"Aid for Trade" Effectiveness? Micro-Level Evidence from Nepal.

Samuel Brazys
Johan Elkink[1]

Abstract

This paper considers the extent to which the 'Aid for Trade' (AfT) initiative has been effective in promoting improved export outcomes at the firm level. Specifically, the paper uses geo-referenced data on AfT projects from the AidData database and firm activity from a survey of nearly 150 exporting firms in Nepal to spatially identify impacts of the projects on export performance. We find qualified evidence that proximity to (more) AfT projects improves export performance but that some projects may be more effective than others. These findings are supplemented by interviews with 21 exporting firms. The results suggest that the research approach could be utilized more broadly in order to draw more generalized conclusions about AfT and firm export performance.

[1] School of Politics and International Relations, University College Dublin. Authors welcome comments, suggestions critiques directed to samuel.brazys@ucd.ie. This project was generously supported with funding from AidData, University College Dublin, and the European Union's Horizon 2020 research and innovation programme under grant agreement no. 693609 (GLOBUS). The authors thank Akriti Gupta, Radhika Curumsey and Rajendra Senchurey for excellent research assistance in preparing, conducting, and coding the telephone survey and Surendra Rana for excellent research and translation assistance during the field interviews.

Introduction

Trade has long been hailed as a potential mechanism to bring growth and prosperity to underdeveloped parts of the globe (Krueger 1980, Frankel and Romer 1999). Recent years have seen a renewed effort to utilize trade as an engine of development via an active agenda of 'trade facilitation.' Indeed, trade facilitation featured at the heart of WTO's moribund Doha Development Round and has gained momentum across a broad spectrum of actors as the 'Aid for Trade' (AfT) initiative (Hoekman 2002). The projects dates from at least the 2005 WTO Hong Kong Ministerial but has roots reaching to the 'Trade Related Capacity Building' of the 1996 Singapore Ministerial and even earlier thinking and practice that links trade and development. However, since 2005, AfT has featured not only in the WTO's Doha round, but also in the development strategies of regional (EU) and bilateral donors. The OECD has provided the umbrella framework for both promoting the AfT dialogue and for monitoring commitments and practice.

Since its launch, the initiative has been a major focus of global development efforts accounting for roughly $53 billion of ODA commitments in 2015, some 25% of all ODA commitments[1]. Broadly speaking, AfT is classified into (economic) infrastructure (roads, ports, utilities, etc.), trade capacity assistance (customs and regulatory assistance), "productive capacity"/"trade development" which is often industry or product-specific assistance projects, or trade-related adjustment which addresses issues like lost tariff revenues, loss of preferential market access, or worsening terms of trade (OECD/WTO 2019).[2] As noted by Brazys (2013), these projects often only have an indirect relationship with direct trade activity.

Despite this size of the initiative, it remains unclear if these efforts have 'levelled' the playing field and promoted growth via trade (Langan and Scott 2014). While AfT has featured heavily in policy dialogues, and is based on the intuitive rationale of using export-led growth to promote development, there has been insufficient research into if and how AfT increases the export performance of target countries. In particular, there have been few satisfactory attempts to tie AfT efforts to firm-level performance. As AfT is such a large part of overall ODA efforts,

understanding its effectivities is immensely germane to an assessment of the extent to which trade can promote growth and development.

This paper contributes to filling that gap by piloting a spatial approach to evaluating AfT export effects by combining micro-level, geo-referenced, data on AfT projects from the AidData initiative with over one hundred firm-level surveys and 21 interviews conducted with exporting firms in Nepal. The study uses spatial identification to evaluate three hypotheses: that closer proximity to AfT projects increases the likelihood that exporting firms begin or continue exporting, that proximity to an increased number of AfT projects improves export performance, and that different types of AfT projects have different impacts on firm exporting behavior. The statistical findings are supplemented with interview evidence from current and former exporting firms that provides detailed analysis on how AfT projects did or did not impact their export activities. As a land-locked, poor, and small country surrounded by major exporting states, Nepal offers a 'hard test' of AfT effectiveness.

Nepal is also not an ideal candidate for geo-spatial identification of firm activity given the heavy spatial concentration of exporting firms around the capital, Kathmandu. As such, we consider the manuscript to be primarily descriptive and exploratory. That said, the paper still finds qualified evidence that proximity to *some* AfT projects increases export performance, suggesting that the AfT initiative may be effective in promoting export growth. Using fine-grained data from the AidData project-level database, we identify which projects showed evidence of this effectiveness to glean projects details that could inform expectations in a broader empirical study.

What do we know about AfT Effectiveness?

Studies on the effectiveness of foreign aid have recently taken a 'spatial' turn largely due to the availability of new sources of geo-referenced foreign aid data. Several papers have used this data to investigate the impact of aid on growth by using remotely sensed (satellite) data on night-time lights as a measure of either regional (Dreher and Lohmann 2015) or district level (Civelli et al. 2018) economic performance. However, the full potential of geo-referenced aid data remains hindered by the comparative lack of micro-level, geo-referenced, outcome data. One exception in

the realm of AfT is Brazys et al. (2019) who use geo-referenced data to determine if local Aid for Trade projects attract Foreign Direct Investment (FDI) to the same location. However, to more closely link AfT to firm-level outcomes, this paper uses a novel dataset on firm exporting activity to explore the effectiveness of AfT projects.

While the breadth of the initiative is responsible for AfT's commanding share of ODA, it has also made evaluating AfT effectiveness difficult. Attempts, to date, have been at either the individual project level or the country level. At the country level, a range of studies have found evidence of AfT effectiveness, although it is often qualified by the type of AfT or the donor (Brazys 2010; Cali and te Velde 2011; Helbe et al. 2012; Vijil and Wagner 2012; Bearce et al. 2013; Brazys 2013; Udvari 2014). Cadot et al. (2014) survey the literature finding some evidence that AfT may increase exports, particularly through the development of trade-related infrastructure. However, these studies all base their empirical investigation on aggregate levels of AfT and total country exports, providing only a tenuous causal linkage.

Other studies have focused on the impact of individual AfT projects or initiatives (for examples, see USAID (2014)). These evaluations, often conducted by aid agencies or their consultants, typically focus on the inputs of program performance (resource allocation and disbursement, timelines, etc.) rather than on changes in export performance. This is often due to the fact that projects classified as Aid for Trade end up having only an indirect relationship with trade outcomes. Examples include a German project providing technical assistance to development of the Brunei-Indonesia-Malaysia-Philippine East ASEAN Growth Area (BIMP-EAGA), Japanese loans to support the building of roads, railways, ports and power plants in Indonesia, a US program titled 'Support for Trade Acceleration' (STAR) which provided technical assistance to implement legal reforms to accompany the US-Vietnam bilateral Trade and Investment Framework (TIFA), or a Norwegian project in Timor-Leste to assist in developing a regulatory framework for the latter nation's emerging petroleum industry (see Brazys 2011 for additional examples and USAID (2012) for examples of US-led AfT projects). While all of these projects are 'trade-related', each is only indirectly related to export activity. These projects typify the difficulty in discerning a direct export effect from project level evaluations.

