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“Disaggregating Foreign Aid: What Have We Learned from Research on Sub-National Foreign Aid?”

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Introduction

Over the past several years, a new wave of research has mapped the location of foreign aid projects within countries to understand the causes and effects of sub-national aid allocation. This effort, affiliated with the AidData research program (albeit not exclusively), is ongoing, and new datasets on foreign aid donors and for particular countries are being released. After several years of continuing research into the correlates and effects of sub-national foreign aid on aid-recipient countries, it is worthwhile to pause and consider what this research program has uncovered and suggest directions where it might go.

This review proceeds in four steps. The first examines why sub-national foreign aid data has become a topic of interest. The next shows how these data on sub-national foreign aid are generated. It will point out the strengths and weaknesses of the data. Next, the review considers the two main questions that researchers have asked of the data: What factors shape where foreign aid goes within countries, and what effects does foreign aid have on local political, social, and economic processes? The conclusion considers the next steps in the research agenda on sub-national foreign aid.

Two main themes emerge from this analysis of the literature. First, it shows how scholarly activity can result from changes and shifts in

the policy dialogue concerning best practices for aid effectiveness. In particular, the emphasis on accountability and transparency combined with decreasing costs of Geographic Information System (GIS) tools of analysis led to the creation of sub-national aid information. Second, in studies of where aid goes sub-nationally and what it does, scholars have tended to focus on need, electoral control, and political violence. Part of the challenge for continued progress in this line of research is overcoming a lack of sub-national indicators for other important phenomena, such state capacity, creating sub-nationally representative public surveys, and integrating the foreign aid datasets with information on national budgetary spending to create a complete fiscal picture of developing states.

Why Sub-National Aid Data?

The recent creation of sub-national aid data is part of a larger movement towards greater transparency and accountability in the development industry over the past decade (Carothers and Brechenmacher 2014, 11-12). In 2005, 166 governments, territories, and international organizations signed the Paris Declaration on Aid Effectiveness, which called for "accountability and transparency in the use of development resources" in order to "strengthen public support for national policies and development assistance" (2005, 8). The Paris Declaration posits accountability and transparency as potential

antidotes to corruption and its negative effects on public support. To increase aid transparency, the declaration called for donors to "provide timely, transparent and comprehensive information on aid flows to enable partner authorities to present comprehensive budget reports to their legislatures and citizens" (2005, 8).

The 2008 Accra Agenda for Action continued the work begun in the Paris Declaration and called for increased transparency by "publicly disclos[ing] regular, detailed and timely information on volume, allocation and, when available, results of development expenditure" (2008, 5-6). Several attendees at Accra, including the World Bank, the UK, Finland, Ireland, and UNDP, created the International Aid Transparency Initiative (IATI) as a means to implement the goals concerning transparency reached at the Accra conference (Davies et al., 2015). The World Bank, one of the early supporters of IATI, created the Open Data initiative in 2010 that made all of its data, reports, and analyses publicly available.

The AidData research program came to life in the context of an international movement toward creating greater transparency and accountability over aid flows. AidData was created in 2009 as a joint project between the College of William and Mary, Brigham Young University, and Development Gateway, an international development company. The project's purpose was to serve as a data repository on aid in order to increase the accessibility and transparency of aid information.

With the World Bank's Open Data initiative and the creation of AidData, the story of the aid transparency movement begins to involve sub-national aid data. Representatives from the World Bank attended an AidData conference at Oxford University in the spring

of 2010. They observed a presentation on foreign aid and violent conflict in sub-Saharan Africa (Findley et al. 2011). This project was one of the first to geocode¹ foreign aid projects, and World Bank representatives began discussing applying the geocoding methodology to its own foreign aid projects. The World Bank released project documentation on its active aid projects, allowing for AidData research teams to geocode the locations of the projects. AidData worked with researchers from Uppsala University to develop a geocoding methodology specifically for aid project locations that built on previous work at Uppsala on geocoding conflict data. After geocoding the active World Bank projects, the goal of geocoding sub-national foreign aid advanced at a steady pace, as described below.

The interest in sub-national foreign aid is also associated with a general increase in the accessibility of GIS software and the ability to make maps using geographic data cheaply and easily (Longley et al. 2015). While the idea of using GIS for development purposes is not new (Dunn et al. 1997), the rise of smartphones and wireless internet access makes the use of GIS for such purposes easier. As one commentator on a blog post noted,

Geographic representation has become increasingly used by governments and through mash ups. There was a time when experts thought that GIS would never 'cross the chasm' for general use, yet today we have maps and GPS on handheld devices. Visualization leveraging graphs and dashboards can provide quick insight. Geographic representation is an order of

¹ Geocoding is the process of assigning location information to data.

magnitude improvement - simplify information, reduce time to analyze, and faster action! [Hadden 2010]²

As Gigler (2010) puts it, "Imagine the potentially transformative role of inter-active mapping tools and the establishment of direct feedback loops between citizens and donors facilitated by mobile technology could provide to improve the impact of development programs on the ground."³

The interest in sub-national foreign aid data is part of a larger trend toward using Information Communication Technologies (ICT) to overcome development industry challenges (Avgerou 2010). The ICT movement in international developments poses challenges to development as ones involving accessing information, sifting through data to find needed information, and connecting users of services with the developers and producers of services. It is an open question of the extent to which these challenges, though real, are the main ones facing developing countries. However, the challenges are framed in terms that ICT can potentially resolve and thus are helpful for ICT proponents in the development industry to promote.

