

# The Global Network of Payment Flows



Regional Conference on Payments and Market  
Infrastructures

Digital event, June 15-18, 2021  
Banco De La República

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## Motivation & Approach



A payment is virtually tied with every other economic transaction.  
What can payments say about the economy?

First dip into a large scale database provided by SWIFT.

We "Don't know what we don't know". Broad investigation on what kind of insights can be gained from global payment flows.

Provide many questions rather than few answers by measuring over time:

- Flows
- Structure
- Communities
- Centrality

Soramaki and Cook (2014), '[The global network of payment flows](#)', Journal of Financial Market Infrastructure

Update forthcoming in proceedings of CPMI Conference - Pushing the frontiers of payments: towards a global payments area

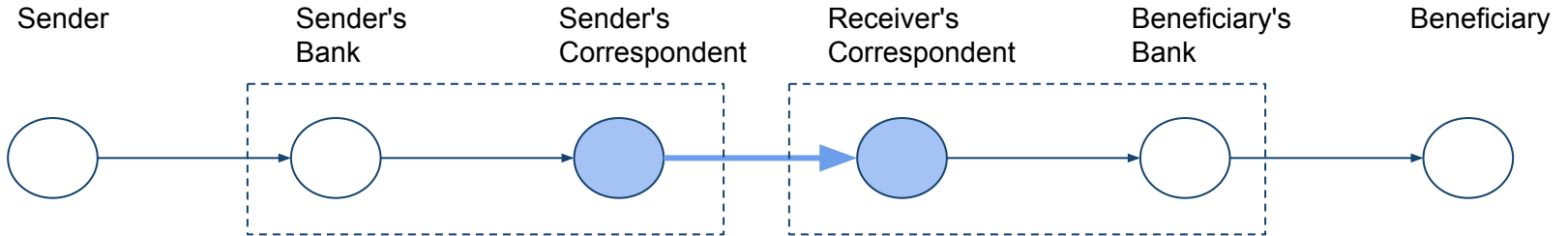
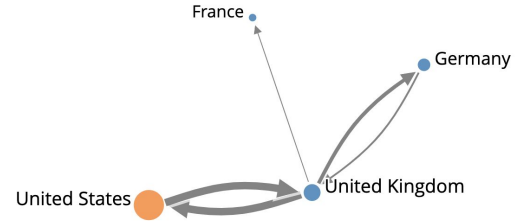
# Data

A total of 8 billion MT103 messages exchanged among 231 countries in 176 currencies, provided by SWIFT Institute

