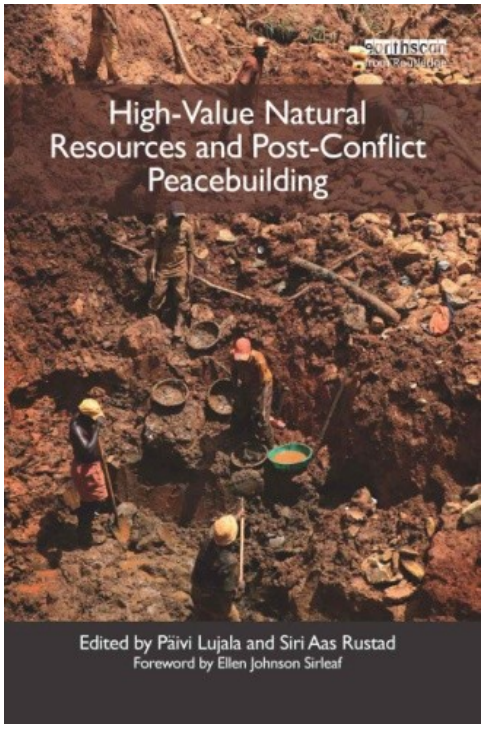
This chapter first appeared in *High-Value Natural Resources and Peacebuilding,* edited by P. Lujala and S.A. Rustad. It is one of 6 edited books on Post-Conflict Peacebuilding and Natural Resource Management (for more information, seewww.environmentalpeacebuilding.org). Thefull book can be ordered from Routledge athttp://www.routledge.com/books/details/9781849712309/.



High-value natural resources, development, and conflict: Channels of causation

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Online publication date: June 2012

Suggested citation: P. Collier, A. Hoeffler. 2012. High-value natural resources, development, and conflict: Channels of causation. In *High-Value Natural Resources and Peacebuilding,*ed. P. Lujala and S. A. Rustad. London: Earthscan.

High-value natural resources, development, and conflict: Channels of causation

Paul Collier and Anke Hoeffler

Natural resources are not distributed equally randomly across the globe. Some countries have few or no valuable natural resources, and others have many. Moreover, natural resources are more abundant in some regions within countries than others. Abundance brings opportunities for greater income—and, historically, resources such as coal and iron ore have been critical triggers for development. But at least since the early 1970s, resource abundance has often been associated with unfulfilled potential for economic growth and high risk of large-scale violent conflict.

That good fortune should yield problems is evidently avoidable, and the international community has recently become interested in identifying feasible collective actions that could significantly mitigate what has come to be known as the "resource curse." Such endeavors are of particular concern to post-conflict societies, because the use and distribution of resource revenues can be pivotal to peacebuilding.

In order to identify possible interventions, it is useful to consider the reasons why natural resource dependence might have adverse effects. Of course, addressing the cause of a problem will not necessarily remedy it; nevertheless, without an understanding of causes, one can have little confidence in proposed remedies. Such an understanding is of particular importance in post-conflict settings because many countries struggle to maintain peace; in fact, about 40 percent of peacebuilding

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attempts fail within the decade, leading to renewed civil war (Collier, Hoeffler, and Söderbom 2008).

This chapter is divided into four sections: (1) a brief consideration of some statistical studies addressing the relationship between natural resources and conflict; (2) a consideration of six major routes that lead from natural resource dependence to development problems; (3) an analysis of potential policy responses; and (4) a brief conclusion.

NATURAL RESOURCES AND CONFLICT: STATISTICAL STUDIES

The first statistical study to find a relationship between natural resources and the risk of civil war was published in 1998 (Collier and Hoeffler); the latest version of that work (Collier, Hoeffler, and Rohner 2009), which analyzed eighty-four large-scale civil wars that occurred between 1960 and 2004, showed that the risk of conflict is substantially increased when primary commodity exports (that is, commodities in their raw or unprocessed state) make up a higher share of gross domestic product (GDP). The relationship is complex, however: at low levels of primary commodity exports, the risk is low, but it increases with higher levels of primary commodity exports. The risk of civil war is at its highest point when primary commodity exports make up about 25 percent of GDP; at still higher levels, the risk decreases.