Similar claims are made about the benefits of providing sub-national aid information. Strandow et al. (2011) argue that sub-national aid data can provide insight into "financing gaps," defined as "inequities in aid distribution," and so improving aid management capabilities. Sub-national aid

² Comment on blog by Soren Gigler, "Geography and Aid." Comment posted on 1 April 2010. Accessed here:

<http://blogs.worldbank.org/dmblog/geography-and-aid>.

³ Soren Gigler. "Geography and Aid." *World Bank Blog*, 31 March 2010. Accessed here:

<http://blogs.worldbank.org/dmblog/geography-and-aid>

would enable recipients to engage with donors to bring projects to overlooked areas and also enable donors to coordinate aid activities and avoid unnecessary project duplication. Finally, data on sub-national aid is expected to increase transparency and accountability for donors and governments (Strandow et al. 2011, 5-6). It is also important to note that the language concerning improved transparency and accountability dovetails with the language of the Paris and Accra agreements.

Finally, international relations research has an ongoing trend to analyze local-level data to better understand relationships previously studied only at the cross-national level (Gleditsch and Weidmann 2012, 462). Kalyvas (2006) first adopted a sub-national approach to explain variation in the occurrence of violence in the Greek Civil War, which inspired new literature on the dynamics of violence at the sub-national level in civil wars (Raleigh et al. 2010; Salehyan et al. 2012; Sundberg and Melander 2013). Similar literature has emerged focused on terrorism, including terror events in the context of civil wars (Findley and Young 2012, 289) and transnational terrorism (Marineau et al. 2020, 350).

Thus the creation of sub-national foreign aid data is a product of increased interest at the international level in promoting transparency and accessibility of aid information, combined with an interest in using ICT in general and GIS in particular to solve challenges in development. The next section describes how these data are generated.

Generating Data on Sub-National Aid

The data on sub-national aid comes from two main sources: The donors and the recipient governments. The donor data tends to have two sources: either from aid project

documentation or indirectly through open sources, such as news reports. Open sources are often used for aid information from non-traditional donors, such as China.

AidData, as of 2019, listed 22 datasets of geocoded aid information for 17 countries⁴ and completed datasets for three different donors (African Development Bank, China, and the World Bank). There is also a dataset on foreign aid during the civil war for countries in sub-Saharan Africa (Findley et al. 2011, 1996) using donor-supplied information. One donor, China, and one recipient, Nepal, has two different datasets.

Aid-recipient countries often have an Aid Information Management System (AIMS), which is a system by which recipient governments track information from donors about aid projects.⁵ The AIMS range from simple formats, which can involve long spreadsheets listing the donor, the project title, and the amount of funds involved, to more elaborate databases that users can search. Development organizations like Development Gateway (DG) have marketed more sophisticated aid management systems to recipient countries.⁶ DG's particular aid management system is called the Aid

Management Platform (AMP). However, DG is not the only organization selling an AIMS to developing countries. Competitors include Synergy International Systems, which produces the Development Assistance Database, DevResults, and ActivityInfo. Early on, AidData largely worked with DG to geocode sub-national foreign aid projects using the information in the AMP. Therefore, the developing countries that had geocoded foreign aid data were countries that had purchased an AMP from DG.⁷ AidData would later collaborate with Synergy International to geocode the aid information for Afghanistan, Iraq, Burundi, Nigeria, and Somalia.

Geocoding Methodology

The methodology used for geocoding the subnational aid was introduced by Strandow et al. (2011) using a system of precision codes originally developed by conflict researchers at Uppsala University (Sundberg et al. 2010). While the original methodology was used to geocode conflict events at the subnational level, Strandow et al. adopted the methodology for geocoding aid projects by adding additional precision codes. The precision codes, as developed by Strandow et al., are as follows:

- 1: This precision code refers to an exact location, such as a city or town.
- 2: This code indicates locations up to 25km or near an exact location.
- 3: This code indicates second-order administrative divisions (ADM2), such as a county or borough.
- 4: This code refers to a first-order administrative division, such as a state or district.

⁴ The aid-recipient countries include: Afghanistan, Bangladesh, Burundi, Central African Republic, Colombia, Democratic Republic of the Congo, Honduras, Iraq, Malawi, Nepal, Nigeria, Sierra Leone, Senegal, Somalia, Timor-Leste, and Uganda.

