinking economic pie. These problems with both ethnic fractionalization and ethnic polarization data may be what leads to the point made by Alesina et al. (2003) that “indices of fractionalization constructed using measures of ethnicity, language or religion lead to substantially different results when they are entered in regressions to explain growth and government quality.”

We try to avoid some of these problems by using ETHTEN though admittedly there is a trade-off between the subjectivity of the ETHTEN variable and the apparent objectivity of measures of ethnic fractionalization and polarization. However, Keefer and Knack (2002) regress ethnic tensions (a variation of what we call ETHTEN here using the same data source) against an ethnic fractionalization measure Sullivan (1991) and report that while ethnic tensions do rise with ethnic fractionalization initially, this relationship reaches a peak when the largest ethnic group consists of about 37% of the population. Thus, the ethnic tension data reported in the IRIS-3 file, though subjective, behaves as expected in the literature on ethnic conflict. This suggests that ETHTEN is a valid measure of the level of ethnic tension in a country. Since our focus is on the effect of actual ethnic tensions on economic growth, ETHTEN may be a more direct measure for our purposes than measures of ethnic fractionalization or polarization that are currently in use.

A number of reputable organizations provide numerical characterizations of the extent to which economic and political freedom is available in various countries. We utilize several of these published rankings to create two new variables, POLFREE and ECFREE. The former is the average of two indices, which encompass a measurement of political rights (PR) and civil liberties (CL)—obtained from Freedom House (2015). In both cases higher ratings indicate lower degrees of political rights. Good political institutions foment political rights while also protecting civil liberties. Therefore, those two characteristics are functional proxies for the former. The average of EXPRO—higher ratings of which indicate less risk of expropriation

of private investment—and REPGOV—the risk of having contracts repudiated—results in our measure of economic freedom (ECFREE).

Note that ECFREE tracks the insecurity of property rights and not the allocation of rights. In other words it tracks the outcome of existing legal institutions rather than index different types of legal institutions. Thus government arbitrariness with regard to property rights can lead to insecurity irrespective of how much redistribution there may be in a particular country. Table 10.2 presents descriptive statistics for all our variables. We note that the robustness of these measures is already well established—they are correlated with other available measures and these correlations are reported in Keefer and Knack (2002).

Implicitly we are proposing the existence of two kinds of governmental institutions, which can but do not necessarily have to go hand in hand. Economic freedom, on the one hand, is related to governmental institutions that are conducive to economic growth through the protection of property rights and the execution of voluntary contract arrangements. On the other hand, political freedom measures the ability to trade without inhibitions in the marketplace for ideas. The People's Republic of China is a prime example of both of these markets coexisting with great liberty in the first and almost insurmountable barriers to entry in the second.

Our econometric model follows the standard growth equations, which have their origin in the seminal paper by Solow (1956). We are assuming fixed effects to account for the variation in country characteristics. The econometrics of this approach is straightforward and has been discussed extensively elsewhere (Barro and Sala-i Martin 2004). In addition, it is well known from the existing empirical literature that the chain of causality runs from institutions to growth (Dixit 2004). We therefore have chosen not to worry about the possibility of simultaneity biases in our specification.

Besides the institutional variables, we take the standard approach of including the logarithm of average years of primary schooling as a proxy for human capital and the logarithm of per capita GDP lagged on year as a measure of physical capital endowment.<sup>3</sup> The general expression of the model is:

$$GROWTHPC_i = \alpha_i + \beta_1 \ln(GDPCONST2000PC(-1)) \quad (10.1) \\ + \beta_2 \ln(PYRYEARS15) + \beta X_i + \epsilon_i$$

This equation hypothesizes that the change in observed real per capita growth in a country  $i$  is a function of capital endowments (human and physical) and a vector of regressors representing institutional variables. Epsilon is the error term.

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<sup>3</sup>Easterly and Levine (1997) is the most direct point of departure for our paper. We have therefore tried to keep the basic structure of that model. In addition much of our reasoning is based on that paper as well.

