Check for updates

Article

International Area Studies Review
2017, Vol. 20(1) 19–41
© The Author(s) 2017
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/2233865916682430
journals.sagepub.com/home/ias

Lazy thinking, lazy giving? Examining the effects of development aid on forests in developing countries

Kristine Hermanrud
Department of Political Science, University of Oslo, Norway

Indra de Soysa
Department of Sociology and Political Science (ISS), Norwegian University of Science and Technology, Trondheim, Norway

Abstract

The Norwegian government enthusiastically supports the protection of forests, which are important CO_2 sinks. Given all the difficulty surrounding the reduction of greenhouse gases, funding the protection of forests is a sound proposition. Up to the present time, how well has Norwegian aid to forests and Norwegian bilateral aid affected the health of forests? Using World Bank data on forest degradation and change in forest area for roughly 130 developing countries from 1999 to 2013, we find that higher levels of Norwegian forest aid among recipient countries has generally had no effect on reducing degradation, while total Norwegian bilateral aid is associated with increased degradation, results that might very well be causal because they are robust to estimations using instrumental variable techniques. Two-step selection models show that forest aid also increases forest degradation, result that are quite unflattering of Norwegian aid. These results are robust to several alternative specifications of our models and to alternative estimation techniques including country fixed effects. Two clear lessons emerge from our findings; firstly, that Norwegian aid does not seem to be coordinated for addressing the problem of forest degradation; and secondly, aid as a means to solve the climate problem likely faces steep obstacles if even a non-strategic, aid-giving country, such as Norway, is capable of more harm than good.

Keywords

Norwegian forest aid, deforestation, climate change, aid effectiveness, democracy

Corresponding author:
Indra de Soysa, ISS, Dragvoll, Trondheim, 7491, Norway.
Email: Indra.de.Soysa@svt.ntnu.no

Introduction

> The culture of aid-giving evolved from the idea that giving is good and the more money the better… and one need not think hard about how the money is spent. We have now learned that this type of lazy giving does not work (Banerjee, 2007: 111).

In 2007, the Norwegian government pledged US$1b to the international effort to reduce emissions from deforestation and forest degradation (Publisher Office of the Prime Minister, 2008). The resulting Norwegian International Climate and Forest Initiative (NICFI) is an integral part of the United Nations Convention on Climate Change (UNFCCC), which oversees a programme called Reducing Emissions from Deforestation and Degradation (REDD+).[1] REDD+ is a global effort aimed at reducing forest degradation and aiding reforestation to fight climate change. Since forests can act as carbon sinks that may reduce CO_2 output by as much as the entire CO_2 output of the global transport sector, saving forests is critical in the fight against global warming (Miljøverndepartementet, 2009). Jens Stoltenberg's (Norway's prime minister) comments at the Bali climate meeting are suggestive: according to him, saving forests is an easy way to fight climate change because 'everybody knows how not to cut down a tree'.[2] Can aid initiatives, thus, nudge the growth of forests and stem forest degradation in a positive direction? This study will empirically assess the Norwegian effort by employing Norwegian aid data disaggregated into forest aid and total bilateral aid, and World Bank data on forest degradation for approximately 130 developing countries over the period 1999 to 2012.[3] Our analysis speaks to a large, ongoing debate about the effectiveness of development assistance (see Easterly, 2006; Sachs, 2005). Analysing Norwegian aid and the forestry sector is particularly important given the targeted nature of Norway's aid and her stated intentions about saving forests for reducing climate change. Critics, however, might suggest that this is yet another instance of 'lazy' aid giving, or perhaps even a rich country's cynical effort to 'buy off' its own high carbon emissions?

Our results are easily summarised. We find that Norwegian aid disbursed by the National Aid Agency (NORAD) for saving forests has no discernible impact on reducing forest degradation, whereas total Norwegian bilateral aid including funds disbursed by the Foreign Ministry are associated with higher forest degradation; these results are statistically significant and robust to the inclusion of country and time-fixed effects. More significantly, when selection effects are accounted for in two-step Heckman models, Norwegian forestry aid increases the intensity of forest use and reduces forest growth, results that are statistically highly significant. Our results suggest that Norway's aid for forestry is not having the intended effect. By extension, one may also question the efficacy of giving aid to countries as compensation for economic losses accruing from providing global public goods, since poor countries pursuing development objectives are likely to prioritise economic growth over reforestation. The rest of the paper will discuss why examining Norwegian forestry aid might speak broadly to the aid effectiveness debate, discuss theory around why aid may help or hurt the objective of saving forests, present hypotheses to be tested, discuss data and methods, present results and end with a brief conclusion.

Why Norway?

Norway is one of the most generous donors of the Development Assistance Cooperation (DAC) countries, giving roughly 0.7% of gross domestic product (GDP) in development aid. In fact, development aid has become an integral component of Norway's peace and development agenda, and a cornerstone of Norway's foreign policy objectives and of its national perception of itself as a global 'humanitarian superpower' (Tvedt, 2007). Indeed, since the early 1990s, Norway's aid

and foreign policy regimes are supposedly highly coordinated to produce a corporatist-style approach involving the state, civil society groups and NGOs, academics (research) and others in a concerted effort at affecting development objectives and goals (Borchgrevink, 2004). Norway and other Nordic countries apparently are more 'genuine' in aid allocation decisions, with less strategic interests and no colonial ties colouring their decisions (Gates and Hoeffler, 2004). This suggests that Norwegian aid might be different to those of others, and a corrective to the general aid pessimism that pervades much academia and policy (Easterly, 2006; Moyo, 2009). The most important reason for focusing on Norway is, however, its forest initiative because, as many experts claim, aid targeted at specific problems, such as various immunisation schemes, has generally tended to work (see Banerjee, 2007). Others argue that Scandinavian aiders do more harm than good (Easterly and Williamson, 2011). Unlike studies that look at growth and broad factors such as governance, however, we isolate a single sector, which might yield a clearer picture as to the relationship between aid and development.

Why forests?

NICFI is a result of collaboration between environmental non-governmental organisations, such as the Rainforest Foundation in Norway, the Norwegian Society for the Conservation of Nature and several political parties exclusive of the Progress Party (Hermansen and Kasa, 2014: 5). The idea behind the initiative is to make it economically beneficial for developing countries to preserve forests for reducing climate change. Norway's main aims for focusing aid on this initiative is to: (1) make sure REDD+ is included in a new international climate regime under UNFCCC; (2) establish actions early to reduce emissions from deforestation and forest degradation; and (3) contribute to the preservation of forests as global carbon sinks (Miljøverndepartementet, 2009). In pursuing these aims, Norway has become the largest contributor to REDD+ and has given approximately 1.5 billion Norwegian kronor (NOK) in grants thus far (NORAD, 2015a, 2015c). Due to this effort, Norway has received a great deal of attention and a positive reputation internationally as a champion of forests (Jørgensen, 2014). Indeed, in the words of the former minister of international development, Erik Solheim, the Norwegian reputation on aid initiatives is 'ahead of change' (Glennie, 2011: 1). Of course, no one can argue with the intent of saving forests, but what really has happened in praxis? Have the expectations of the initiative been met? Given the pessimism attached to aid effectiveness in general as well as pessimism around whether or not the REDD+ programme can achieve its aims (Agarwal et al., 2011), this study will empirically assess the impact of Norway's aid in terms of forest depletion measured by the loss of hardwood forests and the loss of forest area in general in standardised economic terms. Is Norwegian aid helping countries reach forest transitions, the point at which deforestation is arrested and regrowth begins?

Despite the high expectation from aiding forests, aid initiatives from outside meet exigencies on the ground. Poor countries with access to valuable forest resources, such as hardwood, are unlikely to prioritise global public goods at the expense of local priorities (Combes Motel et al., 2014). The economic objectives of poor countries often lead to degradation of forests as new lands are opened up for exploitation through agriculture and mining, and the building of public works, roads and urbanisation (Agarwal et al., 2011; Barbier and Tesfaw, 2015). Stoltenberg's pithy observation about how we 'know how not to cut down trees', is naïve because it assumes that Norway's initiative will adequately compensate for the ground-level factors that determine the political economy of forest degradation, including the mammoth task of affecting the billions of individual decisions that go into forming markets for forest products across the world. As some claim, development based on agricultural growth and poverty reduction are often at 'loggerheads' (Chomitz, 2007).

One might easily say that as much as we know 'how not to cut down a tree', we also know 'how not to pump up oil', a path that successive Norwegian governments vehemently oppose.