⁵ The exceptions are datasets created from tracking under-reported financial flows (China) and from geocoding funding requests from the UNOCHA Financial Tracking Service (such as for Nepal and Central African Republic).

⁶ Development Gateway is an international development company that seeks to “us[e] data and technology to achieve impact.” As its name suggests, the company is involved in the development industry and claims that its technological services can increase the amount and quality of data available to decision makers and advocate. The increased access to information can help produce better development outcomes, claims DG.

⁷ Malawi, the first country that had its foreign aid geocoded by AidData, had an AMP managed by DG, as did Uganda, Nepal, Timor-Leste, Honduras, and DRC. 6 of the 16 aid-recipient countries with geocoded foreign aid are countries that purchased AMPs from DG.

5: This code refers to projects that may span across several administrative divisions, such as along roads, rivers, or national parks.

6: This code refers to country-wide projects or projects implemented at a scale larger than the first-order administrative division.

7: This code indicates when there is no clear information on sub-national location.

8: This code refers to a national capital.

To determine the appropriate precision code, research assistants read through aid project documentation for location information, and if any such information was found, a precision code 1 through 6 or 8 was assigned. If no location information was found, a precision code 7 was assigned. Then the geographic coordinates for the location were found through an online database called geonames.org.

First Publication of Aid Geocoding: "The Localized Geography of Foreign Aid"

The data produced by this methodology were first analyzed and published by Findley et al. (2011), which involved geocoding 65,000 project locations in 22 sub-Saharan African countries experiencing violent conflict between 1989 and 2008. The information used in geocoding the project locations came from the project titles and short and long descriptions in AidData's aid project database (Tierney et al. 2011, 1892). As noted in the paper, the project locations were not geocoded using project documents. The downside to geocoding from project short and long descriptions is the high proportion of projects needing more location information. For example, in the geocoded data for the DRC, 5,511 out of 8,336, or about 66% of the data, lack location information. Subsequent geocoding endeavors could utilize actual

project documentation, allowing for greater precision in coding foreign aid project locations.

World Bank Mapping For Results

The World Bank was the first development organization to make its documents for active projects publicly available, beginning in April 2010 as a part of its Open Data Initiative. The release of its project documents allowed for geocoding the project locations using the methodology introduced by Strandow et al. (2011). By the summer of 2010, most of the active World Bank projects at the time had been geocoded.⁸ As of 2019, some 1,608 projects with 21,899 project locations have been mapped. Following the World Bank's example, the African Development Bank (AfDB) agreed to release its project documentation for all approved projects in 2009 and 2010.

Despite the usefulness of the World Bank and AfDB, data aid from these two organizations is only likely to represent a small portion of the total in a given country.⁹ Getting the complete picture of aid flows at the sub-national level requires getting information from all donors active in a country.

Malawi's Open Aid Map

Malawi was the first country to have the projects listed in its AMP geocoded, and its selection was due to a network of relationships between the academic and aid communities (Weaver 2014, 3-5). The initial

⁸ Innovations for Peace and Development. "What is Geocoding?" Accessed here: <http://www.ipdutexas.org/what-is-geocoding.html>

⁹ For example, the World Bank and AfDB contributed 21% of all aid sent to the Democratic Republic of the Congo between 1998 and 2011; for Ethiopia during the same time period, 33%; Kenya, 23%; Mozambique, 17%; Rwanda, 24%; and for Tanzania, 26%.

consent of government representatives to release information on aid from the country's AMP was given in December 2010, which was followed by formal consent in January 2011. Teams of students visited the country in March of 2011 to make copies of donor documents, which students used to geocode project locations between May and October 2011. Following further documentation gathered in August 2011, the geocoding was finalized in October of that year.