The study also found that when primary commodity exports at similarly high levels of dependence are compared, oil stands out: high levels of oil dependence are even more likely to be associated with conflict. It should be stressed that natural resource dependence—or primary commodity dependence—is far from being the only factor that is statistically significant in the risk of conflict. In particular, the level of per capita income strongly influences the risk of conflict. At high levels of per capita income, the risk of civil war is negligible, with or without natural resources. Hence, societies such as Norway and Australia, which are highly dependent upon natural resource exports but are also rich, do not face any significant risk from their natural resource endowments.

Of the studies that have investigated the relationship between natural resources and the duration of conflict (as distinct from the risk of its initiation), two studies found that resource dependence increases the duration of civil war (Fearon 2004; Collier, Hoeffler, and Söderbom 2004). One of these studies distinguished between the effects of initial dependence and the effects of the world price of the commodity exports during the conflict (Collier, Hoeffler, and Söderbom 2004). The world price is a particularly reliable causal variable: it is both easily observed and almost entirely unrelated to an individual conflict. Unsurprisingly, the effect of the price depends on the initial level of resource exports: for example, assuming a fairly high level of primary commodity exports at the start of the conflict—30 percent of GDP—a subsequent and sustained 10 percent increase in the world price of the export would extend the duration of the conflict by 12 percent. The study also found a negative association between

natural resource dependence and longer-term growth—a finding that is of particular importance in post-conflict situations because economic growth supports the peacebuilding process (Collier, Hoeffler, and Söderbom 2008).[1]

FROM NATURAL RESOURCE DEPENDENCE TO DEVELOPMENT PROBLEMS

By their nature, statistical studies are rarely well suited to explaining why associations exist. This section, which suggests six causal mechanisms, relies on a mix of theory and evidence from statistical and case studies.

Gaining access to honeypots

One obvious potential explanation of the link between natural resources and conflict is that natural resources constitute a valuable honeypot over which interest groups might fight. Surprisingly, the evidence for this hypothesis is relatively weak. If this were a valid explanation, one would expect it to apply to aid: some governments receive very large amounts of aid, so it should be advantageous to capture the government in order to gain access to the aid. Although one economic theorist, Herschel Grossman (1992), proposed precisely this relationship, tests have found no relationship between aid and the risk of conflict (Collier and Hoeffler 2002). Nevertheless, natural resources may be a more evident source of rent than aid.

Some case studies suggest that in particular instances, a pure rent-seeking motive may be important.[2] In Fiji, for example, a businessman who was the local representative of a private American company that was seeking a logging contract attempted to launch a violent coup shortly after the contract had been awarded to a different company (Van Duesen 2008). In Sierra Leone, as part of the 1999 Lomé Peace Agreement, Foday Sankoh, the leader of the Revolutionary United Front rebel group, was offered a role that was analogous to the vice presidency—but he refused until the offer was changed to include chairmanship of the board

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[1] A large body of additional research confirms the negative relationship between resource dependence and growth. In the best known of the statistical studies, Sachs and Warner (2000) found that natural resources reduce growth. In subsequent studies, Robinson, Torvik, and Verdier (2006) and Mehlum, Moene, and Torvik (2006) used the Sachs and Warner data to investigate why political processes might be dysfunctional in the context of resource rents, and suggested that the problem may be remedied through appropriate institutions. There are also many good case study collections. Gelb (1989) is a particularly good analysis of oil economies, and Auty (2001) is a useful broader analysis.

[2] For the purposes of this chapter, *rent* is defined as those payments to a factor of production that are in excess of the minimum payment necessary to have that factor supplied. For further discussion of rent, see Varian (2006).

that controlled diamond-mining interests (Bangura 2000; GOSL and RUF 1999, art. 5, sec. 2).

