Twitter Thread by Daniel Björkegren

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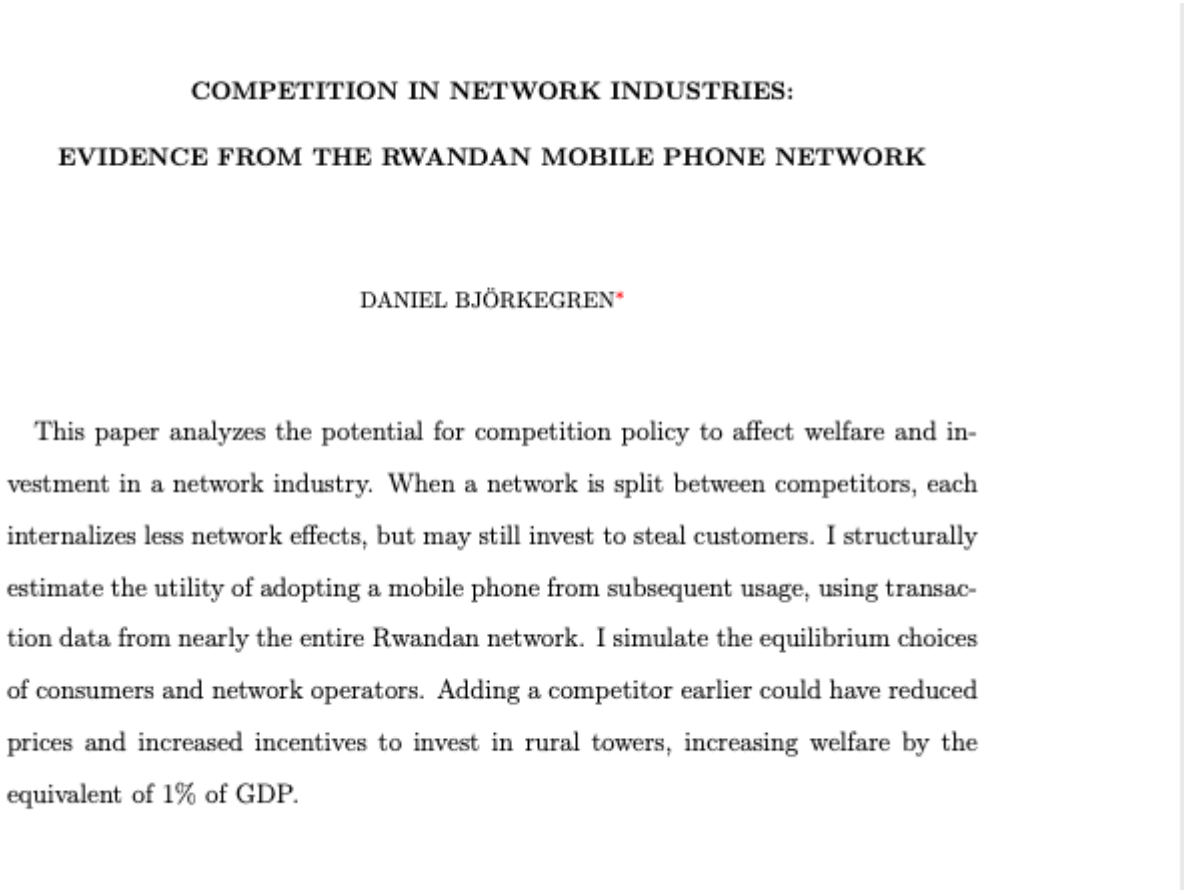
Is it better to split up dominant networks (like social/communication networks) or keep them whole to maximize network effects? I've spent 8 years creating a way to use data to answer this for Rwanda's mobile network, using 5.3b transaction records (1/15) https://t.co/hKC8Vj2PIE



COMPETITION IN NETWORK INDUSTRIES:

EVIDENCE FROM THE RWANDAN MOBILE PHONE NETWORK

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This paper analyzes the potential for competition policy to affect welfare and investment in a network industry. When a network is split between competitors, each internalizes less network effects, but may still invest to steal customers. I structurally estimate the utility of adopting a mobile phone from subsequent usage, using transaction data from nearly the entire Rwandan network. I simulate the equilibrium choices of consumers and network operators. Adding a competitor earlier could have reduced prices and increased incentives to invest in rural towers, increasing welfare by the equivalent of 1% of GDP.