Table 10.2 Descriptive statistics

	GROWTH PC	GDPCONST 2000PC	PRYE ARS15	ETHEN	PR	CL	POLFREE	EXPRO	REPGOV	ECFREE
Mean	0.86	5130	3.71	3.92	3.74	3.87	3.81	7.20	6.52	6.86
Median	1.58	1621	3.71	4	4	4	4	7	6.30	6.85
Maximum	89.82	39,368	7.70	6	7	7	7	10	10	10
Minimum	-50.48	56	0.40	0	1	1	1	1	1	1.5
Std. Dev.	7.01	7473	1.65	1.55	2.20	1.91	2.01	2.22	2.26	2.17
Skewness	-0.27	1.93	0.09	-0.45	0.09	0.04	0.011	-0.32	-0.05	-0.13
Kurtosis	45.29	6.09	2.36	2.32	1.49	1.83	1.61	1.96	1.90	1.83
Jarque-Bera	196,779	2669	30.67	94.67	177.55	104.74	148.60	1,079,653	87.53	103.25
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2290.86	13,412,245	6127	6930	6901	7131	7016	12,444	11,275	11,859
Sum Sq. Dev.	129,570	1.46E+11	4541	4277	8922	6708	7477	8563	8821	8136
Observations	2639	2614	1651	1766	1842	1842	1842	1728	1728	1728

## 10.4 Results

Our results in Table 10.3 are consistent with those reported by Easterly et al. (2006) and Keefer and Knack (2002). In other words, ethnic polarization does reduce economic growth. However, we make the case that institutions that reduce economic risk also reduce the effect of ethnic tensions on economic growth. We do not, unlike the Easterly et al. (2006) and Keefer and Knack (2002) papers, infer anything about a causal chain. We merely report that the marginal effect of ethnic tensions on economic growth persist for countries that have good political institutions but do not for those with good economic institutions. This suggests that economic institutions are better at tempering the impact of ethnic conflict on economic growth than political institutions. Moreover, we find that this is especially true after the end of the Cold War.

First of all, we observe that we find, as expected from our growth regression model, a robust convergence effect—the coefficient on the log of lagged per capita GDP is negative and significant. Further, in models 1 and 2, the human capital element of the population as estimated by educational attainment is positive and significant as expected. In model 1, however, we see that ETHTEN is positive (recall that higher numbers for ETHTEN means that ethnic tensions are lower) and significant, suggesting that more ethnic tensions are negatively related to economic growth per capita. This result confirms our expectations that greater ethnic tension reduces growth and as such caring and effective leaders should try to reduce these tensions in their development efforts. The question, of course, is how? The institutional answer

**Table 10.3** Regression results

Independent variables	Model 1	Model 2	Model 3	Model 4
log(GDPCONST2000PC(−1))	−6.4926*** (−5.5168)	−6.4694*** (−5.5089)	−8.5545*** (−7.0067)	−8.4905*** (−6.9621)
LOG(PYRYEARS15)	7.1876*** (3.8931)	6.9346*** (3.7585)	2.1694 (1.0785)	2.0822 (1.0364)
ETHTEN	0.6924*** (3.5384)	0.6819*** (3.4913)	0.2339 (1.1114)	0.2366 (1.1259)
POLFREE		−0.4472*** (−2.4674)		−0.3746** (−2.0791)
ECFREE			0.7797*** (6.0213)	0.7606*** (5.8675)
C	39.8018*** (4.5549)	41.4718*** (4.7420)	58.0575*** (6.3287)	59.0604*** (6.4384)
Number of cross sections	86	86	86	86
Total panel observations	1253	1253	1234	1234
Sample (adjusted)	1983–1997	1983–1997	1983–1997	1983–1997
F-statistic	3.7893***	3.8315***	4.2654***	4.2783***
Adjusted R <sup>2</sup>	0.1639	0.1675	0.1907	0.1930

Notes: t-values are in parentheses. Fixed-effects included. Dependent variable: GROWTHPC. Period is 1983–1997

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level

has almost become a throwaway line in the growth literature. However, it is clear to most investigators in this area that the institutional role in understanding growth is extremely important (Romer 2001). We suggest that the effect of ethnic tensions on economic growth, even after controlling for the effect of political freedoms and civil liberties, can be ameliorated by enforcing property rights.

In model 2 we add POLFREE, a simple average of the index on political rights and civil liberties from Freedom House. We find, as expected, that not having these rights dampens economic growth (this result is a replication of previous results—see for Barro and Sala-i Martin (2004, p. 522)). Presumably, transparency and accountability in government reduces rent seeking and deadweight losses that can have a negative impact on economic growth. However, POLFREE alone does not have any effect on the significance or the marginal magnitude (the coefficient on ETHTEN in both the models are about 0.7) of the impact of ETHTEN on per capita growth relative to model 1. This suggests that democracy and civil liberties, while important for growth, cannot reduce the impact of ethnic tensions on growth.