Existing studies on the effects of aid on forests are scarce. Most are usually concentrated on the situation of forests in one country, or a specific programme of forestry, or on available solutions for solving the problem of deforestation in theory (Angelsen, 2013; Bratland, 2011; Hajek et al., 2011; Van Soest and Lensink, 2000). Very few large-N statistical studies exist on how aid affects forests. We fill this void by using the World Bank's data on forest degradation measuring destruction of hardwood forests calculated in terms of economic value. We also use change in forest area, which is free from any bias attached to questions around proper valuation of forest assets and other factors that may affect the denominator, GDP (World Bank, 2015).[4] In other words, change in forest area is simply a bio-physical measure. Moreover, we examine the effect of Norwegian aid disaggregated into aid for forests separately and in relation to total Norwegian bilateral aid taken on a per capita basis. If Norway, being one of the more coordinated aid givers, is different from others in terms of achieving targeted objectives, then forest aid and total aid should have complementary effects.

Theory

Aid helps? Since the early 1990s, the question of the effectiveness of foreign aid for development has been heated (Easterly, 2006; Eggen, 2008; Sachs, 2005). Aid began as a form of assistance for poor countries to 'take off' into self-sustaining growth since poor countries had little savings for investments – the so-called financing gap. By 1990, it had become clear that aid had largely failed. The exact reasons for failure are still debated. Some argue that aid properly targeted with clear benchmarks for assessing the feasibility and performance of programmes can yield significant results. In other words, it is not aid or the intentions that are bad but the way in which aid is given – often lazily (see Banerjee, 2007; Riddel, 2007). There is some consensus that aid is still required and that we need to increase the amounts given since poor countries remain trapped in the vicious cycle of poverty and low investment (Hirano and Otsubo, 2014; Sachs, 2005). Collier (2007) argues that the 'bottom billion' who live in poverty measured at less than US$1 per day need foreign assistance, but he argues that there is a need for 'better aid' rather than 'more aid'. Most agree that better aid is aid that targets the poor, who need to increase their opportunities for doing well for themselves. A poor mother is unlikely to send a child to school, for example, if a child is valuable in the household as an economic asset. People who are unable to read, for example, are likely not to know their rights, or be responsible citizens. Thus, aid targeted at the rural poor is likely to reduce forest degradation by increasing awareness, reducing the burdens of poverty and encouraging better stewardship of the forests.

Aid might compensate and empower communities to act in less environmentally harmful ways because aid might compensate communities for their economic losses. Aid targeted at governments and communities can also build awareness and competence for better management of forests, and aid can be used to compensate governments for the global public goods provided from non-use of forests and the resulting environmental gains (Agarwal et al., 2011). These activities ultimately also constrain powerful economic actors, such as corporations, whose activities might be curtailed by better laws and regulations and by empowering civil society to hold their governments and business accountable. In other words, aid can be an instrument for leveraging recipient societies and governments to change their ways in terms of making policies that do good while they also do well. Moreover, since many find that governance matters for regulating resource use, particularly in forestry, then more aid potentially affects resource use by affecting better governance (Barbier and Tesfaw, 2015). All of this, however, is only true in theory.

Aid hurts? Whilst it is intuitive that aid can help the poor, aid pessimism is high, often for the simple reason that the intended good is hard to see in praxis. Indeed, some argue that aid itself is often the cause of bad outcomes since it may encourage rent-seeking and aid dependence, often distorting markets and compensating bad practices. Easterly (2006) aggressively critiques aid for encouraging bad government and counterproductive policy. According to Easterly, aid can displace good market-promoting policies and private initiatives that reduce poverty. He points to examples, such as the distribution of mosquito nets for reducing malaria, where 60 years and billions of dollars have failed to achieve the kinds of numbers that could have been achieved with the profit motive, considering that nine million copies of the sixth Harry Potter book were distributed to the same number of households in a single day by the market. The Princeton economist from Africa, Dambisa Moyo, argues that aid has created slower growth and poverty in Africa by driving aid dependence (Moyo, 2009). Open-ended aid and wasteful projects have killed incentives to devise endogenous policies for driving growth and perpetuating bad policies that increase poverty. Maren (1997) shares Moyo's view that the problem of poverty is aid. He argues that 'aid and charity as an industry, as religion, as a self-serving system that sacrifice its own practitioners and intended beneficiaries in order that it may survive and grow' (Maren, 1997: 11). Maren shows how the aid industry prioritises the financing of big projects with little concern for outcomes for the poor, largely because of self-interest around its own needs rather than of recipient societies. In a similar vein, Hancock (1994) argues that aid is wasted since it is other people's money and encourages self-serving administration of aid by an 'aristocracy of mercy' and their political masters at home without really serving the interests of the poor. At its worst, aid is used as a foreign policy tool where the poor are sacrificed in the interests of the rich and powerful, where bad, often brutal, regimes are sustained by money ostensibly earmarked for alleviating poverty and the global public good of peace and development (Bueno de Mesquita and Smith, 2011; Root, 2008). At best, even very well-intentioned aid is simply ineffective because of lazy thinking about the problems of the poor and how to implement well-intentioned plans, and because of lazy giving in terms of mismanagement and waste (Banerjee, 2007).

Aid is conditioned by political regimes. Most scholars favourable to using aid for solving pressing problems, such as poverty, argue that aid has limited control over outcomes because it has to navigate delicate and difficult domestic political and social territory (Collier, 2007). The initiatives to save the world's forests are likely to face the same quandary. Karsenty and Ongolo (2012), for example, argue that 'fragile' states are unlikely to deliver the expected positive outcomes that underpin the theory of incentives, where aid is given for saving trees. This is because 'governments of such nations are often dominated by "private agendas" and will try to negotiate the most favourable rules for "capturing" REDD money, without having any intention to change the course of things' (Karsenty and Ongolo, 2012: 44). Thus, how clean, democratic and transparent governmental processes are will likely condition the effectiveness of aid (Svensson, 1999). Moyo (2009: 42) is critical to this argument and argues that democracy can sometimes hamper development since democratic regimes find it difficult to push through economically beneficial legislation amid rival parties and competing interests. China, Chile, South Korea, Suharto's Indonesia, Singapore and the Fujimori era in Peru are often cited as examples of rapid development under autocratic conditions. As Moyo (2009: 43) puts it, 'democracy is not the prerequisite for economic growth that aid proponents maintain. On the contrary, it is economic growth that is a prerequisite for democracy, and the one thing economic growth does not need is aid'.

Some scholars argue that neither democracies nor autocracies are better off with aid, because the political intention is not to 'help poor people'. Bueno de Mesquita and Smith (2011: 192) argue that 'aid is a tool for buying influence and policy' and that as long as 'we' the people prefer cheap

oil and other economic benefits to real change in developing countries, the intention of aid will remain the same. The democratic leaders have a short time horizon, and for them staying in government is their number one priority. A democratic leader can achieve popularity from giving the public the impression of doing a lot in the area of economic development but, in reality, only buy support rather than care about real outcomes. Bueno de Mesquita and Smith write that aid agencies rarely care about governance because 'democracy is all about government of, by, and for the people at home', not abroad (Bueno de Mesquita and Smith, 2011: 193). Aid is also an important tool for buying political influence abroad, and here democracies favour giving aid to autocracies because they are cheaper to buy off since autocrats have a smaller winning coalition to please and can more effectively implement policies that may not please everyone in a host society. Thus, the standard view that aid fails because of a lack of democratic liberties and rights in poor countries is theoretically and empirically disputed. We, thus, examine the impact of Norwegian aid on forests conditional on regime type.

Norwegian aid for forests. The theory given above suggests that aid can be intentionally and unintentionally ineffective for a variety of reasons: chief among these reasons is the private good character of aid disbursement even if an intent is the provision of public goods. Norway as a donor country devotes a portion of the yearly budget as development assistance aimed at reducing poverty. Donor countries may also push various favoured programmes as initiatives that are public goods, such as reducing some forms of diseases, or preventing environmental damage. Norway has traditionally been very active in climate change negotiations and has emerged as a champion of global forests, becoming the biggest contributor to REDD+ (Hermansen and Kasa, 2014). The climate and forest initiative emerged because of the problematic nature of Norway's lead in the climate regime and the embarrassment resulting from Norway's own emissions due to petroleum extraction (Hermansen and Kasa, 2014). Since cutting emissions would carry massive political costs, Eggen (2013) argues that the climate and forest initiative gave Prime Minister Jens Stoltenberg a way out to gain credibility internationally on the climate issue. Despite the general view that Norway's aid is 'string free' and better coordinated, Stoltenberg's aid politics and Norwegian aid in general might be accused of all the faults surrounding aid ineffectiveness levelled against others (Borchgrevink, 2011; Tvedt, 2007). According to Eggen (2013), the Norwegian government used aid as a way of 'buying' attention in national and international forums and deflecting attention from Norway's own policies.

