Three methods for rigorous impact evaluation: strength and weaknesses with RCT, GIE and QCA

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GIE $\Rightarrow$ Geospatial Impact Evaluation

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Geospatial analysis of aid:
A new approach to aid evaluation

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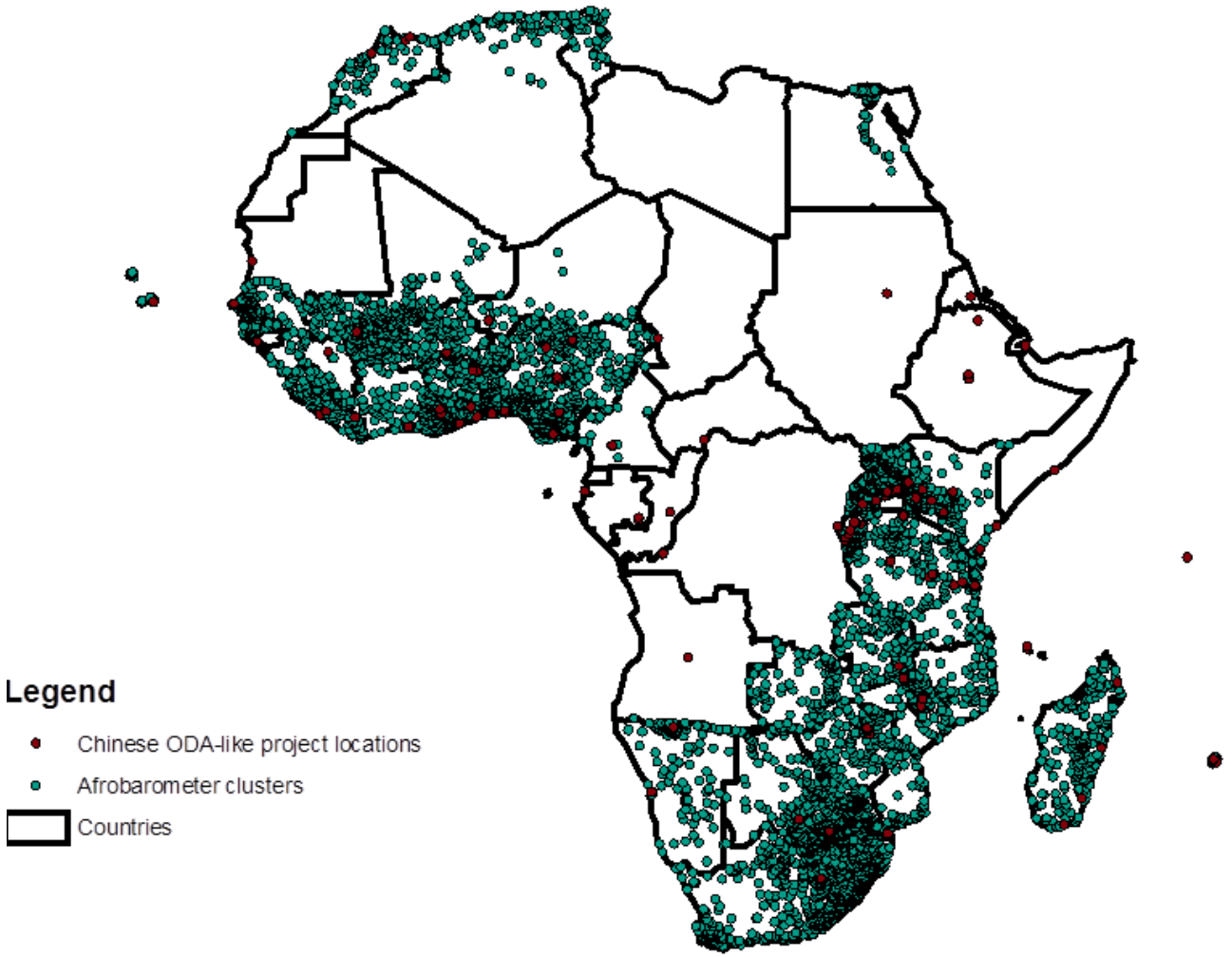
Geocoded outcome data: e.g. geocoded survey or satellite data

⇒ Combining these data sources makes it possible to evaluate the local effects of development projects (or other policies/investments/events etc.) systematically and on a wide scale

