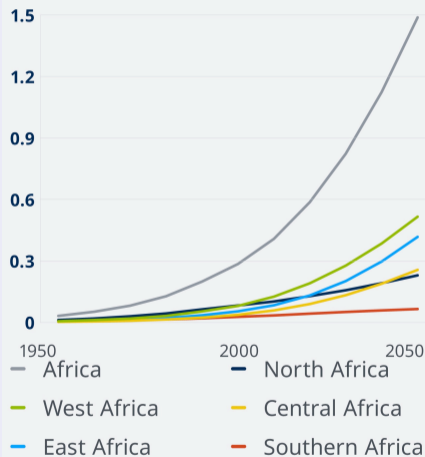# Sustainable Urbanization

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Everything I will Say

1. We will have urbanization in developing countries
   - ▶ Likely sped up by climate migration

2. Externalities mean it could be good, or bad
   - ▶ Which occurs is a policy choice

3. Appropriate policies are theoretically known
   - ▶ Address the externalities of density

4. But, we *need* empirical work, which means
   - ▶ Policy Experimentation
   - ▶ Early collaboration
   - ▶ Bespoke data collection

Urbanization is Coming: Africa as an Example

Chart: African urban population (billions) 1950–2050 by region — Africa, North Africa, West Africa, Central Africa, East Africa, Southern Africa.

UN predicts

- ► 1.5 Billion Urban Residents in Africa by 2050
- ► 1 Billion more than now

Why?

- ► Growth/Urbanization Correlation
- ► Climate Migration

Two Possible Outcomes: The Best Case

Density Creates Positive Externalities - The Pros:

1. Protected:
   ▶ A dense community is easier to protect (citadel)
   ▶ Cities can be anywhere (ideas, not place)

2. Pollution Free:
   ▶ Your proximity means I can walk
   ▶ Your AC cools me
   ▶ etc.

3. Productive:
   ▶ My ideas help you
   ▶ Large labor pool improves matching
   ▶ etc.

Two Possible Outcomes: The Worst Case

Density Creates Negative Externalities - The Cons:

1. Congested:
   - ▶ My car use slows you

2. Climate vulnerable:
   - ▶ e.g., informal housing often sits in flood plains
   - ▶ but social networks are hard to move

3. Carbon emitting:
   - ▶ e.g., urban heat $\rightarrow$ AC
   - ▶ idling cars are worse for pollution

4. Conflictual:
   - ▶ How will incumbents cope with mass in-migration?

Two Possible Outcomes: A Policy Choice

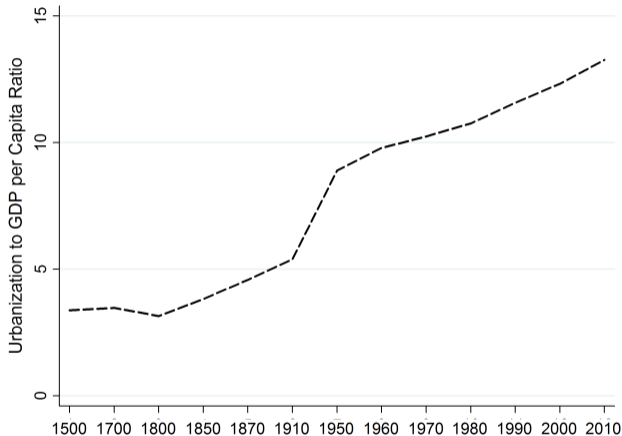Externalities require Collective Action

A Challenge: Urbanization Without Growth

Gov resources:
- ► Income; and
- ► State Capacity

Are historically low
- ► Relative to Population

Source: Jedwab and Vollrath

Implications: Theory

Efficient use of resources is key

▶ Efficiency requires the state does only those things the market will not

▶ Leverage private resources to achieve state aims

In principle this means follow the externalities:

▶ Out-Migration affects the left behind

▶ In-Migration affects host communities

▶ Informal housing is often misallocated

▶ Fixed costs of infrastructure mean it's a natural monopoly

▶ My waste is your water supply

▶ Etc.

Implications: Emprics

Theory can be very helpful:

► Ask: What is the least cost action to create a market?

► e.g., can mandating waste separation create a market for waste?

► e.g., can site and services move informal populations?

So we know the theoretical answer

► But, we do not usually know the empirical answer

How to we get empirical answers?

We need
- ▶ Policy experimentation
- ▶ Early collaboration
- ▶ Bespoke data collection

Two examples from my own work ...

Example: Evicted in Ethiopia (with Franklin and Winton)

Informal housing - negatives:

- ▶ Vulnerable to climate change
- ▶ Infrastructure hard to supply
- ▶ Land may be misallocated etc.