While the Norwegian political establishment still thinks of aid as effective, making it a cornerstone of Norwegian policy, its own aid agency, NORAD's, evaluations of the effectiveness of Norwegian aid are quite pessimistic (NORAD, 2014, 2015b). A recent report on the effectiveness of aid concludes that 'a combination of lack of incentives, poor processes for planning and monitoring grants, and weakness in the procedures for evaluation, [and whether aid is effective] cannot be demonstrated' (NORAD, 2014: 90). An evaluation of NICFI in 2014, seven years after the onset of the initiative, finds that there is evidence for a decrease in the rate of deforestation in Brazil, but the other countries under investigation, Tanzania, Guyana and Indonesia, have only made progress in establishing a framework, some activities, technical and institutional pre-requisites, or planning for REDD+ (NORAD, 2015a). According to the evaluation 'the NICFI strategy has not been sufficiently revised to accommodate the slow rate of REDD+ progress being made by many countries' and that there is a need for 'NICFI to take stock of the differing progress made and the way that REDD+ has evolved to consolidate and rationalise its continuing and future interventions' (NORAD, 2015a: 30). However, NICFI has received little critical scrutiny from the public and political opposition due to the 'prevailing political consensus underlying NICFI as a centerpiece of Norway's climate policy' (Hermansen and Kasa, 2014: 22). Clearly, there is need for greater

empirical scrutiny on the impact of Norwegian aid targeted at saving the world's forests and more systematic thinking for making aid work.

Given the discussion above, we formulate several hypotheses to be empirically tested. Apparently, 'string-free' aid targeted at a specific objective has a better chance of success than aid simply distributed to poor governments. Since Norway is mostly seen as a 'genuine angel of mercy' with a coordinated strategy around its aid regime, Norwegian aid should generally be positively correlated with better outcomes for forests in terms of slowing forest degradation.

H1: Norwegian forest aid is associated with a decrease in forest degradation.

If indeed Norwegian aid is coordinated to be effective, then the NICFI initiative and Norway's overall aid strategy should be in synchronisation despite the fact that total aid has aims that may or may not be compatible with saving forests. Given that Norway's stated goal of development aid is to generate economic growth and reduce poverty, it is likely that overall aid clashes with the objective of aid aimed at reducing deforestation. Thus, our second hypothesis is:

H2: Norwegian bilateral aid is associated with a decrease in forest degradation, but not as much as forest aid.

The literature on political aid and the regimes of recipient governments are mixed. Norwegian aid is likely to be most effective among democracies rather than autocracies. Democratic governments are likelier than autocrats to be genuine partners is providing global public goods and better custodians of a people's wealth in terms of forests. Thus, our third hypothesis is:

H3: Norwegian forest aid has a larger impact on reducing forest degradation among democracies, rather than autocracies.

Data and methods

We used a pooled, time-series, cross-sectional data set to investigate our central questions. This means that we have data for each year between the period 1999 to 2013 for every country in a sample of approximately 130 developing countries depending on availability of data on all variables in the models.[5] While the Norwegian aid to forests is from 1999, total Norwegian bilateral aid is available from 1985 onwards. Thus, our estimations using the forest aid data and the bilateral aid data defers except when they are used in the same model. We estimate the effect of aid in year t on the rate of forest degradation in year $t + 1$, holding constant relevant control variables at time t. Lagging the key independent variables by one year minimises the chance that higher degradation and aid are simultaneously impacted by each other. Correlation is not causality, however. Causality is very difficult to tease out in studies of aid effectiveness (Easterly, 2006) since relationships could be endogenous, where reverse causality and omitted variables could be problems. Norwegian aid may be caused by high forest degradation, for example, and Norwegian aid and forest degradation could both be caused by some unmeasured factor. One solution to teasing out causality is instrumental variables analysis, where the endogenous variable is instrumented by a truly exogenous variable or set of exogenous variables (Wooldridge, 2002). Such instruments, however, are extremely hard to find.

We use proxies for cultural and ideological similarity, using the proportion of Christian population in recipient countries as well as the political ideology of the government in recipient countries as instruments.[6] We also use distance from Oslo, since larger shares of aid may flow to places that

are less costly to administer. Geographical proximity may also signal greater strategic value.[7] Countries with a larger proportion of Christians in their populations might be favoured by Norwegian aid due to the fact that the largest support for aid comes from Norway's Christian political party (KRF). While these instruments did not always pass the instrument validity test and the over identification test, they did pass muster when testing bilateral aid's effect on forest depletion, suggesting that the positive effect of bilateral aid on depletion is likely to be 'causal'. The ideological scale did not show up as a valid instrument for Norwegian aid flows.

Importantly, however, we address the omitted variables issue and the question of selection bias using Heckman two-stage selection models, which is a form of test in the presence of omitted variables (see below). As Easterly (2006) argues using the ambulance analogy, which is that ambulances although present at accidents do not cause accidents, one may still examine whether more and more lives are saved if more and more ambulances keep arriving at accident scenes. Finding out that more ambulances do not necessarily save more lives can inform policy about the value of rushing more and more ambulances to accident scenes. Thus, even a correlation might tell us something about whether some places are able to keep their forest degradation low without receiving aid and vice versa. Rewarding high degraders of forests with higher aid seems also to be morally wrong and hazardous policy because it might encourage more degradation.

Data on tropical forest cover and forest cover change are only sparsely available (Agrawal et al., 2011). However, the World Bank's World Development Indicators dataset (World Bank, 2015) has two good variables that measure forest degradation, which are forest area as a percentage of land area, which allows us to calculate forest area change, and the World Bank's own 'net forest depletion' variable calculated specifically to track sustainability of forests and provide advice to governments. Both variables say something about the year-on-year pressure on forests but they differ conceptually and in terms of measurement.

Our first dependent variable is net forest depletion (percentage of gross national income (GNI)), which captures the extent to which a country uses its forest resources in terms of the intensity of forest use calculated in standardised comparable units across countries. Net forest depletion is defined by The World Bank as 'the product of unit resource rents and the excess of round wood harvest over natural growth'. Forest depletion is a good measure of how intensively a given country is using up its available forest resources by cutting valuable trees – it is in fact a measure of forest use (abuse). If round-wood forests are being harvested above the natural replacement rate, then that country is clearly depleting its resources in terms of available trees. Since the measure is standardised by GDP, one disadvantage is that factors affecting the denominator, GDP, could affect the results.

Our second measure of forest degradation is based on forest cover change. The measure of change in the share of forest area, which relates to biophysical loss/growth of forests, is a physical measure. In other words, economic measurement and biophysical measurement are conceptually different in terms of environmental value. However, forests could grow due to the replanting of new trees with much less environmental value. This measure is not affected by what happens to GDP since there is no monetary calculation. We follow others and use the change in the share of forest area in total land area by calculating the annual compound growth rate of forest area (Barbier and Tesfaw, 2015; Rudel et al., 2005). Forest area is defined by the World Bank as 'land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agriculture production systems (for example, in fruit plantations and agroforestry systems) and trees in urban parks and gardens'. We compute the change in the share of forests as forest area in time t minus forest area at time $t-1$ standardised by forest area at time $t-1$ expressed as a percentage.[8] We compared our values for the annual calculation with aggregated values obtained from the FAO for similar time periods and our data were very similar (FAO, 2010). Like

the FAO's statistics on forest change, higher values measure reforestation, or increase in the area of forests, as a share of total land area.

Our two forest degradation series are negatively correlated as expected ($r = -0.16$), but the variance explained by forest degradation on forest area growth is roughly 2%. These results show that they do indeed capture two differing aspects of forest degradation. The weak correlation is not surprising. Forest depletion as a share of GNI might be higher in poorer countries, which may sometimes go together with greater biophysical changes in forests, but richer countries may show higher reforestation rates with low forest depletion due to higher GNI and vice versa. Examining the data, we find that countries such as the United Arab Emirates, Bahrain and Kuwait show high reforestation rates, presumably forests that are artificial and unlikely to have much impact as carbon sinks (these countries are dropped from subsequent analyses). These data also show that some countries have high changes in one particular year, suggesting fairly large adjustments in forest cover, most likely due to redefinition of what is a forest rather than sudden growth in forests (i.e. Bhutan). For these reasons, we prefer the forest depletion measure because the loss of round-wood forests captures the depletion of old trees above some replacement rate and because aid is supposed to compensate governments from adopting policies that reduce forest depletion.