The punchline: allowing an additional competitor in Rwanda's mobile phone system earlier could have reduced prices and increased incentives to invest in rural towers, increasing welfare by the equivalent of 1% of GDP. (2/15)

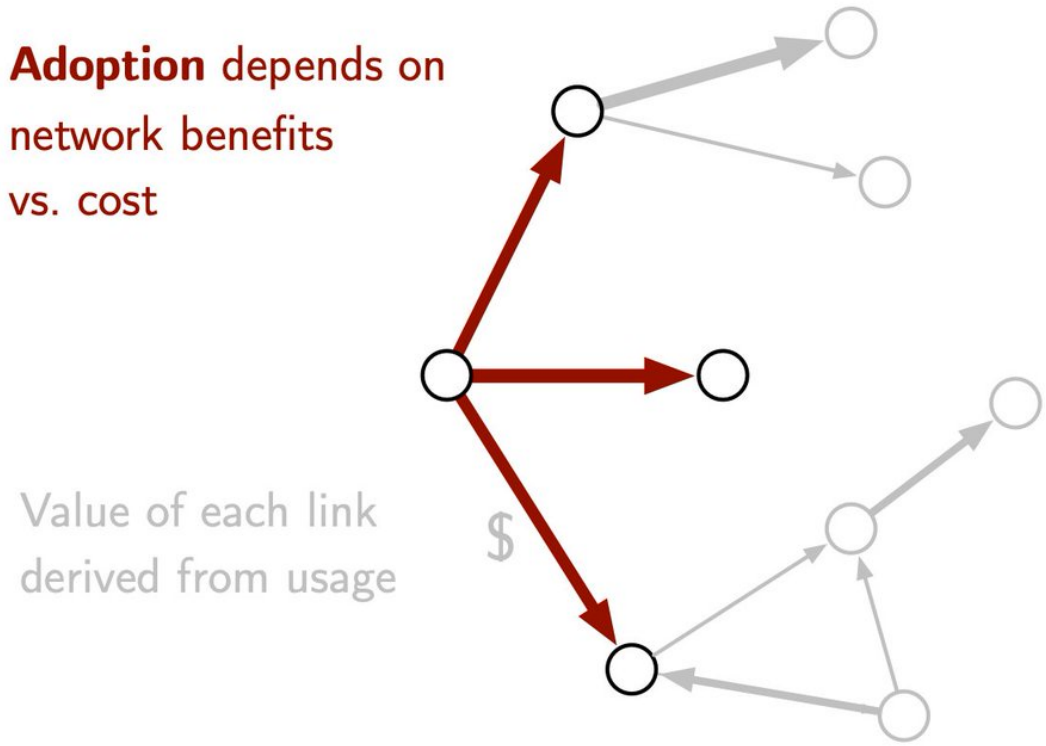
Why study mobile phones in developing countries? Mobile operators are emerging as gatekeepers to information, the internet, and, increasingly, financial transactions. (3/15)

And many of the questions faced by tech antitrust have parallels in telecom: whether to force compatibility, make it easier for users to switch, or split dominant firms. (4/15)

But would encouraging competition improve quality--or reduce it? When a network is split between competitors, each internalizes less network effects. But they may still invest to steal customers. In theory it could go either way. (5/15)

