



International Interactions

Empirical and Theoretical Research in International Relations

ISSN: 0305-0629 (Print) 1547-7444 (Online) Journal homepage: <https://www.tandfonline.com/loi/gini20>

Colonial Legacy and Foreign Aid: Decomposing the Colonial Bias

Daina Chiba & Tobias Heinrich

To cite this article: Daina Chiba & Tobias Heinrich (2019): Colonial Legacy and Foreign Aid: Decomposing the Colonial Bias, *International Interactions*, DOI: [10.1080/03050629.2019.1593834](https://doi.org/10.1080/03050629.2019.1593834)

To link to this article: <https://doi.org/10.1080/03050629.2019.1593834>



Published online: 05 Apr 2019.



Submit your article to this journal [↗](#)



Article views: 36



View Crossmark data [↗](#)



Colonial Legacy and Foreign Aid: Decomposing the Colonial Bias

Daina Chiba^a and Tobias Heinrich^b

^aUniversity of Essex; ^bUniversity of South Carolina

ABSTRACT

It is well-known that donors give considerably more foreign aid to former colonies than to countries lacking past colonial ties. Unfortunately, we know relatively little about why this is the case. For one, there is almost never a theoretical justification for the inclusion of colonial history in statistical models. For the other, the only explicitly made rationale by Bueno de Mesquita and Smith (2009) actually predicts an interpretational problem: colonial history not only increases a former colony's saliency to the donor, but also has left deep marks on recipients' social and political institutions today. Both aspects shape how much aid a donor transfers to the recipient. This leaves ambiguous the meaning of the routinely found positive, sizable, and significant coefficient of colonial history on aid flows. We solve the inferential quandary by using a decomposition approach from labor econometrics. Our results show that about 75–100% of the colony effect on foreign aid stems from the greater saliency that donors give to policy concessions from former colonies.

KEYWORDS

Development aid; foreign policy; colonies; political economy

Colonization at the hands of powerful countries – such as the United Kingdom, France, and Spain – affected social capital, norms, and politics in colonized countries. The effects of this experience linger decades and sometimes centuries later, continuing to influence economic, political and social institutions and outcomes even today. Scholars agree that colonization left countries *observably* different today.¹

Shared colonial history also affects how former colonizers conduct foreign policy toward their former colonies. They are more likely to intervene in civil conflicts, provide more foreign aid, impose fewer visa restrictions, and sign trade and investment treaties.² The argument, under the lens of Bueno de Mesquita and Smith (2009) that we will use throughout the paper, is that

CONTACT Tobias Heinrich ✉ heinricht@mailbox.sc.edu 📧 University of South Carolina

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/gini.

This article has been republished with minor changes. These changes do not impact the academic content of the article.

¹The literature on these effects is vast. For summaries, see Sokoloff and Engerman (2000), Nunn (2009), Spolaore and Wacziarg (2013), and Pepinsky (2015).

²Respectively, see Chacha and Stojek (2016), Alesina and Dollar (2000), Neumayer (2005, 2006), Mansfield, Milner, and Rosendorff (2002), and Mansfield and Reinhardt (2003). There are other prominent colonial biases, such as in trade, migration, tourism, and investment. We will not dwell on them because they are not policy choices in a narrow sense.

domestic constituencies prefer the government to intervene in former colonies' domestic affairs more. In the context of foreign aid, this leads to favoritism toward former colonies. Greater *saliency* of former colonies' policies drives the well-known results of colonial bias in foreign aid (Alesina and Dollar 2000).

Evidence for these expected behavioral *saliency* differences come about by regressing each policy choice (military intervention, aid allocation, economic ties) on a dummy variable for colonial history (plus various controls). Routinely, one finds a robust, sizable, and statistically significant coefficient estimates for the colony variable. However, the pervasive effects of colonization on former colonies' wealth and politics, which theories suggest influence former colonizers' policy choice as well, call this interpretation into question on theoretical grounds. Since differences in both important *observable* features between colonies and non-colonies as well as former colonies' greater *saliency* to colonizers together determine the optimal aid flow, theory suggests that the coefficient for colonial history does more than just capture differences in colonies' *saliency* to colonizers.³ Thus, we do not know whether former colonizers' policy choices today differ because former colonizers behave differently toward former colonies due to higher *saliency* or because colonial effects on wealth and political institutions align such that former colonizers choose policies differently.⁴ Thus, this prominent research faces an identification issue.

The issue arises prominently in foreign aid allocations by rich countries, especially the United Kingdom and France. Colonial bias is massive, and found in essentially every study of foreign aid allocation. The result is so pervasive that development activists and scholars routinely castigate donors for their colonial biases. However, *why* is the colony dummy always sizable and positively signed?

The answer to this question has to be found in a theory of foreign aid allocation. However, there is only one that tackles colonial history explicitly, and it actually points to the aforementioned identification issue.⁵ In the model by Bueno de Mesquita and Smith (2009),⁶ aid serves as a bribe allowing donors to obtain policy benefits. They argue that donors value benefits from former colonies more such that donors are spending more aid, *ceteris paribus*. That is, the greater *saliency* of former colonies makes donors behave differently when using aid to buy policy concessions – even when colonies and non-colonies are *observably* identical otherwise. The model also suggests that the price of such policy concessions should

³We illustrate this issue more generally later.

⁴This question mirrors inquiries into why contiguous and major-power dyads are more likely to go to international conflict with each other. In the former case, the analyses show that *behavioral* difference matters more whereas in the latter, states' *observable* differences matter more. See Reed and Chiba (2010) and Chiba, Martinez Machain, and Reed (2014).

⁵We show that almost all other uses of the colony dummy in regressions are ad hoc inclusions, which do not further any theoretical arguments.

⁶Heinrich (2013) makes a similar argument, but follows explicitly Bueno de Mesquita et al. (2009). We will leave the focus on the original argument.

depend on the wealth and political institutions of recipient countries, which have been shaped by colonial history as well (Nunn 2009; Pepinsky 2015). Even assuming that there is not special *saliency* of the policy by former colonies, differences in prices would make donors give aid differently to former colonies. The latter mechanism connecting colonial history to observed aid is not considered by Bueno de Mesquita and Smith (2009).

This means that the only theoretically-grounded explanation for the pro-colony bias in aid predicts an identification issue. Depending on how colonization affects other determinants of aid (for example wealth and political institutions), the usual coefficient on the colony indicator can understate, overstate, or be about right with respect to the *saliency* interpretation forwarded by Bueno de Mesquita and Smith (2009).

We disentangle these effects, grounding ourselves in Bueno de Mesquita and Smith's (2009) theoretical model. In reanalyzing the Bueno de Mesquita and Smith (2009) data, we employ a variant of the Blinder-Oaxaca decomposition (Blinder 1973; Oaxaca 1973). This approach was developed to understand why male workers receive higher wages than their female counterparts: is this because male workers are observably more qualified (that is, have higher education and/or more work experience) or is it because female workers are treated differently (that is, discriminated against)? This approach allows us to make a precise data-based claim about the relative power that differences in *observables* between colonies and non-colonies have compared to differences in colonies' *saliency* for colonizers.

Our decomposition analysis shows that the salient colony explanation – the *saliency* effect – dominates. In the model specification closest to the theoretical argument, at least 98% of the colony bias is explained by *saliency* differences, leaving only the remainder to differences in *observables*. This is a remarkable finding as a huge body of research shows how profoundly colonization affected the wealth and institutions of the formerly colonized (see, for example, Nunn 2009). However, when considering foreign aid, these consequences are minuscule compared to the lingering effects on present-day political preferences (*saliency*) of colonizers.

Our results show that the *saliency* channel in Bueno de Mesquita and Smith (2009) does almost all the work in explaining the colonial bias. Why does this insight matter for the immediate topic of foreign aid allocation? Donors' bankrolling of former colonies is routinely criticized by development activists and scholars. Since the voting public's preferences in the form of *saliency* drive this widely censured behavior, activists would be well-advised to target the mass public to remedy these (mis)flows of aid. Merely criticizing the donor government in a way that does not reach the public is bound to fail as accountable governments will listen to the public (Heinrich, Kobayashi, and Long 2018). A wide range of broader implications are discussed at length at the end of the article.

Colonial History and Foreign Aid Allocation

Selfish interests routinely drive donors to use foreign aid as a political tool to generate influence abroad (Morgenthau 1962), perhaps undermining the chance for aid to help recipients' economic growth (Maizels and Nissanke 1984; McKinlay and Little 1977). Within this so-called donor interest strain of research emerged the focus on a history of colonial relations.⁷ In a review of aid allocation research, Neumayer (2005) reports that of 13 major studies, nine feature an indicator for colonial history.⁸ Of the 18 articles on bilateral aid allocations featured in the edited volume by Milner and Tingley (2013b), 11 use colonial history as an explanatory variable. In short, when reading an article on foreign aid allocation, odds are good that a colony indicator will be among the regressors, and its coefficient is positive and statistically significant.⁹

Unfortunately, when it comes to the colony dummy, hand-waving nearly always replaces careful theorizing. Scholars rarely offer an explanation as to what exactly is being operationalized by the colony variable, or how they arrive at the anticipated direction of the effect on aid outcomes. For instance, Dudley and Montmarquette (1976: 138) use the variable as it "proxies for political links between donor and recipient." Alesina and Dollar (2000) justify the use by saying that others have used it. Neumayer (2003: 653) argues that it "is a well-established result that many donors favor their former colonies in part at least because of a political interest in maintaining their influence on those countries." Berthélemy and Tichit (2004) write that "another indicator of the donors' self-interest may be found in the privileged relations with their former colonies, usually their political and commercial allies." Carey (2007) states that to "account for the impact of donor interests on aid commitments, I include a binary variable for former colonies for British and French aid" in her analysis of European states' aid flows. As a last example, Bermeo and Leblang (2015) use the indicator as they "are interested in controlling for 'connections' between the donor and recipient."