Informal housing - positives

- ▶ Close to jobs
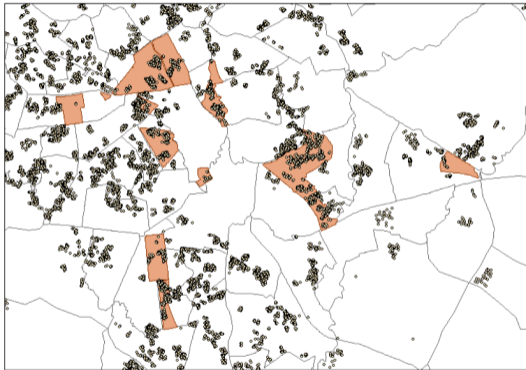- ▶ Social networks etc.

Forced slum clearance is common

- ▶ But, what needs to be done in compensation?

We study a large evictions program in Addis

- ▶ Experimentation is necessary
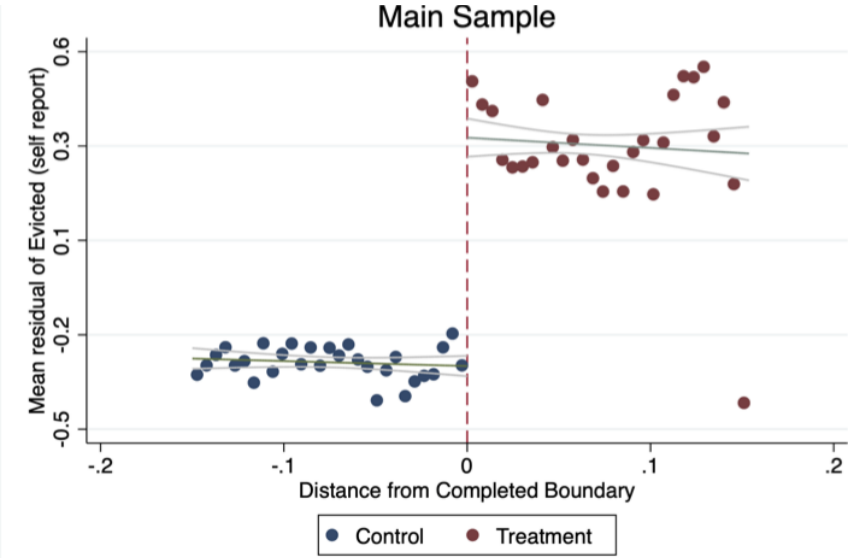
Evicted in Ethiopia: Importance of Early Collaboration

Happen to have WB funded baseline

- ► Collected before announcement
- ► Large sample
- ► Geo-located

Evicted in Ethiopia: Importance of Early Collaboration

Main Sample

Evicted in Ethiopia: Perhaps Not That Bad?

	Expenditure	Non-Rent/Transport Expenditure	Transport Costs	Rent	Food Consumption	Total earnings per working-aged member
Panel A: Average Treatment Effects						
RD_Estimate	208.309	38.629	23.560	176.840	39.509	304.277
	(94.006)**	(80.770)	(8.713)***	(36.656)***	(35.398)	(145.810)**
Control Mean	1271.63	1155.68	57.03	58.93	762.12	1441.04
Observations	1763	1749	1749	1749	1749	1722
Panel B: Housing Privately Owned at Baseline						
RD_Estimate	323.742	160.203	14.746	205.225	65.221	339.917
	(246.211)	(194.015)	(24.396)	(107.509)*	(97.564)	(346.309)
Control Mean	1339.99	1248.05	66.33	25.60	850.28	1468.19
Observations	235	233	233	233	233	231
Panel C: Housing Privately Rented at Baseline						
RD_Estimate	334.607	139.934	47.400	168.375	-18.631	529.037
	(289.919)	(240.364)	(23.817)**	(112.702)	(84.683)	(402.147)
Control Mean	1565.67	1178.78	57.81	329.09	785.95	1777.25
Observations	291	289	289	289	289	288
Panel D: Government Housing at Baseline						
RD_Estimate	164.498	4.290	16.840	169.684	30.421	212.347
	(102.295)	(93.539)	(10.034)*	(35.658)***	(42.248)	(173.470)
Control Mean	1191.90	1124.39	54.72	12.79	738.73	1387.93
Observations	1237	1227	1227	1227	1227	1203

Evicted in Ethiopia: Importance of Bespoke Data

	Network size	Network satisfaction	Neighbours- litter	Neighbours- caring	Neighbours- fights
Panel A: Average Treatment Effects					
RD_Estimate	-3.410	-0.621	-0.064	-0.308	-0.369
	(2.258)	(0.085)***	(0.089)	(0.093)***	(0.069)***
Control Mean	14.94	3.37	1.98	1.85	0.65
Observations	1763	1749	1749	1749	1749
Panel B: Housing Privately Owned at Baseline					
RD_Estimate	-3.236	-1.109	-0.180	-0.610	-0.867
	(4.531)	(0.214)***	(0.307)	(0.275)**	(0.180)***
Control Mean	13.88	3.49	1.97	1.83	0.55
Observations	235	233	233	233	233
Panel C: Housing Privately Rented at Baseline					
RD_Estimate	-5.762	-0.354	-0.408	-0.056	-0.189
	(3.297)*	(0.207)*	(0.199)**	(0.209)	(0.157)
Control Mean	13.50	3.19	1.95	1.76	0.46
Observations	291	289	289	289	289
Panel D: Government Housing at Baseline					
RD_Estimate	-2.782	-0.572	0.068	-0.265	-0.300
	(3.017)	(0.103)***	(0.102)	(0.107)**	(0.084)***
Control Mean	15.19	3.38	1.98	1.87	0.71
Observations	1237	1227	1227	1227	1227

Evicted in Ethiopia: Summary

What does forced eviction do?