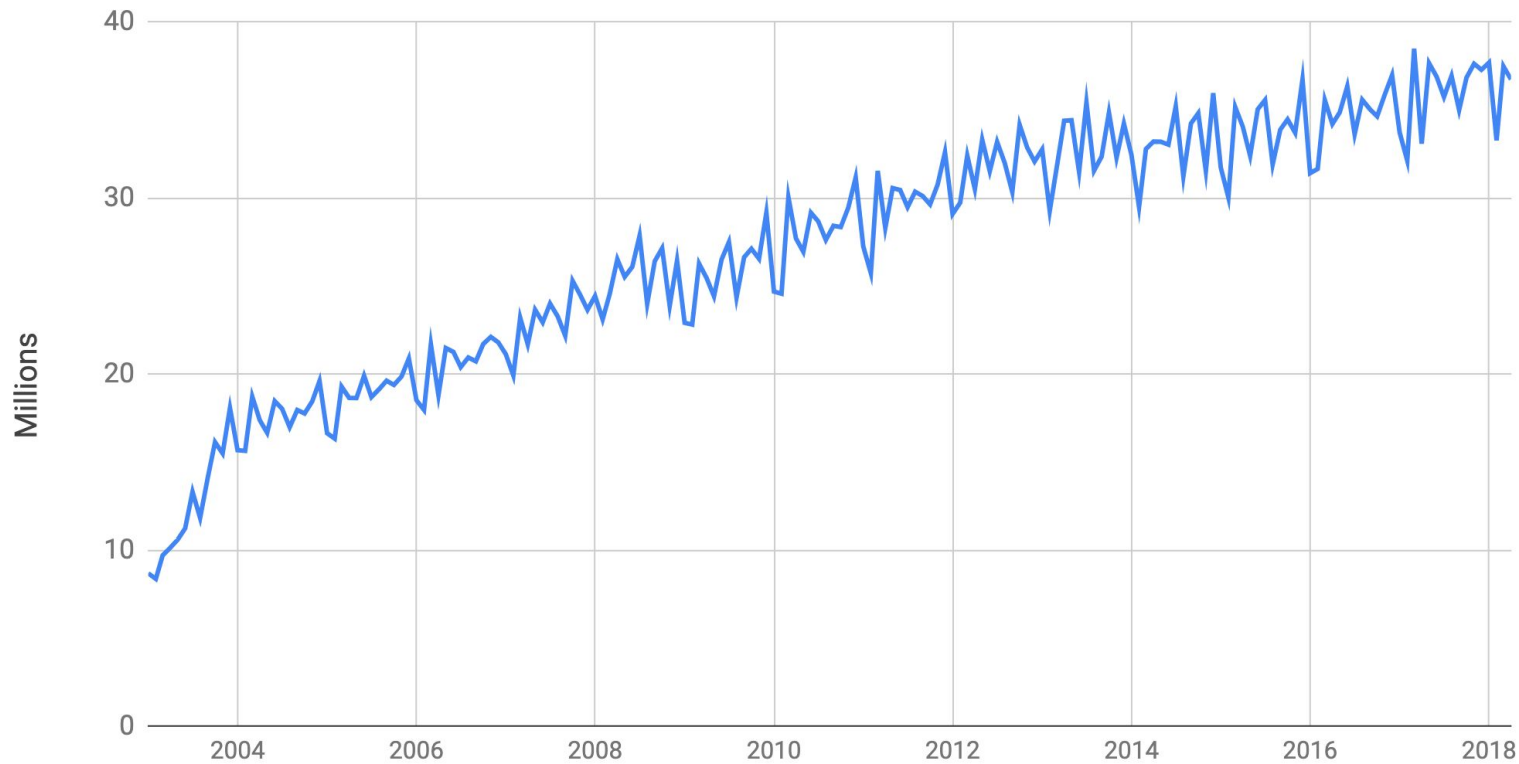
MT103 are single customer credit transfers

Links are established between correspondent banks.

