

**Infrastructure Development in the Shadow of  
Conflict:  
Aligning Incentives and Attracting  
Investment**

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| Collaboratory for Research on Global Projects

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## **Abstract:**

Multilateral and donor fundraising for post-conflict infrastructure reconstruction is insufficient to meet the investment needs for adequate service provision. Higher levels of private investment would speed and expand infrastructure delivery, but investors are largely unwilling to deploy capital to post-conflict infrastructure projects due to elevated political and commercial risk causing expected returns to fall below hurdle rates. This study explores the financial structures and political risk mitigation mechanisms available to private foreign investors to invest in post-conflict scenarios. An analysis of political risk insurance contracts finds deficient structures and prohibitive pricing. New political risk insurance products and subsidy mechanisms can optimize risk and return allocation arrangements. Specifically, the introduction of commercial breach of contract protection would mitigate a key risk for project developers. The study also investigates historical post-conflict infrastructure investment trends, and finds that telecommunications projects receive funding directly after conflict, followed by transportation, energy, and, finally, water projects. Better targeted, coordinated, and comprehensive packages of financial products including multilateral loan guarantees and expanded political risk insurance can be utilized to attract private investment to post-conflict infrastructure projects. However, in the many cases in which commercially extractable user fees and other revenue sources are insufficient to provide internal rates of return above investors' risk-adjusted hurdle rates, cash subsidies should be employed alongside these products.

## **List of Abbreviations**

ADB – Asian Development Bank  
ECA – Export Credit Agency  
EPC – Engineering, Procurement, and Construction  
IFC – International Finance Corporation  
IRR – Internal Rate of Return  
MIGA – Multilateral Investment Guarantee Agency  
PPP – Public-Private Partnership  
PPI – Private Participation in Infrastructure  
PRI – Political Risk Insurance  
SIGIR – Special Inspector General for Iraq Reconstruction  
SOE – State Owned Entity

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Any errors are mine alone.

## **Introduction**

In an era of transnational threats, from global terrorism and transnational organized crime, to infectious disease and nuclear proliferation, the salience of repairing failed states has become exceptionally clear. Weak, often conflict-torn states, are a haven for nefarious and illicit actors, and have the potential to destabilize neighbors. One needs only to look at examples such as Afghanistan and Pakistan to understand potential spillovers and positive feedback from failed states. Building capacity in weak states is one of the most important security challenges of the 21<sup>st</sup> century. This study will focus on infrastructure development as a channel to build stability and prosperity in post-conflict states.

The sustainable and effective reconstruction of civil infrastructure in post-conflict environments continues to challenge the international community. Episodes such as Lebanon, Bosnia-Herzegovina, and now Iraq and Afghanistan illustrate a superiority of the international community's ability to wage war over its capacity to build peace and stability. This unfortunate fact is all too salient given the importance of post-war reconstruction - as Sultan Barakat, the founding director of the University of York's Post-War Reconstruction and Development Unit, put it, "the reconstruction of nations post-conflict is now recognized as a key element in achieving global stability, security, and the eradication of poverty in the 21<sup>st</sup> century," (Barakat 2005, 7). While a consensus that reconstruction capabilities must be improved exists in the policymaking, practitioner, and academic communities, the debate to find the strategies, policies, and institutional structures to best tackle the many problems continues.

Before one can deconstruct specific challenges, a definition of the nebulous term "post-conflict" must be selected. Dominant warring factions signing a peace accord is not an assurance that violence will cease. Indeed, according to a World Bank report, in 44% of post-war cases,

conflict resumes within five years (Collier, et al. 2003, 7). 50% of these cases descend back into full-fledged war in within 10 years. Non-complying militias or spoilers may continue to attack other armed groups or civilians. Thus, a simple statement of “victory” by one party cannot be taken at face value, as the term is subjectively defined. Indeed, in Iraq, after President Bush declared “victory,” an order of magnitude more civilians died as a result of violence than during the March-April 2003 official conflict (Documented civilian deaths from violence n.d.).<sup>1</sup> The UNDAF defines “post-conflict transition” as “the time that exists between a state of national emergency and that of routine national development,” (United Nations Development Group n.d.). This study uses Professor Page Fortna’s database of conflict instance, which uses official cease-fires to indicate the end of conflict, with exceptions for situations in which the cease-fire clearly does not significantly reduce or eliminate violence.

Post-conflict reconstruction involves numerous processes and objectives to rebuild a state’s economy, political institutions, and society. Formal definitions vary in focus and scope, but this study focuses on the reconstruction of physical civil infrastructure, a core mechanism of stimulating economic activity and nurturing security.<sup>2</sup> After a cease-fire, in nearly every case of conflict, a massive infrastructure gap exists, in which the existing infrastructure stock is tens to hundreds of billions of dollars shy of the levels necessary for the regular and affordable provision of basic utilities, including clean water, electricity, fuel, healthcare, sewage treatment,

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<sup>1</sup> Iraq Body Count estimates 7,958 civilian deaths during the official Iraq War, and 96,848 since then during peacekeeping operations.

<sup>2</sup> The Post-Conflict Reconstruction Project at the Center for Strategic and International Studies considers four keystone aspects of reconstruction: “security and public safety, justice and reconciliation, governance and participation, and economic and social progress,” (Center for Strategic and International Studies n.d.). The Post-War Reconstruction and Development Unit at the University of York cites seven foundational pillars for reconstruction: vision, participation, security, reconciliation and justice, equity, reconstruction and development, and capacity to reconstruct (Barakat 2005). Some definitions are more biased and ideological in nature – the U.S. Department of State’s Office of the Coordinator for Reconstruction and Stabilization aims for countries to “reach a sustainable path toward peace, democracy, and a market economy,” (About S/CRS 2008).

transportation and communication, for residents, and to allow for the private production and transportation of goods and services at internally viable and externally competitive levels.

Unfortunately, infrastructure procurement after conflict often progresses too slowly to provide basic services for the population. These critical and time-sensitive projects are often plagued by problems including completion delays, crippling sabotage and terrorism, cost overruns, and deficiencies in operational capacity. These issues can stem from the fact that design, construction, and operation sometimes occur in an environment of insecurity and weak governance. The ecosystem of weak financial, political, and legal structures creates breeding ground for crime and corruption to take hold of the economy and government, which inhibits the optimal allocation of resources and expertise in reconstruction, and slows project delivery times. For example, a single rocket, grenade, or gunshot can take-down a power plant or transmission line, causing millions of dollars in damage and halting generation for weeks. Even when projects are completed after an extended period of time, the level of investment is far short of what the countries need to provide for the basic human needs of the population and facilitate economic activity.

The political economy of donor conferences and post-conflict fundraising is such that it would be difficult to magnify donor commitments and accelerate timelines is largely infeasible. Two remaining options are 1) a permanent, institutionalized and rapidly deployable public fund for reconstruction, and 2) elevated engagement of private sector investment. Both entail numerous and complex challenges. The former has oft been proposed by nationbuilding practitioners, but not yet implemented. The latter is the objective of many multilateral programs, but has yet to show concrete results. This study will focus on methods of incentivizing increased private sector investment in the infrastructure sector after conflict.

Why doesn't the private sector tend to invest in post-conflict nations? The answer may seem obvious – “it's too risky given expected returns” but a nuanced understanding of the specific key risks, their current allocation, and potential lack of mitigation techniques is important to craft appropriate policy solutions. Weak political, legal, and social institutions continue have negative effects on returns that are difficult, expensive, or many times impossible for developers to mitigate. Multilateral institutions, such as the World Bank, and governments have already tried to formulate methods of convincing the investors to build infrastructure in weak or conflict-ridden states. To better incentivize private capital flows to developing nations, the World Bank Group, Export Credit Agencies (ECA), and some private institutions offer political risk insurance (PRI) intended to protect against uncontrollable and potentially devastating politically connected events. However, utilization of PRI is very low, especially in post-conflict cases, since it is imperfectly structured and non-comprehensive, and thus less interesting to private investors.

Moreover, many post-conflict infrastructure projects simply lack a market opportunity – they are not internally financially viable. Even if political risks were not present, many projects in sectors such as water and transportation would not be viable absent government subsidies, which cannot be relied upon in areas of weak governance, and are often nonexistent due to budgetary constraints. Even though the projects may provide economic/social returns that motivate their construction, the financial returns that an investor can capture are not sufficient to compensate for the risk taken, as many of the benefits are externalities. In other economies, such projects are subsidized, but post-conflict, projects tend to be entirely public – few public-private partnerships exist.

This paper explores methodologies to more effectively mitigate project risks that remain obstacles to private investment in infrastructure. Chapter 1 reviews different infrastructure development models to evaluate their respective and comparative advantages, disadvantages, risk allocation structures, and historical implementation. Then, Chapter 2 breaks down the problem of political risk in investments in developing countries, elaborating on security and institutional risk. Chapter 3 focuses on the effectiveness of different types of political and institutional risk mitigation strategies, with a concentration on political risk insurance. Chapter 4 analyzes trends in post-conflict private infrastructure investment to identify areas of structural policy deficiencies. Finally, Chapter 5 explores various policy solutions to better attract private sector investment to post-conflict scenarios. Specific policies include public-private partnership availability payment structures, cash grant subsidies, subsidized political risk insurance, and offering of breach of commercial contract coverage. This basket of strategies attempts to lower necessary investor hurdle rates through reducing project risk, and raise financial returns above said hurdle rates with targeted subsidies.<sup>3</sup> The study largely focuses on Iraq and Afghanistan due to a lack of data availability in other cases for past nationbuilding scenarios, but has broader applicability for all conflict-torn nations.

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<sup>3</sup> A hurdle rate is the minimum expected Internal Rate of Return (IRR) on an asset in order for an investor to feel comfortable deploying capital.

## Chapter 1: Infrastructure Development Models

### Why Focus on Civil Infrastructure?

The presence of robust and reliable civil infrastructure is essential for economic development, especially in low-income countries or regions in poor nations.<sup>1</sup> Infrastructure facilitates crucial economic activity such as manufacturing, trade, services and human capital growth.<sup>2</sup> Numerous scholars try to quantify this effect through various channels. According to a World Bank study, a 1% increase in infrastructure stock is associated with a 1% increase in GDP (Goldman Sachs 2008, 3). A recent study by J. Luis Guash found that a 1% increase in telephone lines can result in a 0.2% increase in GDP (Guasch 2004, 2-3). Briceño et al (2004) find the output elasticity of infrastructure development in Latin America ranged from .15 to 1.12 (Briceño-Garmendia, Estache and Shafik 2004, 6). This figure is particularly meaningful in light of Estache et al (2002)'s finding that a 1% increase in per capita income causes a reduction in the share of a population living in poverty by 0.5% (Estache, Vivien and Wodon, Accounting for Poverty in Infrastructure Reform 2002). Unfortunately, causality also occurs in the reverse, as investment in infrastructure is also a function of economic growth, which results in a demand for new services and projects. Canning and Bennathan use panel data on infrastructure stocks to estimate an aggregate production function, and then calculate the marginal returns of different types of infrastructure on output. They find the economic returns to infrastructure are 30-40% for telecommunications, <40% for power generation, and 80% for roads, again, higher in poor countries (Canning and Bennathan 2000). Given that post-conflict nations tend be

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<sup>1</sup> For the purposes of this paper, the term “infrastructure” refers to projects in the following sectors: power (generation, fuel extraction/refining/storage/transportation, transmission), transportation (roads, rail, bridges, ports, airports, mass transit), non-energy utilities (water, sewage), communications (telecommunications), and social infrastructure (schools, prisons, hospitals, other “public” buildings). Unlike some definitions of infrastructure in the financial community, this study is agnostic to the levels of risk in a project’s financial structure to qualify as “infrastructure.”

<sup>2</sup>

underdeveloped and have an infrastructure that is war-ravaged, standard assumptions of decreasing returns to capital investment would imply the social return is even higher in these cases.<sup>3</sup> Ramirez and Esfahani (2000) estimate that if Africa experienced investment growth rates in telecommunications and power generation infrastructure at levels comparable to East Asia in the 1980s and 1990s, it would have benefited from 1.3 percentage points higher growth (Ramirez and Esfahani 2000).

Unfortunately, a sizeable infrastructure stock and investment gap exists in the developing world. According to a World Economic Forum report, emerging market countries need an average of 5.5% of its GDP annually (more for the poorest nations), but currently only receive 2-4% (World Economic Forum 2006). Asia comes in at the top of the 2-4% range, whereas Latin America receives 1.6%, and Africa 2-3%. Moreover, these figures may overstate investment in African infrastructure, as African nations systematically have a very low GDP. The World Economic Forum further estimates that increasing Latin America's investment to levels in East Asia would add 1.4-1.8% in GDP growth, and lower income inequality by 10-20% (World Economic Forum 2006). Additionally, insufficient or irregular electricity provision in India, Pakistan, Colombia, and Uganda reduces GDP by an estimated 1-2% (International Finance Corporation 1996, 43-44). Finally, a survey of infrastructure constraints in Kumasi, Ghana found that the primary obstacle to business activity was inconsistent electricity supply, road congestion and generally poor road conditions, water supply and quality, and finally telecommunications (Baker 2008).