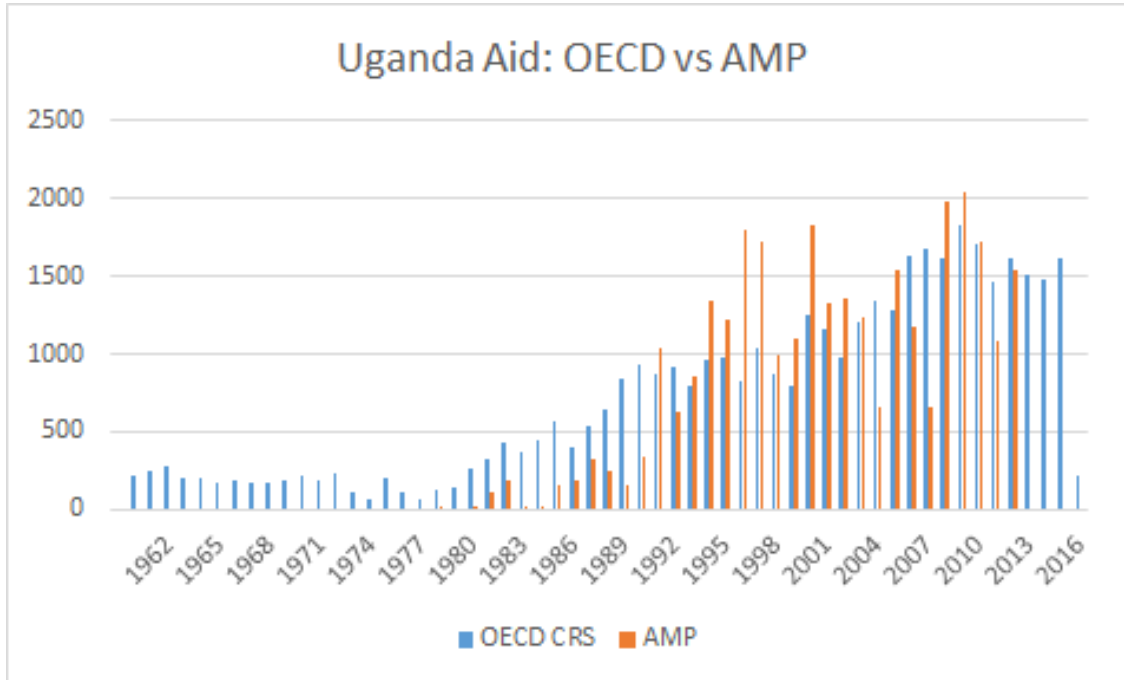
The Malawi geocoding was unique because it contained aid information for all or nearly all donor projects. The "comprehensive donor aid mapping" achieved by the Malawian Open Aid Map project was a helpful step towards achieving the transparency and accessibility called for by the Paris Declaration and Accra Agenda for Action. It also served as the benchmark for geocoding the AIMS from other countries.

However, not all subsequent geocoding initiatives, such as that for Uganda, used the same quality of sources as the Malawi geocoding. For Malawi, donors provided sectoral information about the aid, including data on aid commitments and disbursements and information that needed to be included in future geocoding projects. The Malawi geocoding was accomplished using donor documents, which were highly detailed and nuanced, which allowed for the geocoding of the aid projects to be of similar high quality.

The Uganda geocoding, however, was different. The only data the geocoders had to work with was an Excel spreadsheet directly downloaded from the country's AMP, which was then distributed to donor agencies to record location and aid commitment and disbursement information. Yet the quality of the information from donors could have been better. For example, the Malawi aid project documentation was detailed enough for the geocoding to note whether the aid was a loan or a grant, the date of planned project completion and the date that the aid agreement was signed, and for detailed coding as to the purpose of the project. The Uganda data lacked such nuance and detail. The Uganda data does not differentiate loans from grants, lacks detailed purpose coding, and does not differentiate different dates for when an agreement was signed versus when funds were disbursed.

Another challenge for the Uganda data is that the historical data is often spotty. For example, the historical data in the AMP for Uganda only goes back to 1978, while other databases show that the country had been receiving aid before then. Data on aid in Uganda exists as far back as 1960 in the OECD Creditor Reporting System (CRS). Figure 1 shows the differences overtime between the AMP data and the CRS data for Uganda.

Figure 1. Aid Data in Uganda, OECD-CRS vs. AMP



Data was taken from OECD Creditor Reporting System. Units are in million USD, with constant 2015 prices.

There are other differences between the datasets, too. In the OECD-CRS dataset, there are more aid funds in the 1980s than in the AMP dataset, while the AMP reports more aid funds in several years in the 1990s than in the OECD-CRS dataset. This raises the obvious question of what accounts for the discrepancy and which dataset is more correct. Shortcomings aside, the AMP follows the general trend of Ugandan aid data as captured in the OECD CRS: A limited amount of aid over the 1970s and 1980s, with levels increasing in the 1990s and 2000s followed by a tapering off in the 2010s.

Thus the quality of comprehensive donor aid mapping varies across countries. This is not to say that the data for Uganda is not useful, only that the differences between datasets should be made explicit and kept in mind by researchers.

Tracking Under-Reported Financial Flows (TUFF)

The final way that sub-national aid information has been gathered is through the open-source documentation on aid (Strange et al. 2017). The methodology aims to gather information on donor activities when the donors share little information on their aid flows or at least do not report aid information through more established organizations such as the OECD CRS. The methodology, which AidData has mainly applied to Chinese aid, involves locating aid project information on country AIMS, Chinese embassy websites, IMF reports, and a media database called FACTIVA that tracks over 30,000 media outlets. Next, a team of research assistances attempts to verify the accuracy of the aid information and to find further details such as the financial size of the project, where the project is located, and the status of the project. Finally, a series of quality control steps are applied to help ensure any errors and omissions are corrected (Strange et al. 2017, 4-5).