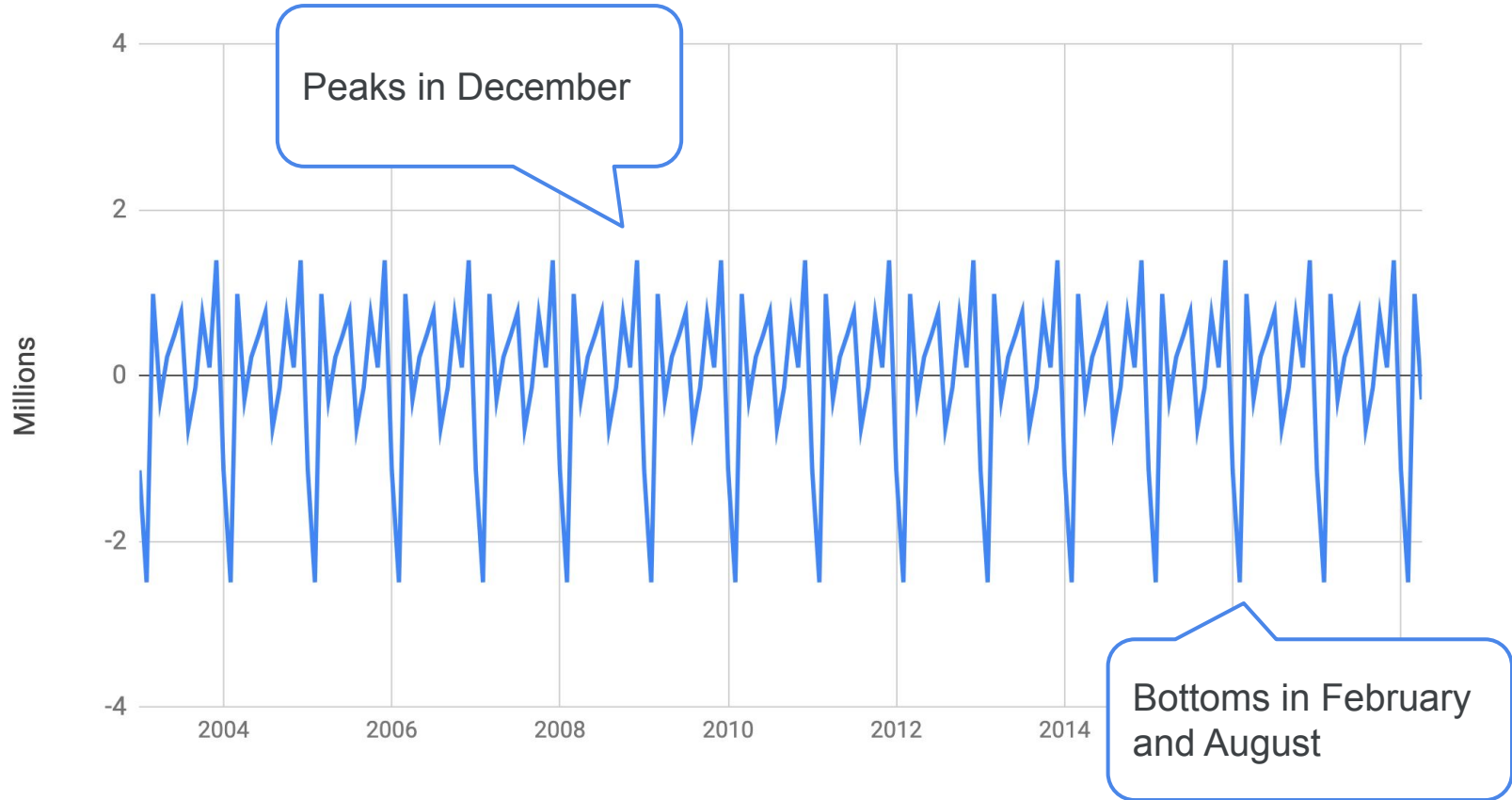
The data was aggregated by Swift to links between countries.