In model 3, however, we find that adding ECFREE changes the impact of ETHTEN on per capita growth. ETHTEN is no longer significant in this model while ECFREE is. Interestingly, educational attainment as measured by PYRYEARS is now insignificant as well. What is special about ECFREE?

Recall that ECFREE is a simple average of REPGOV and EXPRO. REPGOV measures the risk of a modification in a contract with the government of a country if fiscal conditions or political priorities (pressures for indigenization or changes in social priorities) change. EXPRO on the other hand measures the risk of outright expropriation or nationalization of private property by the government. Together they capture the essence of property rights. Higher scores reflect a greater respect for property rights. Thus, protecting property rights seem to reduce the impact of ethnic tensions on economic growth.

First of all, protecting property rights should be important for generating growth just because it creates the right incentives to retain and therefore create wealth. Second, recall that ECFREE captures the outcome of existing legal institutions rather than index different types of legal institutions. In other words, high values of ECFREE suggest high levels of property rights protection for all ethnic groups in a country. The notion of property right protection that cuts across ethnic lines reduces the incentive for individuals to join an ethnically defined interest group to protect and increase their wealth. This reduces conflict and therefore mitigates the impact of ethnic polarization on economic growth.

Further, given that POLFREE does not seem to reduce the impact of ethnic tension on growth while ECFREE does, policy makers subject to resource constraints ought to pay more attention to the development of economic institutions in countries rife with ethnic strife. The high cost of achieving any consensus in ethnically polarized societies (Easterly 2001) makes the appropriate use of scarce political and other resources particularly crucial. The allocation of institution building resources may mean the difference between success and failure for developing countries.<sup>4</sup> The

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<sup>4</sup>It may be possible, in a different paper, to test the hypothesis that a focus on democratic process without any attempt at building economic institutions may actually hinder the development

trade-offs inherent in this process certainly has an impact on economic development (Rodrik 2001). The results reported here should offer some guidance to policy makers interested in making their countries better off.

Note also that in models 3 and 4, PYRYEARS, our measure for educational attainment, does not have a significant marginal effect on economic growth. This result is interesting because results in most growth investigations suggest that educational attainment ought to be significant (Barro and Sala-i Martin 2004, p. 524). In fact we find this result in our models 1 and 2; i.e. in models that do not include ECFREE. This suggests that protecting private property rights captures the effect of educational attainment on economic growth. This result echoes the point made by Murphy et al. (1991) that talented individuals will turn to rent seeking in the absence of the protection of property rights. Educated folks unsure of whether they can reap the benefits of productive activity are likely to turn to rent seeking. This rent seeking would have a growth dampening effect. It is therefore not surprising when the introduction of ECFREE takes away the significance of the impact of PYRYEARS on economic growth.

The results reported in Table 10.3 suggest that POLFREE significantly increases the per-capita growth rate though it does not affect the growth reducing effect of ETHTEN. ECFREE on the other hand mitigates the growth reducing effect of ETHTEN and improves growth performance for countries. Thus, in a correctly specified model ethnic tensions do not matter on average for explaining variations in growth rates. These results are reported in the context of other results that are consistent with major results in the literature and therefore suggest a robustness that could be useful to policy makers in ethnic strife ridden countries trying to claw their way out of low level equilibrium traps. Moreover, the results reported from the model specifications one through four are robust to the inclusion of a time trend. In those scenarios the time trend is positive and significant while not impacting the significance of any of the other explanatory variables.<sup>5</sup> Thus, while the issue of time persistence is always a problem with the sort of variables we are using in our models, controlling for it does not seem to have a major effect on our conclusions. In addition, typical growth regressions tend to have many variables thrown in as possible explanatory variables. Our specification is more parsimonious than most growth regressions because we felt that such an a theoretical approach abstracted away from the focus of our paper without adding any richness.

In Table 10.4 we report the effect of the Cold War on our results. Our dataset spans the years 1983–1997 and therefore includes the time period over which the Soviet Union melted away. We chose 1989, the year the Berlin Wall fell, as the

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process. Indeed the correlation between poor institutions and high ethnic conflict, Keefer and Knack (2002) and Easterly et al. (2006) may provide indirect support for this hypothesis. Such a finding would be consistent with the thrust of this paper.