Only a select few investigations have attempted to estimate the firm-level impact of AfT. Several of these are noted by Cadot et al. (2014) who survey the existing AfT impact evaluations. They highlight investigations into the impact of export promotion programs, noting general success. However, they emphasize that more comprehensive, direct, evaluations of exporters would have 'heavy' data requirements, and they are dubious that existing data sources can be made available to researchers due to confidentiality concerns (Cadot et al, 2014: 525).

Theorizing Local Effects of AfT on Firm Performance

Over the past 15 years, scholarship on international trade has turned to firm-level explanations for trade flows. This work has focused on how firm-level productivity determines which firms export and which serve only the domestic market (Bernard et al. 2012). Beyond traditional costs in capital and labor, there are other costs which may impact firm-level productivity. These 'trade costs' may include inputs such as energy costs, transport costs, border costs, and informational costs (Bernard et al. 2006). As noted above, Aid for Trade has been branded across a multitude of different development projects and includes initiatives to reduce the array of different costs firms can face as barriers to export competitiveness.

While previous work has focused on the country-levels effects of AfT, it is apparent that much of the impact on national exports will be realized by facilitating firms to begin, continue and/or increase their exports. Moreover, this effect is often likely to be local. Local infrastructure improvements, say to water or electric supply, will only reduce production costs for those firms in the catchment of that utility. Even transport infrastructure may have (mostly) local effects, reducing local bottlenecks and transit times or allowing for increased cargo volumes. Even institutional or capacity interventions may have disproportionate local effects, as local firms are more likely to be represented at export fairs or customs trainings in their vicinity compared to firms whose representatives might have to travel a greater distance to attend. Similarly, AfT projects that aim to increase vocational skills are also likely to have an effect of improving the skills in the local labor supply, which in turn is likely to be hired by local businesses, leading to a local effect of AfT on productivity.

The nature of AfT projects also suggests that they would largely be non-rivalrous in reducing firm cost structures, assuming that they are locally implemented in response to a needs assessment. A firm that was a beneficiary of the combination of local energy, water, customs training, and vocational training projects could realize productivity gains via a number of different avenues. Even within a project class, there may be several aspects of customs training or export marketing that could be addressed with multiple projects. Accordingly, local effects of AfT should be increasing in the number of local projects, and indeed should be stronger the closer the firm is to the project. As such, we hypothesize that:

Hypothesis 1: An increased number of local AfT projects will increase the performance of local exporting firms.

Hypothesis 2: Increased proximity to a given AfT project will increase the performance of local exporting firms.

While the first hypothesis considers the summative effect of all types of AfT projects, as noted above, there is also considerable evidence that different types of AfT projects may be more or less effective. In particular, the literature has found that trade-related infrastructure seems to be the most promising AfT channel for reducing costs and increasing exports (Vijil and Wagner 2011; Portugal-Perez and Wilson 2012). Physical infrastructure may be the most fruitful channel as reduced transport, energy or other input costs may be more readily identifiable than 'softer' trade facilitation like training or workshops. In addition to project type introducing heterogeneity, there are also strong theoretical and empirical grounds to suspect that different *donors* will have heterogenous project effects. Aid effectiveness has been tied to donor motivation since at least McKinley and Little (1979), and the discussion remains salient today (Bermeo 2017). Brazys (2013) explicitly tested for heterogeneity among OECD donors in AfT effectiveness, distinguishing between 'universal', 'selective' and 'ineffective' donor outcomes. Likewise, various 'rankings' of development assistance agencies also find significant heterogeneity amongst different donors (Easterly and Pfutze 2008; Easterly and Williamson 2011; Knack et al. 2011; Roodman 2012). These findings are underpinned by theoretical micro-foundations that differ in the donor countries: electoral systems, funding mechanisms, staff

recruitment processes, partner-country interactions. However, the empirical results and rankings have little consistency in terms of identifying 'better' donors. This may be partially due to the fact that the rankings are largely based on *ex ante* criteria like overheads, staff ratios and transparency rather than *ex post* measures of effectiveness. Accordingly, the hypothesis below merely posits an *expectation* of heterogeneity, rather than predicted explanations for the heterogeneity. While the latter would ultimately be desirable, such a project goes beyond the theoretical and empirical scopes of this paper.

Hypothesis 3: Different types of AfT projects, from different donors, will have differential impacts on export performance.

A Spatial Approach to Firm-Level AfT Export Effects

Given the theoretical rationale above, this paper utilizes a spatial approach to identify the relationship between AfT projects and firm outcomes. The dependent variables are based on a nation-wide internet and telephone survey of Nepalese exporting firms conducted from March to May of 2016. Firms were identified using the Government of Nepal's Trade and Export Promotion Centre's Export-Import Directory.[3] The directory listed 864 different exporting firms and, as all firms must register, we expect this to be a reasonable picture of the population of formal Nepalese exporting firms. Of these, phone numbers and/or e-mails were identified for 624 firms. Of these 624 firms, 148 were successfully contacted between February and May of 2016, the remaining firms had invalid e-mails or out-of-service phone numbers, did not answer the phone, or the number was a wrong number. Of the 148 firms contacted, 14 declined to take part in the survey, while 3 had duplicate contact information, leaving a working sample of 131 firms, and a response rate of 89% for firms for which we had valid contact details. Both of the outcome variables come from this survey. First, firms were asked if they were currently exporting. 40 firms indicated they had gone out of business or were not exporting. Next, the survey gathered self-reported total export performance over the preceding five years which provides the basis of indicator variables that firm export volumes either *increased*, *decreased* or were *unchanged.* 17 firms indicated their exports had increased, 12 reported exports unchanged, and 75 reported a decrease in exports (13 of whom went out of business and stopped exporting), while the

remaining firms never exported, despite being on the register. The increased and unchanged categories are collapsed below to create a binary indicator that equals one when firms' *export_performance* increased or remained unchanged compared to those firms who saw declines in export or were never able to export.

The primary independent variable is a subset of projects from the AidData Nepal geo-coded, project-level, database (AidData 2015). This database contains a total 21,008 project locations from 1997 to 2013, with over 18,000 of the project locations having a start date later than January 1, 2008, suggesting that most of the aid projects in the data occurred within 8 years of our exporter survey. While an initial review identified over 4,000 'AfT-like' project locations, as noted above, many projects classified as AfT by donors and/or the OECD Creditor Reporting System (CRS) have little, if any, relation to firm export activity. Accordingly, a more detailed review of project descriptions revealed 29 projects at 224 project locations for projects plausibly linked to export activity. We use the 210 project locations to which AidData assigns a precision code of 3 or better. Of these, 24 are at precision code 3 (second-order administrative units (ADM2) – districts), 60 are at precision code 2 ("near"/"in the area of" up to 25km away), and 126 are at precision code one (precisely located) while and it is these we use in the analyses below[4]. These were further classified by sub-function of trade-related infrastructure, capacity building, and trade development.