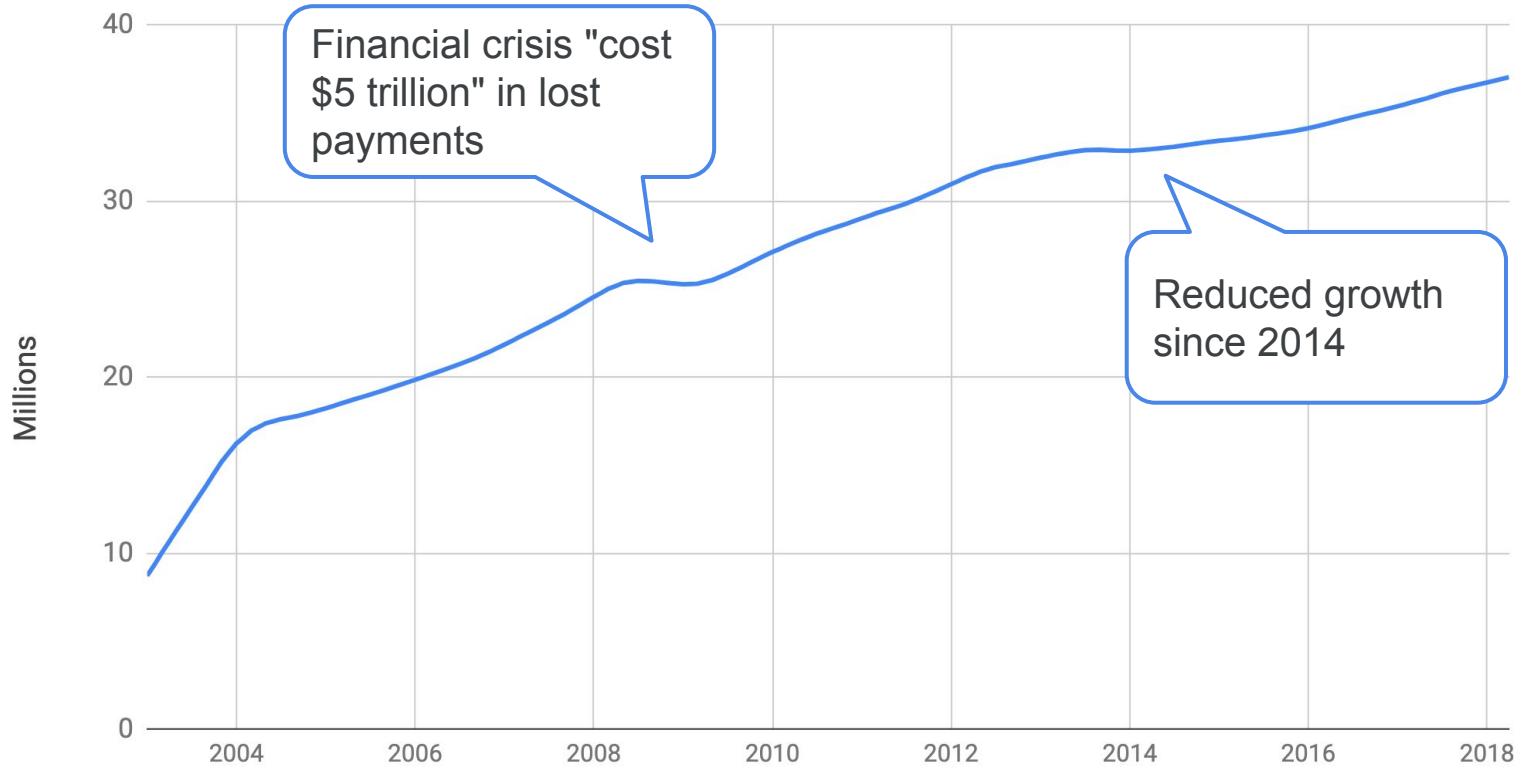
# Monthly total message volume



# Monthly message volume - Seasonal variation

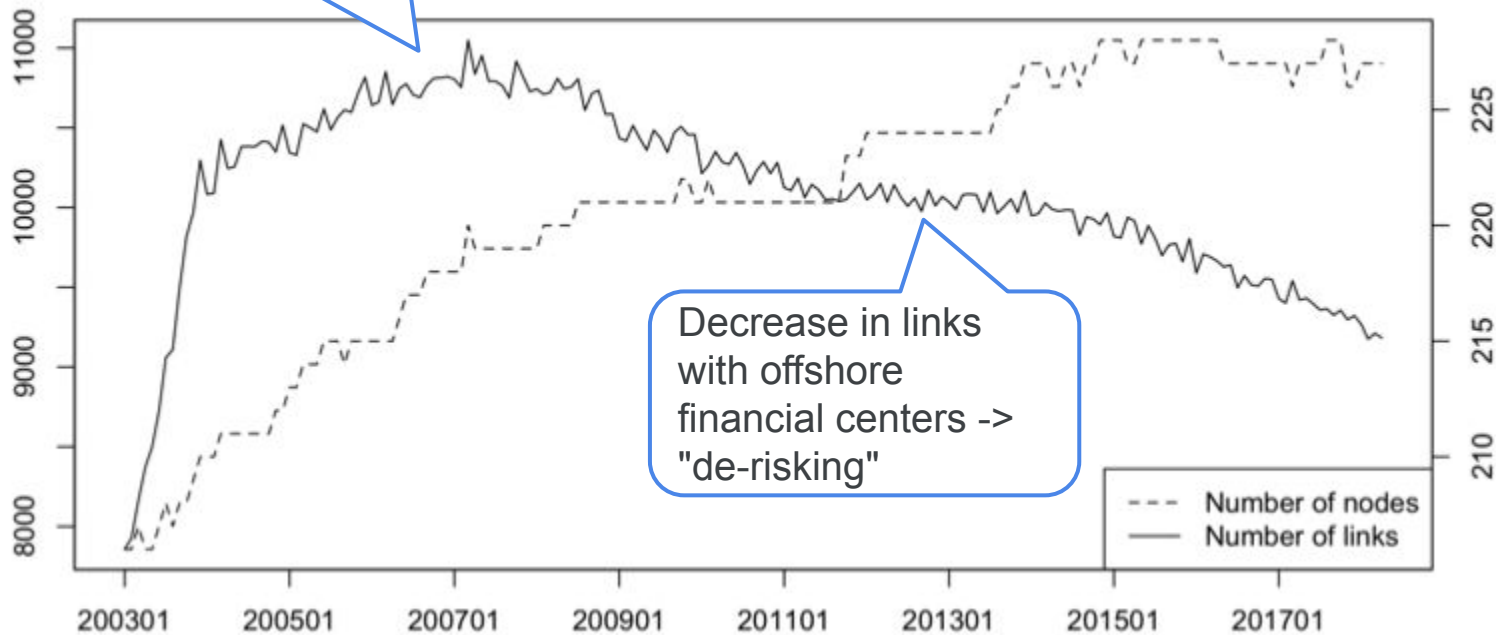


# Monthly message volume - Trend



# Countries and Correspondent Links

Growth in links until GFC with developing countries



Decrease in links with offshore financial centers -> "de-risking"

