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Could Payments for Ecosystem Services Create an "Ecosystem Service Curse"?

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ABSTRACT. Payments for ecosystem services (PES) have received much praise and are increasingly perceived as a promising tool to ensure the protection of global ecosystems as well as being able to help alleviate poverty in areas rich in ecosystem services. Given current trends, the scale of payments is likely to grow, creating new circumstances within which ecosystem services will be managed. In this dynamic context, following a precautionary approach, one should focus on establishing systems to handle the risks involved. Based on an analogy to resources that have long been included in the system of market transactions, we suggest that the rapid development of PES can negatively influence regional and potentially national economies. Resource revenues are highly correlated with economic problems in poor countries that are not able to use those revenues to ensure sound development. Problems similar to those that affect resource-rich countries may emerge in the case of economies rich in ecosystem services once PES increase in spatial and monetary scale. The most prominent examples of such problems include rent seeking, unequal bargaining power of buyers and sellers, volatility of payments, which are all related to the quality of institutions. To ensure the long-term positive impacts of PES, such systems should be carefully designed paying particular attention to distribution of property rights and transparency, decentralization of revenues, and capacity building to ensure further development opportunities.

Key Words: *aid curse; ecosystem services; global PES; payments for ecosystem services; PES; resource curse*

INTRODUCTION

Payments for ecosystem services (PES) are perceived as a promising and efficient approach that allows for the protection of ecosystem services by integrating them into the market system. So far PES have been developed mostly on a regional scale, although international examples are also available (Landell-Mills and Porras 2002, Mayrand and Paquin 2004, Swallow et al. 2009). Their spatial and monetary scale has remained limited and they have not made significant impacts on economies in which they were implemented. However, with their rapid adoption so far, their effects are likely to change. According to one estimate, ecosystem service markets may generate benefits for 600–800 million rural poor by 2030 (Milder et al. 2010). Carroll and Jenkins (2008) calculated that broadly interpreted PES-related transactions are likely to amount up to US\$1.1 trillion by 2050, compared with about US\$87 billion in 2006.

There are a number of trends and factors that could drive a further scaling up of PES, such as the international or even global dimension of many ecosystem services (Huberman 2009, Strassburg et al. 2009); higher willingness to pay for ecosystem services in developed countries (Stern 2007, Wunder and Wertz-Kanounnikoff 2009); better balance of North–South relations (Romero and Andrade 2004, Huberman 2009, Kronenberg 2012); and economies of scale reducing the transaction and planning costs of individual projects. Indeed, the calls for a global PES recently appeared in academic writing (e.g., Sultanian and van Beukering 2008, Huberman

2009, Wunder and Wertz-Kanounnikoff 2009), policy-oriented reports (The Economics of Ecosystems and Biodiversity (TEEB): OECD 2010, ten Brink 2011), and declarations (Heredia Declaration 2007). REDD+ and the CDM's afforestation component provide two examples of PES already being used at the global level. If PES increased in scale with new international conservation initiatives using this instrument, and if these payments reflected the "real value" of ecosystem services, they would generate significant revenue streams particularly in the case of poorer but environmentally well-endowed countries. What may then be "the broader effects on the economy from scaling-up PES schemes" (Jack et al. 2008:9470)? And, "to what extent is PES compatible with an economically viable development trajectory for economies as a whole" (Bulte et al. 2008:247)? This article discusses these questions, aiming to highlight some potential risks that may emerge with the large-scale adoption of PES.

The experience gained so far with provisioning services (such as food and fiber), many of which have long been included in the system of market transactions, reveals that poorer countries may have difficulties to benefit from such revenue streams. The literature on the "resource curse" demonstrates that resource-rich countries are often not able to fully utilize their resources to ensure economic development (e.g., Sachs and Warner 1995). Instead, they suffer from different types of economic and social distortions aggravated by resource revenues, along with additional nuisances for local populations living in resource-rich areas. Similar problems

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have been observed in the case of other capital flows, including aid (Bräutigam and Knack 2004, Harford and Klein 2005, Djankov et al. 2008), workers' remittances (Abdih et al. 2012), and tourism revenues (Wilkinson 1992), especially when these are significant relative to the scale of the receiving economy. We reflect on what can be termed as an "ecosystem service curse", whereby countries rich in ecosystem services would receive payments significant enough to distort their economies, or at least to distort local economies where ecosystem services originate.