Although the rebel leaders in both Fiji and Sierra Leone offered a different explanation, it is difficult to avoid concluding that the desire to obtain control of natural resource rents played a substantial role in their actions. Nevertheless, it is often difficult to distinguish between purely criminal predation and that which is intended to fund a political objective. And the objective can sometimes change over time. For example, FARC (Revolutionary Armed Forces of Colombia) began as a radical rural political movement but is now predominantly a drug-trafficking operation (DOJ 2006; Peceny and Durnan 2006). Presumably, as drug revenues became increasingly central to what the organization was doing, recruits motivated by ideology became less likely to join, and criminals attracted by wealth and violence became more likely to join. Similarly, in the Niger Delta, a movement that had initially protested against injustice and environmental degradation has relatively rapidly been drawn into gang warfare over control of protection and kidnapping rackets.

Making secessionist movements credible

A variant on the honeypot hypothesis, for which there is much better evidence, is that natural resource abundance promotes violent secession. Just as the worldwide distribution of natural resources is not equal, so within countries some locations are more favored than others. Those who live in the vicinity of the natural resource endowment have an obvious economic interest in claiming the resources for themselves, to the exclusion of their fellow nationals. And since natural resources are typically treated as public rather than as private property, such a claim for local ownership is tantamount to a claim for independence.

Many nations are agglomerations of previously distinct political entities, and the process of consolidation is often contested. Hence, in many situations, natural resources will be located in regions where some political groups—albeit often on the fringe—are already claiming autonomy. The presence of natural resources enables such groups to add a credible economic argument to what might otherwise be a largely romantic appeal. An example of this transformation is the (nonviolent) rise of Scottish nationalism, which can be precisely dated to the period between the 1970 and 1974 elections. During the 1970 election, as in all previous elections, the Scottish National Party won only a tiny share of the vote and gained only a single seat in parliament—but in the 1974 elections, its share of the vote rose to 30 percent. The transforming event that brought about this change was surely the dramatic rise in world oil prices that occurred as a result of the 1973 Arab-Israeli War. During this period, the Organization of the Petroleum Exporting Companies appeared to have the power to raise the price almost without limit, and the Shah of Iran began referring to "the noble fuel," giving oil endowments an aura of unrivaled majesty. In this setting, the oil off the shores of Scotland was suddenly seen as valuable, and the Scottish National

Party campaigned using the slogan "It's Scotland's oil" (McBrewster, Miller, and Vandome 2009).[3]

A similar oil-influenced secessionist movement—this time violent—occurred in the Biafra region of Nigeria. Biafra's attempt at violent secession began in 1967, after the central government decided to treat oil revenue as a national asset. Although ethnic tensions were also at play in Nigeria, virtually all African countries have several ethnic groups; what is striking is that the ethnic groups in Africa that have attempted to secede—such as those in Biafra, where there is oil, and in Katanga, in the Democratic Republic of the Congo, where there are diamonds—have usually been resource-rich.[4]

A 2006 statistical analysis of secession (Collier and Hoeffler) relied on the political science classification of civil wars as either secessionist or ideological. Although this is not an immaculate distinction—because it depends, to an extent, on the ostensible objectives of rebel groups—the goal was to determine whether primary commodity exports have differing effects on the risk of the two types of civil war. The study found that dependence on primary commodities does indeed increase the risk of secessionist war more than it increases the risk of ideological war. Another finding worth noting was that if an oil-exporting country experiences a civil war, it is almost certain to be a secessionist war; this is in contrast to non-oil-exporting countries, which often experience ideological civil wars.

Oil may be distinctive in its ability to evoke romantic notions of affluence. The GAM (Free Aceh Movement), for example, which has been attempting to achieve secession of Aceh from Indonesia, has used the analogy of Brunei in its propaganda, claiming that the population of Aceh could be equally rich if Aceh could retain the revenues from the extraction of natural gas in the province. This is a massive—and presumably deliberate—exaggeration, but it may well appeal to the popular imagination.