Statistics estimating the economic impact of infrastructure projects in poor nations understate effects specific to post-conflict states. Warring factions often target infrastructure

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<sup>3</sup> This high social economic return, only a minority of which can be captured through user fees, provides for a strong case for government subsidies for infrastructure as a public good with significant externalities.

assets that are not only logistically important for militants, but strategically and economically valuable. Key bridges, roads, power plants, transmission lines, hospitals, schools, and communications hubs are thus left incapacitated, and require significant investment to be made useful once more. Bottlenecks and severe levels of under-capacity in a given sector and region and allow for tremendous marginal social benefit for a given project. Whereas the magnitude of the specific effects of infrastructure vary by study and are extremely difficult to quantify, it can be concluded that the effects are positive, significant, and worth capturing.

While the relationship between infrastructure development and economic growth has been established, the causality between infrastructure development and security has not been fully explored in academic literature. James Fearon finds that “country poverty and slow economic growth [are] predictors of civil war,” and it follows that infrastructure development can predict increased security through its positive effect on economic development (Fearon and Laitin 2010). However, this relationship is one of simultaneous causality; a more secure environment facilitates infrastructure procurement through the channels of increased market depth and demand, lower cost, more speedy construction, and reduced output interruption.

The importance of infrastructure reconstruction is especially salient in the context of post-conflict nationbuilding, as the legitimacy of nationbuilders has been shown to wane quickly if pre-war levels of infrastructure are not restored, especially if promises are made that raise expectations. Psychological prospect theory predicts that citizens of a state undergoing reconstruction experience happiness relative to a reference point – they feel satisfaction relative to the pre-war level of infrastructure. If infrastructure remains impaired – for example, if previous access to clean water or electricity is hampered – over time they are more apt to become upset with the proximate cause of the change: the nationbuilders. Moreover, economic and

psychological theory dictates that repeated shocks, positive or negative, to ones utility have a greater effect than if the sum of said shocks were felt in a single period. As infrastructure facilitates the provision of daily essentials, and thus these negative effects are indeed felt often, which bodes poorly for nationbuilders. The U.S. Special Inspector General for Iraq Reconstruction (SIGIR) argues “a well-planned, properly resourced, and effectively managed relief and reconstruction program is a prerequisite to an effective counterinsurgency campaign,” (Office of the Special Inspector General for Iraq Reconstruction (SIGIR) 2009). Indeed, according to a Washington Post article soon after the U.S. occupation of Iraq began, “crippling blackouts have returned to the capital and the rest of the country, impeding the restoration of public order and economic activity, and creating a new focus of anger at the U.S. occupation,” and, likewise, according to a senior U.S. official:

Power is the central issue, without it, you don't have security. You don't have an economy. You don't have trust in what we're doing. What you do have is more anger, more frustration, more violence. We're not going to solve anything here until we first find a way to get more electricity to the people. (Chandrasekaran 2003).

Thus, infrastructure provision is crucial for political stability; without it, anger will be directed at the authorities, be they nationbuilders or an indigenous political faction.

Post-conflict infrastructure reconstruction does not merely attempt to return infrastructure levels to pre-war levels – it, at least in rhetoric, attempts to establish an elevated standard of infrastructure that will facilitate speedy economic recovery and sustained growth.<sup>4</sup> However, fundraising and infrastructure reconstruction needs vary significantly by case. For a relatively benign case such as Kuwait, once the conflict concluded and Saddam's forces were defeated,

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<sup>4</sup> However, it should also be noted that certain types of infrastructure projects can facilitate violence. Just as technological innovation can empower spoilers and nefarious actors, better transportation and communications infrastructure in particular can allow for better coordinated and more inexpensive violent acts. Conversely, road paving has been showed to reduce IED attack incidence, as IED are more difficult to bury and hide (Foust 2008).

“Kuwait was quite capable of funding and running itself,” (Taylor 2007, 30). While the lion’s share of post-conflict cases simply have nonfunctional infrastructure, it is important to keep the variance in needs in mind, especially on a sectoral level.

Funding for infrastructure projects after conflict originates from four general sources in decreasing order: governments, multilateral institutions, corporate industry sponsors, and private investment funds. The latter two groups exhibit similar structural attributes, and will be grouped together for the purpose this section analyzing the relative advantages and disadvantages of public and private investment.

### **Public Finance Models**

A sound risk management structure calls for individual types of risk to be allocated to the parties most able to control and mitigate them. In infrastructure development, the private sector is generally best-equipped to bear design, procurement, construction, and operations risk. Technical consultants, logistics companies, construction firms, and operators have more expertise and direct influence over project outcomes than the government, which often does not have the high levels of functional and managerial capacity found in the private sector. On the other hand, certain risks are best borne by the government, especially regulatory and political risk. In post-conflict situations, this includes security risk because of the externalities associated with security in a given area, and the cost-advantage to public military security over usage of private military contractors.

Publicly funded infrastructure projects tend to allocate most project risk to the government, though construction and operations risk are sometimes partially transferred to private parties. Procurement occurs through two general models: “cost-plus / design-build” and “design-bid-build.” The first arrangement is akin to a blank check given to EPC contractors with

a fixed profit margin, an overall budgetary cap on expenditures, and some bonuses for completion of certain milestones.<sup>5</sup> In the U.S. federal government, a “no-bid” contract can be elected in one of seven circumstances: if only one firm can satisfy project requirements, “unusual and compelling urgency,” industrial mobilization, international agreement, requirement by statute, national security, and the “public interest,” (Chapter 1 -- Federal Acquisition Regulation, Part 6 -- Competition Requirements n.d.). Reductions in project implementation can be achieved through conducting design and construction work in parallel, whereas in design-bid-build arrangements, they occur in series. In Iraq, the Department of Defense had active “Indefinite Delivery Indefinite Quantity” contracts with a couple contractors including KBR in which, for a fixed period of time (with optional extensions), an indefinite amount of goods or services for an unspecified cost:

They are used when agencies can't predetermine, above a specified minimum, the precise quantities of supplies or services that the Government will require during the contract period. IDIQs help streamline the contract process and speed service delivery. (IDIQ Contracts n.d.)

It is important to understand the situation-specific utility of public no-bid contracts. First, they bring the benefits of rapid mobilization. Second, they are suited for projects in which costs are so uncertain that no construction firm or private entity is willing to assume cost risk.

According to a KBR spokeswoman, “no subcontractor would have been willing to mobilize equipment and personnel to an unstable war zone if [project contracts] had been written more stringently,” (Glanz 2006, 2). While this is likely an exaggeration, there is some truth behind her statement – a fine balance must be struck between strong performance standards and tolerance for unforeseen cost increases. If performance standards are too strict in a situation in which the construction company does not have ample time to conduct due diligence, it will not accept the

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<sup>5</sup> The stages in the life-cycle of an infrastructure asset are usually divided into four categories: design, financing, construction, and operation and maintenance (O&M).

project contract. On the other hand, if there is too high a tolerance for cost increases, under the standard “no-bid” contract structure that pays a fixed margin of expenses, there is little incentive to build efficiently and without waste; indeed, there can be a perverse incentive to raise costs to receive a higher payout. Though, while cost-plus contracts have definite benefits and are apt for certain situations, a SIGIR report found they were overused in Iraq (SIGIR 2009). Generally, the incentives in this model are to inflate costs, or, at a minimum, the contrapositive is true: there is little-to-no incentive to reduce costs. In post-conflict reconstruction, when budgets are tight, excessive use of cost-plus contracts stifles the potential for additional projects to be constructed.

The second type is a “design-bid-build” contract in which a technical advisor is hired to produce designs and tender documents for bid solicitation, after which construction firms competitively bid on a project, each trying to best the other as the low-cost procurer. Though other considerations are made such as technical and operational capabilities, the lowest bidder nearly always wins the contract. The public agency then pays the firm or consortium the bid amount, after which construction occurs and the infrastructure asset is typically given to the public authority for ownership and O&M. Responsibility for construction risk falls to the private sector, though renegotiation can occur, and long-term performance of the asset is in the hands of the government.<sup>6</sup>

This model has the potential to reduce costs at the expense of increased project gestation duration. One structural element of inefficiency in this process is that it does not allow for market innovation. Alternative designs that may be more cost-effective or superior on other critical metrics are not explored by bidders. However, since the chosen design is opened for public bidding, the incentives to inflate construction costs are reduced, though not eliminated, as

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<sup>6</sup> A short performance warranty period may apply.

during construction, as mentioned, renegotiation often occurs. The chief drawback to this model is time – a months-long bidding process must occur, and the design and construction periods have no potential overlap. Especially in post-conflict scenarios when speedy service delivery is crucial, it might be worth accepting some levels of inefficiency and higher cost to achieve quicker project procurement.

### Private Finance Models

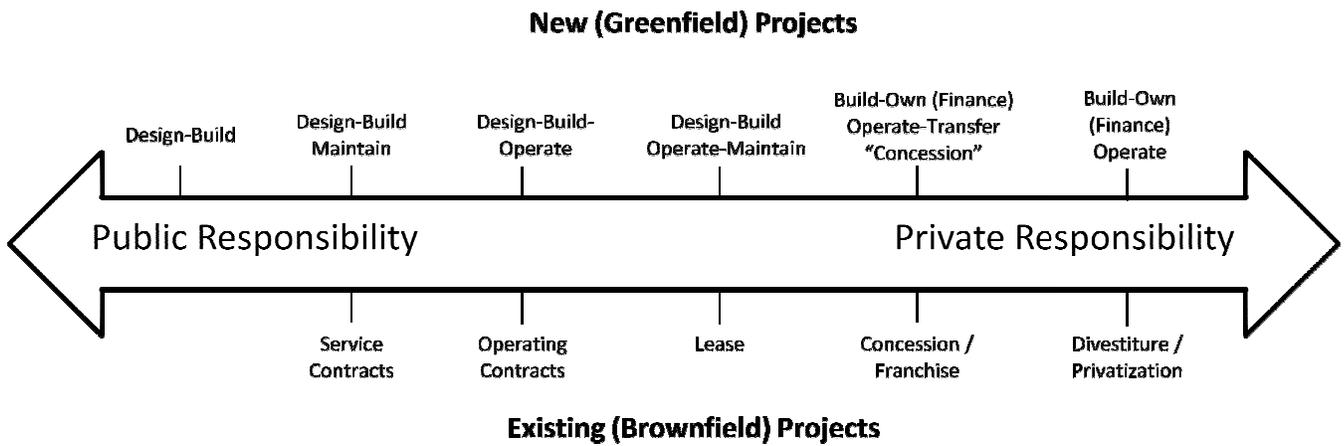
Private sector investment in the infrastructure sector has the tremendous potential to bring investment additionality to post-conflict regions, in addition to design, construction, and operational efficiency. International donors and multilateral organizations do not provide funding sufficient to build enough infrastructure to fuel robust economic growth, leaving an infrastructure investment gap. The need for supplemental capital to fill the investment need can come from the private sector - private investment offers the prospect of “additionality” – using small or no subsidies to leverage the public balance sheet towards higher levels of infrastructure provision. Project investors deploy their own capital and utilize user fees to recoup some of or all investment costs, freeing up public funds that can then be spent on other projects. These user fees, if passed on to ordinary citizens are typically regulated and controlled by the government to protect the public interest, since infrastructure assets (such as roads, bridges, and airports) tend to exhibit monopolistic qualities.

The second core advantage of private project finance is the potential for higher “value for money” than conventional public financed projects. Privately owned infrastructure concessions in which the private sector has a significant duration of ownership of the asset should typically yield cost-savings with constant or better quality service than publicly owned assets. The reduced

cost stems from risk transfer efficiency, life-cycle costing in construction - upfront investments that are initially more expensive than alternatives but produce a net reduction in life-cycle costs of an asset. Much of the cost-savings usually occurs in construction, when the private sector has significant incentives to complete the project early, and of sufficient quality to be operational for a long period of time (E. R. Yescombe 2007). A study of private infrastructure projects in the UK found on average a 17% cost savings associated with private over public delivery (Arthur Andersen 2000, 3). An analysis of the Autoroute 30 project in Quebec yields an estimated \$751 million savings on a \$1,538 million project (estimated costs of \$2,289.8 million if publicly owned) (Quebec 2008).

Private sector models of infrastructure development come in many forms. Different stages of project shaping, including financing, engineering, construction, and operation, can be structured to be managed by either public or private actors. Example methods include private mandates to build-own-operate-transfer (“BOOT”) - a temporary concession to build and operate an asset, then transfer it to government control - and build-own-operate (“BOO”) - a permanent privatization. The figure below shows a sample continuum of project ownership, from completely public to wholly private responsibility.