In this article, we call for caution through indicating potential problems that may emerge if PES developed too quickly. We refer to the experiences of resource-rich countries that have not been able to reap the benefits from selling provisioning services (referred to as the resource curse). We analyze whether the same problems may appear in the case of other ecosystem services for which countries are likely to receive increasingly significant payments. Based on this analysis, we briefly summarize some key design elements for PES systems to help avoid such problems.

LESSONS LEARNT FROM PAYING FOR PROVISIONING SERVICES

Provisioning of materials is an ecosystem service (e.g., Costanza et al. 1997, Rodríguez et al. 2006, Wallace 2007) which, unlike most other ecosystem services, is largely included in the system of market transactions. Thus, the experience gained in this area may now be used in creating markets for other ecosystem services. Interestingly, resource revenues have often turned out to be counterproductive and instead of bringing prosperity they brought or aggravated economic problems, which led to the emergence of the resource curse hypothesis. Although this refers mainly to nonrenewable resources, it has also been observed in the case of renewable resources, such as timber and agricultural products (e.g., Ross 2001*b*, Dube and Vargas 2006).

The idea that abundant resources may have detrimental effects on economic growth emerged with the Prebisch–Singer hypothesis (Prebisch 1950, Singer 1950) and the so-called Dutch disease (Corden and Neary 1982). The Prebisch–Singer hypothesis refers to declining prices of commodities compared with prices of manufactured goods. The Dutch disease concept suggests that large resource revenues may lead to a significant inflationary pressure and shift production factors to the extractive sector, to the detriment of other sectors. The resource curse concept received much attention in the 1990s and refers primarily to experiences gained in the second half of the 20th century in developing countries. From the initial macroeconomic explanations (e.g., Sachs and Warner 1995), the focus has gradually shifted towards institutions ("rules of the game"), suggesting that the effects of resource abundance on economic performance depend on the quality of institutions (e.g., Mehlum et al. 2006*a,b*). Thus, the most widely adopted

explanation is that, unless good institutions are already in place, resource revenues remove incentives to improve institutions and infrastructure, and encourage rent seeking (Harford and Klein 2005, Brunnschweiler and Bulte 2008, Wick and Bulte 2009). Although the Dutch disease provides an obvious exception, and even a good institutional setup may not be able to easily counteract such a situation, most other manifestations of the resource curse depend on institutions (see the Appendix for an overview).

Several recent publications on the resource curse provide an exhaustive review of the debate so far (Auty 2007, Torvik 2009, Wick and Bulte 2009, Van der Ploeg 2011, Frankel 2012). Nevertheless, some countries have been able to avoid the resource curse and this might have depended on a variety of factors, such as saving resource income, the political system and the quality of institutions, the stage of industrialization, and the type of natural resources (Torvik 2009). The main intrinsic characteristic differentiating resources that might have influenced the situations of resource-rich countries is their appropriability or "lootability". Resources that are easier to appropriate facilitate rent seeking, corruption, conflict, and smuggling, thus potentially preventing economic growth (Mehlum et al. 2006*b*, Boschini et al. 2007). Appropriability is further related to spatial concentration. Point resources, such as precious metals, diamonds, and oil (as opposed to diffuse resources, such as agricultural land), are unevenly spread across a territory, which makes them easier to appropriate (Ross 1999, 2001*a*, Leite and Weidmann 2002, Sala-i-Martin and Subramanian 2003, Isham et al. 2005, Wick and Bulte 2006).