Where Sub-National Aid Goes

The first question asked of the sub-national aid data is where it goes within countries. In other words, sub-national foreign aid is the dependent variable, and the question focuses on which independent variable is most associated with foreign aid project locations. The most obvious question is whether aid targets relatively impoverished areas within countries (Briggs 2017; Marineau and Findley 2020). The findings are broadly negative in the papers reviewed here, showing that aid is not going to areas that need it the most.

Briggs (2017) examines the sub-national aid allocation of World Bank (WB) and African Development Bank (AfDB) projects and shows that these projects tend to go to the more affluent areas of the 17 sub-Saharan African countries under examination (see also Briggs 2018). He interprets this finding to suggest that donors have relatively little control over where aid goes within countries because the recipient states can influence aid to go to preferred areas. So recipient state influence over aid project allocation can produce results that contradict the stated preferences of donors. Öhler and Nunnenkamp (2014) also examine WB and AfDB projects in 27 recipient countries and similarly find little association between aid and local-level needs but find evidence of aid projects focusing on regions where the leader of the country was born, suggesting favoritism in aid allocations. Finally, Nunnenkamp et al. (2017) examine World Bank project allocations in India and find little evidence that these projects are targeted at areas of greater need. Instead, they find evidence of regional clustering in aid projects and an association of aid with trade openness. Dreher et al. (2016) also find that World Bank projects tend not to get allocated to leaders' birthplaces, while Chinese aid projects do. Marineau and Findley (2020) are one of the first studies to examine bilateral and

multilateral donors in seven different sub-Saharan African countries, finding that the quality of aid targeting poverty varies across countries.

Another question is the degree to which donors coordinate their aid projects. Nunnenkamp et al. (2016a) examine whether ten major bilateral and multilateral donors have increased the specialization and coordination of aid activities within Malawi between 2000 and 2011. They find that the regional division of labor, which is one measure of aid specialization, has decreased over time, contrary to what one might expect given the goals of the 2005 Paris Declaration. Nunnenkamp et al. (2016b) also examine aid coordination within Uganda. While they find evidence of duplication and fragmentation of aid, they also suggest that aid targets areas of greater poverty.

The relationship between foreign aid and political violence has been a long-standing concern for scholars (Nielsen et al. 2011, 220-221). Findley et al. (2011) were the first to examine whether political violence is associated with foreign aid projects at the sub-national level and provide suggestive findings that such a relationship exists. Bezerra and Braithwaite (2016) find that while donors will target areas experiencing violence, they tend to favor areas where aid effectiveness is likely higher.

The final factor scholars consider that shapes foreign aid allocations are patterns of electoral control. The two main patterns considered are whether aid goes to areas controlled by the ruling party or areas controlled by the opposition party. Briggs (2014), for example, shows that in Kenya, foreign aid projects were allocated disproportionately to the areas where the leader was most popular. This finding is consistent with Öhler and Nunnenkamp

(2014), who showed how multilateral aid projects were skewed towards the leaders' base areas. Jablonski (2014) also finds that aid went to areas of electoral contestation in Kenya. Interestingly, Dreher et al. (2019) find no evidence that either World Bank or Chinese aid is directed disproportionately to the leader's home area. In the case of Zambia, Masaki (2018) suggests that aid went to areas held by the opposition, and the ruling party's popularity is low.

The four variables that have dominated sub-national foreign aid allocation studies are needed (measured by poverty), donor coordination, political violence, and electoral control. The studies have found little evidence that aid targets needs at the sub-national level and that donors are largely not coordinating their aid allocations with one another. Political violence tends to attract aid allocations, at least in areas where the aid might be efficacious. There is some evidence that aid is allocated to areas controlled by the governing party, but the finding is not yet conclusive due to alternative results in different studies.

What is just as notable are the alternative variables missing from these studies. For example, state capacity might factor into where aid projects go if donors are looking to “plug” the gaps where the recipient state is absent, as has been examined concerning non-governmental organizations (Brass 2016, 28-59). Similarly, future work could consider patterns of state spending on different sectors and try to integrate the current datasets on foreign aid with national budgetary data to get a complete picture of the fiscal situation in developing countries. The World Bank has begun making such data available through the Open Budget Portal (<http://wbi.worldbank.org/boost/>), allowing scholars to explore the sub-national distribution and effect of national spending.

What Sub-National Aid Does

Along with asking where aid goes, scholars have begun to ask what aid does. In this formulation, aid project locations become the independent variable, and scholars examine dependent variables associated with aid. Similarly to the independent variables of interest in studies of sub-national aid allocation, scholars have focused on need, political violence, and electoral control as factors that may be affected by foreign aid.