The key independent variables are Norwegian forestry aid and total Norwegian bilateral aid. The forestry aid data are obtained in Norwegian kroner from NORAD.[9] The variable measures Norwegian aid to the forestry sector in different countries from 1999 to 2014. Using the US dollar exchange rate from Norgesbank (Central bank of Norway), we convert the kroner into current US dollars and then divide by total population to obtain a per capita value. We then log this value to avoid results biased by extreme values. Since zero values cannot be logged we assign US$1 to all countries before logging. The second independent variable, total Norwegian bilateral aid, is obtained from the World Development Indicators (WDI) data (World Bank 2015) presented as 'Net bilateral aid flows from Development Assistance Committee (DAC) donors, Norway (current US$)' and is defined as 'the disbursement of official development assistance or official aid from the members of the DAC' disaggregated by donors. By net disbursement, they refer to gross disbursements of grants and loans minus repayments on earlier loans. For this variable, some values for some countries are negative. We set negative values to zero. Again, we obtain a per capita value for total bilateral aid by dividing with population size, and then log this variable to reduce skewness after adding US$1 to all countries. Surprisingly, total bilateral aid and forest aid seem not to be too coordinated (see Figure 1). In fact, forest aid explains roughly 3% of the variance of total bilateral aid.

As Figure 1 shows, forest aid (x axis) for Kosovo (KSV) for several years is greater by far than what it gets in total bilateral aid on a per capita basis. The opposite is true for Guyana (GUY) and the West Bank and Gaza (WBG). This study, however, is not concerned directly about how or why bilateral and forest aid are uncoordinated, but mainly in how in fact they affect the objective of reducing forest degradation across the world.

We include several control variables to reduce the chance of obtaining spurious results on our main independent variables. For example, since aid should go to poorer countries, we may find that aid causes more forest degradation, but in reality it might be the level of development that aid is explaining; thus we use per capita income from the WDI data. However, to avoid the so-called 'kitchen sink' approach, we only use three key confounding factors in each of the preliminary models (Achen, 2005). GDP per capita is logged to reduce skewness. Norwegian aid may also be located in greater volumes within democracies. As with income level, any result of aid might be interpreted also to mean that democratic regimes, rather than aid, is what explains the outcome. Thus, we use the POLITY IV data on regime types widely used in the literature (Gurr and Jaggers, 1995). Using the POLITY scale, which captures attributes of regimes along a 20-point scale from −10 to +10, we create two discrete variables measuring democratic regimes and strictly autocratic

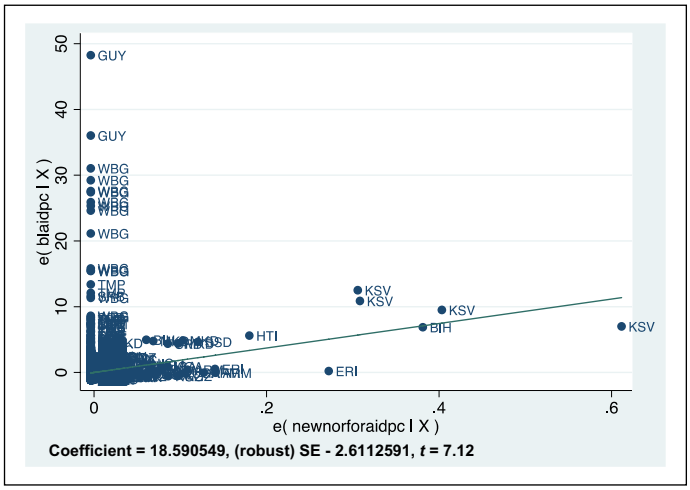

Figure 1. Correlation between Norwegian forest aid per capita and total Norwegian bilateral aid per capita, 1999 to 2012. BIH, Bosnia; ERI, Eritrea; GUY, Guyana; HTI, Haiti; TMP, East Timor; Kosovo; WBG, West Bank and Gaza.

regimes, where democracy is any country year falling above 6 on the scale and 0 if not. Strict autocracy is measured by assigning the value 1 to any country year that is below −6 on the scale and 0 if not. The regime data are available for all independent countries with a total population greater than 500,000.[10] When testing interactive effects between our aid variables and regime type, we enter the full Polity scale (adding 11) so as to obtain as much information from the 1–21 scale as possible. Note that we enter the share of forest area in total land area in models testing forest area growth, since countries with a very small share are likely to have higher growth and vice versa.

We use linear regression because both forest depletion rate and forest area change are continuous variables. The analysis of pooled data presents a few problems for standard regression because of biases from autocorrelation and heteroscedasticity. We use the Newey–West estimator that is robust to both issues (Newey and West, 1987). In addition, we account independently for both time and unit heterogeneity by adding separate terms for years and countries. Issues concerning the proper measurement of forests and definitional changes that have occurred over time could bias the data. More importantly, our limited model is unlikely to capture unmeasured, country-level factors that may be important to explain the political economy of forest use based on local-level factors. The simplest method to account for unit heterogeneity is to include country fixed effects (Wilson and Butler, 2007: 103). However, since our *T* (years) are fairly small, we interpret results with country fixed effects with some caution because of bias due to a very large N (countries) compared to the time period (see Nickell, 1981). We estimate our models with and without country fixed effects and present them in the tables so as to assess the difference in results if any.[11]

While basic linear regression models compute a measure of association between Norwegian aid and the outcome variables, the results cannot be interpreted as causal. A positive association may simply mean that Norwegian aid is located in larger volumes in places that are poor and need forests for survival. Thus, blaming Norwegian aid would be somewhat like blaming hospitals for death, or ambulances for accidents. In other words, Norwegian aid disbursement is not random, but may display a systematic pattern (Angrist and Pischke, 2009). To account for this non-randomness, we compute a two-step Heckman model. The Heckman method simply computes a first-stage

Table 1. The effect of Norwegian aid on forest degradation.

Depletion variation = forest depletion/GNI	(1) 1999–2012	(2) 1999–2012	(3) 1986–2013	(4) 1986–2013	(5) 1999–2012	(6) 1999–2012
Log Norwegian forest aid/pc $t-1$	0.02	0.05			−0.02	0.04
	(0.10)	(0.05)			(0.10)	(0.05)
Log Norwegian bilateral aid/pc $t-1$			0.22***	0.04	0.18**	0.14**
			(0.06)	(0.03)	(0.07)	(0.06)
Log per capita income $t-1$	−1.58***	−2.37***	−1.69***	−1.98***	−1.83***	−1.58***
	(0.15)	(0.67)	(0.13)	(0.58)	(0.19)	(0.58)
Democracy $t-1$	0.25	0.25	0.11	−0.01	0.12	−0.47***
	(0.27)	(0.41)	(0.18)	(0.10)	(0.27)	(0.15)
Autocracy $t-1$	−1.08***	−1.91**	0.53	−0.58*	−0.94***	−1.73**
	(0.34)	(0.84)	(0.44)	(0.33)	(0.36)	(0.83)
Constant	12.98***	17.85***	14.03***	15.14***	14.59***	11.96***
	(1.31)	(4.95)	(1.16)	(4.16)	(1.50)	(4.42)
Countries	128	128	126	126	122	122
Observations	1592	1592	2467	2467	1304	1304
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

probit model that captures why some countries may systematically be left out of Norwegian aid and then use that information in the second-stage regression, which computes the effect of the amount of aid on forest degradation on a more randomised sample (Heckman, 1979). In this sense, the Heckman model corrects for a special form of omitted-variables bias. Accounting for the non-random distribution of aid across the sample of countries allows us to estimate a causal effect of aid on forest depletion in the second-step linear equation. The Heckman two-step model will thus contain all of the determinants of aid that are controls in the first-stage probit model minus one variable to avoid collinearity.

Results

Table 1 presents the results of Norwegian aid effects on forest depletion measured as the production of forest products from the cutting of round-wood trees above a natural regeneration rate, expressed as a share of GNI. Recall that this measure is used by the World Bank as one of its sustainability indicators, which also informs many governments in terms of monitoring the use of natural resources.