- ▶ Incomes increase
- ▶ But so do rents
- ▶ Networks worsen
- ▶ todo: how can we trade these off?

Example: Inclusive Infrastructure (with Balboni, Morten, O'Connor & Siddiqi)

The issue: Infrastructure is often local

- ► E.g., public transport useful for those who live on the line

But, that means it can be taken!

- ► Build transport → rents increase → the poor are priced out
- ► Local infrastructure may be hard to target

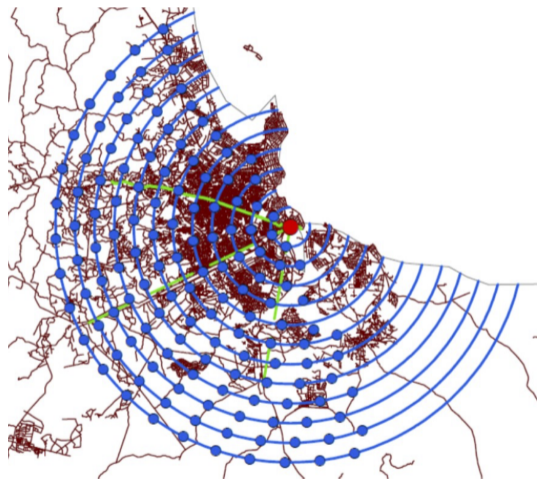To understand, we are evaluating DART

- ► Dar Es Salaam Bus Rapid Transit

DART: Importance of Early Collaboration

Early collaboration through WB

- ► Allowed us to collected baseline
- ► Geo-located
- ► Also ex-ante travel times

Allows "difference in differences"

- ► Did more affected locations see greater changes?

DART: Importance of Bespoke Data

We track arrivers and exiters

	BL	EL	
House 1			Stayer
House 2			Exiter Arriver
Retrospective			Arriver
House 3			Exiter

Also man and women in each hh

Data sets are usually:
- ▶ At location
- ▶ Or structure level

Our data allows us to ask:
- ▶ Are arrivers different?
- ▶ What happens to exiters?
- ▶ Do women use the transport?

DART: Importance of Bespoke Data

Increase FLFP!

LFP at Structure

	(1) Mean	(2) M	(3) F
De-meaned pred. decrease TT CBD Ph1	0.481	-0.066	0.930
	0.179***	0.235	0.190***
Constant	0.000	-0.001	0.001
	0.012	0.013	0.014
N	1320	940	1144
Mean EL value	0.663	0.816	0.542

But also Rent : (

Rent at Structure

	(1) Mean	(2) M	(3) F
De-meaned pred. decrease TT CBD Ph1	0.481	-0.066	0.930
	0.179***	0.235	0.190***
Constant	0.000	-0.001	0.001
	0.012	0.013	0.014
N	1320	940	1144
Mean EL value	0.663	0.816	0.542

DART: Importance of Bespoke Data

There is Evidence of Selection

Baseline Commuting: Arivers v. exiters

	(1) Mean	(2) M	(3) F
De-meaned pred. decrease TT CBD Ph1	0.178	0.127	0.208
	0.095*	0.067*	0.149
Constant	-0.000	0.001	-0.002
	0.007	0.007	0.009
N	712	496	361
Mean EL value	0.676	0.839	0.446

But that is not all the effect!

Impact of BRT on Incumbents

	(1) All	(2) M	(3) F
De-meaned pred. decrease TT CBD Ph1	0.427	0.162	0.729
	0.203**	0.172	0.247***
Constant	0.000	0.001	0.000
	0.014	0.013	0.019
N	2164	994	1170
Mean EL value	0.683	0.838	0.551

Inclusive Infrastructure: Summary

Is DART Inclusive?

- ► Increases FLFP :)
- ► But raises rents : (
- ► Evidence that FLFP partially driven by selection
- ► More to come ...

For both DART and Addis

- ► Early collaboration and bespoke data
- ► Key to answering our questions

Summary

Urbanization is coming

- Externalities mean it could be good or bad
- Sustainable for unsustainable

In Principle we know what to do

- Target the externalities!

In practice we need empirical facts, which requires

1. Policy experimentation
2. Early collaboration
3. Bespoke data collection