While some scholars include the colony indicator because others have used it or to try guarding against omitting an important variable, the desire to proxy political "links" and "connections" between the donor and recipient seems to drive the other uses. Unfortunately, the first two uses do not reveal any theoretical insight. The latter approach is unsatisfactory as well, as one cannot derive a hypothesis without specifying the role of "links" within in a specific theoretical argument. For example, let the strength of a "link" correspond to the degree of alignment of interests between the donor and

⁷Other perennials in this strain include the donor's exports, dyadic geographic distance, regional effects, and Western troop deployments. See the charts in Neumayer (2005).

⁸The count only relies on research that (also) studies countries that were major colonizers, such as Great Britain and France. Studies on US aid only are omitted from this count.

⁹For one divergent result (concerning aid by the United Kingdom), see Bobba and Powell (2007).

recipient governments. The problem here is that one could argue more aid is given because of either a strong or weak alignment. In the case of strongly aligned interests, donors might give more aid because they wish to subsidize the already aligned policies of recipients. Recipients would use aid to pursue more of the existing policies that donors already like. In the case of weak alignment, donors could bribe recipients so that policies become more to donors' likings. The aforementioned cites are not clear whether "maintaining [...] influence" (Neumayer 2003) and "privileged relations" (Carey 2007) suggest aid flows as a subsidy or bribe.¹⁰

Without a theoretical model, we cannot understand the role "links" and "connections" – the widely invoked justifications for the use of the colonial history in prior research – play in decisions to provide foreign aid.¹¹ Consequently, these uses do not give a theoretical expectation about the direction of the effect, and activists would remain in the dark for how to get donors to stop bankrolling former colonies.

Identification Issue in the Colony-Aid Nexus

To our knowledge, there exists only one use of the colonial variable in the context of a theoretical model, with Bueno de Mesquita and Smith (2009) deriving a comparative static result that links foreign aid with a parameter which they operationalize with a colonial history link.¹² We first review their argument, leading to a *saliency* effect of colonization, and then establish another channel through which colonization can affect aid. Throughout, we illustrate the mechanisms and the ensuing identification issue by showing a synthetic data illustration.

Colonial History as Donor-Side Saliency

Bueno de Mesquita and Smith (2009) conceive of foreign aid as payment in aid-for-policy deals between donor and recipient governments. The model stipulates that

¹⁰Consider this illustration of the basic rationale of the inadequacy of the atheoretical "links" argument. Contrast US aid to Pakistan and the Philippines after 9/11. Prior to 9/11, the government of the Philippines was putting "constant military pressure on Abu Sayyaf" (Niksch 2007: 7), an organization intermittently associated with Al Qaeda. Niksch (2007) emphasizes that the Philippine government faced material limitations in countering Abu Sayyaf. After 9/11, the United States subsidized Philippine efforts with aid to help overcome these limitations. In contrast, Pakistan had more amicable prior relations with Al Qaeda so that then-US President "Bush made enormous US grants-in-aid *in exchange* for Pakistani cooperation in fighting terrorism" (Ambrose and Brinkley 2011: 504) (emphasis added). Thus, after 9/11, the alignment of interests between the United States and the Philippines over battling Abu Sayyaf, just as the non-alignment with Pakistan over Al Qaeda, led to increases in US aid. This illustrates the theoretically ambiguous use of "links" in much of the literature. (On aid in the US-Pakistan case, see also Anwar and Michaelowa (2006).)

¹¹A similar ambiguity might be at play with many of the variables in the so-called donor interest strain, such as exports, military alliances, similarity of voting in the United Nations General Assembly, etc. For an overview, see again the summary by Neumayer (2005).

¹²We focus on their comparative static results about foreign aid with respect to saliency and later to a potential recipient's wealth and political institutions. Their model features several more theoretical results, such as linking donor-side wealth and institutions to aid.

donors vary in how much *saliency* policy concessions from recipient countries have to them. That is, an identical policy concession from one country may be appreciated differently when obtained from another country. One of the empirical operationalizations of *saliency* is that “former colonies hold higher salience for donors than do states with which they had no special prior relationship” (Bueno de Mesquita and Smith 2009: 325). Because the donors’ leaders cater to these preferences to stay in power,¹³ and since policy concessions from former colonies are assumed to be valued more, donor leaders are willing to buy more policy concessions and thus pay more in foreign aid to former colonies. Working from a modified version of the model, Heinrich (2013: 429) justifies similarly the colony-as-saliency interpretation, as “policies in former colonies play a significant role in donors’ domestic politics. For example, France cares that its culture and language are carried on in former colonies, which it ensures by extending aid to recipient governments.” In the empirics of these studies, the colony variable proxies *saliency*, a concept for which their models produce clear theoretical predictions.

The central assumption in the model is that influential constituencies in donor countries appreciate aid more when it flows to former colonies, *ceteris paribus*. While Bueno de Mesquita and Smith (2009) argue this to justify their operationalization, they provide no evidence it is warranted. To examine the case for these micro-foundations, we fielded a short survey to 577 people in the United Kingdom (as it constitutes arguably the most prominent former colonizer) in March 2017. We asked people to express their attitude regarding patterns of British aid: “The British government gives development aid to developing countries, some of which used to be part of the British Empire.” Options to express their attitude were that British aid should favor developing countries formerly part of the British Empire, that it should privilege countries never part of the Empire, that no favors should be given based on mutual history, or don’t-know. 31% [26, 36] preferred favoring former colonies (95% confidence intervals are shown in the hard brackets), 1% [0, 2] wanted to see non-colonies privileged, and 61% [56, 66] were indifferent. Thus, the net-favorability of formally biasing aid toward former colonies is on average 30 percentage-points.¹⁴ These results demonstrate that even decades after the end of the British Empire, a sizable portion of voters explicitly prefer skewing aid to former colonies.¹⁵ This substantiates the

¹³These preferences lie with the winning coalition in the model by Bueno de Mesquita et al. (2009), but this specific location is not strictly necessary for our purposes. The crucial piece is that donors are beholden to voters, influentials, lobbies, government insiders, etc., that care more about policy concession from former colonies, *ceteris paribus*.

¹⁴Net-favorability is a common measure of support for policies, assuming that those that are indifferent will not sway the policy positions.

¹⁵Unfortunately, no older survey data were available. We suspect that support for the colony bias in aid was surely larger in the past. For example, MacKenzie (1984) argues that the British government actively manipulated public opinion about the Empire until the 1960s. Thus, for most of the early parts of the usual time periods in aid allocation research, a far larger fraction of British citizens had their preferences formed when the British government molded public opinion in favor of the Empire. For now, this is conjecture though.

foundational assumption behind using the colony indicator as a measure of *saliency* à la Bueno de Mesquita and Smith (2009).

Figure 1 illustrates this *saliency* channel in foreign aid using synthetic data. For now, just consider Case 1. There are two groups of dyads, colonial (black crosses) and non-colonial (gray circles), each with 200 observations. The outcome, *Aid*, is shown on the y-axis, and the x-axis gives the covariate that matters in this illustration, a potential recipient country's *Resources*. The relationship between *Aid* and *Resources* is assumed to be a concave parabolic relationship in all cases, reflecting the variables' well-established empirical association and the theoretical expectation from Bueno de Mesquita and Smith (2009) model.¹⁶

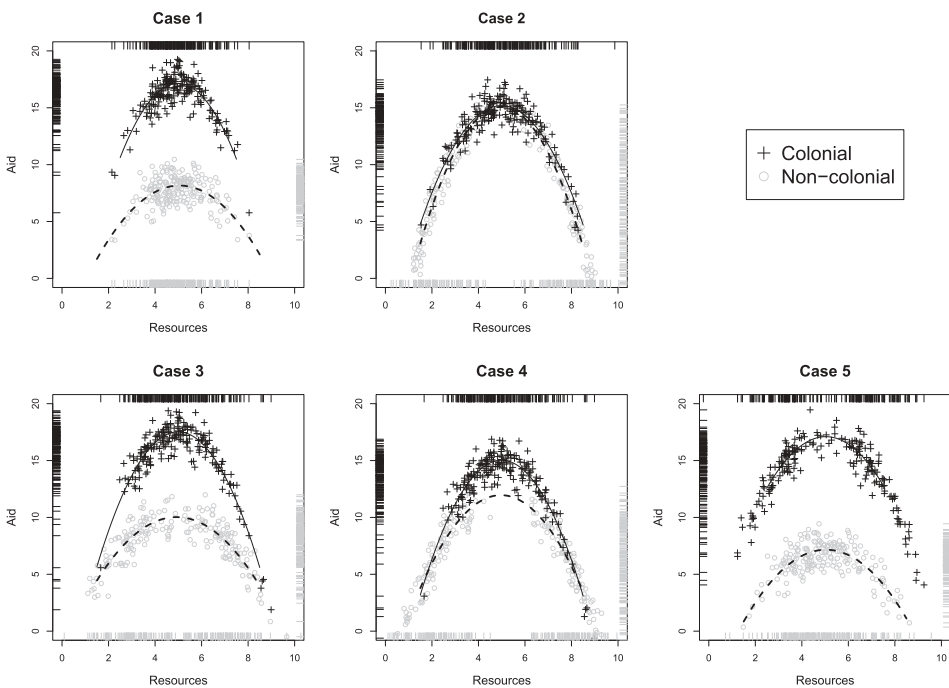


Figure 1. Synthetic Data

Bivariate scatterplots for five synthetic data sets, each containing 400 observations and three variables: *Aid* (y-axis), a recipient's budgetary *Resources* (x-axis), and *Colony* dummy that splits the observations. Colonial observations are denoted with black crosses and non-colonial observations are shown with gray dots. Marginal distributions of *Aid* and *Resources* are shown with rugs in corresponding colors on the axes. Solid and dashed curves show the relationship between *Resources* and *Aid* for colonial and non-colonial observations, respectively.