# SWIFT Network



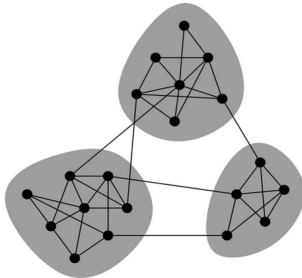
Showing the **maximum spanning tree** of the network which is a filtering technique that identifies the strongest links and the community structure. [\[Link\]](#)



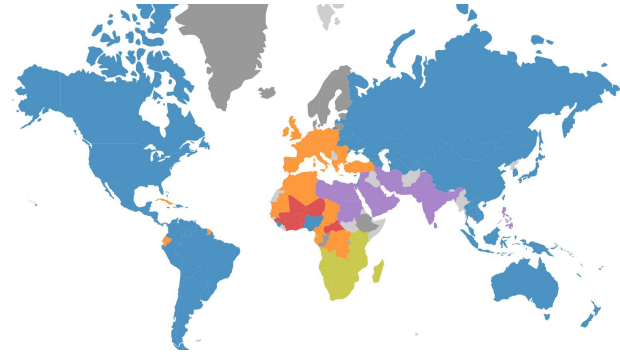


# Communities restructure over time

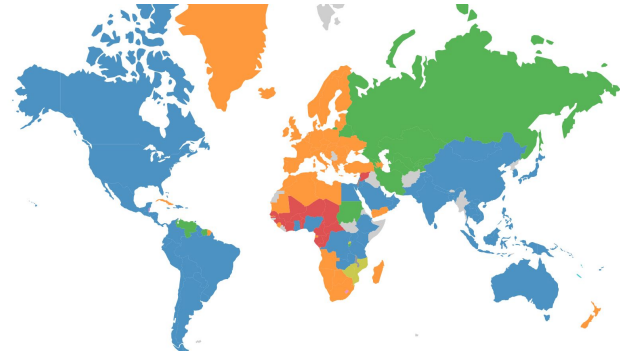
Using an community detection algorithm (Clauset, Newman, and Moore , 2004), we identify communities of countries that deal more with each other, than across other communities. [\[Link\]](#)