Interestingly, the main focus of the resource curse literature is not on resources as stocks but on the flows of resource rents. In particular the focus is on the risk of wasting the potential that these rents might bring for economic development. Rents from ecosystem services can be defined similar to resource rents as the difference between their market value and their total costs. Providing ecosystem services is often related to abstaining from some economic activity or modifying production processes, thus their costs of delivery are related to opportunity costs for land users, which lays the foundation for PES. In the case of resources, rents are often private and can be taxed. In the case of ecosystem services, rents only emerge when they are subject to market transactions that reveal the market value of those services. Thus, PES, like other market transactions, will in most cases lead to the privatization of ecosystem services rents.

While nonrenewable resources are extracted and depleted, ecosystem services can be delivered in perpetuity, depending on the condition of natural capital. This links to the weak vs. strong sustainability debate and to substitutability between different forms of capital. In the case of exploiting mineral resources, long-term development can only be ensured by

substituting natural capital with other forms of capital (e.g., strengthening institutions). Indeed, countries with low or negative so-called net or genuine savings tend to be more affected by the resource curse (Atkinson and Hamilton 2003, Dietz et al. 2007). Meanwhile, ecosystem service “providers” are paid for ensuring that ecosystems provide those services for which their beneficiaries are willing to pay. PES depend on providers’ ability to maintain natural capital so that it provides the services under consideration in perpetuity. Depleting natural capital in this case would have more serious consequences than in the case of mineral resources as it would deprive a given locality of a potentially infinite stream of revenues. Furthermore, PES can increase the total (natural and human made) wealth of a given area if the money is used to generate other forms of capital. PES can serve as a stimulus for further development, through co-investment or seed capital, or through in-kind payments. Nevertheless, as in the case of resource revenues, this development potential may be wasted if the money is not used for development purposes but dissipates within an economy or is siphoned off by elites. We now relate the risks observed in the case of resource revenues to PES.

SOCIOECONOMIC IMPACTS OF PES

The literature on PES has already touched upon many of the problems related to the resource curse. However, these references remain scattered and are often only raised as side issues. In particular, many attempts have been made to study the impacts of PES on the poor and to devise PES in such a way that would help improve the situation of the poor (e.g., Grieg-Gran et al. 2005, Pagiola et al. 2005, 2008, Bulte et al. 2008, Wunder 2008, Jourdain et al. 2009, Milder et al. 2010, Muradian et al. 2010). However, empirical studies have not confirmed that PES schemes have so far contributed to poverty alleviation (Wunder 2008, Pattanayak et al. 2010). Rather, they indicate that if PES attempt to solve both poverty and environmental problems at the same time, this may reduce their efficiency in meeting these objectives. Thus, some authors argue that PES should focus on one of these objectives at a time, that is, protection of ecosystem services for which they were created (Bulte et al. 2008, Wunder 2008, Zilberman et al. 2008, Ferraro 2009) and then the other might be achieved as a side effect. However, ignoring this dual nature of PES might lead to important unintended side effects.

For example, Karsenty (2004, 2007) suggests that PES might keep poor communities in a poverty trap as they would receive payments for refraining from some types of activity that might harm ecosystem services. They might become passive “conservation rentiers”, losing any dynamism and innovation potential they might have had, had they pursued their traditional development path. Activities that are prohibited may have actually been more labor intensive (Pagiola et al. 2005) or related to higher innovation and learning-by-doing gains (Karsenty 2004, 2007, Hutton et al. 2005). Clements et

al. (2010) suggests that the new economic incentives to protect ecosystem services may lead to the erosion of local rules and social norms, which may also affect preferences for different forms of economic activity. Indeed, abundance of resources and the related resource revenues reduce the innovation potential of resource-rich countries. Often it is not the abundance of production factors that forces innovation and enhances competitiveness but their scarcity (Porter 1990).