To develop the first explanatory variable, *AfT_Count*, to evaluate the first hypothesis, the Euclidean distance is calculated from each firm to each AfT project location and the number of projects within a specified distance is counted. There is no *a priori* theoretical rationale for a specific radius other than the notion that projects must be sufficiently close for firms to benefit from their activities. This radius may be different for different types of AfT projects, presumably representatives from a firm could travel a greater distance to attend a training, but a firm needs to be sufficiently close to a new electric sub-station to benefit from an upgraded connection. However, as the level of precision in coding the AidData and the firms is no better than roughly 20km and previous literature that spatially joins aid to outcomes has found effects between 20km and 60 km, we utilize radii from these distances, at 10km intervals, in the specifications below in line with other papers that use spatial-join techniques (Brazys et al. 2017, Isaksson and

Kotsadam 2017). In order to test the second and third hypotheses, we create a dyadic dataset that matches each responding firm to each of the 210 project locations by calculating the distances between each firm and each project location.

Given the firm-level nature of the data, only limited control variables are available. However, sector information is available for the firms. The carpet sector, in particular, experienced a significant downturn during the 2000s, primarily as a result of the Maoist government reforms in 2007. Accordingly, we include a binary indicator if a firm was in the carpeting sector. Finally, as the majority of exporting firms in Nepal are clustered in Kathmandu, we include a distance measure to Kathmandu to account for this spatial artifact. To test hypothesis 1, we employ logistic regressions given the binary nature of our outcome variable. Results are presented in Table 1, below.

Table 1: Export Performance

	20km	30km	40km	50km	60km
AfT_Count	0.138	0.174	0.816*	0.265*	0.123
	(0.97)	(1.40)	(2.03)	(2.01)	(1.64)
Distance_Kathmandu	0.010	0.011†	0.047†	0.018*	0.012*
	(1.43)	(1.76)	(1.90)	(1.99)	(1.98)
Carpet	-0.271	-0.219	-0.373	-0.276	-0.310
	(0.56)	(0.46)	(0.76)	(0.57)	(0.64)
Constant	-2.911†	-3.711*	-14.438*	-6.372*	-4.205*
	(1.71)	(2.11)	(2.22)	(2.48)	(2.31)
N	131	131	131	131	131
Prob > χ^2	0.2912	0.1588	0.0027	0.0244	0.1260

Absolute value of Z score in parentheses. * Significant at 5% level. † Significant at 10% level

The results in Table 1 show qualified support for hypothesis 1. At all distances, an increased number of AfT projects is associated with a higher likelihood of improved firm export performance, and this relationship is statistically significant at the 5% level 40km and 50km radii.[5] It is somewhat surprising to see that this relationship is statistically significant for project counts with larger radii. While some of this result may be driven by the precision level of the geo-coding, it is more likely a result of the fact that of the 131 firms in the sample, 118 are within 40km of the

center of Kathmandu, while 116 are within 10km. This of course means there is very little variation in the AfT project counts for the firms in and around Kathmandu. As the radii of the counts increase, more variation is introduced which may allow for better identification of the spatial effects. Indeed, using counts at 40km is within the range of other studies that have employed this approach.

However, given the concentration of firms near Kathmandu, we explore the descriptive statistics to more closely investigate if the inferential statistics are driven by some particular artefact of the data. Indeed, at the 40km radius, the descriptive findings are suggestive. First, of the 13 firms in the sample more than 40km from the center of Kathmandu, 10 had 2 or 3 AfT projects in the 40km proximity, while the remaining 3 all had 10 projects nearby. Of the 10 firms with fewer projects, only 1 (10%) reported exports that had remained the same or increased over the period. Conversely, all 3 firms that had 10 proximate projects reported export performance had remained steady or improved. Clearly the stark jump in projects (from <=3 to 10) is correlated with a marked improvement in reported firm export performance, although in an admittedly small sample.

Of the 118 firms in or near Kathmandu, 105 had 16 projects in the 40km radius, while 11 were proximate to 17 projects and 2 had 18 within the radius. Of the 16-project firms, 20 (19%) reported export performance that remained constant or improved. At the 17-project level, 4 firms (36%) reported this status, while 1 of the 2 (50%) 18-project firms had the higher level of export performance. Once again, additional projects are associated with an improved ratio of firm export performance. However, even given a constant-returns assumption of additional AfT projects, the change in export performance ratio from the addition of the 17^{th} project is stark.

We next examine our dyadic data to evaluate hypotheses two and three. We use a Bayesian multilevel logistic regression to estimate an intercept and distance coefficient for each of the 29 projects in our database, where the latter account for the proximity of the firm to each project location. Results are presented in figures 1 and 2 below (see Table A1 for the full set of numerical parameter estimates).

Estimations for these figures took place using Hamiltonian Monte Carlo simulations (Betancourt 2017), implemented in Stan (Carpenter et al 2017). The overall model equation is:

$$export_{ip} = \alpha_p + \beta_1 distKathmandu_i + \beta_2 light_i + \beta_3 textile_i + \eta_p distance_{ip},$$

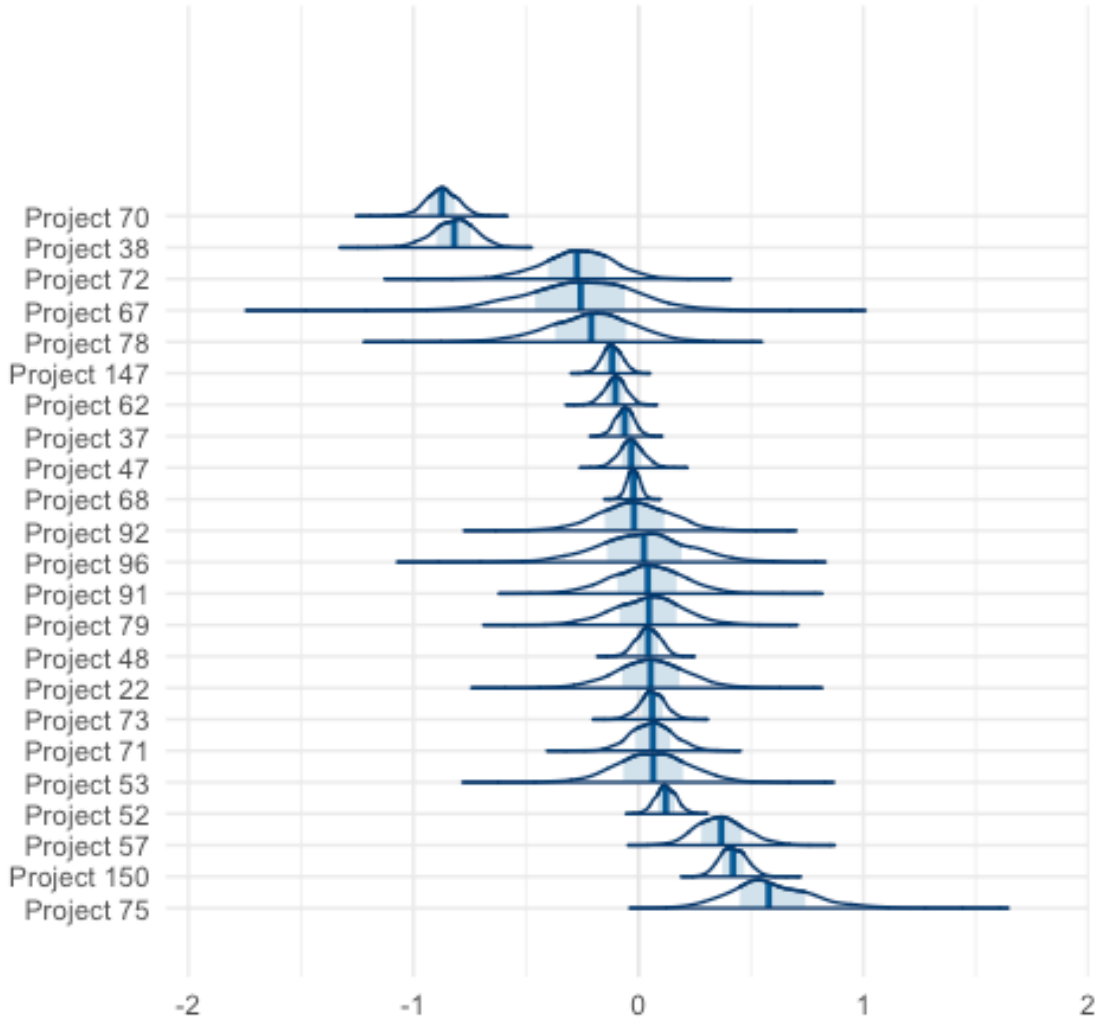
where the impact of project p on firm i is modelled, using random intercepts $\alpha \sim N(\mu_\alpha,\ \sigma_\alpha)$ and random slope $\eta \sim N(\mu_\eta,\ \sigma_\eta)$. The prior on all β- and μ-parameters is $N(0, 100)$, a relatively uninformative prior, and on the σ- parameters $\Gamma(2,1)$, which ensures a positive variance.