2013

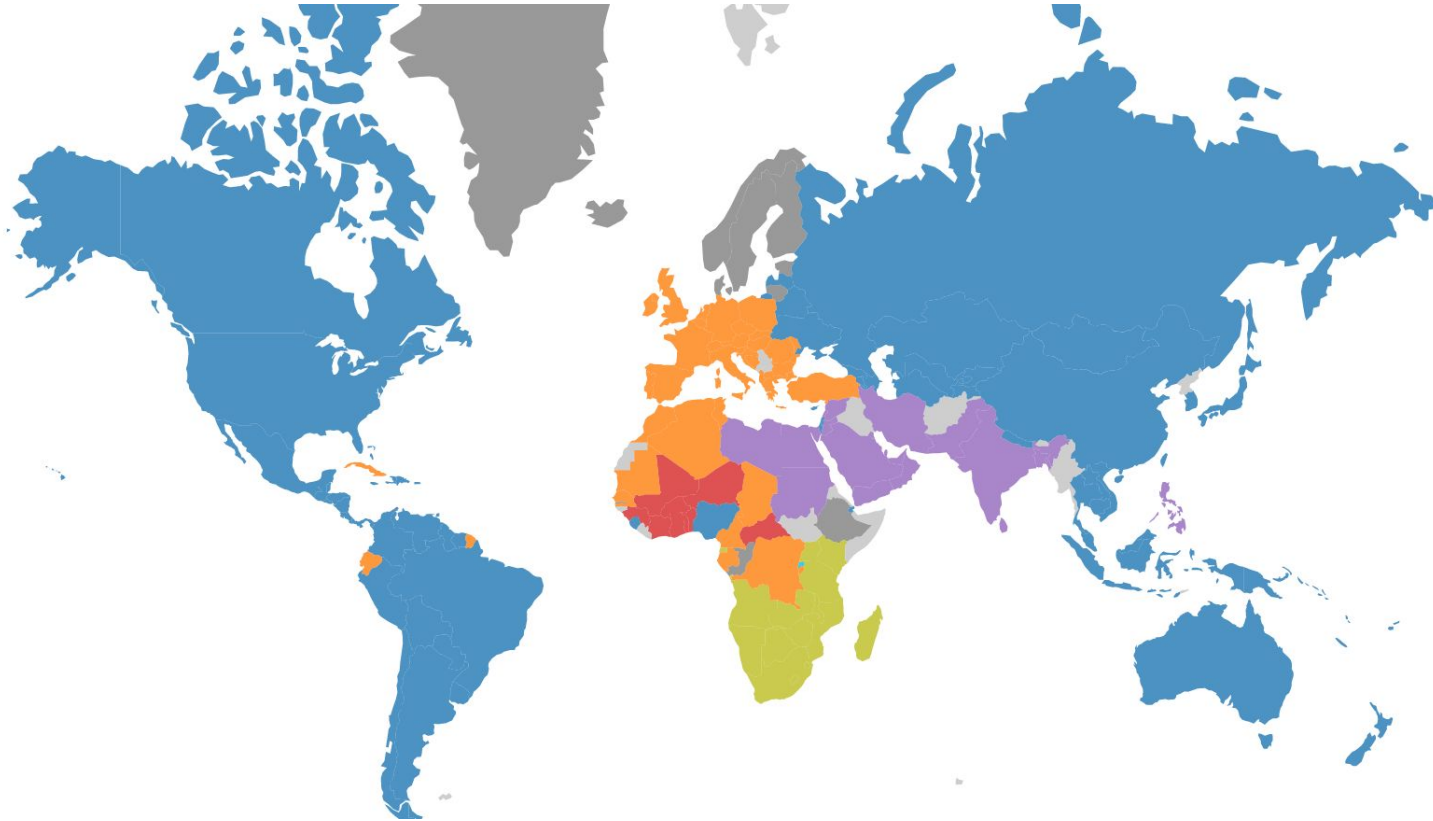


2018



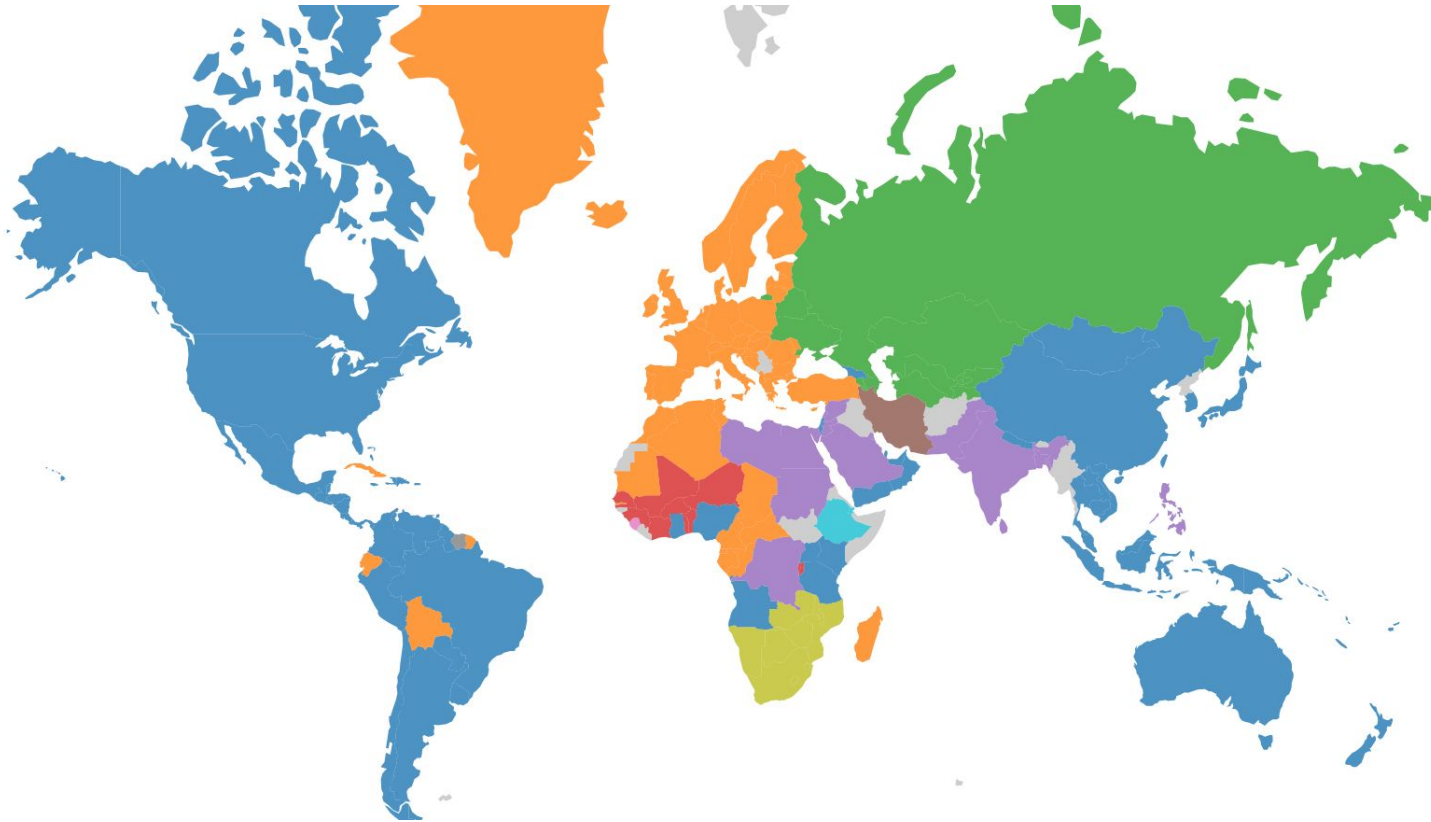