The first outcome of interest is how aid affects economic growth at the sub-national level. In Malawi, Khomba and Trew (2017) present evidence that aid has contributed to economic growth at the constituency level and that bilateral aid substantially affects growth more than multilateral aid. Dreher and Lohmann (2015) examine the effect of World Bank projects on economic growth but find little evidence that World Bank aid has had a causal effect on growth (as measured by nighttime light emissions). Civelli et al. (2017) use a regional panel vector-autoregressive model to look at bilateral and multilateral aid to Uganda and find evidence of a small but positive effect of aid on household expenditure (again, as measured by nighttime light emissions). Dreher et al. (2021) use an instrumental variables approach to find that Chinese aid is associated with a 0.7 percent increase in economic growth two years following the aid commitment. Interestingly, Dreher et al. also find that World Bank aid does not contribute to economic growth.

Economic growth is one way to measure well-being, but there are other indicators that scholars have examined with regard to the potential effects of foreign aid. D'Onofrio and Maggio (2015) find that aid in Uganda is associated at the sub-national level with

increased trust, suggesting that aid may help promote social cohesion. Campbell et al. (2014) similarly examine the effect of UN peacebuilding projects at the sub-national level in Burundi, finding that these projects are associated with higher levels of social trust and cohesion than areas without such projects. Isaksson and Kotsadam (2018) are interested in whether Chinese aid projects fuel corruption and find evidence that they do while World Bank projects do not (see also Brazys et al. 2017). As social cohesion is undermined by corruption, Chinese aid might undermine cohesion. Health is another important component of well-being, one that studies on sub-national aid are just beginning to explore. One such study, again set in Uganda (Odokonyero et al. 2018, 742-743), shows that health aid can reduce disease burden and severity.

Scholars have studied how foreign aid affects violence. The two main lines of argumentation are whether aid increases violence, and if so, by which causal mechanisms, or whether aid reduces violence, and again by which mechanism (Zürcher 2017, 515-517). Strandow et al. (2016) suggest that when concentrated in particular areas in countries undergoing civil conflict, foreign aid can increase the probability of conventional battles, while dispersed aid increases irregular, unconventional fighting. Interestingly, Van Weezel (2015) does not find a positive or negative effect of aid on conflict. Wood and Sullivan (2015) show a positive relationship between humanitarian aid and civil war violence, arguing that aid increases looting opportunities and creates obstacles for rebel governance. Wood and Molfino (2016) similarly find that humanitarian aid increases the frequency of battles in countries undergoing civil war.

The effects of foreign aid on electoral results are the final outcome of interest that scholars

have examined. Jablonski (2014) shows that World Bank projects were directed at areas populated by co-ethnic voters of the governing party in Kenya and helped to increase the governing party's vote margins during elections. Briggs (2014) reached a similar conclusion, finding that aid played a role in perpetuating Kenya's patronage system that rewarded the president's political allies.

As in the previous section, the findings on sub-national aid's effects are inconclusive. Some studies suggest that Chinese aid may boost economic growth, but other studies show it bolsters corruption. World Bank projects do not bolster economic growth, but at least do not increase corruption. Some studies treat nighttime emissions as proxies for economic growth, while others treat them as evidence of household consumption. Some evidence suggests that aid, particularly humanitarian aid, bolsters battles during civil war. However, a more general relationship between sub-national foreign aid and conflict onset has yet to be established. The most consistent finding is that aid helped establish political control in Kenyan elections, but at some level, it would be more surprising if this was not the case.

The data limitations of the current generation of sub-national aid studies are also apparent. In addition to the need for studies of sub-national state capacity and the relationship of foreign aid with national budgetary spending, the lack of sub-national variables is problematic. AidData is making available a geocoded version of Afrobarometer, and several of the studies cited above use Afrobarometer survey data to track the relationship between aid and citizen attitudes. The problem with Afrobarometer and similar surveys such as Demographic and Health Surveys sponsored by USAID is that they are not necessarily representative at the

sub-national level but instead only claim to be representative at the national level.

Conclusion and Next Steps

Two themes emerge from this review. First, the example of sub-national foreign aid shows how scholarly research can evolve in response to policy changes at the international level. Specifically, the interest in sub-national foreign aid accompanies a broader awareness and concern for transparency and accountability in aid information. Additionally, the decreased cost and increased accessibility of GIS software makes the analysis of sub-national foreign aid more feasible.

Secondly, despite the important work that has already been done on the relationship between foreign aid and outcomes such as political violence, economic growth, and electoral control, important research frontiers remain yet to be fully explored. One such area is the relationship between sub-national foreign aid allocation and national budgetary spending. Incorporating budgetary spending is necessary for scholars to more fully understand the fiscal situation within developing countries. More generally, work remains on sub-national state capacity and the extent to which foreign substitutes for or supplement state control. Also, better sub-national indicators are needed. Current research tends to rely on public survey data, such as Afro-barometer, for sub-national covariates, but these data are limited in that they need to be (nor claim to be) representative at the subnational level. Scholars of foreign aid might collaborate with public opinion scholars to create targeted surveys representative of specific sub-national areas to understand how foreign aid affects different public attitudes.