The results support our generic expectation in hypothesis 3 of heterogeneity in project effects. As shown in Figure 1, two of the 24 projects, project IDs 38 and 70, have coefficient on distance is negative, statistically significant, and of a large magnitude. To calculate project effects given the distance to the project, we calculate interaction terms in Figure 2. As is visible here, the intercepts for these two projects are also significantly different from those of other projects. These results suggest that everything else being constant, being increasingly close to a location of either of these two projects led to a significant increase in the probability of improved firm export performance. Projects 38 and 70 therefore stand out as projects which have a positive effect on export performance for proximate firms. Nearly all other projects have distance coefficients that statistically indistinguishable from zero[6]. We take these results as evidence of our generic donor heterogeneity hypothesis (hypothesis three) and, conditioned on that, evidence of our proximity hypothesis (hypothesis two).

Project Descriptions

The statistical analysis above identified two stand-out projects which, when firms are proximate, appear to have a positive impact on their export performance. Accordingly, in this section we briefly investigate these projects to develop an understanding of project characteristics which may have led to them being beneficial projects. This also allows us to better understand hypothesis 3 regarding donor and project heterogeneity.

Figure 1: Distance effects by project



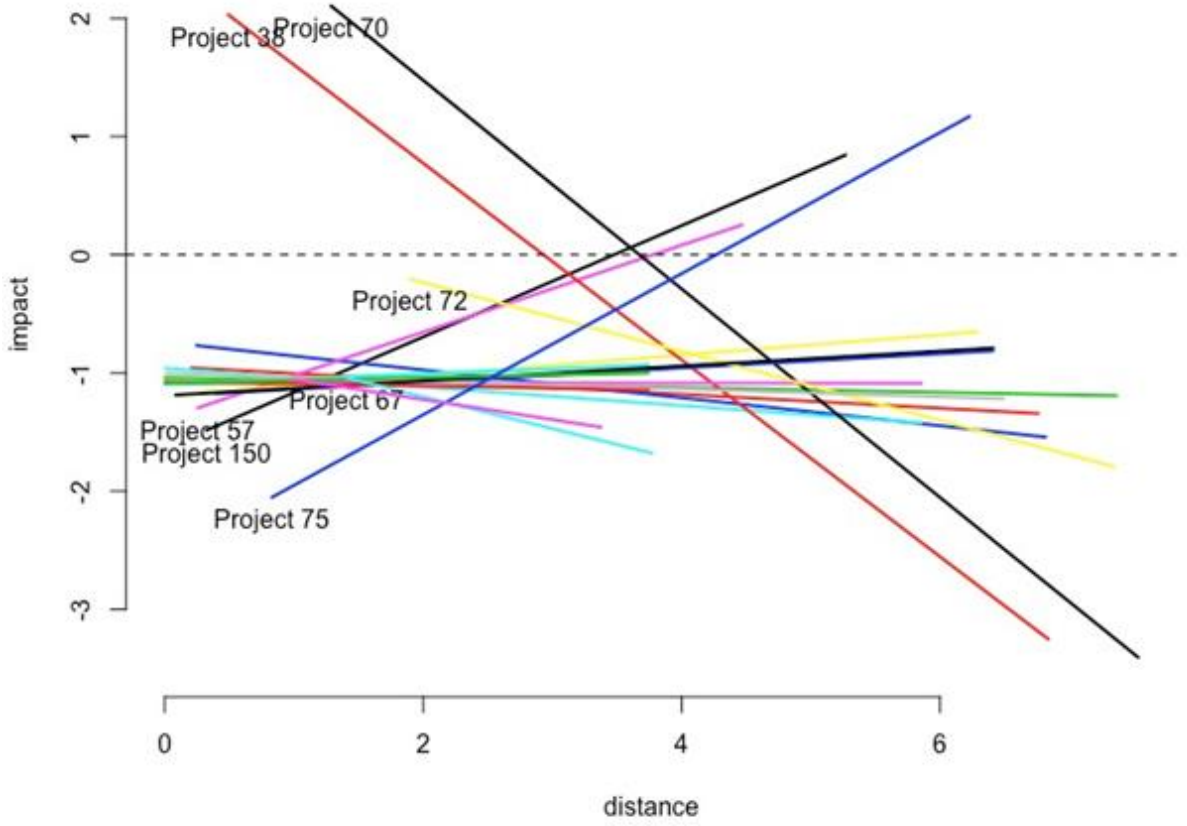
X-axis: Regression coefficient by project.

NRREP

The first project, identified in our data as project ID 70, is a large, 36-site, renewable energy project, the *National Rural and Renewable Energy Programme* (NRREP), a project that would be classified as infrastructure AfT. This five-year project, running from 2012, consisted $170 million in financing from the Government of Nepal ($67.3 million) and 6 development partners including Denmark ($34.7 million), Norway ($24.7 million), the Netherlands ($1.3 million), Germany ($9.6 million), the United Kingdom ($7.6 million) and the United Nations Development Programme (UNDP) ($5 million). The project aimed to combine infrastructure financing with technical

assistance and capacity building to bring electric power to rural and poor regions of Nepal with the aim of, among other things, facilitating the establishment of 1300 micro, small and medium enterprises (MSMEs) creating 19,000 jobs (Government of Nepal, 2012). Like many AfT projects, the linkage to exports here would be indirect, with the project presumably leading to a reduced cost structure that makes firms more competitive as exporters.

Figure 2 – Distance interaction



Y-axis: Regression coefficient. X-axis: Distance (ln)KM

ASESE

The second project, *Action for Sustainable Employment through Skill Enhancement* (ASESE), identified in our data as project ID 38, is a vocational training program carried out at 18 sites with a budget of roughly $500,000, running from 2011-2015. This type of training program would be classified as a trade development AfT project. This project focused on skill development and

employment in the informal sector in Western Nepal (MFA Denmark, 2013). Like the NREEP project above, the link to exports is again not entirely direct, with the idea being that upskilled workers may improve cost competitiveness that enables firms to increase their export performance.