As seen in column 1, per capita forest aid from Norway has a positive effect, albeit a result that is not statistically significant. This result suggests that the amount of aid received from Norway as 'forest aid' has no effect on how forest degradation progresses. To give Norwegian aid a better chance, we add an interactive term of forest aid conditional on the NICFI years (2007 to 2012). This conditional effect is also not statistically significant, although the independent effect of NICFI years remains positive and statistically significant on forest depletion (results not shown). Column 1 reveals that per capita income has a strong negative effect on forest depletion, which is that income determines the value of forest use. Strong autocracies also show a statistically significant negative effect, independent of strong democracies and mixed regimes. In column 2 the results remain identical despite the addition of country-fixed-years to account for unit heterogeneity.

Table 2. The effect of Norwegian aid on forest area growth as share of total land area.

Depletion variation = change in forest area/ total area	(1) 2000–2012	(2) 2000–2012	(3) 1992–2013	(4) 1992–2013	(5) 2000–2012	(6) 2000–2012
Log Norwegian forest aid/pc $t-1$	−0.05	−0.03			−0.06*	−0.02
	(0.03)	(0.03)			(0.03)	(0.03)
Log Norwegian bilateral aid /pc $t-1$			−0.01	0.02**	−0.01	−0.00
			(0.02)	(0.01)	(0.02)	(0.01)
Log income per capita $t-1$	0.26***	−0.04	0.31***	−0.29***	0.25***	−0.25**
	(0.04)	(0.14)	(0.03)	(0.08)	(0.04)	(0.12)
Democracy $t-1$	0.13	−0.20*	0.22***	0.01	0.22**	−0.05
	(0.12)	(0.11)	(0.08)	(0.07)	(0.10)	(0.05)
Autocracy $t-1$	1.14***	0.51	1.03***	0.12	1.17***	0.51
	(0.12)	(0.49)	(0.11)	(0.19)	(0.12)	(0.51)
Percentage forest area/ total land area	0.00*	−0.02	−0.00	−0.04	0.00	−0.03
	(0.00)	(0.02)	(0.00)	(0.03)	(0.00)	(0.03)
Constant	−3.06***	0.84	−2.72***	3.85***	−2.96***	2.72
	(0.41)	(1.70)	(0.28)	(1.44)	(0.40)	(1.70)
Countries	130	130	128	128	125	125
Observations	1629	1629	2175	2175	1339	1339
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. pc, per capita.

In column 3, we enter total Norwegian bilateral aid. As seen here, bilateral aid is associated with higher intensity of forest depletion, with results that are statistically highly significant ($p < 0.0001$). A unit increase in the logged value of bilateral aid per capita increases forest depletion by 0.22 points. Substantively, a standard deviation increase in Norwegian bilateral aid will increase forest depletion by 10% of a standard deviation of forest depletion. Moving from the mean value of logged Norwegian bilateral aid (−1.9) to the maximum value (3.9) would increase forest depletion by over 27% of a standard deviation of forest depletion.[12] Independently of aid, a standard deviation increase in the logged value of income alone would reduce the intensity of forest use by a full 40% of a standard deviation, or four times the impact of Norwegian aid but in the opposite (more beneficial) direction. Notice, however, that in column 4, the statistically significant effect of aid becomes not significant, while strong autocracy again shows a significant negative effect on degradation. In columns 5 and 6, when bilateral aid and forest aid are tested together, bilateral aid again shows positive and statistically significant effects on forest depletion, results that are now robust also to the inclusion of country fixed effects. The results taken together in Table 1 suggest that Norwegian aid associates strongly with higher economic use of forests in terms of hardwood depletion and that total bilateral aid has effects different to forest aid. Lower levels of development and countries that are not strong autocracies also deplete forests at faster rates than others.

Table 2 reports the results of Norwegian aid on the growth of forest area relative to total land area. As seen in column 1 and 2, Norwegian aid to forests has no statistically significant effect on reforestation, or forest area growth. In columns 3 and 4, bilateral aid shows a positive and significant effect only when country fixed effects are computed. These results, however, are not robust since columns 5 and 6 show statistically not significant effects when the 1999 to 2012 period is tested. Forest aid now shows a small negative effect that is statistically significant at the 10% level.

Table 3. Conditional effects of Norwegian forest aid and democracy on forest depletion and forest area growth, 1999 to 2012.

	(1) Forest depletion/GNI	(2) Forest area growth
Democracy	−0.26	−0.01
	(0.18)	(0.04)
Norwegian forest aid/pc (log)	0.43	−0.06
	(0.26)	(0.05)
Democracy × Norwegian forest aid/pc	−0.03*	0.00
	(0.02)	(0.00)
Income per capita (log) $t - 1$	−1.60***	0.34***
	(0.16)	(0.04)
Percentage forest area in total land area $t - 1$		0.001
		(0.00)
	(0.47)	(0.18)
Constant	16.79***	−3.02***
	(3.04)	(0.61)
Countries	128	130
Observations	1,711	1,752

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. pc, per capita.

All in all, Table 2 shows little association between the Norwegian aid variables and forest area growth. When it comes to forest area growth, wealthier countries show mixed results depending on whether country fixed effects are estimated or not, but strong autocracies seem to increase forest area growth, results consistent with those reported in Table 1. Problems associated with the different definitions and methodologies used for measuring forests might be biasing these results. Interestingly, when Norwegian aid is interacted with the NICFI years (2007 to 2012), the effects of Norwegian aid conditioned by these recent years shows no statistically significant effect.

Next we examine the conditional effects between Norwegian forest aid and regime type using the full Polity scale stretching from full autocracy (1) to full democracy (21). Table 3 contains the results of Norwegian forest aid's effects on forest depletion and forest area change conditional on regime type. As seen, Norwegian forest aid is conditioned negatively by democracy on forest depletion, a result that is statistically significant at the 10% level. Since it is somewhat difficult to judge the real effect of the conditional results from the coefficient, we examine the margins plot (Figure 2).

As seen there, the negative effect on forest depletion of Norwegian aid is statistically significant at very high levels of the democracy scale, suggesting that aiding very strong democracies could reap positive results. In column 2, however, there is no statistically significant effect of the conditional relationship between aid and democracy on forest area growth. The margins plot displayed in Figure 3 shows the nature of this relationship.

We assess the robustness of the basic results to the addition of several variables that might be related to Norwegian aid and the dependent variable. Importantly, Norwegian aid is likely to be associated with total overseas development aid (ODA) in terms of where it is located. Thus, any effect of Norwegian aid may simply be capturing the effect of all aid on forest degradation. We obtained total ODA in current US dollars from the World Development Indicators (World Bank, 2015) and obtained ODA per capita after dividing by total population following the exact method used to obtain the Norwegian aid variables. Adding ODA per capita (logged) does not change the

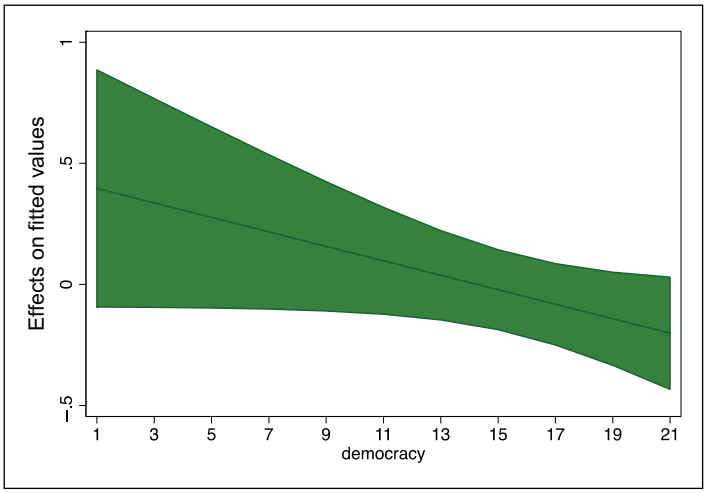

Figure 2. The margins plot of the effect of Norwegian forest aid on forest depletion conditional on the level of democracy. The figure shows conditional marginal effects of lnnewnorforaidpc with 95% confidence levels.