¹⁶The empirical results are established in Alesina and Dollar (2000) and Bueno de Mesquita and Smith (2009), which show that there is an inverse-*u* relation between resources (as well as GDP per capita) and aid. It is worth noting that while we illustrate the identification issue using monadic covariates of recipients, the implications for aid from the two are not monadic. For example, donor-side resources interact with recipient-side resources in Bueno de Mesquita and Smith's (2009) theoretical model.

Case 1 in Figure 1 shows that, on average, more aid goes to colonies; that is, the marginal rug on the left side (black) is higher on average than on the right (gray). In Case 1, this difference is solely attributable to differences in how donors react to the *Resources* covariate, rather than to differences in covariate distributions. After all, the *Resources* variable is designed to be identically distributed for colonial and non-colonial dyads, as the bottom and top marginal distribution rugs show. This points to the *saliency* effect because donors respond to a given observed level of *Resources* such that colonies get more aid. Specifically, the *Resources-Aid* curve (solid) governing colonial observations is much steeper than its counterpart for non-colonial observations (dashed). In the model by Bueno de Mesquita and Smith (2009), this effect stems from the greater *saliency* of former colonies' policy concessions for donors. Moreover, if we regress *Aid* on *Resources* and the *Colony* indicator, as typically done in research, the estimated coefficient for the colony dummy is positive and statistically significant for Case 1 (see Table 1).

The lack of differences in *observables* in *Resources* paired with a much stronger behavioral *saliency-based* reaction to these *Resources* corresponds to a situation where a positive coefficient for the colony dummy would correctly estimate the importance of *saliency*. This means that the entire pro-colony bias would be driven by *saliency* effects in the donor-recipient relationship.

Colonization Changed Observables of Former Colonies

Bueno de Mesquita and Smith (2009) do not consider that colonization has affected two other major variables in their theoretical model, namely the size of the recipient country's governmental budget and the political institutions (Nunn 2009; Pepinsky 2015). To understand the inferential issue that arises, we return to their theoretical model to illustrate how these two features affect equilibrium aid allocations.

Table 1. Regression Results of the Synthetic Data

	Case 1	Case 2	Case 3	Case 4	Case 5
Colony	8.42*** (0.11)	0.60*** (0.13)	6.20*** (0.14)	2.20*** (0.14)	9.28*** (0.11)
Resources	7.84*** (0.37)	9.62*** (0.12)	5.84*** (0.18)	7.14*** (0.12)	6.26*** (0.15)
Resources ²	-0.78*** (0.04)	-0.96*** (0.01)	-0.60*** (0.02)	-0.72*** (0.01)	-0.62*** (0.01)
Intercept	-11.19*** (0.94)	-9.15*** (0.23)	-3.67*** (0.42)	-5.34*** (0.23)	-8.33*** (0.38)
Observations	400	400	400	400	400
Adjusted R ²	0.94	0.97	0.93	0.96	0.95
Observable effect	0 %	95.09%	17.67%	68.10%	-15.07%
Saliency effect	100%	4.91%	82.33%	31.90%	115.07%

*p < 0.1; **p < 0.05; ***p < 0.01

We laid out above how donor leaders can use foreign aid to obtain policy concessions to cater to their supporters (Bueno de Mesquita and Smith 2009). Equivalently, recipient leaders have to please supporters in light of policy change. When donors buy policy changes, it follows that recipient winning coalitions will be upset about the donor-demanded change and thus more likely to oust a leader. Therefore, incoming aid has to allow recipient leaders to provide more bribes and expand policies that mollify supporters. The model predicts that sizes of recipient government budgets and winning coalitions affect the costliness of necessary bribes. Considering this, donor leaders decide how much policy change to ask for, and how much foreign aid to offer, conditional on recipient budgetary resources, size of recipient winning coalitions, and donors' winning coalitions' saliency for policies in the recipient country.¹⁷ The empirical analyses by Bueno de Mesquita and Smith (2009) confirm that recipients' wealth, budgets, and institutions matter for aid allocations.

However, colonization also profoundly shaped the political institutions and wealth of recipient countries. Political economists studying development argue that colonization led to transfers of knowledge, destruction of old institutions, erection of new institutions, and migration of settlers. Each of these consequences affected in some way political institutions and wealth nowadays.^{18,19} Whereas the mechanisms and magnitudes of the effects are still studied extensively, it is undoubtedly the case that colonization has "played a central role in determining the long run evolution of national political economies," as Pepinsky (2015) puts it without any qualification.²⁰ Thus, regardless of any *saliency* effect, colonial history should also shape aid

¹⁷Bueno de Mesquita and Smith (2009) derive precisely and show in the data how recipient government budgets and winning coalition sizes affect observed aid flows; it turns out that the relationship follows an inverse-*u* shape (Bueno de Mesquita and Smith 2009: 318–321). However, the inflection point of the inverse-*u* cannot be mapped onto the observational data. Therefore, we use the vaguer statement that donor leaders makes aid choices "conditional on" the size of winning coalitions and recipient government budgets.

¹⁸Whereas many studies report uniform effects, recent research shows heterogeneous consequences of colonization due to different policies pursued by colonizers (Bruhn and Gallego 2012; Lee and Schultz 2012). For example, Acemoglu, Johnson, and Robinson (2002) demonstrate how colonizers implemented extractive institutions in some cases but investment-conducive institutions elsewhere. Today, the former group of countries have lower wealth than states that were not colonized, whereas the latter group of countries have higher wealth. Others argue that the effect of colonization on institutional development depends on pre-colonial institutions, as colonization itself was not random (Gartzke and Rohner 2011; Hariri 2012).

¹⁹It is also possible that being a colonizer has left a mark on donors' institutions and wealth which work analogously in constraining the donor's leader to provide aid. However, to our knowledge, this literature is not sizable. Therefore, we focus on the effects of colonization on the colonies.

²⁰We focus on wealth and political institutions in recipient countries, as these are the variables that are explicitly incorporated in the theoretical model of aid allocation. However, several other mainstays in aid allocation regressions are also known to have been affected by colonization, exacerbating the inferential issue we discuss. Most prominently, donors' trade with recipients is often used to proxy another manifestation of economic so-called donor interests, although these are themselves outcomes of colonization as countless studies show. Most recently, Bermeo et al. (2015) demonstrate how bilateral migration drives aid, which itself is influenced by colonial history (Kim and Cohen 2010). For both migration and trade, colonial history is interpreted as generating familiarity, thus lowering transaction costs. In short, the effects of colonization on widely used monadic and dyadic determinants of aid are profound and widespread. However, as neither migration nor trade are well tied in via the theoretical framework Bueno de Mesquita and Smith (2009), we remain focused on recipients' wealth and institution.

allocation because former colonies require different amounts of bribes to deliver policy concessions.

Case 2 of our synthetic data exercise illustrates this case. There is a clear *observable* difference between colonial and non-colonial observations in terms of the distributions of *Resources*. Specifically, the values of *Resources* for colonial dyads are clustered around the inflection point (around five) as shown in the marginal rugs on the top axis, whereas the distribution of *Resources* is bimodal for non-colonial dyads. At the same time, the *saliency* effect of *Colony* is set equal to zero in this case, as the relationship between *Resources* and *Aid* is designed to be identical across different groups. We add curves showing the relationship between the *Resources* and *Aid*: solid for colonial and dashed for non-colonial dyads. Since the relationships are identical, the curves overlap in this panel.

In this case, *Aid* is higher for colonial observations not because donors behave differently due to higher *saliency* of former colonies, but because colonial observations are *observably* different from non-colonial observations. We call this the *observables* effect. This corresponds to a case where the positive coefficient for the colony dummy would overstate differences in *saliency*, which Bueno de Mesquita and Smith (2009) hypothesize. When performing the same regression as before, we obtain again a positive and statistically significant coefficient on colonial history (see Table 1). However, the causal stories behind Cases 1 and 2 were designed to be fundamentally different.²¹

Identification Issue

This lays bare the inferential issue. Colonial history affects aid through two channels: the degree of appreciation of a given policy concession – the *saliency* effect – and the price to be paid per unit of policy change – the *observables* interpretation. Therefore, Bueno de Mesquita and Smith's (2009) *saliency* interpretation of the usually positive colony coefficient may be off in a priori unknowable directions.

Of course, matters need not be as clear-cut as in the two previous synthetic data exercise. Cases 3–5 give in-between cases, with both *saliency* and *observables* effects. In Case 3, the *observables* effect is weaker than the *saliency* effect, whereas the opposite holds in Case 4. Finally, Case 5 illustrates a situation where the distribution of *Resources* is reversed between colonial and non-colonial observations, such that data are clustered around the inflection point in non-colonial group whereas they are not in colonial group. *Observables* would make *Aid* higher for non-colonial observations

²¹Coefficient sizes differ. Of course, the magnitudes cannot help identify the cases in actual data because we lack knowledge of the true state of the world.

were it not for any *saliency* differences; yet we observe higher *Aid* for colonial observations due to an overwhelming *saliency* effect. If this is how the world worked, then a positive coefficient for the colony dummy would actually understate the effect of *saliency*.