**Figure 1.1: Public-Private Responsibility Continuum.**



Source: Author

The introduction of increased private sector ownership of project risks emerged from the desire to reduce inefficiency and waste in publicly financed projects, and to open a source of capital to complement insufficient government spending on infrastructure. Project finance, the principle vehicle for infrastructure investment (in contrast to corporate or public finance), originated in the power generation markets, but has become prevalent in all infrastructure sectors. Beginning with rapid growth in the 80s and 90s, project finance has become the predominant financing vehicle for medium and large infrastructure projects. Its defining attribute is the creation of a standalone financial entity, the project vehicle, in which non-recourse debt can be raised. In the United States, around 10-15% of capital investment and over 50% of capital assets costing over \$500 million are financed through project vehicles (B. C. Esty, *Why Study Large Projects? An Introduction to Research on Project Finance* 2004). A benefit to this model, especially in the developing world, is that if the project fails, the government is not left with the debt – investors have no recourse except to the project asset (unless there is a breach of contract). It has been utilized most heavily in emerging markets, partially as a response to previous World Bank infrastructure lending to governments that, if the money was squandered or the project

failed, the country would be saddled with a debt burden. Benjamin Esty distills the essence of project finance into the following definition:

Project finance involves the creation of a legally independent project company financed with nonrecourse debt (and equity from one or more corporations known as sponsoring firms) for the purpose of financing investment in a single-purpose capital asset, usually with a limited life. (Esty and Sesia 2006)

Infrastructure assets often have high levels of debt to raise equity returns above investor hurdle rates, and corporate project developers often do not want project failure risk on their balance sheet – project finance offers non-recourse debt and mitigates and potentially isolates risk to the parent's balance sheet.<sup>7</sup>

However, this model is not without drawbacks – private finance can result in higher financing costs (paying equity investors their hurdle rates or more), and cause slower mobilization (due more thorough due diligence depending on the type and complexity of the project than public sector actors) than public mandates. Private infrastructure projects have characteristics that cause long gestation period, require many specialized actors, and make each debt and equity investor thoroughly vet deals with a low tolerance for cash flow volatility. First, they are large and capital intensive, requiring massive upfront investments - depending on the project structure, it can take many years to break-even. Second, they are complex – highly leveraged and requiring on average more due diligence than is required to sell a Fortune 500 company. Third, partially stemming from complexity, they are illiquid, difficult to divide and rarely change hands, causing them to be difficult to value and exit as an investment. Without some degree of certainty about revenues, usually in the form of off-take/demand contracts

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<sup>7</sup> A hurdle rate is defined as the minimum expected rate of return for an entity to choose to invest capital in an asset. Non-recourse debt is lending in which the credit provider has no right to any other asset besides that being financed – in project finance, the infrastructure asset. The debt provider cannot claim a right to any equityholder's assets beyond the project.

secured before construction or government payment guarantees, many investors do not have the risk tolerance to sponsor the construction of these assets.

### Multilateral Funding for Reconstruction

Though multilateral-sponsors infrastructure reconstruction looks mostly like governmental public finance, distinguishing factors such as ongoing reconstruction programs merit individual analysis. The multilateral organizations that fund infrastructure development are: the World Bank group and regional development banks such as the Asian Development Bank, African Development Bank, and the Inter-American Development Bank. The World Bank Group's role in post-conflict reconstruction has evolved over the past two decades, during which it grew to have a much more direct and sizeable commitment. Prior to 1994, the Bank had little to no role coordinating international assistance immediately after conflict. However, that year UN and World Bank leadership decided that the Bank should mobilize for action before formal longer-term development plans were formulated, bridging the gap between relief and formal development programs (The World Bank 2004, 4). During conflict, the Post-Conflict Unit (now "Fragile and Conflict-Affected Countries Unit") would plan reconstruction contingencies in alongside relevant countries and other World Bank groups (Stremlau and Sagasti 1998, 4). The Bank acknowledged that the immediate economic development and perceived equity of the distribution of development gains amongst a population is a core determinant of a resurgence of violence (Junne and Verkoren 2005, v). The World Bank further affirmed this relationship between economic development and security "countries affected by conflict face a two-way relationship between conflict and poverty – pervasive poverty makes societies more vulnerable to violent conflict, while conflict itself creates more poverty," (The World Bank 2004, 14).

As the World Bank embraced new institutional objectives, it reorganized its divisions to more effectively enact policy. In 1997, the Post-Conflict Unit was established, later changing its name to the “Conflict Prevention and Reconstruction Unit.” In 2007, the name changed again, merging with the Fragile States Unit to become the Fragile and Conflict-Affected Countries Group (OPCFC). Now, in addition to IDA funding, the Bank created the “State and Peacebuilding Fund” in 2008, which was funded with \$100MM and replaces two previous post-conflict facilities.<sup>8</sup> Since 1998 and 2008, the World Bank has given \$263.0MM and \$81.6MM in grants to conflict-afflicted nations, and comprise both project and government planning funding (State- and Peace-Building Grant Database n.d.). In total, Fragile and Conflict Afflicted Nations have received \$5.9 billion in post-conflict reconstruction assistance since 2000 (Fragile and Conflict-Affected States n.d.).<sup>9</sup> While this is an impressive nominal figure, most of this funding does not go to infrastructure development, but rather other important programmatic objectives. According to the most recent Annual Report, 16% of funding through the State- and Peace-Building Grant program went to International/regional organizations, 33% to Government Entities, 37% to NGO, and 14% to internal World Bank groups (The State and Peace-Building Fund 2009). Through the IDA, while the World Bank has been providing important financial support to reconstruction efforts, it is not a significant financier of infrastructure projects through its IDA/IBRD entities.<sup>10</sup> Reconstruction fundraising tends to be short-lived after conflict as well.

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<sup>8</sup> The State and Peacebuilding Fund replaced the Post-Conflict Fund and the Low Income Countries Under Stress (LICUS) Trust Fund.

<sup>9</sup> The current list of Fragile and Conflict Afflicted Nations include: Afghanistan, Angola, Burundi, Cameroon, CAR, Chad, Comoros ,DRC ,Congo, Rep ,Cote d'Ivoire, Djibouti, Eritrea (PC), The Gambia, Guinea, Guinea-Bissau, Haiti (RE), Kiribati, Kosovo, Liberia (PC), Myanmar, Nepal, Papua New Guinea, Sao Tome and Principe, Sierra Leone, Solomon Islands, Somalia (NCIR), Sudan (NCIR), Tajikistan, Timor-Leste (PC), Togo (RE), Tonga, Yemen, Territories, West Bank & Gaza, Western Sahara

<sup>10</sup> The World Bank Group is comprised of five divisions: The International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the International centre for Settlement of

According to a World Bank study, international aid to post-conflict states begins to decline after three years (McDonald 2005). Indeed, we are starting to see this trend in Iraq, as “the Americans — military and civilian reconstruction specialists alike — continue to depart in large numbers, taking with them their money, equipment and expertise (Williams 2009).

### The Rationale for Facilitating Private Investment

Given insufficient public sector investment, the most compelling argument for creating more attractive opportunities for private infrastructure investment is the prospect of additionality. In traditional model, the international community must fundraise to underwrite reconstruction costs, which occurs slowly and usually entails a lack of strong accountability. Once the reconstruction objectives are identified, and required capital for each goal must be secured. This process can take quite some time – first, countries must make pledges, and then they must actually disburse the money into a shared account. Taylor (2007) cites the timeline problem as twofold: the process of obtaining fundraising pledges in the international community frequently required “a year or two,” (Taylor 2007, 33). Then, the process of disbursing pledges occurred “very slowly, and there was little accountability at high levels of government about what was actually done with the funds,” (Taylor 2007, 33). Unfortunately, the problem is not just a story of incentives, but of timing. Projects remain constrained by public budgetary allocations and timelines in international donor pools. The time lag between the end of a conflict, donor commitments, and expending of funds can amount to years, more than enough time for resentment and further insecurity to breed within a nation or region. As a SIGIR report stated “The core problem was – and still is – that the United States government lacks an accepted

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Investment Disputes (ICSID). The first two are colloquially referred to as the “World Bank” whereas the IFC, MIGA, and ICSID are generally thought of as more distinct entities.

doctrine for how to rebuild a failed state and a structure capable of mobilizing resources on the required scale,” (Office of the Special Inspector General for Iraq Reconstruction (SIGIR) 2009).

Depending on whether the nationbuilding operation is lead by a multilateral organization like NATO in Afghanistan, or an orchestrated by single or small group of nations like the U.S. and the “Coalition of the Willing” in Iraq, the structure of fundraising will vary. In UN or NATO organized interventions, donors conferences are held to fundraise for reconstruction. In the case of Iraq, the U.S. bears almost all of the financing and funding costs of civil infrastructure reconstruction, and the story is one of the politics of annual congressional appropriations. Project construction could be delayed due to the time required to fundraise – hypothetically, a nation, group of nations, or multilateral such as the World Bank could provide a facility to loan money to the reconstruction effort to bridge the fundraising time lag, but there is no evidence of this having occurred. It is again important to note that the need and ability of a host nation to fund reconstruction does vary. For example, Iraq had immediately accessible oil revenues to partially underwrite reconstruction. In 2009, the Iraqi state spent \$15 billion of its oil revenues on its civil infrastructure. However, its revenue source is quite volatile – indeed, the 2009 budget had to be cut by 25%, or \$20 billion, from \$80 to \$60 billion, when oil prices dropped from their record high (Rogers 2009). The government was in a better position in terms of revenues than the vast majority of post-conflict states which typically do not have a relatively-easily fungible resource base to fund government outlays.

The need for additional infrastructure reconstruction spending is highlighted by the nationbuilding experience in Iraq. For example, in Iraq, Minister of Finance Bayan Jabr recently noted that the country requires additional capital of \$100 billion to \$150 billion, which is roughly equivalent with how much has been spent over the past 6 years (SIGIR 2009, 315). More

dramatically, recently Prime Minister Nuri al-Malaki claimed that the country needs \$400 billion for infrastructure reconstruction (Williams 2009). A recent UN report found that Iraq requires 1.5 million additional houses, with a current stock of 2.8 million, to accommodate the majority of the population currently living in slum-like conditions (Property Wire 2009). Iraqi Planning Minister Ali Baban states 'Iraq has an increasing housing shortage, crumbling infrastructure and a lack of basic services as a result of years of war, neglect and lack of sufficient investment. We need to address this urgently,' and believes that 85% of the necessary funding for such projects would have to come from foreign investors (Property Wire 2009).

Additionally, private investment and expertise offers the best means to tap a nation's natural resource reserves, which has a strong economic stimulative effect.<sup>11</sup> Afghanistan has geological economic resources that could be extracted with private sector investment to create jobs for local citizens. Mark Ward, Special Advisor on Development to the Special Representative of the Secretary General for the United Nations Assistance Mission in Afghanistan (UNAMA) opined on this need:

It is time to exploit the natural resources of the country to create revenue and jobs. Afghanistan has tremendous reserves of iron ore, and certain minerals, copper, and it also has, we think, natural gas... make some massive investments in infrastructure - in roads, in railroads, in crossing points, in laws, to allow Afghanistan to take advantage of the natural resources and minerals that it has to create tax revenues and jobs for the future (Ward, Afghanistan's New Development Priorities 2009).

The efficiency and reduction of waste, fraud, and abuse that can come with private sector involvement also lends potential for improvement. A recent study by 24 African nations found that the poor levels and quality of infrastructure in Sub-Saharan Africa retards GDP growth by 2% annually, along with reducing business productivity by "as much as 40%," and argues that "improving inefficiencies and reducing waste could result in major improvements in African's

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<sup>11</sup> A discussion of the potential negative environmental repercussions of natural resource infrastructure investment is beyond the scope of this paper.

lives...considerable wastage to address; a number of efficiency improvements could potentially expand the available resources by a further \$17 billion,” (Transforming African Infrastructure will Require an Additional \$31 Billion a Year and Huge Efficiency Gains 2009). There have been numerous examples of waste in Iraq, for example, in one project, Parsons’ lack of project oversight and poor management caused colossal cost overruns, and a SIGIR analysis found that the circumstances that have caused the majority of the schedule slips have, in fact, been within Parson’ control (SIGIR 2009). Another politically sensitive project, the formerly \$165 million Basra Children’s Hospital that Laura Bush championed, is now \$115 Million over budget (Williams 2009). While a systematic analysis of SIGIR audit reports to determine the prevalence of waste, fraud, and abuse beyond the scope of the paper, anecdotal accounts underscore the high degree of waste and abuse. Stuart W. Bowen Jr., inspector general for Iraq reconstruction, said his watchdog agency had “regularly raised concerns about the potential waste of U.S. taxpayer money resulting from reconstruction projects that were poorly planned, badly transferred, or insufficiently sustained by the Iraqi government,” (Williams 2009).