⇒ Focusing on sub-national variation, GIE provides an intermediate perspective between micro and macro level studies

Chinese aid projects and Afrobarometer coverage



Rapid increase in availability of geocoded data

Increased availability of geocoded data on aid projects (see AidData.org)

- World Bank, African Development Bank, Asian Development Bank, China, India
- Some aid receiving countries geocode incoming aid flows (e.g. Nigeria, Uganda, Senegal, Malawi, Afghanistan)

Increased availability of geocoded outcome data

- Household/individual survey data increasingly geocoded
- Increased availability of geocoded data from satellite imagery, and from mobile phone, internet and credit card use

$\Rightarrow$ Growing number of studies utilizing geospatial data

Examples of aid studies applying GIE

- Effects of aid on local conflict (Wood and Sullivan, 2015; Strandow et al., 2016)
- Effects of health aid projects on health outcomes (Rajlakshmi and Becker, 2015 on Malawi; Odokonyero et al., 2015 on Uganda)
- Effects of Chinese aid on local corruption (Isaksson and Kotsadam, 2017)
- Environmental impacts of development projects (BenYishay et al., 2016 on Chinese aid; Buchanan et al. 2016 on World Bank aid)
- Impact of foreign aid on gender-related outcomes (e.g. domestic violence) (Berlin et al., 2017).

Strengths of GIE

- Make it possible to rigorously evaluate project impact in cases when it is not feasible to conduct an RCT
  - Can control for potential confounding factors at the local level
  - Well-suited for quasi-experimental methods (e.g. difference-in-differences, propensity score matching) for causal identification

- Relatively strong in terms of generalizability – across space and over time.
  - Makes it possible to estimate the impact of a multitude of development projects, potentially across several countries
  - Often draw on outcome data that covers long time periods

- Relatively cost-effective since the approach enables researchers and evaluators to utilize comprehensive existing data materials that are often publicly available

Limitations of GIE

- Geospatial analysis is not appropriate for all types of development projects.
  - Need a well-defined project site (e.g. local interventions in terms of health, education or local governance)
  - Some projects are implemented at more aggregate levels, such as a district or greater administrative region, and some lack a clear project site (consider e.g. debt-relief agreements, budget- and sector support).

- Data restrictions
  - Gaps in the geocoded aid data makes it difficult to get a full picture of all development projects located in the area.
  - The questions one can address with geospatial data, without further data collection, is limited by the information available in existing data sources

When is GIE appropriate to use?

GIE is appropriate to use

- When the project (/policy/event) can be connected to local project sites and you have sub-national variation in project coverage
- When there is relevant geocoded outcome data (e.g. from surveys or satellite imagery) that can be connected to these same areas

GIE is *not* appropriate (or equally suitable) to use

- When the project (/policy/event) lacks a well-defined local project site and you have no sub-national variation in project coverage
- When it is not possible to connect the geocoded project data to relevant geocoded outcome data

Potential of GIE for Swedish aid evaluation

Swedish aid not yet geocoded on a wide scale:

- A reasonable first step: screen and compile already available geocoded data pertaining to Swedish aid flows

Deciding to geocode, there are different options:

- Hire coders to do broad portfolio level geocoding of past and ongoing projects (needs to be preceded by a screening of the potential for geocoding different parts of the aid portfolio)
- Geocode specific projects of particular interest in a more detailed manner
- Provide support to partner country initiatives to geocode incoming aid flows

Other applications of GIE

- GIE not only applicable to aid projects.
- In other contexts too, GIE requires that the project(/policy/event) can be connected to local project sites and that you have sub-national variation in project coverage
- Example of policy rolled out to specific localities in Sweden? $\Rightarrow$ the EU regional support funds (The European Structural and Investment Funds)
- Access to geocoded outcome data?
  - Statistics Sweden provides access to geocoded data on e.g. demographics, socio-economic conditions, school performance etc.
  - Geocoded data from satellite imagery, and from mobile phone / internet / credit card use applicable in a Swedish context as well

In sum...

- GIE a fruitful approach when interested in projects implemented in clearly defined geographical localities (otherwise not)
- Combining geocoded project and outcome data makes it possible to evaluate the local effects of projects systematically and on a wide scale
  $\Rightarrow$ provides an intermediate perspective between evaluations of individual projects and performance evaluation at the national level
- A rapid increase in the availability of geocoded data, often publicly available, offers great opportunities for cost-effective evaluation