This simulation exercise presents a simple and stylized version of the identification issue that arises as we incorporate the knowledge from the political economy of development within the theoretical model by Bueno de Mesquita and Smith (2009).²² Each substantively different scenario from Figure 1 results in qualitatively the same regression result, namely a positive and significant colony coefficient as shown in Table 1. Therefore, a positive coefficient on *Colony* in a published article by itself cannot tell us to what extent the *saliency* effect, which Bueno de Mesquita and Smith (2009), applies.

Empirical Analysis

To determine the relative importance and directions of the *saliency* and *observables* effects, we turn to a statistical approach that can distinguish between the cases just illustrated. Specifically, we use a decomposition method developed in labor econometrics, which has been applied in political science recently.²³

Decomposition Method

The idea to decompose an outcome difference between groups comes from the microeconometrics literature on wage discrimination (Blinder 1973; Oaxaca 1971, 1973). Differences in wages might be driven by behavioral effects (that is, discrimination by employers) and by differences in covariate-based characteristics (for example education and labor market experience). This research seeks to answer the following question: How would the distribution of wages look for women if they were operating under the behavioral regime of males (that is, if there were no discrimination against women)? That is, is the difference in wages caused by differences in coefficients between the two groups or by differences in the values of covariates between the two groups?²⁴

In our study, the analogous question is: How would the distribution of foreign aid look for colonial dyads if aid-for-policy deals for former colonies were equally *salient* for non-colonial dyads? Or, alternatively: how would it look if colonies and non-colonies were *observably* similar? Subsequently, we

²²Note that differences due to *observables* do not stem from any omitted variable bias as all our synthetic data regressions use a correctly specified model.

²³See work by Dow (2009), Reed et al. (2010), Conrad and Milton (2013), and Chiba et al. (2014).

²⁴This literature, as well as our study, relies on comparisons between discrete groups. For comparisons between a continuum of groups, see Ulrick (2012).

can determine the extent to which the pro-colony bias in aid is due to *saliency*-related effects. As the decomposition approach is not a standard item in political scientists' toolkits, we first develop its intuition by relying on a linear regression model. We then present a non-linear extension of the approach suitable for a Tobit model used in foreign aid research. Assume from a standard linear regression model,

$$E(Y) = \bar{Y} = \bar{X}\beta, \quad (1)$$

where Y is the vector of some outcome of interest, \bar{Y} the mean of Y , \bar{X} a row vector containing mean values of the covariates, and β a column vector of coefficients. The mean outcome gap, G , between the two groups (C for colonial dyads and N for non-colonial dyads) is,

$$\begin{aligned} G &= \bar{Y}^C - \bar{Y}^N \\ &= \bar{X}^C \beta^C - \bar{X}^N \beta^N. \end{aligned} \quad (2)$$

This mean difference can be rewritten by adding and subtracting $\bar{X}^C \beta^N$ from the right-hand side and gathering the relevant terms together,

$$\begin{aligned} G &= \bar{X}^C \beta^C - \bar{X}^C \beta^N + \bar{X}^C \beta^N - \bar{X}^N \beta^N \\ &= \underbrace{(\bar{X}^C - \bar{X}^N) \beta^N}_{\text{Observables effect}} + \underbrace{\bar{X}^C (\beta^C - \beta^N)}_{\text{Saliency effect}}. \end{aligned} \quad (3)$$

The first part of Equation (3), *Observables effect*, is the difference in foreign aid flows between the groups that differences in measurable, *observable* variables can explain.²⁵ If the groups were identical as in Case 1 in the synthetic data above ($\bar{X}^C = \bar{X}^N$), the difference in foreign aid flows would stem entirely from *saliency* differences (that is, β^C and β^N). However, the political economy of development literature argues this is not the case: \bar{X}^C should be different from \bar{X}^N (as in Cases 2–5 in the synthetic data exercise).

The second part of Equation (3), the *Saliency effect*, corresponds to the difference in aid flows that stem from behavioral differences between the groups, that is, differences in how colonial and non-colonial dyads respond to values of the *observable* variables. In Bueno de Mesquita and Smith's (2009) model, this is attributable to differences in *saliency* of recipients' affairs to donors.

If $\beta^C = \beta^N$, all differences in aid flows between colonial and non-colonial dyads are a function of differences in *observable* variables. However, the

²⁵The coefficients from the sample of non-colonial dyads (β_N) are used for the vector of benchmark coefficients that is multiplied with $\bar{X}^C - \bar{X}^N$. This comes from the convention in labor economics of using the sample of males as the benchmark because this group is not expected to experience wage discrimination. Isomorphic results entail if colonial-dyads are used as the baseline.

saliency explanation advanced by Bueno de Mesquita and Smith's (2009) suggests that differences in β s explain the pro-colony bias in aid.

The decomposition method allows us to derive a data-based assessment of the relative merit of the two effects by generating percentages attributable to *observables* and *saliency*. Percentages are obtained by dividing either *Observables effect* or *Saliency effect* from Equation (3) by G , the total difference. Applying this method to the five synthetic data sets presented above, the results are 0% *observables* and 100% *saliency* in Case 1, 95% *observables* and 5% *saliency* in Case 2, 18% *observables* and 82% *saliency* in Case 3, 68% *observables* and 32% *saliency* in Case 4, and -15% *observables* and 115% *saliency* in Case 5, as shown at the bottom of Table 1.

Data and Results

Using the decomposition method, we can provide estimates of the relative merits of the *saliency* argument (focusing on β s) and from the colonization literature (focusing on *observable* X s) in explaining the pro-colony bias in the context of the theoretical model by Bueno de Mesquita and Smith's (2009.) We now turn to their replication data set to perform the decomposition using their covariate specifications. The data set, spanning 1960–1999, contains annual information on 21 potential donors and 134 potential recipients. This gives 81,144 donor-recipient-year observations, of which about 3% are colonial dyads.^{26,27} The outcome variable, Bilateral Aid, is the natural logarithm of the gross amount of bilateral foreign aid (in constant US dollars) given by the prospective donor to the recipient in a given year (the mean is 8.3 for colonial dyads and 3.5 for non-colonial dyads).

For our main analyses, we focus on a set of covariates that Bueno de Mesquita and Smith (2009) introduce and justify as operationalization of parameters in their theoretical model. Aside from the colonial dummy, we treat these as sources of *observable* differences. Specifically, we look at donor and recipient resources, recipient winning coalition size and population, their geographic distance, and a dummy variable for the Cold War period.²⁸ To capture the theoretically expected inverse- u shaped effects of recipient government resources, we include the squared term for this variable. The non-linear effect of recipient winning coalition size is modeled by creating dummy variables corresponding to each of the ordered categories of this

²⁶For a list of countries included as donors and recipients as well as colonial status, see Appendix.

²⁷As the aid literature relies almost exclusively on uniform effects of colonial history, ignoring inter-colonizer differences that the development literature identifies, we retain such focus in our main analyses. As a robustness check, however, we show the results of two sets of additional analyses focusing on the United Kingdom and France, respectively, as a sole donor. See Appendix.

²⁸The latter three are additional operationalizations of donors' winning coalitions' *saliency* for policy concessions.

variable. All these covariates are taken directly from the replication data set for Bueno de Mesquita and Smith (2009).²⁹

To apply the decomposition method, we first need to regress the outcome on these covariates separately for colonial and non-colonial samples and obtain $\hat{\beta}^C$ and $\hat{\beta}^N$. As foreign aid is given only to selected recipient countries, bilateral aid flows between a donor i and a prospective recipient j in year y are zero in many observations. We thus estimate a Tobit model. To account for the potential non-independence across units and time, we use random intercepts as well as a cubic polynomial of calendar time (which is part of x_{ijt}). Specifically, we have,

$$\begin{aligned} Y_{ijt} &= \max\left(0, Y_{ijt}^*\right) \\ Y_{ijt}^* &= x_{ijt}\beta + v_{1i} + v_{2j} + \epsilon_{ijt}, \end{aligned} \quad (4)$$

where Y_{ijt}^* is the natural logarithm of foreign aid given by donor i to recipient j at time t , x_{ijt} is a vector of (potentially time-varying) covariates, and β is a vector of coefficients.³⁰ The model captures the effects of unmeasured heterogeneity by donor and recipient by incorporating two random effects, v_{1i} and v_{2j} , respectively. We assume that these are independent from x_{ijt} and t , and are distributed according to $N(0, \eta_D^2)$ and $N(0, \eta_R^2)$, respectively. ϵ_{ijt} is an error term distributed according to $N(0, \eta_\epsilon^2)$.

We estimate this model for the two separate samples for the decomposition as well as for the pooled data for illustrative purposes. Model parameters are estimated using Markov Chain Monte Carlo (MCMC) under a Bayesian framework with diffuse yet proper priors, relying on the implementation by Hadfield (2010). We run 11,000 MCMC iterations, discarding the first 1,000 as burn-in, saving every 10th draw.³¹ Table 2 reports summary statistics of the posterior distributions of the model parameters. The first column reports estimates for pooled dyads, the second for colonial dyads (β^C), and the third for non-colonial dyads (β^N). Cell entries are means of posterior distributions along with 95% central credible intervals. These estimates indicate the estimated marginal changes in Y_{ijt}^* in response to changes in observable variables x_{ijt} .³² Interestingly, there appear to be several important differences between

²⁹See Appendix for the distributions of these variables for colonial and non-colonial dyads. We also report test statistics comparing their distributions for colonial and non-colonial samples. Results suggest that there are substantial differences between the two groups for *all* the variables, except for the Cold War dummy and Multilateral Aid.