Authors such as Wunder (2006) respond that in many poor countries economic development or innovation do not frequently occur and indeed PES may be a unique opportunity offered to such communities. Wunder (2006) suggests that PES do not necessarily mean capping development because people in poor communities are involved in diversified activities, only some of which might conflict with providing a given ecosystem service. However, Wunder (2006) agrees that the negative social phenomena related to extra financial flows for ecosystem services (“PES trap”) had not occurred because so far these payments have not been large enough to change the situation in this way. Indeed, most PES studies adopted a narrow focus, studying individual projects and their income redistribution impacts. At the same time, they neglected the regional, national, and especially international context in which important welfare or development issues emerge. Larger scale PES could also have significant unintended side effects on the poor (also on those who would not take part in PES) (Pagiola et al. 2005, Wunder 2008, Zilberman et al. 2008). For example, retiring land from agriculture and other uses leads to higher land prices and lower accessibility of land and nonprotected ecosystem services, as well as higher prices of commodities, especially food.

Although there are also potential opportunities to create jobs with the use of PES, such as in tree-planting, tourism or silvopastoral practices, as well as potential positive externalities for agriculture (from forest and water conservation), and further economic opportunities may emerge with new capital available to poor communities, again, all of these depend on how PES are designed. These opportunities may be undermined by rent seeking, unequal bargaining power, and volatility of payments; these are problems that affect the development opportunities of resource-rich countries but are also highly relevant in the case of ecosystem-rich countries.

Rent seeking

Rent seeking emerges when new actors take over rents, often by manipulation, corruption or force, from those who would have been entitled to receive those rents in normal circumstances.

Mechanism

PES increase the value of land that is important in terms of ecosystem services. As PES are usually tied to land ownership, PES might lead to further concentration of wealth and to

excluding poorer land users from the land they have been using in order to capture PES (Redford and Adams 2009, Milder et al. 2010). Additionally, rent seeking and appropriation of land providing ecosystem services may lead to conflicts (Ferraro and Kiss 2002).

In developing countries people working the land are not necessarily landowners (Karsenty 2004, 2007, Wunder 2006, 2008, Porras et al. 2008). Although so far it has been thought that customary rights might often guarantee effective control and no formal systems of property rights need to be introduced (Wunder 2006), with a global system of PES this would probably have to change, in order to ensure its objectivity and universality within an international setting. Indeed, when institutions are weak and stakes are high, various forms of rent seeking become more attractive, which is known as a moral hazard effect.

Evidence

Rent seeking has already appeared in the PES-related literature as a potential threat (Ferraro and Kiss 2002, Landell-Mills and Porras 2002, Rosa et al. 2003, Karsenty 2004, 2007, Pagiola et al. 2005) but most authors downplayed its importance on the grounds that PES have not been large enough to attract larger players (Rosa et al. 2003, Robertson and Wunder 2005, Wunder 2005, 2006, 2008). Rent seeking has been feared by some donor agencies that were considering getting involved in PES (Wunder et al. 2008a) and by some providers of ecosystem services (Wunder 2008). For example, rent seeking was identified as a serious problem in the case of an internationally financed carbon sequestration project in Madagascar in which large amounts of available money attracted powerful players. As a result, profits from selling carbon credits did not reach local communities but led to the appropriation of resources by the state and other actors (Pollini 2009). Ebeling and Yasué (2008) plotted potential REDD income against the World Bank's governance indicators and observed that some countries in particular would be likely to receive significant payments relative to their GDP and at the same time are among those with the poorest governance structures.

Evidence of rent seeking can also be found in the earlier examples of government-funded PES-related schemes, such as soil conservation programs in the U.S. Farmers who conformed to the initial standards were soon overridden by powerful local committees that influenced the government to change the rules regarding what practices could be funded (Elmendorf 2003). Other examples of strategic behavior emerged with reference to other government subsidy schemes with environmental objectives, including the largest U.S. and EU agri-environmental programs (Martin et al. 1982, Baylis et al. 2004, Salzman 2005, Wunder et al. 2008b, Wunder and Santiago 2010).

Unequal bargaining power

Negotiations between the participants of the ecosystem service market are affected by unequal bargaining power; in most of these cases, buyers are exploiting their position to the detriment of the providers' interest.