That both of these projects had substantial Danish involvement is further support of hypothesis (3) that projects from different donors will be differentially effective. This performance meshes well with other work that has "ranked" Denmark highly as a donor (Knack et. al 2011). The NRREP also has a large contribution from Norway, who also scores highly in donor comparisons (Knack et al. 2011; Brazys 2013). Thus, the project heterogeneity here appears credible, at least from a donor standpoint.

Qualitative Evidence: Exporters' Perspective

In addition to the telephone survey, open-ended interviews were conducted with managing directors and/or owners of 21 exporting firms in and around Kathmandu from May 9th to May 13th, 2016 in order to elicit what institutional, infrastructural and market constraints these exporters faced and what, if anything, was effective in overcoming those hurdles. The interviews also covered firm demographics, general market conditions, history and performance. Field notes were taken during the interviews using a double-blind coding system and were transcribed in the evening at the end of each day. Of these firms, 62% had experienced decreased exports, 19% had exports that had increased or stayed the same, while the remaining 19% did not answer this question.

Several themes emerged from these interviews. First, fully two-thirds of the interviewed firms identified supply/costs of infrastructural inputs, mainly electricity and water, as a major constraint to their operations. Firms noted how these constraints increased production costs and caused customer frustration, cancelled orders or prevented firms from taking large orders.[7] One firm reported only having four hours of reliable electricity per day[8], while another related having its workers come into the factory at 2am to work on the line as this was the only time the electricity would be reliably available[9]. Two interviewees[10] mentioned the situation was so intolerable that the only option was to use diesel generators. That these input problems were the most frequently

noted amongst the interviewee lends support to the statistical finding that the NRREP project was useful in improving export performance.

The second most frequently mentioned issue was labour problems, with 62% of interviewees making some note of the situation. Many interviewees tied labour issues, both in terms of strikes and labour shortages, to the Maoist insurgency and government during the late 1990s and 2000s[11]. Pressure from Maoists and affiliated labour unions increased labour costs (up to 175% by the estimate of one interviewee (1401)) which led many firms to unprofitability. However, in these instances the Maoists insisted upon massive severances for firms seeking to close[12]. In some cases, firms paid these severances and closed[13], while others effectively ceased operations but did not deregister, remaining as 'zombie firms'[14]. One interviewee found a more creative solution to the problem:

> *I wanted to close my factory but I knew there were four Maoists inside. I called each of them into my office, locked the door, and asked them what they wanted. They first asked for 24 months (severance pay), some had only been working for six months. I was eventually able to negotiate them to 6 months severance, but I then had them sign a paper saying they only took 2 months severance. I then showed that paper to all of the other factory workers and everyone took 2 months severance – I didn't have any bank debts so was able to close down my factory.* (Interview 1021)

A related labor problem noted by several interviewees is the outward migration of labor[15]. A common refrain was that Nepal is 'exporting people', particularly to the Middle East, which is leading to a loss of skilled workers and higher wage costs[16]. Once again, these qualitative findings support the statistical finding that the ASESE AfT intervention, aimed improving the labor market by enhancing skills and perhaps brining new workers into the labor pool, was effective in increasing the export performance of local firms.

Over 50% of respondents also reported institutional hurdles to their operations. Some 57% noted some form of government corruption. A surprising number of interviewees explicitly, or via euphemism, told of paying bribes to various government agencies. A variant of 'Rules follow the

elephant' (Interview 1615) was a common refrain amongst interviewees, as an elephant features prominently on the 1000 Nepalese Rupee note[17]. Another common euphemism was 'table money' or 'under the table'[18]. A final phrasing suggests that such behavior is not a new problem, as one interviewee (1615) used the more dated phrase 'Everyone wants to meet the king' (where the king featured on banknotes prior to 2007). Most frequently, respondents reported paying bribes in order to secure a VAT refund[19], but others reported paying bribes for favorable Harmonized Tariff Schedule (HTS) classifications in order to take advantage of the WTO's Generalized System of Preferences (GSP) market access scheme[20] or for small bureaucratic functions[21]. Interestingly, however, many existing exporters didn't view this bribe paying as a hinderance to export performance. Paying the bribes weren't problematic if one knew 'how to tackle' (Interview 1021) the issue. As one interviewee put bluntly, '(a) Bribe doesn't slow business if you have business' (Interview 9000). What emerged more commonly was a theme that the system of paying bribes could act as a significant entry barrier that would be 'impossible' for newer firms to figure out[22]. As one interviewee (1021) described, 'If you know it, no problem, if you don't know it, you have a problem'. A different interviewee (1170) suggested the learning curve was quite steep, with new companies needed 5 to 10 years to navigate the system before it was 'no problem'.

However, the topic of bribes often arose in the context of a broader conversation about the ineffectiveness and/or obstructiveness of government regulation, as indicated by 52% of the firms. One interviewee shared a vignette of how a relatively trivial 'standing' bribe, in terms of cost, led to other production problems in terms of delay:

> *…all the silver has to get stamped, but there is only one government office to stamp the silver and it has very long queues and people have to travel. Sometimes you have to pay 'extra money' to get the stamp – 100/200 Rupees ($1/$2) – but it's worth it for good services. They don't want to open a new office because then the workers there would have to split their bribes and they all are greedy, so the government says 'one office is enough'* (Interview 1610)

Others noted how the prevalence of needing to pay bribes was often tied to the level of success of the business. One said that he feels that the government's attitude is that 'if he earns money he

must be doing something bad'[23], while another suggested that the tax authority gives more scrutiny to firms that report profit because they think the firms must be 'hiding (additional) profit'[24]. These more specific grievances were also accompanied by widespread general dissatisfaction with the government and regulatory environment. Alternately, interviews vented different frustrations with the government touching on themes of incompetence or unconcern[25]. One interviewee put the situation into particularly colorful language that suggested the only solution would be a root and branch overhaul 'If you have a tree that gives you sour oranges you have to cut down the tree and plant it again to get sweet oranges.' (Interview 1584).

When it came to things that exporters found useful, the most common response was the GSP. Nearly 43% of interviewees explicitly mentioned the GSP as being useful for their business. Duty free access to developed country markets was cited as a major factor in terms of firm viability, although some firms did indicate some difficulty in compliance[26]. Only 4 firms indicated awareness of any AfT project, while only 2 firms mentioned AfT projects as being useful to their operation, despite the fact that all were eventually prompted to the issue. Both firms indicated that a training project was of assistance[27] while one also cited a facility development project[28]. While these firms were not in the ASESE training program, that they cited the usefulness of a similar project increases the plausibility of the ASESE statistical results. It is worth nothing, however, that both of these firms reported decreased exports over the study period. Interestingly, two firms mentioned how AfT projects in *other* countries had helped their competitors and hurt their business. One firm[29] discussed how UNDP and JICA projects in India had benefitted the carpet industry there at the expense of Nepalese carpet producers while another[30] discussed how World Bank-supported credit facility supported the garment industry in Bangladesh, again to the detriment of Nepalese competitors. This "Aid for *Trade Diversion*" is perhaps an interesting unintended consequence of AfT programs focused on industries in one country that have direct competitors in peer countries.