# Communities : April 2003



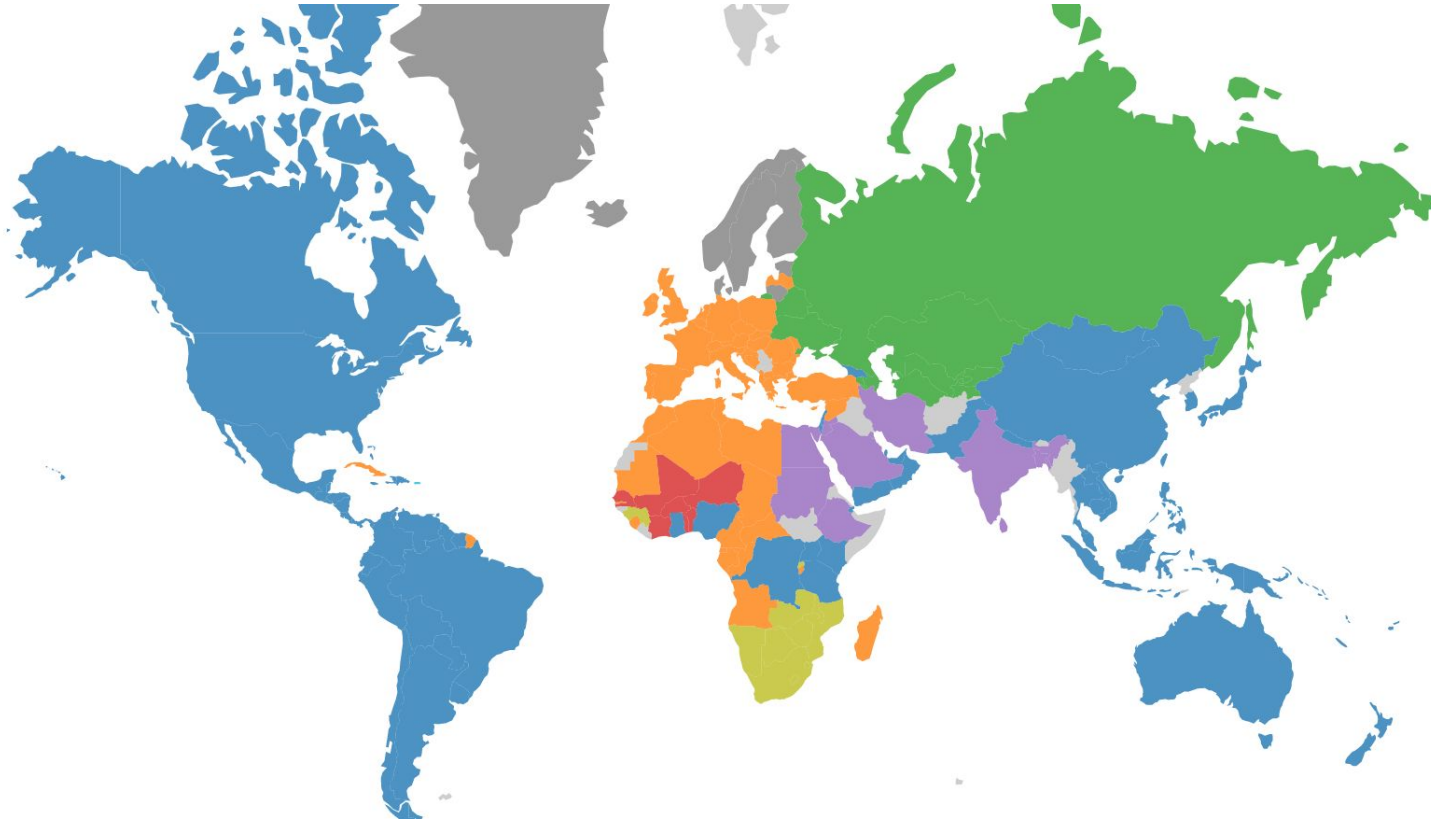