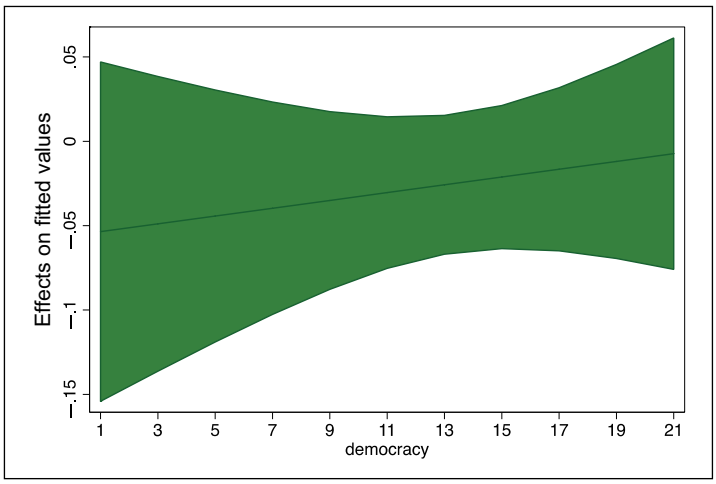

Figure 3. The margins plot of the effect of Norwegian forest aid on the growth of forest area conditional on the level of democracy.The figure shows conditional marginal effects of lnnewnorforaidpc (log of Norwegian Forest aid per capita) with 95% confidence levels.

basic results. Total ODA per capita and total Norwegian bilateral aid per capita both show independently positive effects that are statistically significant on forest depletion. Secondly, we add both economic growth rates and population density since aid is likely to be associated with growth. Adding growth, which affects the denominator (GNI) in forest depletion had no effect on the basic results. Growth is not statistically significant. Similarly, population density, another proxy for development-based pressure on forests, failed to dislodge our basic finding on aid, but population density shows an independently positive effect on forest depletion. Thirdly, we drop our regime

type variables (democracy and autocracy) in order to obtain several more countries (approximately 22) since the Polity IV regime type data are limited to countries with populations above 500,000 inhabitants. Our results remain unchanged when using the expanded sample (133 developing countries). Next, we obtained variance inflation factor scores (VIF) to examine if our results are biased by multicollinearity. Using the basic models in Table 1 and 2, we find no VIF scores for any of the models above the critical value of 10. Finally, we examined if our basic results might be driven by extreme values on aid in our data. We computed several influence statistics, such as Cook's D values and dfbetas. Dropping roughly 300 data points with Cook's D values above the threshold of $4/n$ has little effect on the basic results presented above – Norwegian forest aid has no effect on forest depletion while total Norwegian bilateral aid increases the harvesting of round-wood forests above the regeneration rate, or unsustainable forest use.

Interestingly, the fixed country effects, or those unmeasured factors in the model, seem to explain a great deal of the variance on the dependent variables. When examining those results (not shown) several interesting findings show up. For example, Togo appears as a country where the intensity of forest use and deforestation (negative growth of forests) seem extremely high, but Togo receives no aid for forestry protection from Norway. Likewise, Burundi also shows a high intensity of forest use (degradation) and receives bilateral aid from Norway but not 1 Kroner thus far in aid for forestry. The same is true for Bhutan, which has very high intensity of forest use (logging) but receives no aid for forestry, but plenty of bilateral aid for other priorities. Contrarily, Mali seems to be underusing forests for economic purposes despite little aid for forestry, as is Chad, which receives no forestry aid at all. Future studies may carefully examine what exactly drives (determines) Norwegian forestry aid to understand precisely how efficiently it is allocated. In terms of this study, we are able to reject the hypotheses that suggest that Norwegian aid to forests reduce the intensity of forest use (degradation) and that overall aid and forest aid work efficiently to promote this goal. Indeed, we find that total bilateral aid seems to harm the cause of forests. Moreover, our results reject the hypothesis that Norwegian aid to forests enhances the prospects of reducing degradation in democracies more than they do autocracies, since the conditional effects are statistically insignificant. Strong autocracy seems to have independent effects on reducing forest degradation, results consistent with others who find democracy to be positively associated with deforestation (Midlarsky, 1998).

Causality?

As mentioned earlier, we cannot claim that Norwegian aid causes harm to forests because of a positive association. In order to eliminate endogeneity bias, we instrument Norwegian aid with the measure of distance from Oslo and the proportion of Christians in a recipient country. These measures must reasonably explain Norwegian aid but not explain the dependent variable directly. In other words, the instruments must be valid and be truly exogenous. It is quite reasonable to assume that Norwegian forest aid would locate marginally closer to home because of high costs of administration of aid and because of the importance of foreign policy goals closer to home. Notice that Kosovo gets an inordinately high amount of forest aid, for example. A higher proportion of Christians in a society might also elicit marginally higher aid from Norway. We tried these instruments in regressions reflecting the basic models as tested in Tables 1 and 2. When using forest aid, the instruments failed to pass the test of validity, but recall that forest aid was statistically insignificant in the standard OLS regressions anyway. When we test total bilateral aid, however, the instruments pass the validity test (joint F statistic is 28.7, $p < .00001$) and the Hansen J statistic is not significant ($chi^2 = 0.054$, $p < 0.82$), which suggests that the instruments do not explain the dependent variable directly (results not shown but available upon request). These results hold only for

Table 4. Heckman two-step model of Norwegian forest aid's and bilateral aid's effect on forest depletion, 1999 to 2012.

Depletion variation = forest depletion/GNI		(1)	(2)
	Norwegian forest aid/pc $t-1$	0.24**	
		(0.12)	
	Norwegian bilateral aid pc $t-1$		0.21
			(0.26)
	Income pc log $t-1$	−3.81***	−3.65
		(0.77)	(6.08)
	Democ $t-1$	0.45	0.13
		(1.02)	(7.37)
	Autoc $t-1$	−2.9**	−0.49
		(1.53)	(9.97)
	Constant	24.01***	25.80**
		(3.53)	(38.75)
Forest aidpc dummy selection eq.	Norwegian bilateral aid pc	0.15***	
		(0.03)	
	Income pc (log)	−0.27***	
		(0.05)	
	Democ	0.097	
		(0.11)	
	Constant	0.73	
		(0.35)	
Mills	Lambda	2.21	111.17
		(1.9)	(305.76)
Bilateral aid pc dummy selection eq.	Norwegian forest aid pc $t-1$		23.96***
			(0.10)
	Income pc (log)		−0.38***
			(0.15)
	Democ		0.003**
			(0.27)
	Constant		281.22
			(.)
	Observations	1420	1343

pc, per capita.

forest depletion and not for forest growth. Thus, there is some evidence to suggest that total Norwegian aid might in fact cause higher forest depletion.

Next, we turn to the Heckman selection models. Perhaps Norwegian aid only gets to the very hard cases, where achievement is likely to be limited despite great effort? In Table 4 we display the results on forest aid's effect on forest depletion (column 1) and forest area growth (column 2). In Table 5 we present results on the total bilateral aid's effects in a similar way, in which is determined the non-randomness of aid allocation and then this information is used in the second stage where the effect of Norwegian aid is estimated on the outcomes. As seen in Table 4, the effect of Norwegian forest aid per capita on forest depletion is positive and statistically significant, suggesting that higher amounts of aid per person encouraged forest depletion even after accounting for the

Table 5. Heckman two-step model of Norwegian forest aid's and bilateral aid's effects on forest area growth, 1999 to 2012.

Depletion variation = growth rate of forest area relative to total land area		(1)	(2)
	Norwegian forest aid/pc $t-1$	−0.098***	
		(0.03)	
	Norwegian bilateral aid/pc $t-1$		−0.03
			(0.05)
	Log income pc $t-1$	−0.31*	0.19
		(1.7)	(0.20)
	Democ $t-1$	−0.01	0.24
		(0.24)	(0.24)
	Autoc $t-1$	0.77**	1.22***
		(0.31)	(0.14)
	Forest area $t-1$	0.001	−0.0004
		(0.004)	(0.005)
	Constant	−2.73***	−1.97
		(0.80)	(1.3)
Forest aid pc dummy selection eq.	Norwegian bilateral aid pc	0.16***	
		(0.03)	
	Log income pc	−0.27***	
		(0.05)	
	Democ	0.10	
		(0.11)	
	Constant	0.70	
		(0.35)	
Mills	Lambda	1.73***	3.73
		(0.47)	(10.25)
Nor BL aid pc dummy	Norwegian forest aid pc $t-1$		23.62***
			(0.10)
	Log income pc		−0.38**
			(0.15)
	Democ		0.003
			(0.27)
	Constant		277.35
			(.)
	Observations	1421	1375

possibility of non-randomness of aid allocation. If Norway gets the harder cases to fix, then the problem seems to get worse after this factor is taken into account. The Mills lambda statistic suggests that the two equations are indeed independent of each other, justifying a two-step approach. In column 2, the effect of bilateral aid is not statistically significant, and we can reject the hypothesis that the two equations are independent. In Table 5, Norwegian forest aid also seems to reduce forest area growth, even after selection is accounted for. Again, a highly significant Mills lambda statistic suggests that the two equations are independent of each other. Again, bilateral aid has no statistically significant effect. The Heckman results taken together suggest strongly that Norwegian forest aid is having the opposite effect of what it is intended to do, which is to reduce the use of forests for commercial gain and improve the conditions that regenerate forests.