Financing rebel groups

Rebellions require resources. Recruits are usually full time, and need to be housed, clothed, and fed; but most would-be rebel groups simply cannot finance their activities on a sufficiently large scale, beyond minor acts of predation. Thus,

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[3] Indeed, debate at the time may well have inflated the value of the oil in excess of its true value.

[4] Usually, ethnic groups in regions that are poorly endowed do not press for secession, for the obvious reason that they would be worse off. However, in cases where "romantic" secessionists manage to build a politically powerful demand for secession—perhaps because they have an unusually charismatic leader—the other regions of the country may decide to grant secession peacefully, since violent opposition would not be worthwhile. This was the case in Czechoslovakia, where the larger and richer Czech region permitted the poorer region of Slovakia to secede peacefully.

another hypothesis about the relationship between natural resources and civil war is based on the vulnerability of such resources to appropriation by rebel groups that need financing to pursue violence.

Natural resource predation is by no means the only source of financing for a rebel army, but where natural resources abound in rural areas, they are uniquely vulnerable: lucrative, immobile, and difficult to defend. The task of extorting rents from rurally based natural resource industries also requires armaments and organization that are similar to those that rebel groups would need in any case. (In urban-based extortion rackets, in contrast, virtually anything beyond basic handguns would be an encumbrance rather than an asset.)

Diamonds offer the most spectacular examples of rebel groups funded by natural resources. UNITA (the National Union for the Total Independence of Angola) and the Revolutionary United Front both came to be remarkably big organizations: when UNITA was disbanded, over 90,000 excombatants took part in a demobilization and reintegration program (MDRP 2008). Standing armies of this size are expensive and depend upon correspondingly substantial predation businesses. Alluvial diamonds are particularly well suited for predation because the extraction process is sufficiently simple that it does not require large corporations. Thousands of small individual operators are much less able to defend themselves than large companies, so a rebel organization can easily intimidate and "tax" producers. Timber is also technologically suited to rebel predation, as was demonstrated by the Khmer Rouge in Cambodia. Where technology requires large companies, as in the case of oil, rebel groups can still be predatory, but the nature of the predation changes: companies are threatened with sabotage, and their employees are kidnapped and ransomed.[5] Legislation and increased public pressure have made it more difficult, however, for multinational corporations to make such payments to rebel groups.[6]

As Philippe Le Billon (2001) argues, it is likely that point resources (oil, for example) and diffuse resources (coffee, alluvial diamonds) generate different types of rents. Whereas point resources *motivate* rebellion, rents from diffuse resources may be used to *finance* rebellion, because rents from such resources can more easily be appropriated while fighting is ongoing. Point resource extraction and sales, in contrast, typically involve international companies that are unwilling to operate during a war. Once rebels have won a civil war, however, they anticipate international involvement in resource extraction.

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[5] A related phenomenon is "war-booty futures" (Ross 2005), in which a rebel group actually needs a large company to which it can sell the highly risky prospect of extraction rights, contingent upon subsequent rebel victory.

[6] Nongovernmental organizations such as Global Witness have raised awareness of the links between resource extraction and violence. The USA PATRIOT Act is an example of legislation that regulates financial transactions, particularly those involving foreign individuals and entities.

Detaching the government from the electorate

Historically, representative government arose because states needed to raise large amounts of revenue in order to fight wars, and they found that conceding some degree of representation to taxpayers was the necessary price for compliance with taxation (Tilly 1975; Acemoglu and Robinson 2000). A common political economy argument—encapsulated in the central demand of the American Revolution, "No taxation without representation"—holds that taxation provokes scrutiny from citizens. But when a state receives income through aid, natural resources, or both, the need for taxation is reduced, as is popular scrutiny of government. In their discussion of the problems associated with aid, Deborah A. Brautigam and Stephen Knack, for example, point out that "when revenues do not depend on the taxes raised from citizens and businesses, there is less incentive for government to be accountable to them" (2004, 265).[7] Resource rents are a nontax revenue that is somewhat analogous to aid.