References

- Alpino, Matteo, and Eivind Hammersmark Olsen. "On a Mission from God: The historical roots of development aid allocation." (2016). *Working paper*.
- Avgerou, Chrisanthi. "Discourses on ICT and development." *Information Technologies & International Development* 6, no. 3 (2010): 1-18.
- Bezerra, Paul, and Alex Braithwaite. "Locating foreign aid commitments in response to political violence." *Public Choice* 169.3-4 (2016): 333–355.
- Brass, Jennifer. *Allies or adversaries: NGOs and the state in Africa*. Cambridge University Press, 2016.
- Brazys, Samuel, Johan A. Elkink, and Gina Kelly. "Bad neighbors? How co-located Chinese and World Bank development projects impact local corruption in Tanzania." *The Review of International Organizations* 12, no. 2 (2017): 227–253.
- Briggs, Ryan C. "Poor targeting: A gridded spatial analysis of the degree to which aid reaches the poor in Africa." *World Development* 103 (2018): 133–148.
- Briggs, Ryan C. "Does Foreign Aid Target the Poorest?" *International Organization* 71.1 (2017): 187–206.
- Briggs, Ryan C. "Aiding and abetting: project aid and ethnic politics in Kenya." *World Development* 64 (2014): 194–205.
- Campbell, Susanna, T. Dexter, M. Findley, S. Hofmann, J. Marineau, and D. Walker. "Independent External Evaluation: UN Peacebuilding Fund Project Portfolio in Burundi, 2007-2013." 2014. *UN Peacebuilding Fund*.
- Carothers, Thomas and Saskia Brechenmacher. 2014. *Accountability, Transparency, Participation, and Inclusion: A New Development Consensus?* Washington, DC: Carnegie Endowment for International Peace. Available at http://carnegieendowment.org/files/new_development_consensus.pdf. Accessed 1 September 2015.
- Civelli, Andrea, Andrew Horowitz, and Arilton Teixeira. "Foreign Aid and Growth at the Subnational Level." (2017). *AidData Working Paper 36*.
- Davies, Ian C.; Brümmer, Julia; Vaca, Sara; Weiss, Lauren (October 2015). "Evaluation of the International Aid Transparency Initiative IATI: "Evaluation of IATI as a Political Initiative": Final Report."
- D'Onofrio, Alexandra, and Giuseppe Maggio. "Does foreign aid fuel trust?" (2015). *Aid Data Working Paper 17*.

- Dreher, Axel, Andreas Fuchs, Bradley Parks, Austin Strange, and Michael J. Tierney. "Aid, China, and growth: Evidence from a new global development finance dataset." *American Economic Journal: Economic Policy* 13, no. 2 (2021): 135-74.
- Dreher, Axel, Andreas Fuchs, Roland Hodler, Bradley C. Parks, Paul A. Raschky, and Michael J. Tierney. "African leaders and the geography of China's foreign assistance." *Journal of Development Economics* 140 (2019): 44-71.
- Dreher, Axel, and Steffen Lohmann. "Aid and growth at the regional level." *Oxford Review of Economic Policy* 31.3-4 (2015): 420-446.
- Dunn, Christine E., Peter J. Atkins, and Janet G. Townsend. "GIS for development: a contradiction in terms?" *Area* 29, no. 2 (1997): 151-159.
- Findley, Michael G., Josh Powell, Daniel Strandow, and Jeff Tanner. "The localized geography of foreign aid: A new dataset and application to violent armed conflict." *World Development* 39, no. 11 2011: 1995-2009.
- Findley, Michael G., and Joseph K. Young. "Terrorism and civil war: A spatial and temporal approach to a conceptual problem." *Perspectives on Politics* 10, no. 2 (2012): 285-305.
- Gleditsch, Kristian Skrede, and Nils B. Weidmann. "Richardson in the information age: Geographic information systems and spatial data in international studies." *Annual Review of Political Science* 15 (2012): 461-481.
- Jablonski, Ryan S. "How aid targets votes: the impact of electoral incentives on foreign aid distribution." *World Politics* 66.2 (2014): 293-330.
- Khomba, Daniel Chris, and Alex Trew. "Aid and growth in Malawi." 2017. *AidData Working Paper 42*.
- Kotsadam, Andreas, Gudrun Østby, Siri Aas Rustad, Andreas Forø Tollefsen, and Henrik Urdal. "Development Aid and Infant Mortality." (2017). *AidData Working Paper 39*.
- Isaksson, Ann-Sofie, and Andreas Kotsadam. "Chinese aid and local corruption." *Journal of Public Economics* 159 (2018): 146-159.
- Longley, Paul A., Michael F. Goodchild, David J. Maguire, and David W. Rhind. *Geographic information science and systems*. John Wiley & Sons, 2015. Masaki, Takaaki. "The political economy of aid allocation in Africa: Evidence from Zambia." *African Studies Review* 61, no. 1 (2018): 55-82.
- Marineau, Josiah F., and Michael G. Findley. "'The Swarm Principle': A Sub-National Spatial Analysis of Aid Targeting and Donor Coordination in Sub-Saharan Africa." *Stability: International Journal of Security and Development* 9, no. 1 (2020).