In sum, the interviews suggested that infrastructure (particularly electricity) and labour supply were the two largest hindrances to export production. This result generically supports the statistical findings that proximity to an electricity project and a skills development project facilitated improved firm export performance. However, we do not want to overstate this support. None of

the interviewed firms were proximate to these two projects and indeed none of them cited either project. The qualitative evidence is thus, at best, only *indirect* support that projects in those areas might be more useful as they address areas of need identified by a non-random interview sampling of firms in the same country.

Conclusions

It should be stressed that the results in this paper are drawn from a small sample and, given the large concentration of exporting firms in and around Kathmandu, the power of a spatial identification strategy is limited. Despite our best efforts to control for spatial considerations, the statistical results could still well be driven by idiosyncratic artefacts of our data. As such, we primarily consider this manuscript a descriptive and exploratory effort that sets out a research approach for identifying firm-level effects of AfT projects. Those caveats aside, the results are at least preliminarily suggestive that proximity to more and/or important projects is associated with improved export performance. Further, while the results supported our expectation of project heterogeneity, we are not confident in being able to say anything generalizable about *which* (types of) projects, or from which donors, might be effective. While the existing literature and the qualitative evidence suggest it's *plausible* that energy and training programmes, from (Northern) European donors, might be (more) effective, neither seems to be a necessary or sufficient condition, as other energy and training projects, and other (Northern) European donor projects showed no export effect.

Thus, the more important contribution of the investigation is an illustration of a proof of concept which would be a useful approach to a broader and more systematic study of AfT effectiveness. Interviewing and geo-coding firms creates a plausible pathway for spatial identification of AfT effects. Interviewing more firms, across multiple developing countries would be likely to generate sufficient spatial variation for a more robust identification approach. Such an effort might also include information that allows for better identification of both direct and indirect AfT effects, the latter of which might occur through input-output linkages, knowledge spill-overs or via an impact on the labour supply.[31] The relatively high survey response rate in this paper is encouraging for such an endeavour, and an expanded effort would include a broader battery of survey questions

that could capture other important firm-level characteristics that were omitted by necessity in this study.

Conflict of Interest Statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Allee, T., & Elsig, M. (2016). Why do some international institutions contain strong dispute settlement provisions? New evidence from preferential trade agreements. *The Review of International Organizations, 11*(1), 89-120.

Bearce, D. H., Finkel, S. E., Pérez-Liñán, A. S., Rodríguez-Zepeda, J., & Surzhko-Harned, L. (2013). Has the New Aid for Trade Agenda been Export Effective? Evidence on the Impact of US AfT Allocations 1999–2008. *International Studies Quarterly*, *57*(1), 163-170.

Bernard, A. B., Jensen, J. B., & Schott, P. K. (2006). Trade costs, firms and productivity. *Journal of monetary Economics, 53*(5), 917-937.

Bernard, A. B., Jensen, J. B., Redding, S. J., & Schott, P. K. (2012). The empirics of firm heterogeneity and international trade. *Annu. Rev. Econ.*, *4*(1), 283-313.

Betancourt, M. (2017). *A conceptual introduction to Hamiltonian Monte Carlo*. arXiv preprint arXiv:1701.02434.

Brazys, S. (2010). Race to give? The selective effectiveness of United States trade capacity building assistance. *Review of International Political Economy*,*17*(3), 537-561.

— (2011). *Explaining donor and recipient heterogeneity in trade capacity building* (Doctoral dissertation, INDIANA UNIVERSITY).

— (2013). Evidencing donor heterogeneity in Aid for Trade. *Review of International Political Economy*, *20*(4), 947-978.

Brazys, S., & Lightfoot, S. (2016). Europeanisation in Aid for Trade: the impact of capacity and socialisation. *European Politics and Society*, *17*(1), 120-135.

Brazys, S. R., Saltnes, J., & Pillai, A. (2019). EU Aid for Trade: Mitigating Global Trade Injustices?. *GLOBUS Research Paper, 4*. ARENA, University of Oslo, Norway. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3466115.

Cadot, O., Fernandes, A., Gourdon, J., Mattoo, A., & Melo, J. (2014). Evaluating aid for trade: a survey of recent studies. *The World Economy*, *37*(4), 516-529.

Cali, M., & Te Velde, D. W. (2011). Does aid for trade really improve trade performance? *World Development*, *39*(5), 725-740.

Carpenter, B., Gelman, A., Hoffman, M. D., Lee, D., Goodrich, B., Betancourt, M., Brubaker, M., Guo, J., Li, P. & Riddell, A. (2017). Stan: A probabilistic programming language. *Journal of Statistical Software*, 76(1).

Civelli, A., Horowitz, A., & Teixeira, A. (2018). Foreign aid and growth: A Sp P-VAR analysis using satellite sub-national data for Uganda. *Journal of Development Economics*, *134*, 50-67.

Dreher, A., & Lohmann, S. (2015). Aid and growth at the regional level. *Oxford Review of Economic Policy*, *31*(3-4), 420-446.

Easterly, W., & Pfutze, T. (2008). Where does the money go? Best and worst practices in foreign aid. *The Journal of Economic Perspectives*, *22*(2), 29.

Easterly, W., & Williamson, C. R. (2011). Rhetoric versus reality: the best and worst of aid agency practices. *World Development*, *39*(11), 1930-1949.

Edwards, S. (1997). Trade policy, growth, and income distribution. *The American Economic Review*, *87*(2), 205-210.

Frankel, J. A., & Romer, D. (1999). Does trade cause growth?. *American economic review*, 379-399.

Garcia, F. J. (2000). Building a just trade order for a new millennium. *Geo. Wash. Int'l L. Rev.*, *33*, 1015

Ghose, A. K. (2004). Global inequality and international trade. *Cambridge journal of economics*, *28*(2), 229-252.

Helble, M., Mann, C. L., & Wilson, J. S. (2012). Aid-for-trade facilitation. *Review of World Economics*, *148*(2), 357-376.

Hoekman, B. (2002). Strengthening the global trade architecture for development: the post Doha agenda. *World Trade Review*, *1*(1), 23-45.

Jones, K. (2009). Green room politics and the WTO's crisis of representation. *Progress in Development Studies*, *9*(4), 349-357.

Langan, M., & Scott, J. (2014). The aid for trade charade. *Cooperation and Conflict*, *49*(2), 143-161.

Meunier, S., & Nicolaïdis, K. (2006). The European Union as a conflicted trade power. *Journal of European Public Policy*, *13*(6), 906-925.

Knack, S., Rogers, F. H., & Eubank, N. (2011). Aid quality and donor rankings. *World Development*, *39*(11), 1907-1917.

Krueger, A. O. (1980). Trade Policy as an Input to Development. *The American Economic Review*, *70*(2), 288-292.

Krugman, P. (1981). Trade, accumulation, and uneven development. *Journal of Development Economics*, *8*(2), 149-161.

McKinley, R. D., & Little, R. (1979). The US aid relationship: a test of the recipient need and the donor interest models. *Political Studies*, *27*(2), 236-250.