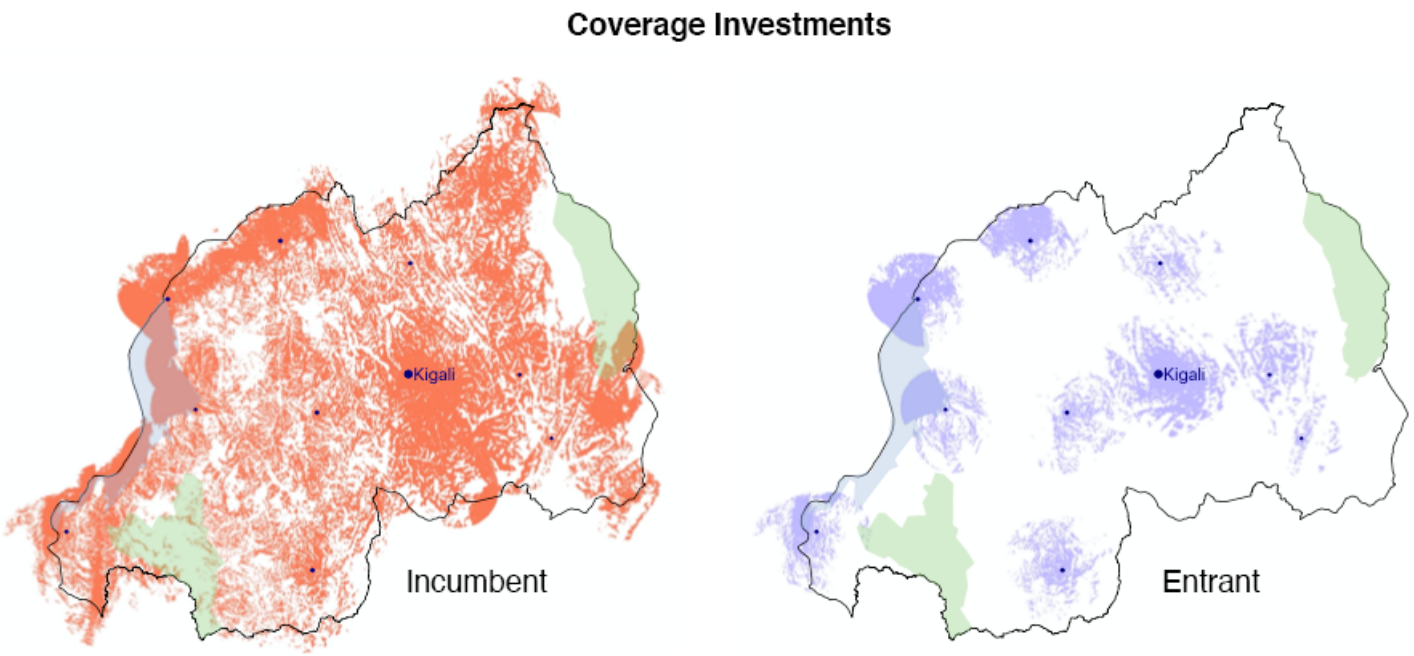
So we should use data to guide our policy. But classical network goods (like communications and social networks) have been difficult to study using data, because users' decisions are interdependent. (6/15)

I created a way to solve this problem, estimating the utility of adopting a mobile phone from its subsequent usage, using 5.3b anonymous transaction records from nearly the entire Rwandan network. (7/15)