In an empirical investigation of the link between taxation and representation, Michael L. Ross (2004a) found that the larger the share of government expenditures financed through taxation, the more likely the government was to become representative.[8] People are less concerned about the misuse of public money if they have not been taxed in order to generate it. The power of this argument depends, however, on the sophistication of the electorate. In principle, the opportunity cost of misused public money is the same, regardless of its source. But governments that misuse public funds can more easily disguise the amount of revenue from natural resources than they can disguise the amount of revenue from taxation. It may also be easy to co-opt the relatively small groups of informed critics of natural resource misuse.

To the extent that a government is more detached from electoral concerns when it has substantial natural resource revenues, this detachment is both bad in itself and a potential cause of rebellion, including secession. The perception that resources are being embezzled by a corrupt elite is, at the very least, convenient for rebel groups. Although there is seldom a single motivation for rebellion, the perception of government corruption can be a contributing factor even if it is not, by itself, a significant trigger of violence.

Dutch disease

In the late 1970s and early 1980s, economic scholars made much of the problem of Dutch disease—the apparent relationship between an increase in natural resource exploitation and a decline in the manufacturing sector.[9] Economic theory suggests

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[7] Moore (1998) has also investigated the relationship between state capacity, democracy, and aid and come to similar conclusions.

[8] This is consistent with the state-formation hypothesis developed by Charles Tilly (1975).

[9] The term *Dutch disease* was coined by the *Economist* (1977). The first formal economic model was developed by Corden and Neary (1982).

that an increase in natural resource revenues will deindustrialize a nation's economy by raising the exchange rate, and thereby making the manufacturing sector less competitive (Corden and Neary 1982). As this perspective suggests, the response—deindustrialization—is simply an efficient allocation of resources: resources move into the nontradable sector, where they are used to produce the goods that are demanded by the now-richer society but that cannot be supplied through imports.

For such changes to be categorized as a disease—that is, as a problem that warrants attention—one or the other of two additional characteristics must typically be present. First, the increase in the exchange rate is temporary, but private actors fail to recognize this; as a result, the resources that have been lured into the nontradable sector are marooned once prices revert, leading to excessive adjustment costs. Second, assuming that one of the main engines of economic growth—namely, learning by doing—occurs mostly in the manufacturing sector, rather than in the natural resource extraction industry, as the manufacturing sector contracts (and with it one of the engines of growth), overall growth rates decline. Whether Dutch disease requires intervention is likely to depend on both the scale of the resource revenues and on the policy environment. But there is overwhelming statistical evidence that since the 1960s, countries that are rich in natural resources have experienced lower growth rates,[10] and that low growth rates are robustly correlated with a higher risk of civil war (Miguel, Satyanath, and Sergenti 2004; Collier and Hoeffler 2004; Collier, Hoeffler, and Rohner 2009).

Since aid has the same effect as natural resource extraction in raising the real exchange rate, it has sometimes been criticized for causing changes that are analogous to those associated with Dutch disease. Indeed, the effect of aid on growth has been extensively debated. In a study that controlled for policy—and thus controlled, in principle, for the "detachment" effect that both aid and natural resources are likely to have in common—the findings showed that aid has diminishing returns that depend, in turn, on policy (Collier and Dollar 2002).[11] The study authors used "saturation point" to refer to the point at which the effect of aid on growth becomes negative. When policies are reasonable and aid is no more than 30 percent of GDP, aid contributes to growth. When policies are poor, the saturation point occurs when aid is around 10 to 15 percent of GDP. Since natural resource revenues are closely analogous to aid, at least for a given policy environment, one would expect the same range of absorptive capacity to apply to both. The diminishing returns that drive the economy to the saturation point, beyond which aid—and, by implication, natural resources—actually reduces

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[10] See, for example, Sachs and Warner (2000), Gylfason (2001), and Gylfason and Zoega (2006) for an analysis of the mechanisms by which a decline in the formation of human and physical capital reduces growth in resource-rich economies.