In post-conflict situations, increased ownership of projects by the private sector could also assist in project selection. Administrators and bureaucrats often do not select the best projects or the best designs for projects. If a more efficient design methodology can be utilized, a private investor would implement it to maximize equity returns. The Al Fatah pipeline is a now infamous case of cost overruns due to fraud and abuse partially stemming from the misallocation of incentives and poor project selection in the public procurement process. The project aimed to rebuild a bridge and oil pipeline near Al Fatah, Iraq, a village about 130 miles north of Baghdad. The area had been shelled during the invasion in 2003 to prevent troop movement across the Tigris River, and the bridge and adjacent pipeline destroyed. KBR, a subsidiary of the U.S.

construction firm Halliburton, was given a no-bid, cost-plus contract to reconstruct a new pipeline. The New York Times' James Glanz published an investigative report describing the process that resulted in the project going grossly over-budget. As he put it, "Although the failures of [reconstruction] are routinely attributed to insurgent attacks, an examination of this project shows that troubled decision-making and execution have played equally important roles (Glanz 2006, 1). Warnings that the project would fail occurred at many stages of project shaping. In August of 2003, KBR solicited a technical consultant to analyze on the geotechnicals of the relevant area. The resulting report warned that it would be very risky to drill in the riverbed without extensive underground tests; the study "stated repeatedly that the project should not begin without extensive field exploration and laboratory testing of the area," citing "past tectonic activities...suggesting slippage of the earth's crust...[the project] could not succeed because the underground terrain was shattered and unstable" however KBR proceeded to begin drilling without notifying senior oil governmental officials in Iraq (Glanz 2006). Before construction, experts warned that the project "could not succeed because the underground terrain was shattered and unstable," (Glanz 2006). After the project began, a supervisor informed the project team that it would be impossible to drill the holes according to specification, but KBR instructed him to continue. Work did not stop until a few weeks later, when the \$75.7 million earmarked for the budget had been exhausted (Glanz 2006, 2). Valuable taxpayer resources were wasted due to improperly aligned incentives.

What motives led to these warnings being ignored and the project failing? Indeed, a SIGIR report concluded that "the geological complexities that caused the project to fail were not only foreseeable but predicted," (Glanz 2006, 2). According to an official at SIGIR, "It was a horrible contract...basically, Give it your best shot, spend six months doing it (Glanz 2006, 2).

KBR did not even supply the Oil Ministry with requested and required status reports, and heard about the project failures through rumor. Later, after the budget for the pipeline was expanded to \$220 million, KBR notified the oil ministry that the project funds had been expended with no substantive progress on construction. SIGIR concluded:

Neither the UACE, nor the general contractor, KBR, acted on the consultant's recommendation to perform additional research that should have prevented the failure. In addition... there were a number of issues that contributed to the project's failure, including: a flawed construction design, a subcontract that had no performance requirements, a compartmentalized project management structure that impeded communications, and inadequate oversight by USACE and KBR. (Office of the Special Inspector General for Iraq Reconstruction 2006, i)

The economic cost of this pipeline was far larger than the \$220 million lost on construction – an estimated \$1.5 billion in potential oil revenues was lost during the period the pipeline was originally supposed to be in operation.

The Al Fatah pipeline case demonstrates how early private sector advice on project selection or private ownership could have prevented such egregious and costly cost overruns.. Private investment advisors can help governments complete cost-benefit analysis on a project-basis after a needs assessment to help prevent investment in unviable projects. For example, It shows how bureaucrats and the Army Corps of Engineers sometimes choose projects that are not economically viable, or demand design specifications that are infeasible at given cost parameters. Additionally, it is difficult to simply conduct even the levels of project selection and bidding due diligence analysis required by governmental contracting rules. As of December 31, 2005, about 30 months after the Iraqi invasion campaign concluded, according to the SIGIR, 40% of the \$19.439 billion of the Iraqi Relief and Reconstruction Fund (IRRF) appropriated by Congress was expended on security (Office of the Special Inspector General for Iraqi Reconstruction (SIGIR) 2006). In total, \$10.10 billion or just over 50% of appropriated funds have been expended (Office of the Special Inspector General for Iraqi Reconstruction (SIGIR) 2006).

However, in post-conflict cases, one can envision many scenarios in which this general principle is not necessarily wholly applicable – for example, a desire for expediency may limit technical study durations and depth, and designs could end up flawed due to factors unknown to the firm and government alike. Procurement could be delayed due to security issues affecting supply, and construction hampered by security, local labor issues, or sabotage. In some of these situations, the public sector may be the best agent to bear part of the risk, especially since it is charged with for maintaining security. In some cases of political risk, no party involved can credibly mitigate the risk, and government agrees to bear it as an implicit subsidy, partially because it has unique tools and mechanisms for exerting influence to political actors. But balancing allocation of risk is a delicate issue, as too much of a subsidy attenuates some of the incentive for good project performance and inexpensive delivery.

Nationbuilding experts agree that local participation is crucial to building capacity, but the employment of local can entail a tradeoff between project efficiency (depending on technical complexity) and local ownership. If a project is technically complex, transfer of the asset to the government after construction risks improper operations and maintenance. Whereas it may be most efficient for an international private contractor to have long-term ownership and management over an infrastructure asset, it may not be palatable or feasible when taking into account political constraints.

This chapter reviewed different models of public and private infrastructure development, and argued that increased private sector involvement is not only desired but necessary for adequate infrastructure service provision in post-conflict nations. The following chapter analyzes the channels through which political risk impacts private investment, and reviews mitigation techniques.

## **Chapter 2: Political Risk and the Ecology for Private Investment**

The intensity of conflict and other contextual variables including the political, economic, and social institutional structures of a nation influence the post-conflict investment climate. In almost all conflict cases, the investment climate in the aftermath is unfriendly to capital inflows. Many of the underlying problematic issues are endemic to many developing countries, regardless of conflict, but they are usually more pronounced after conflict. Additionally, post-conflict scenarios also have unique political risk challenges – most importantly, security risk.

### **Political Risk in Developing Countries**

Investors have a strong aversion to assets with political risk since it can cause unexpected, often difficult to manage and/or mitigate, and severe effects on financial returns. Political risk refers to a broad basket of political decisions or events that impact an investment. The precise definition for the term has not yet been universally agreed-upon, but common types of political risks include convertibility risk (difficulty or inability to convert local currency to an internationally fungible currency), expropriation risk (nationalization of an infrastructure asset), creeping expropriation risk (damaging changes in legislation, taxes, regulations, or the ability to procure permits), restriction on repatriation of profits, breach of contract with a government counterparty (including payment obligations), terrorism, civil war, or other violence.

The term “political risk” potentially misleading since it is often difficult to predict with reasonable probability the occurrence of different resulting states of the world, and thus some argue that it should be classified as an “uncertainty” rather than a risk. Frank H. Knight, in *Risk, Uncertainty, and Profit* (1921), distinguished between risk and uncertainty, defining risk to be randomness with predictable probabilities and outcomes, and uncertainty as randomness with

unknowable probabilities and impacts. Decision-making in an environment of risk can theoretically be optimized through actuarial and management science; coping with uncertainty is more of an art. For example, the decision to expropriate or the occurrence of terrorism are, for all intensive purposes, unpredictable, and can occur on a whim. Investors have varying risk tolerances and can accept some amount of uncertainty for a certain risk premium.

Expropriation risk continues to intimidate investors, though its incidence has decreased relative to the 1970s (Instability may spark expropriation 2009). Scholars refer to the negotiating dynamic between investors and the government that leads to expropriation as the “obsolescing bargain.” In his seminal book “Sovereignty at Bay,” Vernon (1971) laid out the obsolescing bargain model, describing how the bargaining power of multinational enterprises investing in a foreign country erodes over time, with negotiating power shifting to government. The implication of this model is that the government, as time progresses, can impose more conditions on the corporation/project, ranging from unfavorable legislation or higher taxes, to outright expropriation, thus “obsolescing” the original investment bargain to have ownership of the asset in return for provision of services at an agreed-upon fee. Infrastructure investments tend to be expensive fixed capital assets with long lives, and are particularly vulnerable to the obsolescing bargain dynamic. Once the upfront capital has been expended to build the infrastructure asset, it the bargaining power of an investor is severely diminished, and it may have to offer concessions to the government to recoup some of its investment, the alternative being complete expropriation. While outright “obsolescence,” practically manifesting as full expropriation, has diminished, “creeping expropriation,” has become more of a worry. Though it varies significantly by locality, the types of political risk that worry investors has structurally shifted over time from expropriation to currency controls to general instability (Hill 1998, 6). These

risks are an important factor in why so little of infrastructure investment comes from the private sector in the developing world. A 2002 United Kingdom Department of International Development study finds that financing of infrastructure projects in the developing world comes from the following sources: 70% from self-financing by government or public utilities, 3% from aid, and the balance, 27%, from the private sector (United Kingdom Department for International Development 2002). However, post-conflict nations tend to be the poorest, and receive even less private investment.

### Conflict and Security Risk

The extent of security risk in post-conflict cases ranges from nonexistent to severe, and its effects on infrastructure investment occur through several direct and indirect channels: physical interruption, rebuilding of damaged assets, delay of infrastructure services, and the signal effect on investment and business behavior. Supply or delivery routes can be temporarily shut down. Spoilers can sabotage expensive, hard to replace pieces of infrastructure, such as a power plant turbine. Exposed transmission lines are easy targets for those wanting to interrupt services. The U.S. Army Corps of Engineers felt these troubles while trying to provide electricity to Baghdadi citizens:

Saboteurs believed to be loyal to Hussein started to attack the system by felling towers and cutting lines. U.S. officials here would not detail the number of cases of sabotage to the electrical infrastructure other than to call them significant. In the most recent case, gunmen shot at high-voltage cables about 25 miles south of the city of Samarra, causing the wires to break and a nearby tower to keel over. The attack severed a vital line that connects power plants in northern Iraq with Baghdad, triggering a chain reaction that destabilized the national grid and shut down other plants. The incident led to a two-day blackout in Baghdad last week and a continuing reduction of power coming into the city. "Our biggest problem is sabotage," Gibson said. (Chandrasekaran 2003)

However, these effects are not just felt proximately in projects under construction or operation - a recent report on telecommunications investment in Iraq describes the latter "Security concerns are likely to drive investment decisions, which will in turn affect employment, the influx of

foreign expertise and businesses, consumer and business spending, and the availability and coverage of telecommunications networks,” (Telecommunications in post-war Iraq: wireless technologies expected to dominate the voice 2003). Scott Feil defined security conceptually as “a condition of acceptable public safety, particularly the establishment of an environment wherein citizens can conduct daily business relatively free from violence or coercion directed at them by the government, organized crime, political organizations, and ethnic groups,” (Feil 2004, 41). Security is not a prerequisite for infrastructure construction, but without it, the resource and time cost of construction balloons, and willingness of the private sector to invest diminishes. Stuart Bowen, Special Inspector General for Iraq Reconstruction, describes the some operational challenges associated with insecurity:

But the story of the Reconstruction Gap is fundamentally about security needs driven by a lethal and persistent insurgency... While this security spending reduces the funds available for actual reconstruction, it is vital. This is demonstrated most clearly by the number of contractors killed, kidnapped or wounded. Intimidation of workers continues to delay projects, and the insecure environment has driven away critically needed foreign technicians in the essential service sectors. It is difficult to overstate the impact of violence on the reconstruction program. However, not many realize that electrical capacity grew above pre-war levels in mid-2004 and peaked in July 2005. Since then, however, the insurgents have targeted the electrical infrastructure, sabotaging the towers that carry high-voltage lines to Baghdad from generating facilities in the south. (Office of the Special Inspector General for Iraqi Reconstruction (SIGIR) 2006).

In Iraq, due to insecurity and associated rules prohibiting U.S. forces from leaving the embassy, there was very little oversight of projects during construction. Since the lives of management and/or workers may be at risk, and casualties may be incurred from terrorist acts, EPC firms err on the side of protecting their employees over keeping a constant eye on the project. With these direct communication and management channels restricted, projects quality diminished and waste, fraud, and abuse instance increased.

The US military had a policy of not providing security for infrastructure construction projects, leaving security provision in the hands of expensive private military contractors. Thus, construction firms had to rely on expensive private contractors to defend installation sites,

causing project costs to balloon. Guards for private security firms can be paid between \$400 and \$600 per day, sometimes up to \$1000 per day (Porteus 2005). The case of Bechtel's Doura power plant project illustrates the security issues faced during construction. USAID hired Bechtel to retrofit the Doura power plant, which was nonoperational at the time of the invasion. Bechtel began work on August 1, 2003, soon after the end of official military operations, and was given nine months to complete the project. However, the security situation worsened in late 2003, so much so that Bechtel's subcontractors and government employees refused to work. It "was a shoot 'em up place," (SIGIR 2009, 185). Bechtel bolstered its private security forces and convinced the U.S. military to guard the project perimeter, "a rare example— during this period—of U.S. forces providing infrastructure security," (SIGIR 2009, 185). However, the situation did not improve, and by mid-2004, several subcontractors withdrew from the project, leaving Bechtel having to find new employees, (SIGIR 2009, 185).