Mechanism

Apart from uncertain land tenure, other problems, such as limited experience and understanding of novel mechanisms or poor enforcement of legal contracts may limit the access of ecosystem service providers to PES (Ferraro and Kiss 2002, Kosoy and Corbera 2010). In principle, this is most often the case of relatively isolated groups that do not have enough knowledge and experience to make informed decisions when confronted with new ideas presented by powerful external stakeholders. Alternatively, if not exploited, smallholders may be excluded from participation in PES schemes due to higher transaction costs of organization and inclusion. Commodification of ecosystem services can create new socioeconomic hierarchies, repositioning of actors, or can reproduce unequal power relations in access to wealth and environmental resources (Kosoy and Corbera 2010). Indeed, PES criticisms often focus on the related problems of equity and legitimacy (Karsenty 2004, 2007, Corbera et al. 2007, Hubacek et al. 2009).

Romero and Andrade (2004) emphasized that even conservation organizations may expect to make a deal paying relatively little for conservation in poor countries where the current opportunity costs of environmental protection are low compared to developed countries. Thus in the case of markets for ecosystem services, with fewer and better informed buyers than sellers, the buyers could dictate the conditions (Wunder 2008). The more homogenous a service is, the easier it might be for the buyer to change a provider (thus providing the buyer with higher bargaining power because of substitutability), potentially undermining the financial sustainability of a scheme.

PES are often arranged through intermediaries who have major influence on the price and conditions of the transaction. Not only is their bargaining power much larger than that of most ecosystem service providers when deciding on the conditions of the transaction, but also they may use many other opportunities to capture a disproportional part of benefits (Neef and Thomas 2009, Kosoy and Corbera 2010, Vatn 2010). For example, offering to "help" by providing access to a bank account to those who do not have access to an account and would not be able to receive the payments otherwise. There is a strong focus in the literature on the need to employ "honest brokers" ensuring that the interests of both buyers and sellers are secured (Rowcroft et al. 2011).

Alternatively, large ecosystem service providers, sometimes those that have pushed out smaller providers in the first place, may resort to dishonest practices by demanding higher prices

than economically justified. This is related to information asymmetry, that is, providers may know or at least pretend to know the specificity of ecosystem services better than the buyers and inflate the opportunity costs of supplying these services. This may happen especially when ecosystem service providers realize that the scheme is not monitored well enough and that no sanctions are imposed on those who do not fulfill the original agreements (Salzman 2005, Ferraro 2008, OECD 2010, Pattanayak et al. 2010).

Evidence

Based on some preliminary evidence with initial voluntary projects, some authors feared that relatively large REDD payments might “create incentives for government and commercial interests to actively deny or passively ignore the rights of indigenous and other forest-dependent communities to access and control forest resources” (Brown et al. 2008:113). Based on experiences from Meso-America, Corbera et al. (2007) indicates that the above problems are more likely to emerge in PES programs carried out in protected areas where managers and intermediaries make all decisions. Another study of PES in Mexico demonstrated that because of the poor knowledge of ecosystem service providers and their poor capacity to prepare project proposals, “substantial funding was lost in the preparation of unsuccessful project proposals” (Corbera et al. 2009:751).

Volatility of payments

Due to various primarily external reasons, the value of PES may vary significantly over time.

Mechanism

The discussion on PES so far has not paid enough attention to the dynamics of the situation that PES are supposed to solve. Ecosystem services change over time, as do the pressures on ecosystems, properties of ecosystems, and the preferences and needs of society. In addition, service recipients may not be satisfied with the service or they may find a more cost-effective way of acquiring the same service elsewhere. These dynamics may influence price fluctuations similar to those experienced in other natural resources-related markets. Volatility of payments would translate into volatility of income for ecosystem service providers. Pagiola et al. (2005) noted that the stability of income for ecosystem service providers depends on the financial sustainability of the PES scheme. Although incomes are likely to be stable in the short term, one cannot ensure that the scheme would last in the long term. Even if, in principle, ecosystem services can ensure an infinite stream of benefits, this depends on many additional factors, such as demand for those ecosystem services and their substitutability. If funding ends with the end of a given project, the local population may not find it easy to identify and pursue new development prospects (Hutton et al. 2005, Carolina Elia, *personal communication*).