³⁰As Wooldridge (2002: 517–520) points out, there are two alternative interpretations of a Tobit model. In the first, observed zeros are assumed to be censored; we simply could not observe the true (positive) values of our outcome variable for these observations. This is clearly not the case here. Any positive aid would be observed as such, so our zeros are indeed zeros. We thus adopt the second interpretation, called “corner solution model,” that assumes actors’ optimal choices are indeed the corner solution, $Y = 0$, for these observations. In this interpretation, the goal is to characterize features of the distribution of Y , such as $E(Y)$, $\Pr(Y > 0)$, or $E(Y|Y > 0)$, but not the distribution of Y^* itself.

³¹For all models and parameters, we monitor the \hat{R} statistic and find no signs of non-convergence.

³²Of course, in non-linear models such as Tobit, these marginal effects of x_{ijt} on Y_{ijt}^* themselves are usually not of substantive interests.

Table 2. Bayesian Mixed-Effects Tobit Models of Bilateral Foreign Aid

	Without controls			With controls		
	Pooled	Colonial	Non-colonial	Pooled	Colonial	Non-colonial
Colony	4.49 [4.31; 4.69]			2.94 [2.75; 3.13]		
Donor Resource	-0.08 [-0.20; 0.05]	3.27 [2.72; 3.84]	-0.27 [-0.40; -0.13]	-0.07 [-0.19; 0.05]	4.34 [3.75; 4.97]	-0.18 [-0.31; -0.06]
Recipient Resource	1.41 [1.12; 1.67]	1.02 [0.11; 1.96]	1.49 [1.17; 1.78]	0.78 [0.34; 1.20]	1.65 [0.49; 2.73]	0.61 [0.19; 1.06]
Recipient Resource ²	-0.11 [-0.12; -0.09]	-0.14 [-0.20; -0.08]	-0.11 [-0.13; -0.09]	-0.07 [-0.10; -0.05]	-0.16 [-0.23; -0.09]	-0.06 [-0.08; -0.03]
Recipient Population	1.47 [1.22; 1.69]	1.44 [1.10; 1.79]	1.49 [1.27; 1.70]	0.92 [0.71; 1.13]	0.61 [0.28; 0.92]	0.93 [0.69; 1.14]
Recipient W = 0.25	0.08 [-0.08; 0.24]	0.36 [-0.17; 0.88]	0.08 [-0.09; 0.25]	-0.03 [-0.19; 0.13]	0.14 [-0.32; 0.64]	-0.04 [-0.20; 0.12]
Recipient W = 0.50	-0.55 [-0.72; -0.41]	-0.40 [-0.91; 0.14]	-0.56 [-0.72; -0.38]	-0.00 [-0.17; 0.18]	-0.23 [-0.75; 0.28]	0.01 [-0.17; 0.20]
Recipient W = 0.75	0.21 [0.06; 0.37]	1.38 [0.85; 1.93]	0.13 [-0.03; 0.28]	0.36 [0.20; 0.52]	1.03 [0.53; 1.56]	0.30 [0.14; 0.48]
Recipient W = 1	0.16 [-0.12; 0.45]	2.44 [1.51; 3.35]	0.01 [-0.28; 0.29]	0.48 [0.19; 0.79]	1.68 [0.81; 2.59]	0.37 [0.07; 0.67]
Cold War	-0.37 [-0.52; -0.20]	-1.51 [-2.07; -0.94]	-0.28 [-0.45; -0.11]	0.06 [-0.11; 0.23]	-0.14 [-0.68; 0.41]	0.06 [-0.11; 0.23]
Distance	-2.23 [-2.33; -2.14]	-0.57 [-1.83; 0.56]	-2.23 [-2.33; -2.13]	-0.99 [-1.12; -0.87]	0.53 [-0.34; 1.44]	-1.05 [-1.18; -0.92]
Multilateral Aid				0.42 [0.38; 0.47]	0.52 [0.37; 0.67]	0.42 [0.37; 0.47]
Trade				0.68 [0.63; 0.73]	0.60 [0.37; 0.84]	0.63 [0.59; 0.68]
Alignment				-1.09 [-1.65; -0.47]	-3.22 [-5.85; -0.55]	-0.98 [-1.63; -0.37]
Alignment ²				-0.75 [-1.68; 0.15]	9.31 [0.40; 18.27]	-0.84 [-1.70; 0.04]
Time	2.02	-0.06	2.15	1.01	0.86	0.99

(Continued)



Table 2. (Continued).

	Without controls			With controls		
	Pooled	Colonial	Non-colonial	Pooled	Colonial	Non-colonial
Time ²	[1.89; 2.14] - 1.02	[-0.45; 0.31] - 0.84	[2.02; 2.28] - 1.06	[0.86; 1.17] - 0.24	[0.36; 1.39] - 0.23	[0.83; 1.14] - 0.25
Time ³	[-1.08; -0.96] 0.30	[-1.04; -0.64] 0.42	[-1.12; -1.00] 0.29	[-0.29; -0.20] - 0.12	[-0.36; -0.09] - 0.28	[-0.29; -0.21] - 0.10
Intercept	[0.25; 0.35] 14.27	[0.26; 0.59] - 23.32	[0.24; 0.34] 15.81	[-0.17; -0.07] 5.95	[-0.45; -0.11] - 52.47	[-0.15; -0.04] 8.13
η_{ϵ}^2	[11.20; 17.21] 17.29	[-34.49; -10.67] 8.528	[12.97; 18.78] 17.41	[2.92; 9.02] 10.61	[-63.80; -40.17] 4.952	[4.71; 11.19] 10.73
η_D^2	[17.02; 17.52] 24.24	[7.97; 9.08] 9.33	[17.16; 17.68] 27.29	[10.4; 10.77] 16.67	[4.59; 5.32] 21.39	[10.55; 10.94] 18.8
η_R^2	[11.34; 41.07] 5.92	[0.006766; 24.97] 4.70	[13.25; 45.78] 5.97	[7.11; 27.83] 4.79	[1.98; 58.32] 2.30	[8.43; 32.88] 4.88
Observations	[4.32; 7.49] 81,144	[3.02; 6.64] 2,659	[4.47; 7.43] 78,485	[3.54; 6.16] 44,916	[1.30; 3.42] 1,781	[3.60; 6.33] 43,135

95% credible interval in bracket.

colonial and non-colonial dyads in terms of how donors respond to changes in the values of observable covariates. For example, donor resources are positively associated with aid in colonial dyads, whereas the relationship is negative in non-colonial dyads.

To see how these differences in *saliency* compare with the differences in *observables*, we apply the decomposition method. Before proceeding, however, we need to briefly revisit Equation (3). We derived it using a linear regression to demonstrate the intuition behind the decomposition idea. However, since we are working with a Tobit model, we need to introduce the non-linear generalization of Equation (3) proposed by Fairlie (2005):

$$G = \left\{ \sum_{k=1}^{n^C} \frac{F(X_k^C \hat{\beta}^N)}{n^C} - \sum_{k=1}^{n^N} \frac{F(X_k^N \hat{\beta}^N)}{n^N} \right\} + \left\{ \sum_{k=1}^{n^C} \frac{F(X_k^C \hat{\beta}^C)}{n^C} - \sum_{k=1}^{n^C} \frac{F(X_k^C \hat{\beta}^N)}{n^C} \right\}. \quad (5)$$

The first component (inside the first curly brackets) is the portion of the gap attributable to *observable* differences, and the second component (inside the second curly brackets) is the portion attributable to *saliency* differences. In this equation, X_k^g is a row vector of covariates for the k th observation in group g with $g \in \{C, N\}$, $\hat{\beta}^g$ is a vector of coefficients estimated separately for each group g , and n^g is the number of observations in each sample. $F(\cdot)$ is a function that converts the linear predictor ($X_k^g \hat{\beta}^g$) into a quantity of interest, such as $E(Y)$, $\Pr(Y > 0)$, or $E(Y|Y > 0)$.³³

As we adopt the corner-solution interpretation of Tobit models, there are three quantities of interest. We can obtain each by replacing $F(\cdot)$ in Equation (5) with one of the following. The first quantity of interest is the expected value of Y_{ijt} , calculated as,³⁴

$$E(Y_{ijt}) = \Phi \left(\frac{x_{ijt} \hat{\beta}}{\hat{\eta}} \right) (x_{ijt} \hat{\beta} + \hat{\eta} \hat{\lambda}), \quad (6)$$

where $\hat{\eta} = \sqrt{\hat{\eta}_\epsilon^2 + \hat{\eta}_R^2 + \hat{\eta}_D^2}$ is the square root of the estimated total variance, $\hat{\lambda} = \frac{\phi(x_{ijt} \hat{\beta} / \hat{\eta})}{\Phi(x_{ijt} \hat{\beta} / \hat{\eta})}$ the estimated inverse Mills ratio, $\Phi(\cdot)$ the standard Normal distribution function, and $\phi(\cdot)$ the standard Normal density function. This is the (unconditional) expected value of aid flows given values of x_{ijt} implied by our Tobit model. As Equation (6) makes clear, this quantity is composed of two parts: the first representing the probability of $Y_{ijt} > 0$, and

³³Technically, it is necessary for the two groups to have the same number of observations. Following convention, this is accomplished by sampling observations from the group with the larger number of observations in the data to match the number of observations in the smaller.

³⁴For the following results, see Wooldridge (2002: Chapter: 16).

the second the conditional predicted value of Y_{ijt} given $Y_{ijt} > 0$. These two components of Equation (6) are our second and third quantities of interest³⁵:

$$\Pr(Y_{ijt} > 0) = \Phi\left(\frac{x_{ijt}\hat{\beta}}{\hat{\eta}}\right) \quad (7)$$

$$E(Y_{ijt} | Y_{ijt} > 0) = x_{ijt}\hat{\beta} + \hat{\eta}\hat{\lambda}. \quad (8)$$

The results of the non-linear decomposition analysis are shown on the left hand side in Figure 2. We report the percentage of the gap in $E(Y)$, $\Pr(Y > 0)$, and $E(Y|Y > 0)$ attributable to differences in *observable* covariates (darker gray) and that attributable to differences in *saliency* (lighter gray). The percentage *observable* is calculated by dividing the first component in Equation (5) by the total gap, G . Median posterior estimates (black dots) are obtained from using 1,000 posterior draws; 95% credible intervals (horizontal bars associated with black dots) are constructed by taking the 2.5th and 97.5th percentile values of the posterior distribution of the target quantity.