These troubles illustrate the need for adequate military and police forces to maintain the rule of law. By Bush Administration design, Iraq and Afghanistan had fewer military personnel during military and peacekeeping operations than other successful nationbuilding endeavors. For example, For example, Bosnia, on a per capita basis, "had received 50 times more international military personnel and 16 times more economic assistance than did Afghanistan over the first couple of years of reconstruction," (Dobbins, et al. 2008, xx). According to SIGIR, "A lack of security in 2003-2004 significantly slowed the reconstruction program," (Office of the Special Inspector General for Iraq Reconstruction (SIGIR) 2009). Government construction contractors had to resort to private mercenary contractors to provide protection to immediate infrastructure assets, but this was extremely expensive, and cannibalized from target budgetary expenditures on other infrastructure projects. In 2004, the IRRP budget underwent reprogramming, which

ratcheted up funding for security by reducing allocations to the Water and Electricity sector from \$4.3 billion to \$2.1 billion, and \$5.56 to \$4.31 billion, respectively (Office of the Special Inspector General for Iraqi Reconstruction (SIGIR) 2006). As a result, only 49 of 136 water projects and, and 300 of 425 projects in the electricity sector were planned to have been completed in 2006 (Office of the Special Inspector General for Iraqi Reconstruction (SIGIR) 2006). Additionally, this partial solution did not reduce the effects of security risk outside of the immediate proximity of the asset.

However, it is important to note that in many post-conflict cases, security is not an issue, yet private capital still does not flow. As the Chapter 4 will show, even as security risk diminishes over time, investment barely increases. The other aspects of political risk, in addition to commercial risk, deter investment. Private infrastructure investors go into a country with a ten-to-twenty year investment horizon (Actis 2010). While they may hope to exit an investment earlier, they must plan for contingencies where they have to own the asset for a longer period of time. Given this long period in which investors recoup their investment and turn a profit, they carefully analyze the risk and uncertainty associated with future cash flows, and identify methods of mitigating whatever risks they can if the price for mitigation is attractive. The next chapter identifies the benefits and deficiencies of available political risk mitigation technique.

### **Chapter 3: Mitigating Political Risk after Conflict**

As a major project risk category, it is important to understand why political risk mitigation strategies are not powerful enough to adequately protect investors.<sup>15</sup> I already discussed how political risk tends higher in post-conflict cases than other developing nations. In this section I focus on political risk insurance (PRI) as a method of mitigating political risk, and find structural problems with current coverage, pricing to be prohibitively high, and the scope of coverage to be insufficient to attract many private investors.

Woodhouse (2006) describes two methods of coping with political risk: strategic management and risk engineering. Strategic management, more of an art than a science, is most broadly defined as stakeholder engagement. He discusses four factors “1) tariffs and project costs, 2) balancing counterparty rights and incentives, 3) commercial management, and 4) local partnerships,” (Woodhouse 2006). Interactions with decision-makers in government and the development of positive relationships with those who might make political decisions detrimental to the project can go a long way to reduce political risk. Depending on the situation, “facilitating payments” can be made to members of government. Additionally, a grassroots, bottom-up approach can be effective in mitigating other types of political risk. Early involvement of local community leaders, including sometimes adapting project plans to accommodate other stakeholder requests, can reduce the probability of widespread social opposition to a project, which fuels renegotiation expropriation.

Another basket of mitigation methods, risk engineering, includes legal and financial mechanisms to restrict government action and provide more cash-flow certainty. It includes 1)

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<sup>15</sup> The impact of commercial risk on inhibiting infrastructure investment will be addressed in Chapter 5.

elaborate and complex contractual agreements, especially between governments and investors, 2) agreements and guarantees to ensure a regular flow of project income, 3) multilateral or bilateral partners whose involvement tends to deter breach of contract by government, and 4) international arbitration. The financial partnership, through co-investment, lending, or insurance, of project sponsors with multilaterals, large financial institutions, or otherwise internationally prominent entities, leads to significant gains in negotiating power. Its applications are somewhat limited by the strength of legal institutions that can apply to project agreements, be they local jurisdiction or international arbitration, and the depth of financial markets, which offer mechanisms like interest rate and currency futures, and credit default swaps. One form of risk engineering that holds promise for post-conflict situations is political risk insurance.

Investors can purchase political risk insurance to protect against some types of project risk. These policies are issued by three types of entities: multilaterals, government agencies, and private firms. Though the types and scope of coverage varies across issuers, the protections can commonly be obtained for include: 1) Currency transfer restrictions, 2) Expropriation, 3) War and Civil Disturbance, 4) Breach of Contract, and 5) Non-Honoring of Sovereign Financial Obligations (MIGA n.d.).<sup>16</sup> The most prominent issuers of PRI are the Multilateral Investment Agency (MIGA), and sovereign Export Credit Agencies (ECA).<sup>17</sup> Private issuers sometimes insure for more specific, exotic, and project-specific risk, but charge very high premiums for such coverage (Official 2010).

The nature of each PRI issuing market entity influences the types of products it is willing to offer and associated pricing. While the PRI market share of MIGA and ECAs has gone down

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<sup>16</sup> Breach of contract covers agreements where the government or state-owned entity is a counterparty. In May 2009, MIGA introduced a fifth product covering the non-honoring of sovereign financial obligations.

<sup>17</sup> In the U.S., the Overseas Private Investment Corporation (OPIC) issues PRI, not the U.S. ECA, the Export-Import Bank of the United States.

over the past decade, public issuers of PRI still dominate in high-risk markets. The Berne Group is an industry association that claims to include the largest PRI issuers – as the table below illustrates, the market is dominated by sovereign export credit agencies, MIGA, and a handful of private issuers.

**Figure 3.1: Berne Group Member - Top PRI Issuers**

ASEI Indonesia	EKF Denmark	OEKB Austria
ASHRA Israel	EKN Sweden	ONDD Belgium
ATRADIUS The Netherlands	EXIMBANKA SR Slovak Republic	OPIC USA
CESCE Spain	EXIM J Jamaica	PWC Germany
CGIC South Africa	FCIA USA	SACE Italy
CHARTIS USA	FINNVERA Finland	SBCE Brazil
CHUBB USA	GIEK Norway	SERV Switzerland
COFACE France	HKEC Hong Kong	SID Slovenia
COSEC Portugal	HISCOX Bermuda	SINOSURE China
ECGC India	ICIEC Multilateral	SLECIC Sri Lanka
ECGD UK	KEIC Korea	SOVEREIGN Bermuda
ECICS Singapore	KUKE Poland	TEBC Chinese Taipei
ECIC SA South Africa	MEHIB Hungary	THAI EXIMBANK Thailand
EDC Canada	MEXIM Malaysia	TURK EXIMBANK Turkey
EFIC Australia	MIGA Multilateral	US EXIMBANK USA
EGAP Czech Republic	NEXI Japan	ZURICH USA
EH GERMANY Germany		

However, critics cite that the Berne Union does not sufficiently represent the private market.

Indeed, according to a recent Economist article, Private issuers such as AIG, Chubb, and Lloyd’s of London now comprise about half of the PRI market, a shift from the historical norm of ECAs and MIGA owning the market (Of coups and coverage 2007).

The pricing of political risk insurance is more of an art than a science. As Daniel Riordan, Senior Vice President at Zurich U.S. Political Risk, a preeminent issuer of PRI, stated, a peculiar aspect of PRI is that “ratings are not actuarially based. This fact creates great challenges for underwriters in pricing their products,” (Moran, Comment on Cooperation, Competition, and the

"Science of Pricing" in the Political Risk Insurance Marketplace 2001). However, the market presence of each entity is a function of risk - a MIGA official explained that for lower-risk environments, private providers may beat MIGA in pricing, but as risk levels increase, private issuer involvement wanes. In most post-conflict countries, private providers do not issue policies given the difficulty of actuarially assessing the risk, and their comparative disadvantage to MIGA and ECAs to exert influence to recoup project losses, or prevent them in the first place.

Indeed:

Public providers of political-risk cover have some notable advantages over private insurers. Government connections make a difference when things go pear-shaped: a MIGA official says that of more than 850 contracts written in the past two decades (worth more than \$16 billion), it has had to pay only [five] claims. Most of the 10-15 disputes it sees each year are resolved between the insured party and the host government. Public insurers can also typically write longer contracts than their private counterparts dare to offer. Such contracts deprive insurers of the opportunity to recalibrate risks. (Of coups and coverage 2007)

This network of influence and relationships between MIGA, and to a lesser degree ECA, and investment host countries allows for it to recoup some losses on paid claims. The repercussions of defaulting on a MIGA-insured project are severe, and can result in a country being cut off from World Bank funding, as well as potential repercussions from MIGA member-nations.

Given MIGA's prominent role in high-risk markets and the lack of private alternatives, the length of time it takes for post-conflict nations to be eligible for MIGA guarantees stifles investment in some countries. For example, Iraq completed the membership requirements to join MIGA in October of 2008, over 5 years after the nationbuilding process began. Likewise, Afghanistan joined in July 2003, two years after the commencement of reconstruction. While most other post-conflict nations were already members of MIGA, it is important to consider whether a form of provisional membership may be desirable to allow for political risk insurance to be issued on local projects.

## Coverage Structure

Deficiencies in PRI policy structures cause them to be less attractive as a means of creating infrastructure investment additionality post-conflict. The first problematic characteristic surrounds “waiting periods” and the lack of coverage for losses that do not last long enough. The standard MIGA contract includes long waiting periods that can force a project into bankruptcy before MIGA is obligated to pay a claim. For example, a guarantee holder can file a claim for compensation due to Breach of contract “at any time from the Date of Loss to the date 180 days after the applicable Waiting Period has elapsed,” (MIGA 2007, 19). For transfer restriction, claims will be paid “provided that such Loss continues for the duration of the applicable Waiting Period,” (MIGA 2007, 15). Sample waiting periods are below:<sup>18</sup>

**Figure 3.2: MIGA Compensation Waiting Periods**

Transfer Restriction	60 continuous days
Expropriation	60-180 continuous days
War and Civil Disturbance	180 continuous days
Breach of contract	180 continuous days

“Contract of Guarantee for Loan Guarantees” Clause 8

As Rick Jenney of law firm Morrison & Foerster, LLP explains, “the length of time required for this [arbitration] process may push the project company into bankruptcy before the process is complete,” (Moran, Breach of Contract Coverage: Overview 2001, 42). Most project financed transactions have leverage with debt service payments due quarterly, biannually, or, annually. Waiting periods, coupled with arbitration, have the potential to trigger default and the forfeiture of an asset. Understanding the possibility of a PRI claim being paid out too late, an investor is less likely to want to invest.

Acknowledging this issue, in cases of breach of contract, MIGA now allows for a provisional payment of 50% or less of the guarantee amount provided that the sponsor has

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<sup>18</sup> Waiting periods are negotiable, but MIGA will adjust premiums based on desired waiting period lengths.

engaged unsuccessfully in arbitration for at least 180 days (MIGA 2007). The introduction of the new “Non-Honoring of Sovereign Financial Obligations” product also, if the “the financial payment obligation of the sovereign is unconditional and not subject to any defenses,” allows full payment without arbitral award (MIGA, New Products Offered by MIGA September 2009).. One reason for these waiting periods is that MIGA wants to minimize its liabilities, “Our lawyers are telling us we need to have a fine line in the sand where our coverage kicks in or doesn't kick in,” (Official 2010). While cure/waiting periods are common for insurance contracts, the stipulation that claims must exceed the waiting period length may deter investors wanting a more complete hedge of political risk.<sup>19</sup>

MIGA’s recent enhancements to its PRI portfolio of offerings will help expand the attractiveness of PRI to investors. In April 2009, MIGA expanded its War and Civil Disturbance coverage, which now includes violence against foreign investments and governments in addition to simply violence against a host government (MIGA, New Products Offered by MIGA September 2009). These policies cover both loss of income and costs of violence. Efforts to expand eligibility of coverage to state-owned entities are a step in the right direction, but the stipulation that the public entity or state-owned enterprises (SOE) is “creditworthy” is an obstacle. In post-conflict situations, it is unlikely that any public entity or SOE will be “creditworthy,” which is precisely why PRI is necessary in many cases.

Since most government or multilateral political risk insurance providers are structured and managed to private organizations with interest in profitability, PRI policies for post-conflict investments tend to be pricier, reducing the quantity of policies demanded. According to a MIGA

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<sup>19</sup> Paradoxically, the strong track record of MIGA-insured projects and small number of paid claims increases uncertainty for investors. According to a MIGA official, there is a need to set an example for how the claims process works, however, since MIGA has only paid five claims over its entire history, some investors feel skittish about the process and probability of being paid for a claim.

official, a policy for a post-conflict country would be in the range of a 2-3% premium on the guaranteed amount, for smaller investments, the premium could be as low as 1.25% (Official 2010). Unfortunately, these prices can eat up a significant portion of equity returns. Part of the reason why pricing is so high is that MIGA is run like a private corporation, and must cover its administrative costs, the price of risk, and grow the size of its fund to cover future operations:

As a financial institution with limited budget support, MIGA pays careful attention to balance sheet management, so assets match potential liabilities. Policies are priced to their riskiness and the probability and associated magnitude of claims. According to a MIGA official, “post-conflict countries tend to be way on the pricier end, and...as a general rule, infrastructure projects be riskier, and we price to risk,” (Official 2010).