OECD/WTO (2019), Aid for Trade at a Glance 2019: Economic Diversification and Empowerment, OECD Publishing, Paris, https://doi.org/10.1787/18ea27d8-en.

Roodman, D. (2012). An Index of Donor Performance.

Schott, J. J., & Watal, J. (2000). Decision Making in the WTO. In *The WTO after Seattle*, 283-292.

Udvari, B. (2014). Impacts of Aid for Trade on Trade with the EU The Role of Old and New Member States. *Journal of global policy and governance*, *3*(1), 77-93.

USAID (2010). From Aid To Trade: Delivering Results: A Cross-Country Evaluation of USAID Trade Capacity Building. Document ID PD-ACR-202. Washington, DC.

— (2012). TCBoost supporting trade capacity building worldwide : final report, December 2012. Document ID PB-AAA-008. Washington, DC.

— (2014). Peru and Andean trade capacity building program USAID. Document ID PA-00J-MXP. Washington, DC.

Vijil, M., & Wagner, L. (2012). Does aid for trade enhance export performance? Investigating the infrastructure channel. *The World Economy*, *35*(7), 838-868.

Wade, R. H. (2003). What strategies are viable for developing countries today? The World Trade Organization and the shrinking of 'development space'. *Review of international political economy*, *10*(4), 621-644

Woods, N., & Narlikar, A. (2001). Governance and the Limits of Accountability: The WTO, the IMF, and the World Bank. *International Social Science Journal*, *53*(170), 569-583.

Table A1: Detailed Parameter Estimates of the Bayesian Multilevel Model

parameter	mean	sd	lower	upper	rhat
bKathmandu	0.215	0.036	0.145	0.287	1.000
bLight	-0.002	0.004	-0.010	0.006	1.001
bTextile	0.222	0.038	0.147	0.297	1.002
bIntercept (Project 57)	-1.409	0.165	-1.750	-1.088	1.002
bIntercept (Project 47)	-1.027	0.227	-1.480	-0.584	1.000
bIntercept (Project 147)	-0.761	0.189	-1.139	-0.387	1.000
bIntercept (Project 91)	-1.109	0.200	-1.500	-0.724	1.000
bIntercept (Project 37)	-0.957	0.170	-1.282	-0.621	1.000
bIntercept (Project 38)	2.388	0.501	1.457	3.411	1.001
bIntercept (Project 70)	3.192	0.444	2.376	4.108	1.000
bIntercept (Project 150)	-1.591	0.131	-1.855	-1.347	1.001
bIntercept (Project 68)	-1.051	0.129	-1.303	-0.804	1.001
bIntercept (Project 75)	-2.581	0.567	-3.818	-1.572	1.001
bIntercept (Project 53)	-1.120	0.206	-1.520	-0.726	1.000
bIntercept (Project 52)	-1.268	0.131	-1.531	-1.018	1.000
bIntercept (Project 62)	-0.894	0.172	-1.235	-0.562	1.000
bIntercept (Project 78)	-0.830	0.350	-1.513	-0.128	0.999
bIntercept (Project 79)	-1.109	0.201	-1.520	-0.723	1.001
bIntercept (Project 71)	-1.213	0.259	-1.729	-0.723	1.001
bIntercept (Project 22)	-1.111	0.197	-1.506	-0.728	1.001
bIntercept (Project 48)	-1.197	0.187	-1.563	-0.846	1.000
bIntercept (Project 72)	0.264	0.990	-1.554	2.283	0.999
bIntercept (Project 92)	-1.090	0.231	-1.569	-0.634	1.001
bIntercept (Project 96)	-1.107	0.260	-1.614	-0.600	1.001
bIntercept (Project 73)	-1.213	0.186	-1.578	-0.852	0.999
bIntercept (Project 67)	-0.696	0.532	-1.755	0.348	1.001
bDistance (Project 57)	0.374	0.133	0.123	0.643	1.000
bDistance (Project 47)	-0.031	0.067	-0.163	0.103	1.000
bDistance (Project 147)	-0.116	0.053	-0.221	-0.014	1.000
bDistance (Project 91)	0.040	0.196	-0.345	0.415	1.001
bDistance (Project 37)	-0.060	0.050	-0.161	0.037	1.000
bDistance (Project 38)	-0.824	0.114	-1.057	-0.617	1.001
bDistance (Project 70)	-0.875	0.087	-1.060	-0.709	0.999

bDistance (Project 150)	0.422	0.071	0.287	0.560	0.999
bDistance (Project 68)	-0.022	0.034	-0.091	0.046	1.000
bDistance (Project 75)	0.603	0.224	0.210	1.087	1.001
bDistance (Project 53)	0.066	0.200	-0.333	0.448	0.999
bDistance (Project 52)	0.123	0.055	0.017	0.232	0.999
bDistance (Project 62)	-0.102	0.058	-0.219	0.012	1.000
bDistance (Project 78)	-0.216	0.240	-0.725	0.240	1.000
bDistance (Project 79)	0.044	0.191	-0.330	0.421	1.000
bDistance (Project 71)	0.065	0.115	-0.153	0.293	1.001
bDistance (Project 22)	0.053	0.196	-0.338	0.444	1.001
bDistance (Project 48)	0.044	0.064	-0.083	0.167	0.999
bDistance (Project 72)	-0.279	0.194	-0.683	0.073	0.999
bDistance (Project 92)	-0.019	0.193	-0.408	0.355	1.000
bDistance (Project 96)	0.025	0.255	-0.484	0.536	1.000
bDistance (Project 73)	0.062	0.071	-0.075	0.204	1.000
bDistance (Project 67)	-0.262	0.304	-0.870	0.325	1.000
muInterceptProject	-0.760	0.302	-1.385	-0.168	1.000
sdInterceptProject	1.322	0.242	0.926	1.867	1.001
muDistanceProject	-0.038	0.092	-0.219	0.142	1.000
sdDistanceProject	0.389	0.078	0.266	0.562	1.001

Mean and standard deviation describe the distribution of the posterior. Lower and upper the 95% equal tailed credible interval. $\hat{R}$ is the Gelman-Rubin convergence statistic, which indicates convergence when below a typical threshold value of $\hat{R} < 1.1$.