The results strikingly favor the behavioral, *saliency-based* arguments as they account for 98–100% of the pro-colony bias. Specifically, the estimates of the *saliency* effect are 100.1% with the 95% credible interval of [98.3; 101.5] for $E(Y)$, 98.3% with the 95% credible interval of [95.9; 99.9] for $\Pr(Y > 0)$,

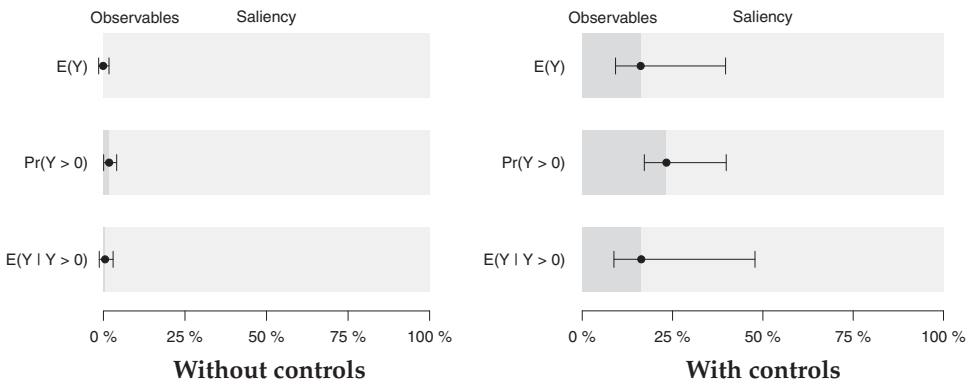


Figure 2. Decomposition Results

Notes. This figure shows the results of the non-linear decomposition analysis using Fairlie's (2005) formula for the three quantities of interests $E(Y)$, $\Pr(Y > 0)$, and $E(Y|Y > 0)$. In each panel, black circles show the median estimate of the percentage attributable to differences in *observables*, and horizontal lines show 95% central credible intervals.

³⁵These last two quantities are of interest to foreign aid scholars (Fariss 2010; Neumayer 2005). This is motivated by the so-called gate keeping step that occurs in the US foreign aid process: decision makers draw a list of who is eligible for US aid, and then decide how much aid each eligible state gets.

and 99.5% with the 95% credible interval of [97.0; 101.3] for $E(Y|Y>0)$. The remaining roughly 0–2 percentage-points are attributable to difference in *observables* that arose from colonization. That is, the variables that the new political economy of colonization literature emphasizes explain barely anything of the pro-colony bias in aid allocation.

As a robustness check, we expand the list of included covariates. Following Bueno de Mesquita and Smith (2009), we add a few more variables not implied by the theoretical models, the idea being to see whether the inclusion of several other mainstays of the empirical aid allocation regressions challenge our findings. To this end, we also use the logarithm of bilateral trade (known to be affected by colonial history), the volume of multilateral aid (as a proxy of internationally perceived so-called recipient need), and the security alignment (and its square) between the countries. Data come again from Bueno de Mesquita and Smith (2009). The model parameter estimates and associated decomposition results are shown in the right sides of Table 2 and Figure 2, respectively. These auxiliary variables increase the extent to which *observables* explain the pro-colony bias, although the *saliency* effect still dominates. The estimated *observables* effect ranges between 16 and 23% across our three different aid outcomes.³⁶

We repeat the analyses using an alternative specification of recipient resources as an additional robustness check. Bueno de Mesquita and Smith (2009) argue that the size of the recipient population, which is a constituent element of the governmental resources measure, is also an appropriate operationalization of *saliency*. In order to show that the resources variable does not just pick up *saliency* via its population component, they repeat the estimation by including all the constituent elements of the resources variable (population, GDP per capita, government's share of the economy) and their respective squares. Results shown in the Appendix confirm that the *saliency* effect still dominates.

Finally, we also replicate the analyses for various subsets of our data. First, we drop all recipients that were never colonized by any other state, rendering recipients more homogeneous between colonial and non-colonial dyads. Second, as some research suggests that the end of the Cold War brought with it changes in donors' preferences (Bearce and Tirone 2010; Bermeo 2016; Fleck and Kilby 2010), we subset the data and separately study different time periods. Third, we also consider whether particular former colonizers (France and United Kingdom) display varying extents of *behavioral* effects. Fourth, we check whether taking the logarithm of foreign aid

³⁶Specifically, the estimated *observables* effect is 16.2% [9.2; 39.7] for $E(Y)$, 23.3% [17.2; 39.9] for $\Pr(Y>0)$, and 16.3% [8.8; 47.8] for $E(Y|Y>0)$. Just as in the article by Bueno de Mesquita and Smith (2009), the inclusion of the additional covariates generates many missing values. Trade data before 1975 are largely missing and numerous recipients have no records for multilateral aid. Therefore, we want to verify that the change in sample composition is not driving this smaller *saliency* effect. We re-estimated the original model specification on this smaller data set and it turns out that the *saliency* component actually grows even larger ($\approx 105\%$) in that sample.

skews our results. In the Appendix, we show that the *saliency* effect dominates just as well in all of these analyses.

Conclusions

Our decomposition analyses allow us to assess the relative merit of the *saliency* explanation for the colony bias against the explanation focusing on differences in wealth and political institutions (that is, the *observables* effect). Tying these estimates back to our foundational theoretical model (Bueno de Mesquita and Smith 2009), we can say that colonial bias resides predominantly with the group of people to which (democratic) donor governments are beholden. Activists wishing to undo the colonial bias should target people in the countries of former colonizers. Had our results shown that the *observables* effect dominates recipients' wealth and institutions should have been activists' targets. As the latter would seem infeasible to do, our results suggest that there are venues for the development community to effect change.

The extent to which the *saliency* effect dominates is remarkable: notwithstanding the huge effects of colonization on today's recipients' wealth and institutions, they are actually transcended by their legacy on the former colonizer in the context of foreign aid. That is, today's preferences and behaviors by constituents in donor countries have deep historical roots (Acharya, Blackwell, and Sen 2016; Spolaore and Wacziarg 2013). Many states in the international system that share a legacy of colonialism are treated differently by some of the richest and most influential states because people in these states care more. Understanding these dramatic effects and the differential *saliency* in the context of a theoretical model of foreign aid opens up many opportunities for future research.

First, our results suggest an under-explored mechanism for how colonial history may have shaped today's wealth. Previous studies of colonization have focused on transfers of human capital, political and legal institutions, and technology (Spolaore et al. 2013), with foreign aid largely absent in that literature. The presumable and understandable reason for the lack of attention to the aid channel is that the common wisdom used to suggest that a politically motivated deployment of aid renders it ineffective for developmental purposes (Bearce and Tirone 2010; Easterly 2009). However, scholars have recently arrived at the view that there is actually a wide range of conditions that enable aid to be effective for economic growth and even for institutional development (see Wright and Winters 2010).

Many studies demonstrate that (some) former colonies nowadays are more democratic, and it is well known that former colonizers provide them with more aid (for example Alesina and Dollar 2000).³⁷ Importantly, it turns out

³⁷In light of our findings, we can say that they receive more aid for donor-related *saliency* reasons independent of *observable* differences in correlates of aid.

that these former colonizers happen to be democracies today, as much recent work suggests that aid *to* democracies (Dutta, Leeson, and Williamson 2013; Kosack 2003; Kosack and Tobin 2006) and *from* democracies (Bermeo 2011; Kilby and Dreher 2010) works in spurring growth and growth-conducive institutions. As our results show that aid flows more abundantly in exactly such cases, it seems that a colonial history generates a confluence of factors in which aid might function for development purposes. With that, the positive long-run effect of colonization on prosperity may in part be driven by aid policies of the last several decades. While much recent research has considered the cultural, symbolic, and social mechanisms by which colonization long ago affects prosperity today (Spolaore and Wacziarg 2013), we propose looking at how rich countries' more recent policies toward states can explain prosperity today. Given the aforementioned and our research, we believe that colonial effects on wealth today may have been mediated by foreign aid patterns.³⁸ We see that as an exciting opportunity for future research.

Second, several scholars demonstrate that aid arriving as part of an aid-for-policy deal is ineffective, perhaps detrimental, for development goals (Bearce and Tirone 2010; Bermeo 2011; Dunning 2004; Girod 2012). In statistical analyses, a colonial past is one measure for when such policy concessions play a big role in the provision of aid. However, the inferential issue we diagnosed in this article suggests that caution is warranted. If the pro-colony bias were fully reflective of *observable* differences between colonies and non-colonies, then donors would not act differently toward former colonies and thus the operationalization would not be appropriate in these studies. Since we find that the colony indicator captures behavioral, *saliency* effects crucial for these arguments, the use of the colonial dummy is justified here. However, the broader point is that theoretical arguments that rely on assumptions about donors acting differently in some cases require that the chosen operationalization captures behavioral and not *observable* differences. Therefore, it remains unclear whether other frequent donor-intent operationalizations that are often under the so-called donor interests headline – such as troop deployments, UN voting similarity, and Cold War alliances – capture the behavioral differences assumed by scholars. A revisiting of these results using a decomposition approach could bolster the substantive implications from such studies.