Volatility is related to changing perceptions and values associated with different ecosystem services. The attention and preferences of the public might change and associated decrease in funding might lead to a decrease of the ecosystem service provision due to, for example, land conversion. Alternatively, the public might start recognizing the importance of certain services but these might not be available anymore due to previous overharvesting or destruction. A change in preferences cannot just create new service flows given certain irreversibility and uncertainty with regard to ecosystem responses (Hubacek et al. 2009). Finally, knowledge about the importance of certain ecosystem services may change, diverting attention of buyers to different services and thus impacting upon ecosystem service providers. Had a given community specialized in one type of ecosystem services, its vulnerability and dependency on PES would increase.

Evidence

On a global scale, the unpredictability of carbon prices provides the most obvious example of how preferences and payments change. In particular, the REDD+ scheme exhibits the many risks that affect the level of payments, such as unknown future demand for carbon credits, unclear plans of donors, market pressure favoring the lowest cost solutions, and undecided future of the scheme itself (Phelps et al. 2011). Other factors add to this uncertainty, such as the overall economic situation, e.g., the current recession, and changes in the political framework, e.g., the expiration of the Kyoto Protocol and lack of a successor framework.

POLICY IMPLICATIONS AND CONCLUSIONS

With increasing scale of PES, new problems may emerge, similar to those that have been linked to other relatively large revenue streams, notably resource revenues. These problems are not specific to ecosystem services and yet, on a limited scale, they have already occurred in the case of PES. At least to some extent these problems can be mediated by proper design of PES and thus, they should attract the attention of all stakeholders responsible for developing this instrument. Further research is necessary on how to design a global system of PES taking into consideration the risks that we have highlighted. Indeed, all of these risks refer to governance structures, including institutional frameworks, monitoring, communication, and participation.

Strengthening institutions emerges as the most important issue; this includes enforcement of regulations and decentralization of resource revenues. Targeting providers directly and studying the socio-political situation in regions in which important ecosystem services exist prior to offering PES to those regions might prevent rent seeking. It would also ensure that PES do not cause counterproductive distributional

consequences that might negatively affect the environment. Where applicable, this could also be achieved by reducing the appropriability of ecosystem services, for example by introducing objective eligibility criteria, such as period of use of a given plot of land. Similar to some other international undertakings, accredited auditors should be responsible for verifying whether the system works in countries receiving PES, preventing any negative consequences as early as possible. Ensuring the transparency of this system will also require tight controls in order to avoid exertion of undue bargaining power.

A global system of PES would require the creation of national agencies that would be responsible for promoting the system in the respective countries and adjusting global standards to local conditions. These agencies would have to be independent from national authorities to minimize the problems of rent seeking and corruption. These agencies should be responsible for promoting information on local markets internationally, thus fostering efficient and effective design of PES transactions (e.g., prices, services, cooperation rules, socio-political situation in regions rich in ecosystem services). Nationally, these agencies should improve access to information on PES, including promoting PES good practices in local languages. Apart from reducing the differences in bargaining power and thus promoting the participation of smaller ecosystem service providers in PES, information availability should increase the influence of service providers on designing PES. Indeed, thanks to participation of service providers in designing PES, their interests are better taken into account than in the case of traditional resource management in which decisions are frequently made centrally. Involving providers in discussions on PES might enhance their engagement and interest in participation (Corbera et al. 2007, Turner and Daily 2008, Hubacek et al. 2009). This would also help to avoid some of the problems that have been highlighted (e.g., conflicts) and it would bring additional benefits to the protection of ecosystem services, such as learning-by-doing and preventing free riding.