Table A2: Descriptive Statistics

	N	mean	sd	min	Max
Monadic data					
Export performance	134	0.216	0.413	0	1
Distance to Kathmandu	131	23.408	71.669	0.000	370.025
Carpet firm	134	0.336	0.474	0	1
Count AfT within 40km radius	131	14.947	3.728	2.000	18.000
- electric only	131	7.359	2.016	1.000	9.000
- training only	131	0.092	0.472	0.000	3.000
- transport only	131	3.756	1.137	0.000	5.000
- export only	131	3.740	0.828	0.000	4.000
Dyadic data					
Export performance	19,320	0.261	0.439	0	1
Distance to Kathmandu	19,320	0.200	0.697	0	4
Distance firm to project	19,320	2.516	1.774	0.002	7.534
Textile firm	19,320	0.228	0.420	0	1
Light within 10km radius	19,320	21.462	5.505	0.385	24.710

Table A3: Export Performance by Aid Category

	20km	30km	40km	50km	60km
Electric					
AfT_Count	0.206	0.268	1.124†	0.770*	2.287
Distance_Kathmandu	0.009	0.010	0.033†	0.026*	0.089
Carpet	-0.260	-0.225	-0.440	-0.264	-0.315
Export					
AfT_Count	0.313	0.392	2.010†	1.773	1.997†
Distance_Kathmandu	0.008	0.008	0.022†	0.019†	0.014†
Carpet	-0.255	-0.262	-0.295	-0.289	-0.283
Training					
AfT_Count	-	0.967	0.710	0.459	0.109
Distance_Kathmandu	0.004	0.002	0.001	0.002	0.003
Carpet	-0.213	-0.218	-0.186	-0.181	-0.209
Transport					
AfT_Count	1.626	0.578†	1.145*	0.366	0.095
Distance_Kathmandu	0.008	0.008†	0.019*	0.011*	0.007
Carpet	-0.330	-0.157	-0.245	-0.281	-0.273

* Significant at 5% level. † Significant at 10% level

Figure A1: Estimates on Control Variables and Random Effect Parameters

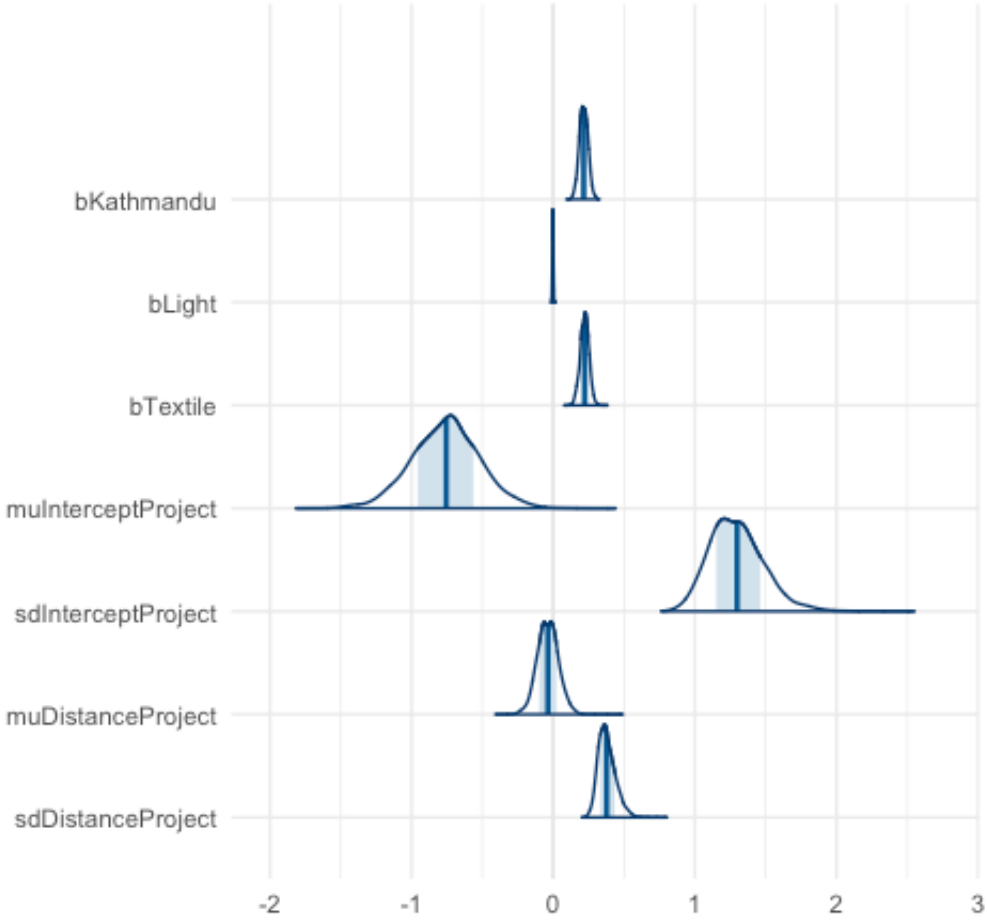


Table A4: Overview of Firms

Firm	Decrease	Increase / Same	Maoists / Labor	Elephants -VAT Refund	Entry Barriers / Bureaucracy	Input Costs (Electricity / Water)	AfT Helped	GSP
1021	1		1	1	1			1
1090		1	1		1	1		
1134		1	1	1	1	1		1
1170	1			1		1		1
1233	1				1	1		
1339	1		1					1
1382	1		1	1		1		1
1400	1		1	1	1			1
1401	1		1			1		
1408	1		1	1		1	1	
1523	1				1	1		
1584		1			1	1		
1594	1		1	1		1		
1595		1				1		
1610	1			1	1	1		1
1615			1	1	1	1		1
1623	1			1			1	1
1639	1		1	1	1			
9000								
9001			1	1	1	1		
9002			1					
TOTAL	13	4	13	12	11	14	2	9
Percentage	62%	19%	62%	57%	52%	67%	10%	43%

[1] https://stats.oecd.org/Index.aspx?DataSetCode=CRS1

[2] Some project examples include online trade portals with regulatory information (TPR), fibre optic cables (infrastructure), or a jewelry e-commerce site (trade development) https://www.wto.org/english/tratop_e/devel_e/a4t_e/gr17_e/gr17casestudies_e.htm accessed 12-05-2020.

[3] Available at: http://www.tepc.gov.np/ex_im_directory/export Firm information was compiled into the database

[4] More details on the AidData geocoding methodology can be found at: http://docs.aiddata.org/ad4/files/geocoding-methodology-updated-2017-06.pdf accessed 12-05-2020.

[5] Table A3 in the appendix provides the same statistical results, separately for each of four different AfT aid project categories. Coefficients are comparable across categories, but significance tests vary due to varying numbers of aid projects in each category.

[6] Exceptions being projects 72 which had a positive effect but of a much smaller magnitude and projects 75 and 58 which had small, *negative* effects on export performance.
[7] Interviews 9001, 1408, 1170, 1400, 1090, 1610
[8] Interview 1610
[9] Interview 1615
[10] Interview 1401, 9001
[11] Interviews 1610, 1021, 1382, 1639, 9001
[12] Interviews 1610, 1021, 1382, 9001, 9002
[13] Interview 1610
[14] Interview 9001
[15] Interviews 9001, 1639, 1623, 1090
[16] Interviews 1639, 1090, 9001
[17] Also Interviews 1584, 9001, 1595
[18] Interviews 1400, 9001, 1595
[19] Interviews 1615, 1584, 9001, 1594, 1400, 1610
[20] Interview 1595
[21] Interview 1610
[22] Interviews 1584, 1012
[23] Interview 9001
[24] Interview 1610
[25] Some quotes include 'government was sleeping, still sleeping' (Interview 1021), 'government does nothing' (Interview 1401), 'they (the bureaucracy) don't know anything, don't care about services, just want tax' (Interview 9001), 'government doesn't help' (Interview 1610), 'bureaucrats don't change (Interview 1584), 'Have as little to do with the government as possible' (1615).
[26] Interviews 1584, 1595
[27] Interviews 1408, 1623
[28] Interview 1408
[29] Interview 1523
[30] Interview 1090
[31] We thank an anonymous reviewer for this suggested avenue forward.