Third, while we view our findings about the *saliency*-based interpretation as an important initial step toward understanding colonial effects on foreign aid, we recognize that the specific contents of *saliency* remain unexplained. We need further research to directly identify what kind of policy changes donor-side publics appreciate more from former colonies. Toward this end, we can begin by gleaning some insights by revisiting our alternative, less

³⁸Other candidate phenomena for such an examination include other well-known colonial biases, such as civil war interventions, visa restrictions, etc.

true-to-the-theory model specifications (the right half of columns in Table 2 and in Table A.3 in the Appendix). After we include in our decomposition model trade between donors and recipients, security-related alignments, and the extent of so-called recipient need as perceived by the global development community, our estimate of the *saliency* effect shrinks by about 11--18 percentage-points (from about 95%). That is, *observable* differences between colonial and non-colonial dyads in terms of trade, security-related interest alignment, and developmental concerns may account for 10--20% of the difference in aid between colonial and non-colonial dyads.³⁹ This implies that in the sparser model specification, some bought policies concern trade, security, and poverty. This is not surprising as these variables are staples in the aid literature (Milner and Tingley 2013b; Neumayer 2005). However, even after accounting for these three prominent policies, the *saliency* effect swamps the *observables* effect, and much of its content remains unexplained. Presumably, aid dealings are probably rather idiosyncratic in their detailed content so that the broad categorization of trade, security, and poverty may be too crude to capture exactly what donors seek.

This suggests that even though we understand correlational patterns of aid flows well, scholars need to develop richer accounts of donors' preferences over various foreign aid projects and their intended policy changes in the recipients. Some recent work highlights the influence of different donor country actors. These include aid contractors (Fleck and Kilby 2001; McLean 2015), holders of capital (Milner and Tingley 2010), migrants (Bermeo et al. 2015; Lahiri and Raimondos-Møller 2000), and highly educated bureaucrats (Lumsdaine 1993); Milner and Tingley (2015) explore a great variety of other actors as well. While there has been more research into people's preferences on aid (see for example Milner and Tingley 2013a), only limited efforts have been made to specify what these other actors expect to gain from supporting aid to *particular* recipients. For an effort toward this end, see Heinrich et al. (2018).

While the focus here is on explaining the pro-colony bias, a similar lacuna exists for the other mainstay variables that purport to capture so-called donor interests, such as foreign direct investment, exports, distance, and military alliance between donors and recipients. Our results suggest that much explanatory power is to be had by considering donor-side constituencies whose interests are captured by each respective variable.

Last, it is worth revisiting the studies showing colonial effects on treaty formation, visa restrictions, and civil conflict intervention, which we cited at the beginning. The same issues that we analyzed here in foreign aid allocation are at play in these as well. Applying the decomposition technique to these policy outcomes would reveal the extent to which colonial bias in each foreign

³⁹It is important to reiterate that simply increasing the number of observable covariates as right-hand-side variables in a standard regression model (that is, without the decomposition method) is not sufficient to account for the colonial bias. This is because of the identification issue we illustrated with the synthetic data exercise.

policy instrument reflects different behaviors of former colonizers rather than lingering effects of colonization on social, economic, and political institutions. Such an analysis would provide a greater depth to existing knowledge.

Acknowledgments

We are grateful for comments from Navin Bapat, Sam Bell, Patrick Brandt, Rob Carroll, Mark Crescenzi, Matt DiGiuseppe, Brad Epperly, Chelsea Estancona, Yoshi Kobayashi, Amanda Licht, Pat Lown, Carla Martinez Machain, Tim Peterson, Lindsay Reid, Tom Scotto, Dan Tirone, and several anonymous reviewers. Olivia Morris provided research assistance. Previous versions were presented at the IR workshop at the University of North Carolina (2014), the 4th Annual General Conference of The European Political Science Association (2014), the 2nd Annual Meeting of the Asian Political Methodology Conference (2015), and at Kansas State University (2017).

References

- Acemoglu, Daron, Simon Johnson, and James A. Robinson. (2002) Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution. *The Quarterly Journal of Economics* 117(4):1231–1294. doi:[10.1162/003355302320935025](https://doi.org/10.1162/003355302320935025)
- Acharya, Avidit, Matthew Blackwell, and Maya Sen. (2016) The Political Legacy of American Slavery. *The Journal of Politics* 78(3):621–641. doi:[10.1086/686631](https://doi.org/10.1086/686631)
- Alesina, Alberto, and David Dollar. (2000) Who Gives Foreign Aid to Whom and Why? *Journal of Economic Growth* 5(1):33–63. doi:[10.1023/A:1009874203400](https://doi.org/10.1023/A:1009874203400)
- Ambrose, Stephen E., and Douglas G. Brinkley. (2011) *Rise to Globalism: American Foreign Policy since 1938*, 9th ed. New York: Penguin.
- Anwar, Mumtaz, and Katharina Michaelowa. (2006) The Political Economy of US Aid to Pakistan. *Review of Development Economics* 10(2):195–209. doi:[10.1111/rode.2006.10.issue-2](https://doi.org/10.1111/rode.2006.10.issue-2)
- Bearce, David H., and Daniel C. Tirone. (2010) Foreign Aid Effectiveness and the Strategic Goals of Donor Governments. *The Journal of Politics* 72(3):837–851. doi:[10.1017/S0022381610000204](https://doi.org/10.1017/S0022381610000204)
- Bermeo, Sarah Blodgett. (2011) Foreign Aid and Regime Change: A Role for Donor Intent. *World Development* 39(11):2021–2031. doi:[10.1016/j.worlddev.2011.07.019](https://doi.org/10.1016/j.worlddev.2011.07.019)
- Bermeo, Sarah Blodgett. (2016) Aid Is Not Oil: Donor Utility, Heterogeneous Aid, and the Aid-Democratization Relationship. *International Organization* 70(1):1–32. doi:[10.1017/S0020818315000296](https://doi.org/10.1017/S0020818315000296)
- Bermeo, Sarah Blodgett, and David Leblang. (2015) Migration and Foreign Aid. *International Organization* 69(3):627–657. doi:[10.1017/S0020818315000119](https://doi.org/10.1017/S0020818315000119)
- Berthélemy, Jean-Claude, and Ariane Tichit. (2004) Bilateral Donors' Aid Allocation Decisions: A Three-Dimensional Panel Analysis. *International Review of Economics & Finance* 13(3):253–274. doi:[10.1016/j.iref.2003.11.004](https://doi.org/10.1016/j.iref.2003.11.004)
- Blinder, Alan S. (1973) Wage Discrimination: Reduced Form and Structural Estimates. *Journal of Human Resources* 8(4):436–455. doi:[10.2307/144855](https://doi.org/10.2307/144855)
- Bobba, Matteo, and Andrew Powell. (2007) Aid Effectiveness: Politics Matters. InterAmerican Development Bank Working Paper. doi:[10.1094/PDIS-91-4-0467B](https://doi.org/10.1094/PDIS-91-4-0467B)
- Bruhn, Miriam, and Francisco A. Gallego. (2012) Good, Bad, and Ugly Colonial Activities: Do They Matter for Economic Development? *Review of Economics and Statistics* 94(2):433–461. doi:[10.1162/REST_a_00218](https://doi.org/10.1162/REST_a_00218)

- Bueno de Mesquita, Bruce, and Alastair Smith. (2009) A Political Economy of Aid. *International Organization* 63(2):309–340. doi:[10.1017/S0020818309090109](https://doi.org/10.1017/S0020818309090109)
- Carey, Sabine C. (2007) European Aid: Human Rights Versus Bureaucratic Inertia? *Journal of Peace Research* 44(4):447–464. doi:[10.1177/0022343307078938](https://doi.org/10.1177/0022343307078938)
- Chacha, Mwita, and Szymon Stojek. (2016) Colonial Ties and Civil Conflict Intervention: Clarifying the Causal Mechanisms. *Conflict Management and Peace Science* 36(1):42–62.
- Chiba, Daina, Carla Martinez Machain, and William Reed. (2014) Major Powers and Militarized Conflict. *Journal of Conflict Resolution* 58(6):976–1002. doi:[10.1177/0022002713487318](https://doi.org/10.1177/0022002713487318)
- Conrad, Justin, and Daniel Milton. (2013) Unpacking the Connection between Terror and Islam. *Studies in Conflict & Terrorism* 36(4):315–336. doi:[10.1080/1057610X.2013.763600](https://doi.org/10.1080/1057610X.2013.763600)
- Dow, Jay K. (2009) Gender Differences in Political Knowledge: Distinguishing Characteristics-Based and Returns-Based Differences. *Political Behavior* 31(1):117–136. doi:[10.1007/s11109-008-9059-8](https://doi.org/10.1007/s11109-008-9059-8)
- Dudley, Leonard, and Claude Montmarquette. (1976) A Model of the Supply of Bilateral Foreign Aid. *The American Economic Review* 66(1):132–142.
- Dunning, Thad. (2004) Conditioning the Effects of Aid: Cold War Politics, Donor Credibility, and Democracy in Africa. *International Organization* 58(2):409–423. doi:[10.1017/S0020818304582073](https://doi.org/10.1017/S0020818304582073)
- Dutta, Nabamita, Peter T. Leeson, and Claudia R. Williamson. (2013) The Amplification Effect: Foreign Aid’s Impact on Political Institutions. *Kyklos* 66(2):208–228. doi:[10.1111/kykl.12018](https://doi.org/10.1111/kykl.12018)
- Easterly, William. (2009) Can the West Save Africa? *Journal of Economic Literature* 47(2):373–447. doi:[10.1257/jel.47.2.373](https://doi.org/10.1257/jel.47.2.373)
- Fairlie, Robert W. (2005) An Extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models. *Journal of Economic and Social Measurement* 30(4):305–316. doi:[10.3233/JEM-2005-0259](https://doi.org/10.3233/JEM-2005-0259)
- Fariss, Christopher J. (2010) The Strategic Substitution of United States Foreign Aid. *Foreign Policy Analysis* 6(2):107–131. doi:[10.1111/j.1743-8594.2010.0104.x](https://doi.org/10.1111/j.1743-8594.2010.0104.x)
- Fleck, Robert K., and Christopher Kilby. (2001) Foreign Aid and Domestic Politics: Voting in Congress and the Allocation of USAID Contracts across Congressional Districts. *Southern Economic Journal* 67(3):598–617. doi:[10.2307/1061453](https://doi.org/10.2307/1061453)
- Fleck, Robert K., and Christopher Kilby. (2010) Changing Aid Regimes? US Foreign Aid from the Cold War to the War on Terror. *Journal of Development Economics* 91(2):185–197. doi:[10.1016/j.jdeveco.2009.09.011](https://doi.org/10.1016/j.jdeveco.2009.09.011)
- Gartzke, Erik, and Dominic Rohner. (2011) The Political Economy of Imperialism, Decolonization and Development. *British Journal of Political Science* 41(3):525–556. doi:[10.1017/S0007123410000232](https://doi.org/10.1017/S0007123410000232)
- Girod, Desha M. (2012) Effective Foreign Aid Following Civil War: The Nonstrategic-Desperation Hypothesis. *American Journal of Political Science* 56(1):188–201. doi:[10.1111/j.1540-5907.2011.00552.x](https://doi.org/10.1111/j.1540-5907.2011.00552.x)
- Hadfield, Jarrod D. (2010) MCMC Methods for Multi-Response Generalized Linear Mixed Models: The MCMCglmm R Package. *Journal of Statistical Software* 33(2):1–22. doi:[10.18637/jss.v033.i02](https://doi.org/10.18637/jss.v033.i02)
- Hariri, Jacob Gerner. (2012) The Autocratic Legacy of Early Statehood. *American Political Science Review* 106(3):471–494. doi:[10.1017/S0003055412000238](https://doi.org/10.1017/S0003055412000238)
- Heinrich, Tobias. (2013) When Is Foreign Aid Selfish, When Is It Selfless? *The Journal of Politics* 75(2):422–435. doi:[10.1017/S002238161300011X](https://doi.org/10.1017/S002238161300011X)