Again, MIGA has the unique ability, and to a lesser degree, other multilaterals, to receive indemnification for paid claims. MIGA has paid five claims since it was founded in 1988 (About MIGA n.d.).<sup>20</sup> The three war and civil disturbance claims were all for repair costs associated with damage to assets, and did not entail significant payouts. MIGA has the relationships to “find solutions to pre-claim situations before they reach the level of full-fledged claim, ultimately keeping the investment and its development benefits on track,” indeed “MIGA’s proactive facilitation efforts have been pivotal in the resolution of more than 60 disputes related to MIGA-guaranteed projects,” (About MIGA n.d.). Unlike private insurers, MIGA has the credible threat of punishing violator states through restricting access to World Bank programs, as well as sanctions potential sanctions from member states, and thus “[MIGA] can do a project in Afghanistan or Liberia where things are pretty bad, but [MIGA is] still going to price to where [it] thinks the risk is” (Official 2010). Since these risks are often of high magnitude, insuring these risks is pricey without subsidies. Investors are thus left with two unattractive options: be

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<sup>20</sup> 1) Expropriation equity claim on power project in Java in 1997, 2) War and civil disturbance equity claim on power project in Nepal in 2002, 3) Transfer restriction equity claim on toll-road project in Argentina in 2005, 4) War and civil disturbance equity claim in Kenya in 2007. 5) War and civil disturbance equity claim in Madagascar in 2007 (About MIGA n.d.).

exposed to significant political risk, or pay insurance premia that make equity returns insufficient cover project risk.

MIGA has mobilized resources to address private sector investment in specific post-conflict scenario on two occasions, The West Bank and Gaza and Afghanistan, to little effect. These funds were designed to take the riskier tranches of guarantees for post-conflict facilities. The European Investment Bank, the Government of Japan, and the Palestinian Authority pledged and/or contributed funds (The World Bank Group n.d.). The trust fund is an independent vehicle overseen by MIGA, and claims from policies issued through the trust fund have no recourse to MIGA. Both greenfield and brownfield investment (including expansion, modernization, or financial restructuring) investment from entities including foreign and Palestinian investors. PPP of assets including movable assets, technical assistant, management contracts, and franchising and licensing agreements are also eligible (The World Bank Group n.d.). The Trust Fund is intended for “is designed to facilitate small and medium size investments, with a special emphasis on projects with high employment generating capacity,” for a maximum of 15 years (The World Bank Group n.d., 3). Since the West Bank and Gaza program began, only one project, outside of the infrastructure sector, has successfully received funding – a social infrastructure cultural center for tourists and business visitors, for \$5.0MM coverage (Solomon Pools Company n.d.). The Afghanistan Investment Guarantee Facility (AIGF) was set up with a similar structure. It was “designed primarily to facilitate small and medium-size investments,” (Afghanistan Investment Guarantee Facility n.d.), but has not been used for any infrastructure projects. While the concept of a post-conflict fund to subsidize PRI is novel and has potential, the program execution and structure leaves much to be desired.

## Chapter 4: Trends in Post-Conflict Private Infrastructure Development

An analysis of trends in infrastructure development reaffirms the need to improve current policy structures to incentivize more private development. The World Bank Public Private Participation in Infrastructure (PPI) Project Database aggregates private sector investment in infrastructure by attributes including country, sector, structure, status, sponsors, and a number of other important criteria. The existence of such a dataset allows for detailed analysis of private infrastructure investment trends, however, the literature conducting this analysis on conflict-torn nations is scarce; the only study that examines these trends is Schwartz, Hahn, and Bannon (2004). The authors analyze 10 nations in which conflict has ceased since 1990 and at least 8 years of PPI data was available.<sup>21</sup> They find that telecommunications investment tends to occur directly when conflict ceases, usually the first sector to receive capital. These investments, particularly mobile networks, have higher rates of return and much lower cost-recovery (Schwartz, Hahn and Bannon 2004, 21). One example that illustrates this conclusion is in Iraq, where “the open bidding for regional mobile licenses held in October 2003 attracted 200 consortia of firms all seeking tow year licenses,” (Schwartz, Hahn and Bannon 2004, 21). The authors further found that transportation, energy, and finally water investments, follow telecommunication investments, and that investments in infrastructure tend to ramp up and peak 6 years after the end of a conflict, followed by a decline. The authors conclude that:

The standard deviation from those means is sufficiently high to suggest that, given the right macroeconomic policies, properly formulated incentives and, perhaps, sovereign or multilateral support, individual conflict-affected countries can succeed in attracting private partners for the rehabilitation and provision of infrastructure. (Schwartz, Hahn and Bannon 2004, 29).

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<sup>21</sup> Their dataset has the following countries: Azerbaijan, Cambodia, El Salvador, Georgia, Lebanon, Mozambique, Nicaragua, Rwanda, Tajikistan and Yemen.

While the Schwartz et al study offers an interesting initial analysis of post-conflict infrastructure investment, its lack of controls for intensity of conflict and controls for economic development are problematic and pass over important trends.

## Methodology

To find sectoral and overall trends in infrastructure investment by post-conflict nation. I extract data from World Bank PPI database. I used Page Fortna's "Does Peacekeeping Keep the Peace?" dataset of conflict incidences to select post-conflict nations to include in the study sample. Fortna augments the Doyle and Sambani civil war dataset of civil wars, and has a minimum criteria for inclusion of:

- a) the war has caused more than 1,000 battle deaths;
  - b) the war represented a challenge to the sovereignty of an internationally recognized state
  - c) the war occurred within the recognized boundary of that state
  - d) involved the state as one of the principal combatants
  - e) the rebels were able to mount an organized military opposition to the state and to inflict significant casualties on the state.
- (Fortna Vol. 48, No. 2, June 2004)

Fortna's dataset has a total of 130 cases. It also includes data on deaths due to conflict, allowing for a control for conflict intensity. I also coded in conflict beginnings and endings for cases between 2004 and 2008, after the Fortna's dataset was compiled. The treatment of nations that are experiencing ongoing conflict is challenging - I group these cases separately. The final list of countries studied is below:

**Figure 4.1: Sample Conflict Countries**

<b>Country</b>	<b>YearBeg</b>	<b>YearEnd</b>			
			Lebanon	1982	1992
Afghanistan	1993	N/A	Liberia	1993	1996
Algeria	1992	1997	Mali	1990	1995
Angola	1992	N/A	Mexico	2006	N/A
Azerbaijan	1988	1996	Moldova	1992	1994
Burma	1983	1995	Morocco	1975	1989
Burundi	1991	N/A	Mozambique	1979	1992
Cambodia	1997	1998	Namibia	1965	1989
Central African Republic	1995	1997	Nicaragua	1981	1989
Chad	1980	1994	Pakistan	2004	N/A
Colombia	1978	N/A	Peru	1980	1996
Congo Democratic Republic of Congo	1992	1996	Philippines	1972	1996
Djibouti	1991	1995	Romania	1989	1989
El Salvador	1979	1992	Rwanda	1990	1994
Eritrea	1974	1991	Sierra Leone	1991	1996
Ethiopia	1974	1991	Somalia	1988	N/A
Georgia	1992	1994	South Africa	1976	1994
Guatemala	1974	1994	Sri Lanka	1987	1989
Haiti	1995	1996	Sudan	1983	N/A
Indonesia	1986	1986	Tajikistan	1992	1994
			Yemen	1994	1994
			Yugoslavia	1995	1995

**Figure 4.2: Sample Classifications**

	<b>Poor</b>	<b>Rich</b>
<b>High Conflict</b>	Democratic Republic of Congo, Iraq, Liberia, Mozambique, Nicaragua, Sierra Leone  Excluded because ongoing: Afghanistan, Tajikistan, Somalia, Sudan, Iraq <sup>22</sup>	Algeria, Azerbaijan, El Salvador, Lebanon, Sri Lanka  Excluded because ongoing: Angola, Colombia
<b>Low Conflict</b>	Burma, Cambodia, Chad, Ethiopia, Rwanda, Yemen  Excluded because ongoing: Burundi	Congo, Georgia, Guatemala, Morocco, Romania, Yugoslavia

Since the PPI dataset begins in 1990, all conflict incidences prior to 1989 are excluded. I use 1989 as a cutoff point instead of 1990 because four conflicts ended in 1989 – the lack of data for  $t=-5$  to  $t=0$  is a limitation of the data.<sup>23</sup> I select the most recent conflict instances for each country. I also threw out countries where other major factors, such as sanctions, would confound findings – this only affects the Iraq after the First Gulf War. I construct an indicator for conflict intensity by dividing the total number of deaths by the number of years of conflict to derive a crude measure of conflict intensity.

### Data Analysis

The analysis in this section attempt to elucidate the speed by which different infrastructure sectors receive investment while controlling for intensity of conflict and economic output of sample countries. First, I hypothesize that an exponential curve best fits the “years after conflict” variable, as investors gain confidence in investment, I expect capital flows to

<sup>22</sup> The period after the First Gulf War was excluded because multilateral sanctions prevented foreign investment.

<sup>23</sup> Morocco, Namibia, Nicaragua, and Sri Lanka

infrastructure to accelerate. I thus test both linear and exponential specifications, but results with the exponential function come back with less significant results than the linear function.

$$(1) \# \text{ of projects}_t = f(\text{years postconflict}_t, \text{Conflict Intensity}, \ln(\frac{GDP}{Capita} PPP))$$

$$(2) \# \text{ of projects}_t = f(\text{years postconflict}_t^2, \text{Conflict Intensity}, \ln(\frac{GDP}{Capita} PPP))$$

Second, I also predict the coefficient on conflict intensity to be negative, as more intense conflict should decrease investment incidence. Finally, I expect the coefficient on  $\ln(\text{GDP/Capita})$  to be positive, as richer countries should attract more investment. I choose a logarithmic specification for GDP/capita because I expect decreasing returns to economic output – a test with a linear coefficient yielded less significant indicators. The pooled results for investment by sector for each of the two specifications are in Table 4.2 below.

**Figure 4.3: Projects Reaching Financial Close in Each Year after Conflict.**

Years Post-conflict	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
All	0	2	0	1	4	5	10	14	16	17	13	28	16	24	17	18	23	33	22
Energy	0	1	0	0	2	3	5	6	8	3	3	15	8	7	11	6	8	14	10
Telecom	0	1	0	1	2	2	3	6	4	10	7	10	6	9	4	5	5	7	3
Transport	0	0	0	0	0	0	2	2	4	4	1	2	0	4	2	3	2	7	3
Water	0	0	0	0	0	0	0	0	0	0	2	1	2	4	0	4	8	5	6

Source: World Bank PPI Database, Page Fortna, Author's calculations. (n=37)

**Figure 4.4: Regression Results with Continuous Economic Output**

Sector	Years Post-Conflict	High Conflict	Ln(GDP/capita PPP)
All	.034***	.100	.162***
Energy	.0149*	-.132**	.0680**
Telecom	.000756	.0654	.0493**
Transport	.00625*	.0414	.00349
Water	.0165***	.111**	.0548**

\* significant at the 10% level, \*\* significant at the 5% level, \*\*\* significant at the 1% level

Source: World Bank PPI Database, Page Fortna, Author's calculations.

The results indicate several features of post-conflict infrastructure. First, overall levels of private infrastructure investment are extremely low. Across the 37 post-conflict sample

countries, on average, only around half of the countries have a privately-funded project implemented every year. Second, econometric analysis finds a statistically significant time trends in the data for all sectors except the telecommunications sector. However, this trend is not as strong as one might expect – the strongest effect was seen in the water sector, which has a coefficient of .0165, followed by energy at .0149, and transportation at .00625. For example, after 10 years of peace, one would expect a 17% higher likelihood of water project procurement – not highly pronounced. However, this is likely because, though investors might become comfortable with security risk, the other elements of the institutional ecology for private investment, including strong political, social, and legal institutions, does not usually improve quickly.

Third, the “high conflict” binary, which is active more than an average of 5,000 deaths per year occur, is significant only in the energy and water sector. Moreover, in the water sector, the effect is positive, indicating 11.1% higher likelihood of a project occurring in areas of high conflict. This effect could be because the need for investment is most dire in the highest conflict regions. In the transportation and telecommunications sectors, the coefficients are not significant. In both of these sectors, investment is relatively constant, though subdued, across conflict levels. Interestingly, these are also the sectors with the weakest time trends, indicating an inelasticity of the investment to the independent variables.