Conclusions

Norway continues to receive much acclaim for its climate initiative focused on saving the world's forests for reducing the effects of greenhouse gases (Harvey and Vidal, 2013). Indeed, the Norwegian forest initiative (NICFI) launched in 2007 is the largest aid programme in terms of ambition and financial commitment (NORAD, 2015a). Is Norway's aid regime particularly well placed for addressing this issue? This is one of the first systematic independent empirical analyses aimed at assessing how friendly Norwegian aid has been to forests, both in terms of forest-specific aid and aid in general. Critics of aid argue that aid might be counterproductive because it is badly targeted, badly delivered, and is often captured and misused. Cynics are also likely to see aid aimed at solving the climate change problem as yet more 'lazy giving', as the rich world's window dressing that masks its own unwillingness to cut emissions. Our findings support others who have found the NICFI initiative and forestry aid to have made little progress (Hermansen and Kasa, 2014). More worryingly, after accounting for selection effects, Norwegian forestry aid seems to be 'causing' higher damage to forests.

Of course, despite the enthusiasm of Norwegian politicians, Norwegian forestry aid is not going to be enough to reach everything capable of saving forests, nor do we expect it to be allocated efficiently, which is exactly what the data seems to be suggesting. Future studies might examine the exact determinants of Norwegian aid to forests. The expectation that poor people in poor countries with their own pressing problems will 'simply stop cutting trees' because of aid is quite naïve, but future studies might look more closely into specific conservation projects to figure out where aid succeeds and fails. These results also suggest that differing forms of aid to countries might be working at cross-purposes, where the economic interests of people in the receiving societies might not always gel with the objective of saving forests, an issue that is often highlighted by others (Chomitz, 2007) but, more importantly, that inter-agency priorities in the donor country work at cross-purposes.

Governments of poor countries prioritising poverty reduction through agricultural expansion and the marketing of forest products, plus all the other demands of economic growth, such as urbanisation, expansion of transportation and resource extraction, are likely to remain a significant obstacle to saving forests. Our results show rather cogently that the expectations of the Norwegian forest initiative in terms of its achievements thus far through the aiding of forestry projects do not go hand in hand with less degradation of forests but more often than not with the opposite effect. These results certainly do not support the view that Scandinavian aid agencies are somehow exceptional, the results confirming the findings of others who examine the rhetoric versus the reality of aid agencies (Easterly and Williamson, 2011). Carefully constructed, case-study-based research will have to unpack how Norwegian aid may be being used in ways other than that of saving forests and examine how a politically weak economic superpower, such as Norway, might create the right incentives for governments and people on the ground in developing countries to balance their development needs while preserving valuable forests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Notes

1. See http://www.unredd.net/about/what-is-redd-plus.html (accessed 15 September 2015).
2. See https://www.regjeringen.no/no/aktuelt/Tale-til-FNs-klimakonferanse-pa-Bali/id493899/ (accessed 2 November 2015).

3. Since Norwegian bilateral aid is available from 1985, we use this longer time period when testing bilateral aid.
4. The economic value attached to forest products may not fully capture degradation in terms of forest area because a forest where one 'expensive' tree is cut may not equate with a forest where 10 trees with less economic value are destroyed and vice versa. However, since the World Bank looks at the value of trees cut above the regeneration rate, it remains a fairly good measure of the intensity of resource extraction.
5. We exclude the industrialised countries in the temperate climatic zones, plus Japan, because of their status as donor countries, the levels of development and the general insignificance of forests as economic assets relative to total GDP and forests as CO_2 sinks. The countries excluded from the study are Sweden, Denmark, Finland, Germany, Belgium, Netherland, Spain, France, Switzerland, Austria, Italy, Portugal, Great Britain, Ireland, Russia, USA, Canada, Japan, New Zealand and Australia. We also exclude the countries in the Gulf region of the Middle East because of their oil wealth and the general lack of forest area there. These countries are Saudi Arabia, Qatar, Bahrain, Kuwait, Oman and the United Arab Emirates (see the complete list in Appendix 1).
6. Data on the Christian proportion of the population are obtained from the PEW Research Center on Religion and Public Life. See http://www.pewforum.org. The ideological scale of the largest political party in government is taken from the Database on Political Institutions (DPI). See http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html.
7. Data on the distance between national capitals in kilometers is obtained from Gledtisch and Ward (2001). See http://privatewww.essex.ac.uk/~ksg/mindist.html.
8. The growth of the share of forest area is based on the formula: ((forest area/total land area$_t$ − forest area/total land area$_{t-1}$)/(forest area/total area)) × 100.
9. The data can be obtained from http://www.norad.no/en/front/toolspublications/norwegian-aid-statistics/ (accessed 15 April 2015).
10. See http://www.systemicpeace.org/polity/polity4.htm for extended discussion of sources and methodology.
11. All data and the do files generating all results are available from the corresponding author upon request.
12. The calculation is made by obtaining the difference between the mean and maximum values (5.8) and then multiplying this value with the coefficient (5.8 × −0.22), which is then divided by the standard deviation of forest depletion (−1.3/4.7).

References

Achen CH (2005) "Let´s Put the Garbage-Can Regressions and Garbage-Can Probits Where They Belong." *Conflict Management and Peace Science* 22(4): 327–339.

Agarwal A, Nepstad D and Chhatre A (2011) Reducing emissions from deforestation and forest degradation. *The Annual Review of Environment and Resources* 36:11–24.

Angelsen A, Brockhaus M, Sunderlin WD, et al. (eds) (2012) *Analysing REDD+: Challenges and Choices*. Bogor, Indonesia: Center for International Forestry Research.

Angrist JD and Pischke J (2009) *Mostly Harmless Econometrics*. Princeton: Princeton University Press.

Banerjee A (2007) *Making Aid Work*. Boston, MA: MIT Press.

Barbier E and Tesfaw A (2015). Explaining forest transitions: The role of governance. *Ecological Economics* 119: 252–262.

Borchgrevink A (2004). Images of Norwegian aid. *Forum for Development Studies* 31(1): 161–181.

Bratland KS (2011) *Bevaring av regnskog gjennom bistand, en analyse av Norges bidrag til Amazonasfondet i Brasil*. Masters Thesis, Norges Handelhøyskole, Bergen, Norway.

Bueno de Mesquita B and Smith A (2011). *The Dictator's Handbook*. Reprint edition (2012). New York: Public Affairs.

Chomitz KM (2007). *At Loggerheads? Agricultural Expansion, Poverty Reduction, and Environment in the Tropical Forests*. Washington, DC: The World Bank.

Collier P (2007) *The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It*. Oxford: Oxford University Press

Combes Motel P, Choumert J, Minea A, et al. (2014). Explorations in the environment – Development dilemma. *Environmental and Resource Economics* 57(4): 479–485.

Easterly W (2006) *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*. Oxford: Oxford University Press.

Easterly W and Williamson C (2011) Rhetoric vs. reality: The best and worst of aid agency practices. *World Development* 39(11): 1930–1949.

Eggen Ø (2008) Virker bistand? De ulikebidragene til de siste års bistandsdebatt. *Internasjonal Politikk* (66): 209–222.

Eggen Ø (2013) Bistand som politisk markering. *Universitetsforlaget, Internasjonal Politikk* 71(3): 421–429.

FAO (2010). Global Forest Resources Assessment 2010: Main Report. *Rome: Food and Agriculture Organization, United Nations*. Available at: http://www.fao.org/docrep/013/i1757e/i1757e.pdf (accessed 16 October 2015).

Gates S and Hoeffler A (2004) Global Aid Allocation: Are Nordic Donors Different? Working paper series WPS/2004-34. Centre for the Study of African Economies. University of Oxford.

Gleditsch KS and Ward M (2001) Measuring space: A minimum distance database. *Journal of Peace Research* 38(6): 739–758.

Glennie J (2011) Norway's wise ways on aid. *The Guardian*, 1 December. Available at: http://www.theguardian.com/global-development/poverty-matters/2011/dec/01/norway-progressive-ways-on-aid (accessed 17 September 2015).

Gurr TR and Jaggers K (1995) Tracking democracy's third wave with the Polity III data. *Journal of Peace Research* 32(4): 469–482.