<sup>5</sup>We do not report these specifications here to preserve consistency across Tables 10.3 and 10.4. The limited degrees of freedom in the pre- and post-cold war periods reported in models 5 through 10 in Table 10.4 make the inclusion of a time trend variable impracticable for those specifications. Results for all our specifications with the time trend included are available on request.

**Table 10.4** Regression results based on Cold War-truncated dataset

Variables	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
log(GDPCONST2000PC(-1))	-13.05*** (-4.8)	-13.98*** (-5.19)	-16.46*** (-5.72)	-13.34*** (-4.57)	-13.34*** (-4.59)	-15.52*** (-5.23)
log(PYREARS15)	6.37*** (2.59)	4.94** (2.00)	4.6* (1.85)	11.30** (1.94)	11.61** (2.01)	3.59 (0.588)
ETHTEN	-0.009 (-0.02)	0.2 (0.51)	0.12 (0.27)	0.609* (1.87)	0.54* (1.67)	-0.07 (-0.2)
POLFREE		-1.44*** (-3.73)	-1.3*** (-3.23)		-0.73** (-2.15)	-0.83** (-2.45)
ECFREE			0.52 (1.50)			0.987*** (3.73)
C	94.16*** (4.41)	107.18*** (5.02)	122.54*** (5.51)	87.8*** (4.02)	90.11*** (4.13)	112.27*** (5.02)
Number of cross sections	85	85	85	86	86	86
Total panel observations	572	572	553	681	681	681
Sample (adjusted)	1983-1989	1983-1989	1983-1989	1990-1997	1990-1997	1990-1997
F-statistic	3.57***	3.78***	3.776***	2.335***	2.37***	2.55***
Adjusted R <sup>2</sup>	0.28	0.3	0.31	0.147	0.153	0.17

Notes: t-values are in parentheses  
 \*\*\* Significant at the 1% level. \*\* Significant at the 5% level. \* Significant at the 10% level



watershed year. We divided our dataset into two parts—from 1983 to 1989 and from 1990 to 1997. We find that during the Cold War era part of our dataset ethnic tensions do not have any effect on economic growth (see models 5, 6, and 7). However, in the post Cold War era our results mirror those found in the wider data set (see models 8, 9, and 10). The results in models 5 and 8 suggest that the political and institutional vacuum left in the detritus of a retreating Soviet Union exacerbated ethnic tensions—ETHTEN is significant in reducing growth only after the end of the Cold War. On the other hand the lack of political freedom certainly continued to have an impact on economic growth irrespective of the Cold War. POLFREE significantly reduces per capita growth in models 6, 7, 9, and 10. We believe that these results strengthen our point about the role of economic institutions in dampening the negative impact of ethnic polarization on economic growth. A combination of communist propaganda and jackboots kept ethnic tensions at bay within the ethnically heterogeneous Soviet sphere of influence. Moreover, the growth advantage lay with relatively ethnically homogenous western and western style societies. These effects are in agreement with our finding a significant POLFREE (driven by ethnically homogenous but fast growing western societies) and an insignificant ETHTEN (driven by ethnically heterogeneous but slow growing eastern bloc countries) in models 5, 6, and 7. The results reported in models 8, 9, and 10 are consistent with the idea that the removal of the Soviet yoke also unleashed rampant rent seeking in erstwhile eastern bloc countries that coalesced around ethnic lines in the absence or nascence of private property rights.

## 10.5 Conclusion

As a purely practical matter we recognize that political leaders may be stymied in their efforts to generate growth in developing countries by the lack of social cohesiveness. However, it may be easier (and possibly more moral) to devise public policy that focuses on economic freedom rather than on redrawing borders to facilitate some notion of social cohesiveness even if these efforts at consolidation have the best intentions. Of course, efforts at promoting good institutions by encouraging a common ethnic identity can rapidly degenerate into the sort of ethnic cleansing that continues to be a devastating part of the daily lives of large numbers of people. Thus, policies that focus on promoting economic freedom may reduce the relevance of the lack of trust across ethnic divisions by reducing the importance of ethnic divisions in providing societal benefits.

We believe that our point in this paper has a practical importance for countries ravaged by ethnic conflict. The foremost question in such an environment is what kind of institutions should leaders and policymakers focus their scarce resources on?

Our results suggest that while good political institutions are important for economic growth, countries being devastated by ethnic tensions ought to have a bias towards building good economic institutions.

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