- Marineau, Josiah, Henry Pascoe, Alex Braithwaite, Michael Findley, and Joseph Young. "The local geography of transnational terrorism." *Conflict Management and Peace Science* 37, no. 3 (2020): 350-381.
- Milner, Helen V., Daniel L. Nielson, and Michael G. Findley. "Citizen preferences and public goods: comparing preferences for foreign aid and government programs in Uganda." *The Review of International Organizations* 11.2 (2016): 219–245.
- Nielsen, Richard A., Michael G. Findley, Zachary S. Davis, Tara Candland, and Daniel L. Nielson. "Foreign aid shocks as a cause of violent armed conflict." *American Journal of Political Science* 55, no. 2 (2011): 219–232.
- Nunnenkamp, Peter, Alben Sotirova, and Rainer Thiele. "Do aid donors specialize and coordinate within recipient countries? The case of Malawi." *Development Policy Review* 34.6 (2016a): 831-849.
- Nunnenkamp, Peter, Hannes Öhler, and Maximiliano Sosa Andrés. "Need, merit and politics in multilateral aid allocation: A district-level analysis of World Bank projects in India." *Review of Development Economics* 21.1 (2017): 126-156.
- Nunnenkamp, Peter, Michaela Rank, and Rainer Thiele. "Aid fragmentation and donor coordination in Uganda: A district-level analysis." *The Fragmentation of Aid*. Palgrave Macmillan UK, 2016b. 153-164.
- Odokonyero, Tonny, Robert Marty, Tony Muhumuza, Alex T. Ijjo, and Godfrey Owot Moses. "The impact of aid on health outcomes in Uganda." *Health economics* 27, no. 4 (2018): 733-745.
- Öhler, Hannes, and Peter Nunnenkamp. "Needs-based targeting or favoritism? The regional allocation of multilateral aid within recipient countries." *Kyklos* 67.3 (2014): 420-446. Paris Declaration on Aid Effectiveness: Ownership, Harmonisation, Alignment, Results, and Mutual Accountability. (2005).
- Raleigh, Clionadh, Andrew Linke, Håvard Hegre, and Joakim Karlsen. "Introducing ACLED: an armed conflict location and event dataset: special data feature." *Journal of peace research* 47.5 (2010): 651-660.
- Salehyan, Idean, Cullen S. Hendrix, Jesse Hamner, Christina Case, Christopher Linebarger, Emily Stull, and Jennifer Williams. "Social conflict in Africa: A new database." *International Interactions* 38.4 (2012): 503–511.
- Strandow, Daniel, Michael G. Findley, and J. M. Young. "Foreign aid and the intensity of the violent armed conflict." *Aid Data Working Paper 24* 2016.

- Strandow, Daniel, Michael Findley, Daniel Nielson, and Josh Powell. "The UCDP-AidData codebook on geo-referencing foreign aid." Version 1.1 2011.
- Strange, Austin M., Axel Dreher, Andreas Fuchs, Bradley Parks, and Michael J. Tierney. "Tracking underreported financial flows: China's development finance and the aid–conflict nexus revisited." *Journal of Conflict Resolution* 61, no. 5 (2017): 935–963.
- Sundberg, Ralph, Mathilda Lindgren, and Ausra Padskocimaite. "UCDP GED codebook version 1.0-2011." *Department of peace and conflict research, Uppsala University* (2010). Sundberg, Ralph, and Erik Melander. "Introducing the UCDP georeferenced event dataset." *Journal of Peace Research* 50, no. 4 (2013): 523-532.
- Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. "More dollars than sense: Refining our knowledge of development finance using AidData." *World Development* 39, no. 11 2011: 1891-1906.
- Weaver, Catherine, Stephen Davenport, Justin Baker, Michael Findley, Christian Peratsakis, and Josh Powell. "Malawi's open aid map." *Washington, DC: World Bank* 2014.
- van Weezel, Stijn. "A Spatial Analysis of the Effect of Foreign Aid in Conflict Areas." *Aid Data Working Paper 8* 2015.
- Winters, Matthew S. "Targeting, accountability and capture in development projects." *International Studies Quarterly* 58, no. 2 (2014): 393–404.
- Wood, Reed M., and Christopher Sullivan. "Doing harm by doing good? The negative externalities of humanitarian aid provision during civil conflict." *The Journal of Politics* 77.3 (2015): 736–748.
- Wood, Reed M., and Emily Molfino. "Aiding victims, abetting violence: The influence of humanitarian aid on violence patterns during civil conflict." *Journal of Global Security Studies* 1.3 2016: 186–203.
- Zürcher, Christoph. "What do we (not) know about development aid and violence? A systematic review." *World Development* 98 2017: 506–522.