A global system of PES needs to reduce the vulnerability of its participants to price volatility. Such a system should promote mechanisms that guarantee a fair price to ecosystem service providers in order to encourage a long-term provision of these services. Again, examples of such mechanisms are available in the commodity market. In poorer communities such a system would need to introduce capacity building mechanisms to ensure that these communities can absorb the funds, and to bring about other benefits such as improved social capital, and future development opportunities. A good system of PES should help to diversify the economies of poor countries so that they do not depend exclusively on PES but still manage their ecosystems in a sustainable way. Indeed, PES should have an educational component on the importance of ecosystem services and on the mutual dependence of

providers and buyers. After all, because of irreversibility, new markets reflecting new preferences will not be able to undo many of the changes that we introduce to ecosystems.

Responses to this article can be read online at:

<http://www.ecologyandsociety.org/issues/responses.php/5240>

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Appendix. Manifestations of the resource curse.

Problems	Selected references
Dutch disease (appreciation of the real exchange rate leading to export difficulties of the manufacturing sector, resulting in losing the related positive externalities in an economy, undermining its long-term competitiveness)	Corden and Neary 1982, Sachs and Warner 1995, Sachs 1999, Gylfason et al. 1999
Volatility of commodity prices and their long-term decline relative to the prices of manufactures	Prebisch 1950, Singer 1950, Hausmann and Rigobon 2003
Volatility of resource export earnings (changes in demand and prices in international markets), contributing to macroeconomic boom and bust cycles (borrowing in good times, repaying in bad times; high levels of government spending in good years followed by deep cuts in bad years); often combined with volatility of exchange rates	Knack and Keefer 1995, Manzano and Rigobon 2001, van der Ploeg and Poelhekke 2010
Volatility of rates of extraction (may be affected by technological processes but also by political instability)	Humphreys et al. 2007
Volatility of timing of payments by corporations to states, again leading to macroeconomic boom and bust cycles	Humphreys et al. 2007
Poor institutions that have not been able to ensure development without resources are not able to be effective once resources are discovered and exploited, either (imperfect markets, poor legal systems, badly defined property rights)	Ross 1999, 2001b, Mehlum et al. 2006a,b, Robinson et al. 2006, McSherry 2006, Smith 2007
Weak democracy (weak, unaccountable states – fewer connections between the state and citizens, fewer taxes, less information, lower demand for government services by citizens)	Moore 2001, Ross 2001a
Corruption (spending in political campaigns or coercion – funding militias); related to poor institutions and weak democracy	Sala-i-Martin and Subramanian 2003, Vicente 2010
False sense of security leading to overconsumption and underinvestment (resource windfalls encourage unsustainable and unwise policies, unnecessary projects, clientelism, unjustified public expenses, excessive borrowing, insufficient investment in educational and social reforms); related to poor institutions and weak democracy	Mansoorian 1991, Ross 1999, Gylfason 2001, Manzano and Rigobon 2001, Robinson and Torvik 2005, Aslaksen and Torvik 2006, Robinson et al. 2006, Collier and Hoeffler 2009
Rent seeking and conflicts (those in power and those who already control resources abuse their authority to appropriate resource revenues and remain in power, either by various forms of bribery, delaying reform, etc., or through armed conflict); additionally, this diverts resources away from more productive activities; related to poor institutions and weak democracy	Gelb 1988, Baland and Francois 2000, Acemoglu et al. 2004, Auty 2001ab, Ross 2001a,b, Torvik 2002, Fearon and Laitin 2003, Humphreys 2005, Collier and Hoeffler 2005, Acemoglu and Robinson 2006, Robinson et al. 2006, Bulte and Damania 2008
Unequal expertise (foreign extractor may know more about the resource, its value, quantity, extraction technologies than the government of the resource-rich country leading to differences in bargaining power)	Bougrine 2006, Humphreys et al. 2007
Grievances for local populations (reducing quality of life as a result of resource extraction: forced migration, inadequate job opportunities, environmental degradation, unfair distribution of benefits, military repression)	Collier and Hoeffler 1998, 2004, Azam 2001