[11] The "detachment effect" refers to the phenomenon, discussed in the previous section, in which the government is removed from the concerns of the electorate because most of its funding comes from other sources.

growth, might well reflect Dutch disease. In other words, up to a point, resources might have a beneficial effect that is subject to the normal pattern of diminishing returns; beyond that point, an adverse effect—Dutch disease—becomes preponderant.

Many countries that have abundant natural resources are indeed likely to breach the saturation point—partly because revenues are sometimes very high (in excess of 30 or even 40 percent of GDP, as in Nigeria), but also because policies are often very poor, perhaps because of the detachment effect, which may cause the saturation point to set in at relatively low levels of revenue. Indeed, there may be an inherent trap in the dynamics of revenue and policy: when policies are poor and natural resource revenues are high, the non-natural-resource part of the economy is likely to have slow or even negative growth, and so to diminish relative to the natural resource component. It is then in a weak position to lobby for reform. In Nigeria, for example, the non-oil segment of the economy has been virtually stagnant for a long period.[12]

Exposure to shocks

Finally, natural resources and other primary commodities can be problematic for development because they expose the economy to price shocks. Large negative shocks tend to produce episodes of severe economic contraction that compound the direct loss of income. Such episodes directly increase poverty by causing a drop in export income; they also tend to reduce the growth rates of output over the medium term (Collier and Dehn 2001). Over and above the income and output losses, episodes of rapid economic decline substantially increase the risk of civil war (Collier and Hoeffler 2004; Miguel, Satyanath, and Sergenti 2004). Even positive shocks sometimes destabilize economic management, thereby creating missed opportunities.

Distinguishing between competing hypotheses

Although there is plenty of evidence for all six linkages between natural resource abundance and violent conflict, the proxies of natural resource abundance are often too crude to allow one to distinguish the precise transmission mechanisms. The question is, how can one distinguish between competing hypotheses?

A 2004 study used a general measure of primary commodity exports that included agricultural products, oil, and minerals, but not diamonds (Collier and Hoeffler 2004). This measure, which was first used by Jeffrey Sachs and Andrew M. Warner (2000), has been criticized, however, because it aggregates such a variety of resources. Michael Ross (2004b) and James Fearon (2005) have also raised doubt about whether the Sachs and Warner (2000) measure is robustly correlated with civil war.

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[12] For an overview of the Nigerian economy, see Collier, Pattillo, and Soludo (2008).

A number of studies—for example, James Fearon and David Laitin (2003) and Päivi Lujala (2010)—have found that oil exporters have a higher risk of civil war. There is also some evidence that oil and gas reserves increase the duration of conflict (Lujala 2009), a finding that may be interpreted in different ways. Because oil-producing countries tend to have weaker institutional capacity (Isham et al. 2005), they may be unable or unwilling to distribute their oil wealth evenly, thus causing grievances that lead to civil war, or they may be unable to effectively deter rebellion. Another possibility is that oil is a honeypot that motivates rebellion. Macartan Humphreys (2005) has examined this last hypothesis by analyzing the role of oil reserves rather than current oil production. But his results are not conclusive, perhaps because current oil production and known reserves are highly correlated: "proven" reserves are more likely to be an economic than a geological concept: oil companies explore reserves only if the political and economic situation is conducive to exploitation (Collier and Hoeffler 2005). Thus, it is likely that proven reserves are considerably underestimated in fragile countries (Collier 2010), and that available data therefore do not permit an investigation of the hypothesis that natural resource reserves motivate rebellion.