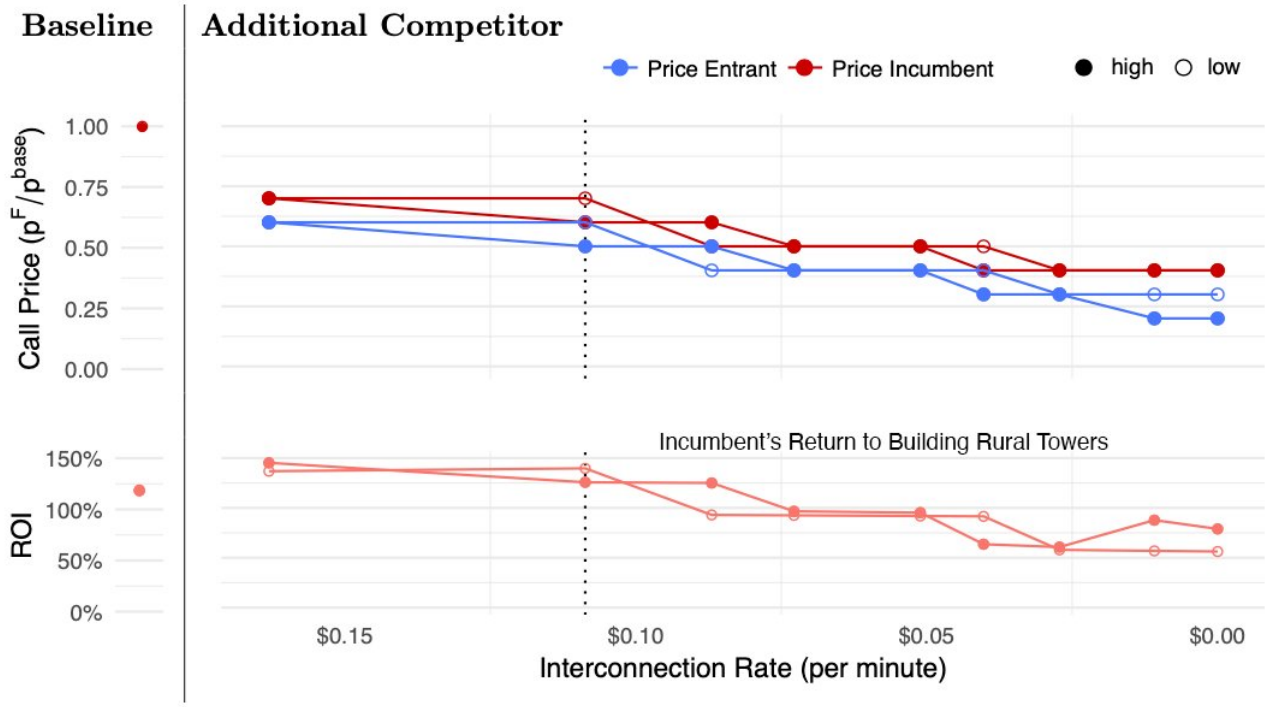
I model the decisions of firms and the network of consumers, as a function of policy. What would have happened had the Rwandan government allowed entry of a new competitor four years earlier? (8/15)

I find that competition can actually increase incentives to invest, when business stealing effects outweigh the lost network effects. In the punchline policy, they do: these uninternalized network effects can be small (7-12%). (9/15)



However, different network competition policies have different effects. (10/15)

As networks are made more compatible (interconnection rates reduced), this allows firms to lower prices. Price competition and lower payments between the networks reduce incentives to invest. (11/15)



If the incumbent, or firms jointly, chose the terms of interconnection, and firms were required to price the same for on- and off-net calls, they would effectively block access and the market would remain essentially the same. (12/15)

But there is a policy that resolves these: I gave away the punchline above! (13/15) https://t.co/5Dv2N2iYgt

> The punchline: allowing an additional competitor in Rwanda\u2019s mobile phone system earlier could have reduced prices and increased incentives to invest in rural towers, increasing welfare by the equivalent of 1% of GDP. (2/15)
>
> — Daniel Bj\xf6rkegren (@danbjork) December 21, 2020

What's neat is that this approach is generic: it can evaluate an entire spectrum of policies, beyond what I consider here: breaking up the incumbent, heterogeneous interconnection rates, directly regulating coverage, and levying taxes. (14/15)

A regulator could use an approach like this to decide how to handle a monopoly network. It uses transaction data from a dominant network + models of firms and consumers, to anticipate how an industry would evolve under different competition policies. (15/15)