Finally, the coefficient on the natural logarithm of economic output is highly significant for all sectors except transportation. This indicator appears to be the most predictive, as the  $\ln(\text{GDP})$  variable ranges from 5.70 to 9.63, indicating an incremental expected .923 to 1.56 higher probability of project receiving financing in a given country-year. This result is

unsurprising, as larger economies have a larger consumer base and higher demand for infrastructure services, inviting higher levels of investment.

However, countries that are both high-conflict and poor may have an incremental negative effect on investment. To test whether such an effect exists, I added an interaction term between conflict and economic output. Regression results indicated insignificant coefficients for each of the sectors, indicating no incremental effect to the confluence of high conflict and economic output in addition to their separate effects. Given the structure of my specification – choosing the dependent variable “years post-conflict” – I was unable to test for an incremental effect between countries with no conflict and countries with any level of conflict.

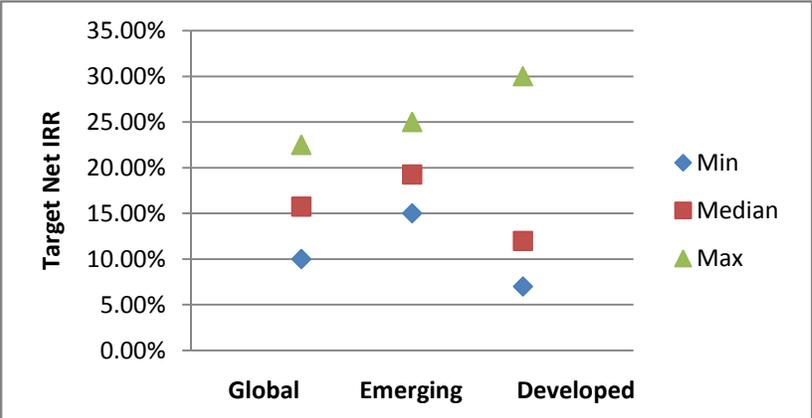
Perhaps the most important take-away from the data is the small coefficient on the “years post-conflict” variable. The small positive slope indicates that investment does not tend to increase much over time. This study did not have access to indicators for security by year, and cannot show how security trended in individual countries and overall over time. However, given that the sample includes the most recent outbreaks of conflict in each of the countries, it is plausible to assume that the security situation improves over time. However, investment barely increases, which indicates that ongoing stability and security does not increase investment. The private sectors does not refrain from investing post-conflict simply because of insecurity (though it can cause investment to freeze quite quickly), but due to other reasons, such as poor institutions, or risk aversion to the possibility of conflict breaking out once more.

The data also reaffirm the dire need for investment in the water sector. Gavin Wilson, the CEO of IFC Asset Management, highlighted the need for infrastructure services in developing areas, citing in particular “water, electricity sanitary facilities, and all-water roads... where unfortunately the financing is not present, yet” (Wilson 2010). He emphasized on the need for

water and water treatment in many of these markets, especially those post-conflict, as it is a “highly underinvested” market (Wilson 2010). Indeed, according to the Iraqi government, over 40% of Iraqi citizens do not have access to clean water. (Williams 2009).

A recent survey by a private equity intelligence firm illustrates the higher hurdle rates on infrastructure assets that investors demand in emerging markets:

**Figure 4.6: Infrastructure Asset Expected IRR by Market**



Source: Prequin February Report (Prequin 2010)

As expected, the data indicate a much higher median expected return on assets in emerging markets (19%) versus those in the developed world (12%).<sup>24</sup>

To gain a better understanding of what these figures look like when broken down by sector, I obtained a dataset of 79 infrastructure sectorally and geographically diversified projects constructed during the 1990s to ascertain typical yields, which should inform hurdle rates. The findings are in the table below:

<sup>24</sup> The high maximum expected returns in the developed world is due to leveraged-buyout-type infrastructure funds that restructure brownfield assets in the developed world – a strategy that is not widely utilized in emerging markets.

**Figure 4.7: TableRock Partners IRR Data Summary**

	Telecom	Energy Oil & Gas	Power Generation (Hydrocarbon)	Pipeline	Transportation
Average Return	22.5%	19.6%	17.6%	17.4%	15.2%
Standard Deviation	3.5%	3.7%	5.4%	0.7%	2.5%
Observations	10	7	4	12	32

Source: TableRock Infrastructure Fund

The average IRRs align with the global hurdle rates indicated in Prequin’s survey, and also indicate the relative profitability of different types of infrastructure assets. The results from my regression showing a sectoral ordering of telecom, energy, transport, then water roughly align with the ordinal rankings of IRR in the TableRock dataset. The highest returns were in telecommunications and power generation, followed by energy infrastructure, pipelines, and finally transportation. However, it is important to note that investors will look for a “post-conflict premium” to compensate for the additional risks inherent in most post-conflict countries, likely in the range of 5-10% higher returns.<sup>25</sup> Projects in high-risk, conflict-torn regions will probably have lower levels of leverage, which further negatively impact IRR. But, unfortunately, no element of a country having “post-conflict” status raises internal (in contrast to social) returns to compensate; indeed, the reverse is most likely the case. Therefore, investors hurdle rates tend to exceed the risk-adjusted internal returns on post-conflict infrastructure projects.<sup>26</sup>

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<sup>25</sup> Studies to precisely quantify a “post-conflict” equity premium have proved inconclusive.

<sup>26</sup> One area that needs further research is how project values increase as a function of conflict intensity, economic output, and years post-conflict, in addition to other situational variables. This study focuses on projects per year, but a more nuanced understanding of investment trends could be attained by looking at project value trends, controlling for GDP. For example, a flat line of one project per year could actually indicate increasing levels of investment if project value is increasing over time. Conflict intensity might also yield different results if controls for population size were used.

## Policy Recommendations and Conclusion

Though the failure to rebuild a nation's infrastructure after conflict can have severe humanitarian, economic, and political consequences, the international community has not yet implemented an effective process and structure to fund civil infrastructure reconstruction operations. Donor conferences and multilateral funding have thus far proved insufficient to get the job done. However, attracting private sector capital is a complex and challenging task. Chapter 2 broke down specific political and commercial risks and obstacles to foreign investment flow. Chapter 3 found that political risk insurance, the chief political risk mitigation mechanism available, does not cover enough project risks to be interesting to infrastructure investors post-conflict. Moreover, certain structural aspects of the insurance products such as waiting periods, arbitration requirements, institutional country and project limits, and prohibitive pricing levels further inhibit their utilization. To complement this analysis, Chapter 4 analyzed historical post-conflict infrastructure investment trends to understand how subsidies could be better targeted to meet areas of dire service provision need, finding important diverging project implementation time trends between sectors.

### Policy Recommendations

The international community should adopt the following policy recommendations to attract private sector investment in the infrastructure sector in post-conflict states:

- 1. Expand political risk insurance to include other institutional risks including breach of contract with a commercial entity.** As described in Chapters 2 and 3, contracts with commercial counterparties lay the basis for the viability of many project financed assets,

especially in the water and power sectors. One of the most important risks for which MIGA and ECA should provide coverage is breach of contract with a commercial entity to give investors a stronger risk mitigation method to reduce cash flow uncertainty. A new “breach of contract with commercial entities” product should be offered, and can be folded under existing MIGA protocols and guarantee structures. If a claim arises, the World Bank or ECA-nations are in a unique position over private insurers to put pressure on governments to enforce the rule of law. While some might classify this risk as a commercial risk since it is between two commercial entities, it is more accurately a political risk, since payment hinges upon the enforcement of the rule of law. The need is dire – according to a former director general of the ADB Private Sector Operations Department “the trend continues. AES, the last of the companies that specialize in power projects in the emerging countries, is scaling back. The company has some very close calls [with breach of contract] with several investments and is now scaling back and is thinking about new business directions,” (Bestani 2010).

- 2. MIGA should rethink its pricing structure and make political risk insurance available for less expensive rates, especially for post-conflict countries.** A special program could be put in place for such nations in which PRI is offered at concessionary/subsidized rates. MIGA has sufficient financial resources to offer some of these policies, but would likely need some budgetary support from other World Bank agencies or member countries to fund this program. Liquidity is not an issue for MIGA, which has over \$1 billion in cash available to pay claims, in addition to callable capital from member states (Official 2010).

**MIGA Income Statement (\$US MM)**

<b>Year</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Net Premium Income	35.5	38.2	43.6
Investment Income	42.8	45.3	36.9
Administrative and Other Expenses	(29.2)	(28.5)	(29.8)
<b>Operating Income</b>	<b>49.0</b>	<b>55.0</b>	<b>50.6</b>
Operating Capital	950	1,019	1,044

Source: MIGA Annual Report 2009

The post-conflict development trusts that were implemented for the West Bank and Afghanistan could be made larger and more robust for other post-conflict scenarios. MIGA Chief Underwriter Christopher S. Bellinger asserted that “After all, MIGA must ensure that its rates are not a deterrent to an investment going forward,” yet it is unclear if MIGA is meeting this imperative (Bellinger 2001). A recent World Economic Forum report finds that:

Despite these huge unmet investment needs, lending by multilateral development banks as a group, and the World Bank in particular, has fallen and is well below the potential permitted by their capital structures... the amount of unused capital in these institutions has increased substantially relative to lending ceilings governed by their statutory capital gearing ratios and now approaches US\$ 181 billion. (World Economic Forum 2006, 7)

It is apparent that MIGA is not utilizing its full institutional capacity to underwrite political risk insurance policies – a function of pricing, structure, and weak demand. Indeed, according to a MIGA official “we have too much capacity; we can’t find enough business to do,” (Official 2010). “[Private insurers] can generally match or beat their prices, but [private insurers] also improve on the ECA coverage due to [their] ability to include additional risks such as contractual risk and enhanced definitions of net loss, business interruption, license cancellation coverage, and contingency risks,” (James 2001). MIGA could expand its offerings, or subsidies could also be allocated towards

these private institutions that sell other products that are relevant to investors, but which MIGA does not provide.

3. **MIGA should have a process for syndicating underwritten policies to its member nations to increase balance sheet capacity.** If institutional limits for a given project or country are breached, and coinsurance/reinsurance options have been exhausted, MIGA should introduce a process to syndicate its policies off of its balance sheet to member nations. As described in Chapter 3, these institutional limits have the potential to deter larger capital investments, which can amount to hundreds of millions of billions of dollars, especially in the natural resources sector.
  
4. **Increased breadth and funding of subsidy mechanisms, with an emphasis on program coordination.** Ultimately, the problem distills to pure project economics. Many urgently needed services require projects that are not financially attractive to investors even if the aforementioned political and institutional risk insurance policies were to be offered for concessionary rates. Part of the problem is that it is difficult to collect revenue after conflict – first, the processes and infrastructure to monitor service usage is usually vacant or damaged. Second, in some cases, citizens cannot afford to pay for services such as power or water. While in some countries this problem is solved through cross-subsidization – richer consumers and industrial clients paying higher tariffs, and the poor paying reduced or no tariffs, there is often not enough market depth for cross-subsidization in post-conflict scenarios.

MIGA and ECA should more actively engage with corporations and private infrastructure funds to help them understand subsidy programs and post-conflict country-specific risks, and engage in partnerships for proper project selection. They should coordinate with other arms and subsidy programs of the World Bank to offer centralized, comprehensive packages of subsidies, including cash grants, loan guarantees, and risk insurance, for private investors.

## Conclusion

Though private investment levels are low, there is hope - some countries are success stories that rapidly nurture the ecology for investment and receive infrastructure foreign direct investment. In November 2009, Liberia announced plans to implement a PPP for its port sector, seeking \$50 million to repair its deep-water port in Monrovia. Given the FY2010 nation budget has projected spending at \$347 million, the importance of private investment is clear (Government of Liberia 2009). In another scenario, MIGA is in the process of approving PRI for a liquefied petroleum gas storage and distribution project in Sierra Leone that is expected to cause a price reduction of 60% for natural gas (Projects in Sierra Leone n.d.). Foreign infrastructure investment is occurring, but can be accelerated.

While time and efforts to build institutional capacity comprise the most effective long-term solution to political risk issues, well-structured political risk insurance can serve as a stop-gap to attract foreign direct investment.<sup>27</sup> Even so, private sector investment, even if properly

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<sup>27</sup> A World Economic Forum 2006 report states: “[Development Finance Institutions] should rather adapt their services, culture and capital allocation to the imperative of “crowding in” domestic and foreign private investment by placing much more emphasis on such risk mitigation instruments as partial guarantees as a transitional strategy and on capacity building in such areas as property rights, contract dispute adjudication, bankruptcy frameworks, accounting and auditing capabilities, corporate governance rules, banking supervision and securities market

incentivized, takes time to occur. Investors must conduct due diligence, negotiate agreements with project parties, and structure the transaction. Therefore, immediately after conflict, public funding will be the chief source of investment capital. In the second or third year after conflict, private projects can begin to occur, but only if risk-adjusted project returns are attractive to investors. Ultimately, certain projects may be more conducive to a public model – for example, project costs may be far too uncertain for the private sector to bear cost risk. The central tradeoff is between expediency and cost-effectiveness, and in the immediate stages after conflict, it is often prudent to use inefficient cost-plus contracts to obtain rapid provision of infrastructure services.