Indra de Soysa and Eric Neumayer (2007) have used a measure of resource rents to distinguish between two rival hypotheses: (1) that resources provide financing and motive for conflict and (2) that resources weaken state capacity, which in turn fosters conflict. They found that higher rents from the energy sector were positively associated with the risk of civil war (which supports the "state capacity" hypothesis), but they found no evidence that mineral rents increased the risk of civil war. Since energy rents are more likely to accrue to the state, whereas mineral rents can be appropriated either by the state or by rebels, they rejected the finance and motive hypothesis. This stands in contrast to Lujala (2010)—who, using subnational data, found a positive relationship between the location of violent conflict and the location of diamonds, providing some evidence that the diamonds might have been used to finance conflict.

POLICY RESPONSES

Clearly, no single policy intervention will simultaneously address all six of the causal mechanisms that link natural resources to conflict. If all are indeed credible routes to conflict, as seems likely, a package of interventions that collectively addresses all the routes will be required. In the absence of a package, interventions that address only a single route may have limited effect: closing one connection may simply increase opportunities for the other connections to take effect.

This section considers the four components of a feasible package of interventions: revenue transparency, expenditure scrutiny, commodity tracking, and reduced exposure to price shocks. (Although there are six routes, some interventions address more than one of them, so an effective package need have only four components.)

Revenue transparency

Revenue transparency is useful in several respects. Clearly, it is necessary for scrutiny of expenditures: unless revenues are known, it is pointless to ask how they are used. In terms of the six routes discussed earlier in the chapter, transparency is necessary to address the problem of detachment; it can also reduce secessionist pressure.

As the example of the GAM in Aceh illustrated, rebel movements may deliberately exaggerate the value of natural resource revenues. Far from keeping the population quiescent, secrecy is likely to facilitate such exaggeration. Because the populations of many developing countries do not trust their governments to provide accurate information, especially on such contested matters, transparency alone cannot counter such propaganda: a government campaign to demonstrate that revenues from natural resources are lower than the figures cited by a rebel group would simply set off claims, on the part of the rebels, that the government is engaging in embezzlement. Hence, any system of transparency must also be credible to the domestic population.

Post-conflict countries can now participate in programs such as the Extractive Industries Transparency Initiative, which supports improved governance in resource-rich countries through the verification and publication of company payments and government revenues from oil, gas, and mining.[13] The Natural Resource Charter, currently an international convention in the making, is a set of economic principles that governments can use to increase the prospects of sustained economic development from natural resource exploitation.[14] The strategies recommended by the Natural Resource Charter should further improve government accountability—and, thereby, the use of resource incomes for development and security. Developed through a participatory process that was guided by academic research, the charter begins with the premise that the development of natural resources should be for the maximum benefit of the citizens of the source country, then specifies how this can be achieved. The precepts cover issues that range from achieving transparency and informed public oversight to best practices in contracting with and paying natural resource extraction companies.

Expenditure scrutiny

Although scrutiny depends on transparency, transparency is not in itself scrutiny. Citizens and their representatives are the legitimate beneficiaries of public revenues; hence, scrutiny is predominantly a domestic process. The international community may also have a legitimate interest in scrutiny, to the extent that it is putting resources into the country, but this interest is distinctly secondary to the domestic interest. The international community should nevertheless support

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[13] For additional information on the Extractive Industries Transparency Initiative, see Eddie Rich and T. Negbalee Warner, "Addressing the Roots of Liberia's Conflict through the Extractive Industries Transparency Initiative," in this volume.

[14] See www.naturalresourcecharter.org.

domestic efforts to increase scrutiny; in some countries, institutions that can conduct scrutiny need to be established from scratch. The precise architecture of scrutiny will vary from country to country, depending on what is already in place.

Citizens of post-conflict countries have experienced either state fragility or complete state failure and are thus more likely to feel detached from their governments. Transparency and scrutiny can counterbalance the problem of detachment, at least to some extent. Gradually, the population may come to recognize that natural resource revenues are indeed owned by the nation, and that decisions about their use are a core issue of domestic politics.