- Heinrich, Tobias, Yoshiharu Kobayashi, and Leah Long. (2018) Voters Get What They Want (When They Pay Attention): Human Rights, Policy Benefits, and Foreign Aid. *International Studies Quarterly* 62(1):195–207. doi:10.1093/isq/sqx081
- Kilby, Christopher, and Axel Dreher. (2010) The Impact of Aid on Growth Revisited: Do Donor Motives Matter? *Economic Letters* 107(3):338–340. doi:10.1016/j.econlet.2010.02.015
- Kim, Keuntae, and Joel E. Cohen. (2010) Determinants of International Migration Flows to and from Industrialized Countries: A Panel Data Approach beyond Gravity. *International Migration Review* 44(4):899–932. doi:10.1111/j.1747-7379.2010.00830.x
- Kosack, Stephen. (2003) Effective Aid: How Democracy Allows Development Aid to Improve the Quality of Life. *World Development* 31(1):1–22. doi:10.1016/S0305-750X(02)00177-8
- Kosack, Stephen, and Jennifer Tobin. (2006) Funding Self-Sustaining Development: The Role of Aid, FDI and Government in Economic Success. *International Organization* 60(1):205–243. doi:10.1017/S0020818306060097
- Lahiri, Sajal, and Raimondos-Møller. Pascalis. (2000) Lobbying by Ethnic Groups and Aid Allocation. *The Economic Journal* 110(462):62–79. doi:10.1111/1468-0297.00521
- Lee, Alexander, and Kenneth A. Schultz. (2012) Comparing British and French Colonial Legacies: A Discontinuity Analysis of Cameroon. *Quarterly Journal of Political Science* 7(4):365–410. doi:10.1561/100.00011022
- Lumsdaine, David H. (1993) *Moral Vision in International Politics: The Foreign Aid Regime, 1949–1989*. Princeton: Princeton University Press.
- MacKenzie, John M. (1984) *Propaganda and Empire: The Manipulation of British Public Opinion (1880–1960)*. Manchester, UK: Manchester University Press.
- Maizels, Alfred, and Machiko K. Nissanke. (1984) Motivations for Aid to Developing Countries. *World Development* 12(9):879–900. doi:10.1016/0305-750X(84)90046-9
- Mansfield, Edward D., Helen V. Milner, and B. Peter Rosendorff. (2002) Why Democracies Cooperate More: Electoral Control and International Trade Agreements. *International Organization* 56(3):477–513. doi:10.1162/002081802760199863
- Mansfield, Edward D., and Eric Reinhardt. (2003) Multilateral Determinants of Regionalism: The Effects of GATT/WTO on the Formation of Preferential Trading Arrangements. *International Organization* 57(4):829–862. doi:10.1017/S0020818303574069
- McKinlay, Robert D., and Richard Little. (1977) A Foreign Policy Model of US Bilateral Aid Allocation. *World Politics* 30(1):58–86. doi:10.2307/2010075
- McLean, Elena V. (2015) Multilateral Aid and Domestic Economic Interests. *International Organization* 69(1):97–130. doi:10.1017/S0020818314000289
- Milner, Helen V., and Dustin Tingley. (2010) The Political Economy of US Foreign Aid: American Legislators and the Domestic Politics of Aid. *Economics & Politics* 22(2):200–232.
- Milner, Helen V., and Dustin Tingley. (2013a) Public Opinion and Foreign Aid: A Review Essay. *International Interactions* 39(3):389–401. doi:10.1080/03050629.2013.784090
- Milner, Helen V., and Dustin Tingley, eds. (2013b) *The Geopolitics of Foreign Aid*. Cheltenham, UK: Edward Elgar.
- Milner, Helen V., and Dustin Tingley. (2015) *Sailing the Water's Edge: The Domestic Politics of American Foreign Policy*. Princeton: Princeton University Press.
- Morgenthau, Hans. (1962) A Political Theory of Foreign Aid. *American Political Science Review* 56(2):301–309. doi:10.2307/1952366
- Neumayer, Eric. (2003) Do Human Rights Matter in Bilateral Aid Allocation? A Quantitative Analysis of 21 Donor Countries. *Social Science Quarterly* 84(3):650–666. doi:10.1111/ssqu.2003.84.issue-3
- Neumayer, Eric. (2005) *The Pattern of Aid Giving*. London, UK: Routledge.

- Neumayer, Eric. (2006) Unequal Access to Foreign Spaces: How States Use Visa Restrictions to Regulate Mobility in a Globalized World. *Transactions of the Institute of British Geographers* 31(1):72–84. doi:[10.1111/tran.2006.31.issue-1](https://doi.org/10.1111/tran.2006.31.issue-1)
- Niksch, Larry. (2007) Abu Sayyaf: Target of Philippine-U.S. Anti-Terrorism Cooperation. CRS Report for Congress. doi:[10.1094/PDIS-91-4-0467B](https://doi.org/10.1094/PDIS-91-4-0467B)
- Nunn, Nathan. (2009) The Importance of History for Economic Development. *Annual Review of Economics* 1(1):65–92. doi:[10.1146/annurev.economics.050708.143336](https://doi.org/10.1146/annurev.economics.050708.143336)
- Oaxaca, Ronald L. (1971) Male-Female Wage Differentials in Urban Labor Markets. Unpublished Doctoral Dissertation, Department of Economics, Princeton University.
- Oaxaca, Ronald L. (1973) Male-Female Differentials in Urban Labor Markets. *International Economic Review* 14(3):693–709. doi:[10.2307/2525981](https://doi.org/10.2307/2525981)
- Pepinsky, Thomas B. (2015) The New Political Economy of Colonialism. In *Emerging Trends in the Social and Behavioral Sciences: An Interdisciplinary, Searchable, and Linkable Resource*, edited by R. Scott, S. Kosslyn, and M. Buchmann. Hoboken, NJ: John Wiley & Sons, Inc..
- Reed, William, and Daina Chiba. (2010) Decomposing the Relationship between Contiguity and Militarized Conflict. *American Journal of Political Science* 54(1):61–73. doi:[10.1111/ajps.2010.54.issue-1](https://doi.org/10.1111/ajps.2010.54.issue-1)
- Sokoloff, Kenneth L., and Stanley L. Engerman. (2000) History Lessons: Institutions, Factors Endowments, and Paths of Development in the New World. *The Journal of Economic Perspectives* 14(3):217–232. doi:[10.1257/jep.14.3.217](https://doi.org/10.1257/jep.14.3.217)
- Spolaore, Enrico, and Romain Wacziarg. (2013) How Deep are the Roots of Economic Development? *Journal of Economic Literature* 51(2):325–369. doi:[10.1257/jel.51.2.325](https://doi.org/10.1257/jel.51.2.325)
- Ulrick, Shawn W. (2012) The Oaxaca Decomposition Generalized to a Continuous Group Variable. *Economics Letters* 115(1):35–37. doi:[10.1016/j.econlet.2011.11.037](https://doi.org/10.1016/j.econlet.2011.11.037)
- Wooldridge, Jeffrey M. (2002) *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.
- Wright, Joseph, and Matthew Winters. (2010) The Politics of Effective Foreign Aid. *Annual Review of Political Science* 13(1):61–80. doi:[10.1146/annurev.polisci.032708.143524](https://doi.org/10.1146/annurev.polisci.032708.143524)