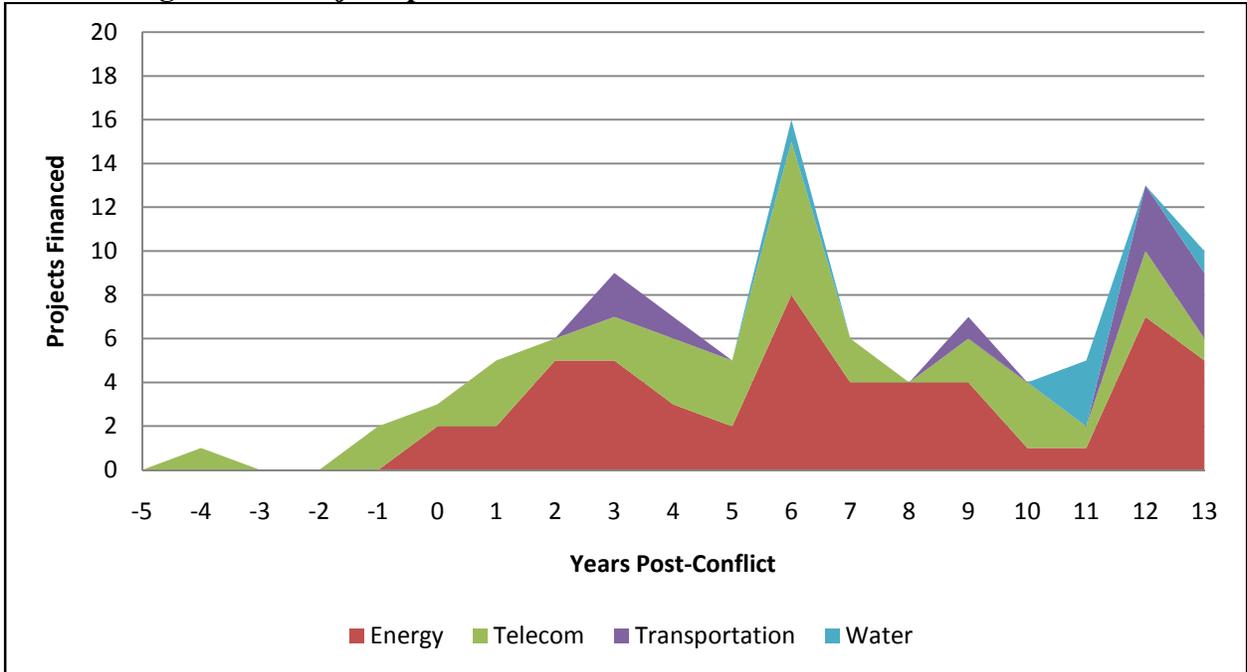
This paper proposes policy solutions that will result in wider private infrastructure procurement post-conflict, but more resources and analysis are necessary to tackle this important problem. Financial products and subsidies alone cannot solve this problem. The international community must allocate sufficient peacekeeping forces to post-conflict states to ensure sustained violence does not break out once more. International experts must work closely with locals to weed out corruption and build important legal and social institutions to create a viable state. However, in parallel to these processes, by reshaping the risk allocation structures and return dynamics of infrastructure projects for investors, policymakers can increase the flow of much-needed capital to post-conflict states and more effectively work to end conflict and build a more prosperous future.

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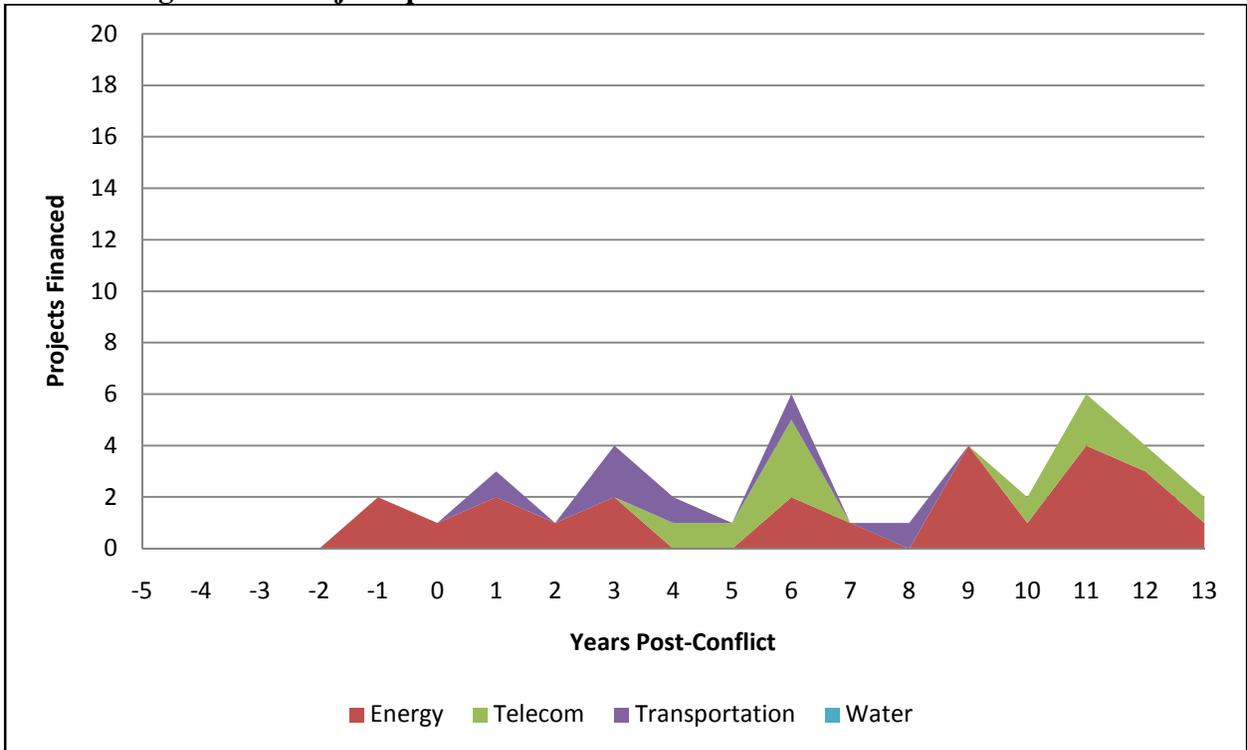
development as part of long-term strategy to render themselves obsolete only after the development of robust local currency capital market and bank lending institutions, (World Economic Forum 2006, 6).”

## Appendix

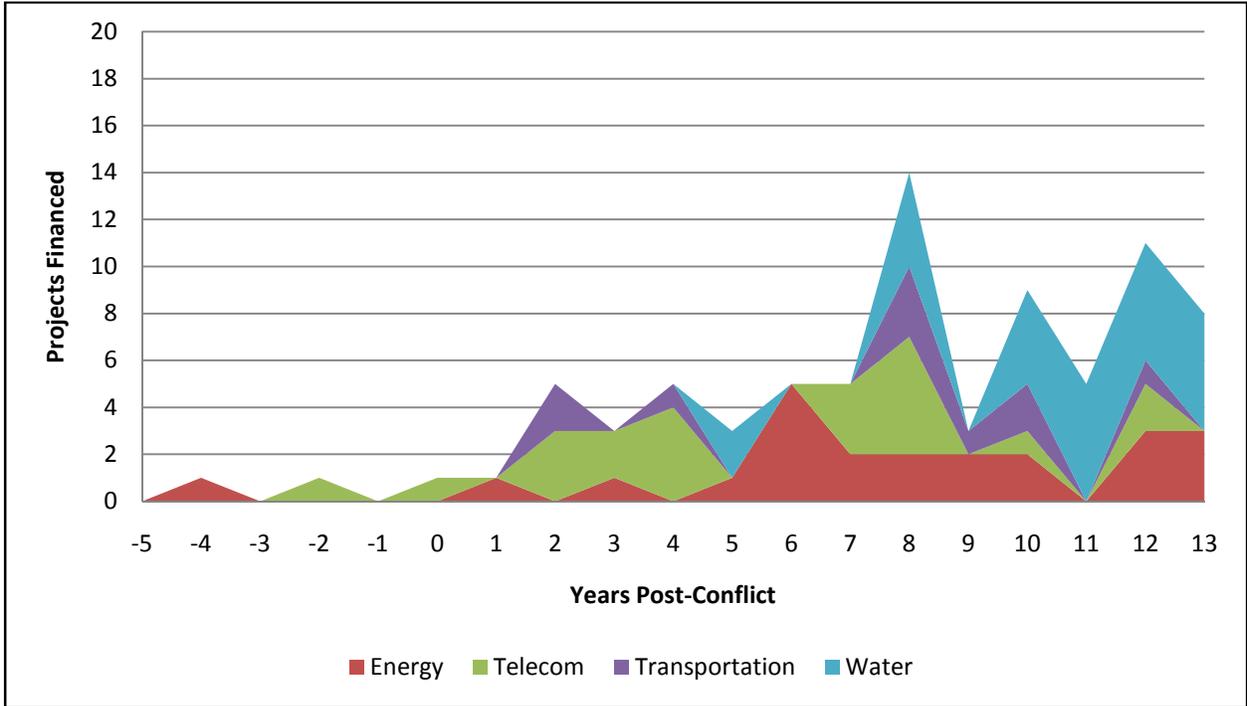
**Figure 6.1: Projects per Year Post-conflict in Rich Countries with Low Conflict**



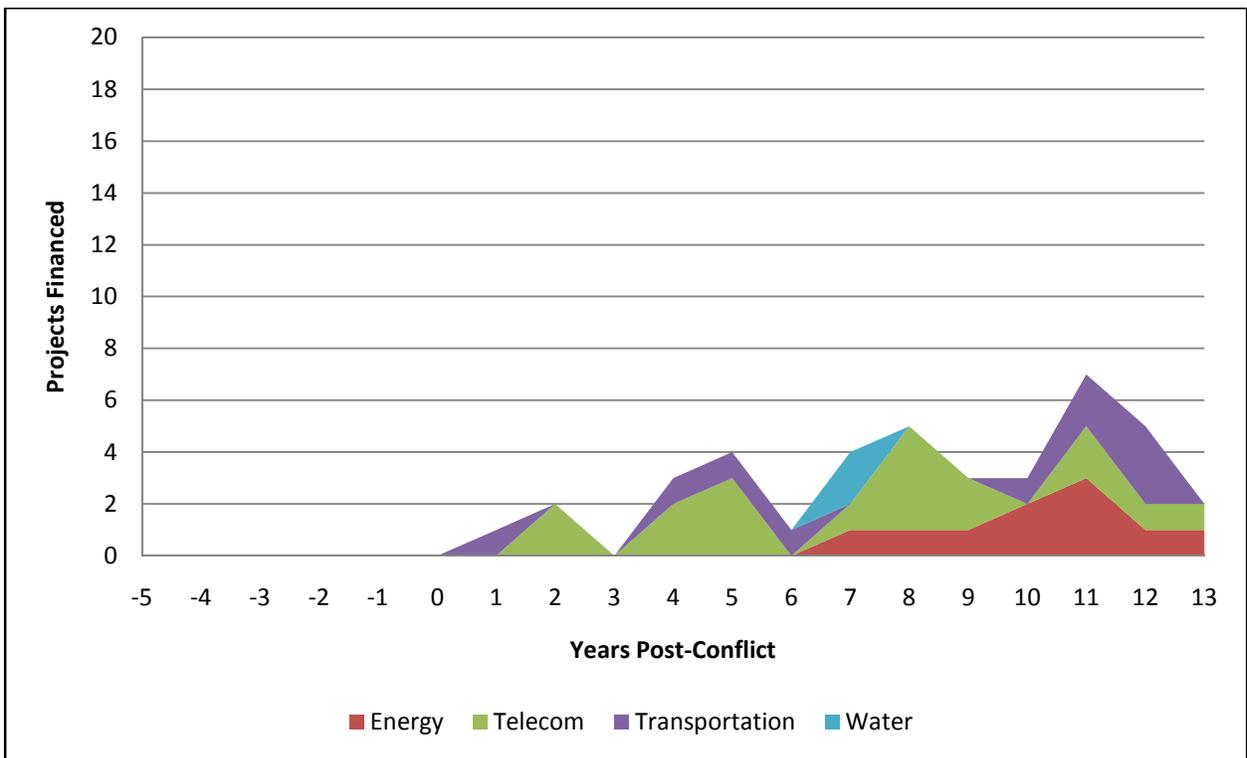
**Figure 6.2: Projects per Year Post-conflict in Poor Countries with Low Conflict**



**Figure 6.3: Projects per Year Post-conflict in Rich Countries with High Conflict**



**Figure 6.4: Projects per Year Post-conflict in Poor Countries with High Conflict**



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