Commodity tracking

Commodity tracking directly addresses the fact that natural resources have historically been used to finance rebel movements. The Kimberley Process, a certification scheme designed to ensure that rough diamonds are "conflict free," should reduce financing opportunities for rebel movements and thereby decrease the risk of violent conflict.[15] By improving transparency, commodity tracking also addresses the problems of secession and detachment: the government is seen to be attempting to curtail the illicit use of revenues.

The physical tracking of commodities can also be usefully combined with information on the corresponding financial transactions.[16] Banks' reporting requirements are currently increasing in any case, as a means of curbing corruption and international terrorism, and the reporting requirements for the physical movement of commodities are also being increased—but the two have yet to be combined. The integration of financial reporting systems, for which banks are responsible, and physical consignments, which are reported by customs authorities, would be relatively straightforward with modern information technology, and would greatly augment transparency.

Reduced exposure to price shocks

It is currently difficult for post-conflict countries to guard against price shocks: opportunities to cushion price shocks through private and public insurance are

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[15] For additional information on the Kimberley Process, see Clive Wright, "The Kimberley Process Certification Scheme: A Model Negotiation?"; J. Andrew Grant, "The Kimberley Process at Ten: Reflections on a Decade of Efforts to End the Trade in Conflict Diamonds"; Harrison Mitchell, "A More Formal Engagement: A Constructive Critique of Certification as a Means of Preventing Conflict and Building Peace"; and Kazumi Kawamoto, "Diamonds in War, Diamonds for Peace: Diamond Sector Management and Kimberlite Mining in Sierra Leone," all in this volume.

[16] One development along these lines is a U.S. law, the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was signed on July 21, 2010. Designed to increase transparency in the trade of minerals financing conflict in the Democratic Republic of the Congo (DRC) and surrounding areas, the act requires companies to trace the source of "conflict minerals" that are used in production of their goods.

limited for governments, and because stabilization funds can be difficult to administer,[17] they are therefore slow to respond and would be in danger of working procyclically (that is, in times of economic growth the fund would release money, while in times of economic downturn the fund would withhold the money). One strategy for protecting against price shocks is to diversify the economy—that is, to make it less vulnerable to price changes in the natural resource sector by increasing activities in other sectors, such as services and manufacturing. But diversification takes time, and the benefits to peacebuilding will be slow to materialize.

In combination with transparency and scrutiny, however, diversification can help to reduce the problem of Dutch disease. Dutch disease is best thought of in terms of absorptive capacity: how much natural resource revenue can the government productively use? Absorptive capacity depends, in turn, on the quality of the policy environment. Reducing economic fluctuations and improving the effectiveness of public expenditures increase absorptive capacity, rendering countries less likely to suffer from the adverse effects of natural resources and more able to use them to rebuild their societies.

CONCLUSION

Development aid typically dominates the public debate when it comes to assisting poor countries, many of which are post-conflict societies. Scholars do not agree on whether aid has a positive impact on development. Sachs (2006) stresses the positive impact of development aid, while Easterly (2006) argues that aid has impeded development. Collier (2007) takes the middle ground, suggesting that aid has had positive but small effects on development. If this view is correct, it is desirable to continue to focus on aid effectiveness and policy coherence in the poorest countries. Aid effectiveness refers to the need to increase the impact of aid on economic growth and poverty reduction; policy coherence refers to efforts to align apparently disparate policy arenas (such as aid and trade), to ensure that they are all supportive of development.

The natural resource revenues that accrue to developing countries are far larger than aid flows, but they are analytically similar. Policy coherence demands that the international community focus on raising the returns from natural resource revenues, just as it has struggled to raise the returns on aid. Indeed, the payoff for raising the returns on natural resource revenues dwarfs the effects of raising the returns on aid. Some of the actions required—such as domestic scrutiny—are similar; others are very different. But the prolonged international debate on the effectiveness of aid contrasts sharply with the neglect that has prevailed, until recently, with respect to international policy toward natural resources.

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[17] Stabilization funds are designed to reduce the economic impact of volatile revenue from nonrenewable resources.

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