Hajek F, Ventresca MJ, Scriven J, et al. (2011) Regime-building for REDD+: Evidence from a cluster of local initiatives in south-eastern Peru. *Environmental Science & Policy* 14(2): 201–215.

Hancock G (1994) *The Lords of Poverty: The Power, Prestige, and Corruption of the International Aid Business*. New York: The Atlantic Monthly Press.

Harvey F and Vidal J (2013) $280m forests initiative launched at UN climate talks in Warsaw. *The Guardian*, 20 November. Available at: http://www.theguardian.com/environment/2013/nov/20/forests-un-climate-talks-warsaw (accessed 16 October 2015).

Heckman J (1979) Sample selection bias as a specification error. *Econometrica* 47(1): 153–161.

Hermansen EAT and Kasa S (2014) Climate policy constraints and NGO entrepreneurship: The story of Norway's leadership in REDD+ financing. *CGD* Working Paper 389. Washington, DC: Center for Global Development.

Hirano Y and Otsubo S (2014) Aid is good for the poor. Policy research working paper 6998, World Bank Group. Available at: http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2014/08/05/000158349_20140805102808/Rendered/PDF/WPS6998.pdf (accessed 20 May 2015).

Jørgensen I (2014) *Hvorfor snakker vi om skog hele tiden?* Available at: http://www.noradbloggen.no/2014/03/hvorfor-snakker-vi-om-skog-hele-tiden/ (accessed 11 May 2015).

Karsenty A and Ongolo S (2012) Can "fragile states" decide to reduce their deforestation? The inappropriate use of the theory of incentives with respect to the REDD mechanism. *Forest Policy and Economics* 18: 38–45.

Maren M (1997) *The Road to Hell: The Ravaging Effects of Foreign Aid and International Charity*. New York: The Free Press.

Midlarsky MI (1998) Democracy and the environment: An empirical assessment. *Journal of Peace Research* 35(3): 341–361.

Miljøverndepartementet (2009) *Bakgrunns informasjon om Regjeringens klima-og skoginitiativ* Available at: https://www.regjeringen.no/nb/dokumentarkiv/stoltenberg-ii/md/Ryddemappe/2009/bakgrunnsinformasjon-om-klima-og-skogpri/id550800/ (accessed 11 May 2015).

Moyo D (2009) *Dead Aid: Why Aid is Not Working and How There is Another Way for Africa* London: Penguin.

Newey WK and West KD (1987) "A simple, positive, semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix." *Econometrica* 55(3): 703–708.

Nickell N (1981). Biases in dynamics models with fixed effects. *Econometrica* 49(6): 1417–1426.

NORAD (2014) *Can we demonstrate the difference that Norwegian aid makes?* Report 1/2014. Oslo: Evaluation department.

NORAD (2015a) *Norsk utviklingspolitikk*. Available at: http://www.norad.no/om-bistand/norsk-utviklingspolitikk/ (accessed 21 May 2015).

NORAD (2015b) Real-time evaluation of Norway's International Climate and Forest Initiative (NICFI). Available at: http://www.norad.no/globalassets/import-2162015-80434-am/www.norad.no-ny/filarkiv/vedlegg-til-publikasjoner/real-time-evaluation-of-nicfi-2014_in-brief.pdf (accessed 11 May 2015).

NORAD (2015c) List of grant recipients Norad/NICFI grant scheme for civil society 2013–2015 Available at: http://www.norad.no/globalassets/import-2162015-80434-am/www.norad.no-ny/filarkiv/3.-sivsa-2012—/cfi/list-of-grant-recipients-2013-2015.pdf (accessed 18 May 2015).

Publisher Office of the Prime Minister (2008) Norway offers up to 1 billion to save the rainforest. Available at: https://www.regjeringen.no/en/aktuelt/norway-offers-up-to-1-billion-to-save-th/id526492/ (accessed 19 May 2015).

Riddel RC (2007) *Does Foreign Aid Really Work?* Oxford: Oxford University Press

Root H (2008). *The Alliance Curse: How America Lost the Third World*. Washington, DC: Brookings.

Rudel TK, Coomes OT, Moran E, et al. (2005). Forest transitions: Towards a global understanding of land use change. *Global Environmental Change* 15: 23–31.

Sachs JD (2005) *The End of Poverty. How Can We Make It Happen in Our Lifetime?* London: Penguin Books.

Svensson J (2000) Foreign aid and Rent-seeking. *Journal of International Economics* 51: 437–461.

Tvedt T (2007) International development aid and its impact on a donor country: A case study of Norway. *European Journal of Development Research* 19(4): 614–645.

Van Soest D and Lensink R (2000) Foreign transfers and tropical deforestation: What terms of conditionality? *American Journal of Agriculture Economics* 82(2): 389–399.

Wilson SE and Butler DM (2007) A lot more to do: The sensitivity of time-series cross-section analyses to simple alternative specifications. *Political Analysis* 15(2): 101–123.

Wooldridge JM (2002) *Econometric Analysis of Cross Section and Panel Data*. London. MIT Press.

World Bank (2015) World Development Indicators, online data. http://data.worldbank.org/data-catalog/world-development-indicators

Appendix 1

Table 6. Descriptive statistics.

Variable	Obs	Mean	SD	Min	Max
Forest depletion/GNI	1325	2.053751	4.446855	0	31.82671
Forest area growth	1324	−0.3759364	1.383876	−21.26377	6.790264
Nowegian bilateral aid (log)	1272	−1.716703	2.051574	−9.21034	3.899963
Norwegian forest aid (log)	1325	−10.8373	2.092321	−11.51293	−1.287529
Income per capita (log)	1323	7.170344	1.117849	4.910031	10.01818
Democracy (discrete var.)	1315	0.3764259	0.4846732	0	1
Democracy (scale)	1315	13.8038	5.921697	1	21
Autoc (discrete var.)	1315	0.1110266	0.3142846	0	1
Forest area share	1324	29.30653	21.37169	0.006462	94.71795
Population density (log)	1325	3.94319	1.216468	0.4338516	7.083998
GDP per capita growth	1323	3.35997	4.761367	−33.98336	58.3638
Total ODA/GNI (log)	1314	3.283865	1.89162	−9.21034	6.511149
NICFI years (discrete var.)	1325	0.3562264	0.4790641	0	1

Table 7. Descriptive statistics.

Countries in the study		
Albania	Ghana	Panama
Algeria	Guatemala	Papua New Guinea
Angola	Guinea	Paraguay
Arab Replic of Egypt	Guinea-Bissau	Peru
Armenia	Guyana	Philippines
Azerbaijan	Haiti	Poland
Bahrain*	Honduras	Qatar*
Bangladesh	Hungary	Republic of Congo
Belarus	India	Republic of Korea
Benin	Indonesia	Republic of Macedonia
Bhutan	Iraq	Republic of Yemen
Bolivarian Republic of Venezuela	Islamic Republic of Iran	Romania
Bolivia	Israel	Rwanda
Botswana	Jordan	Saudi Arabia*
Brazil	Kazakhstan	Senegal
Bulgaria	Kenya	Serbia
Burkina Faso	Kuwait*	Sierra Leone
Burundi	Kyrgyz Republic	Singapore
Cabo Verde	Lao PDR	Slovak Republic
Cambodia	Latvia	Slovenia
Cameroon	Lebanon	Solomon Islands
CentralAfrican Republic	Lesotho	South Africa
Chad	Liberia	Sri Lanka
Chile	Libya	Sudan
China	Lithuania	Suriname

Table 7. (Continued)

Countries in the study		
Colombia	Luxembourg	Swaziland
Comoros	Madagascar	Tajikistan
Costa Rica	Malawi	Tanzania
Cote d'Ivoire	Malaysia	Thailand
Croatia	Mali	The Gambia
Cuba	Mauritania	Timor-Leste
Cyprus	Mauritius	Togo
Czech Republic	Mexico	Trinidad and Tobago
Democratic Republic of Congo	Moldova	Tunisia
Djibouti	Mongolia	Turkey
Dominican Republic	Montenegro	Turkmenistan
Ecuador	Morocco	Uganda
El Salvador	Mozambique	Ukraine
Equatorial Guinea	Namibia	United Arab Emirates*
Eritrea	Nepal	Uruguay
Estonia	Nicaragua	Uzbekistan
Ethiopia	Niger	Vietnam
Fiji	Nigeria	Zambia
Gabon	Oman*	Zimbabwe
Georgia	Pakistan	

*Excluded from statistical analyses.