# Communities : April 2008



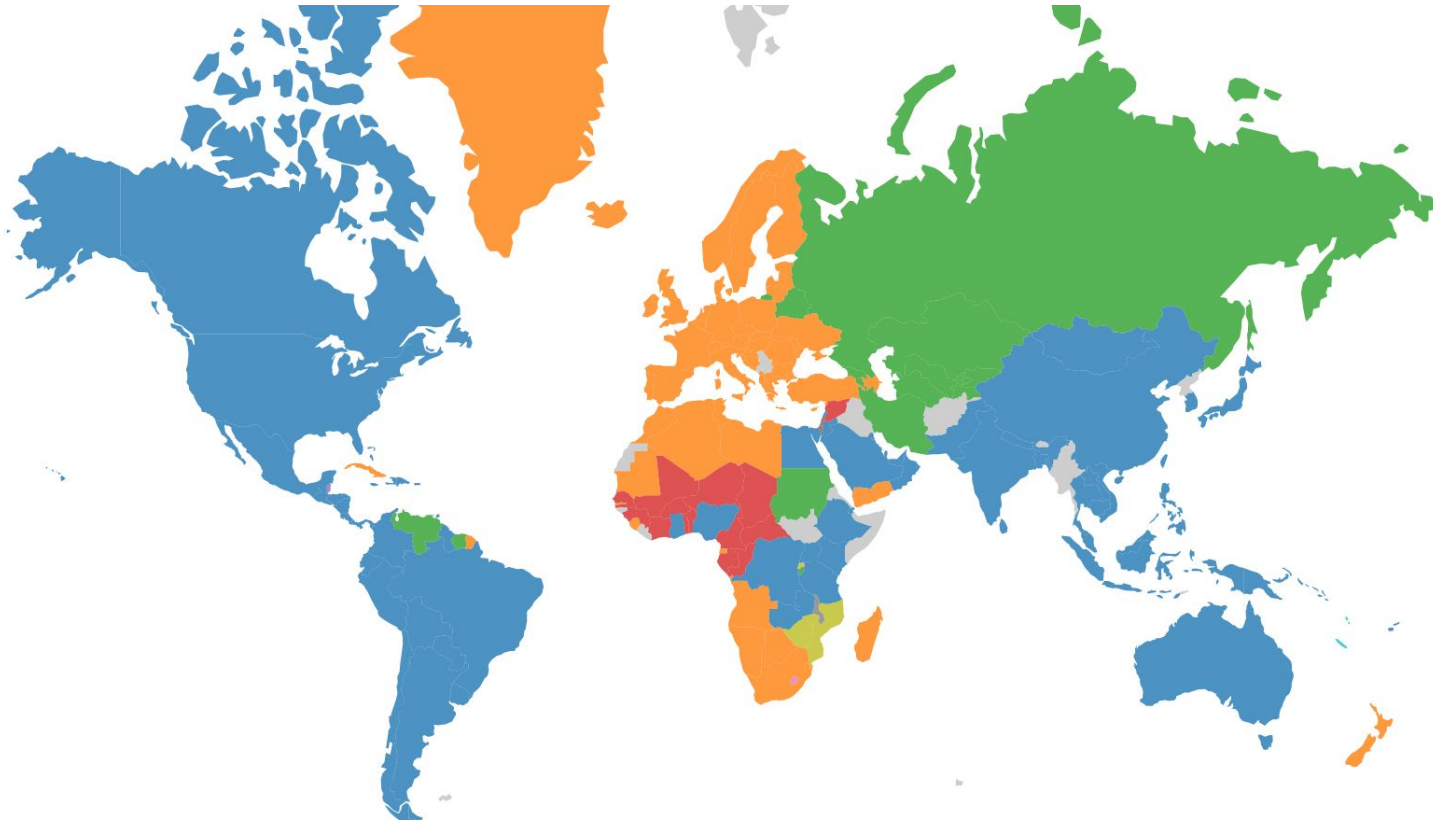


# Communities : April 2013



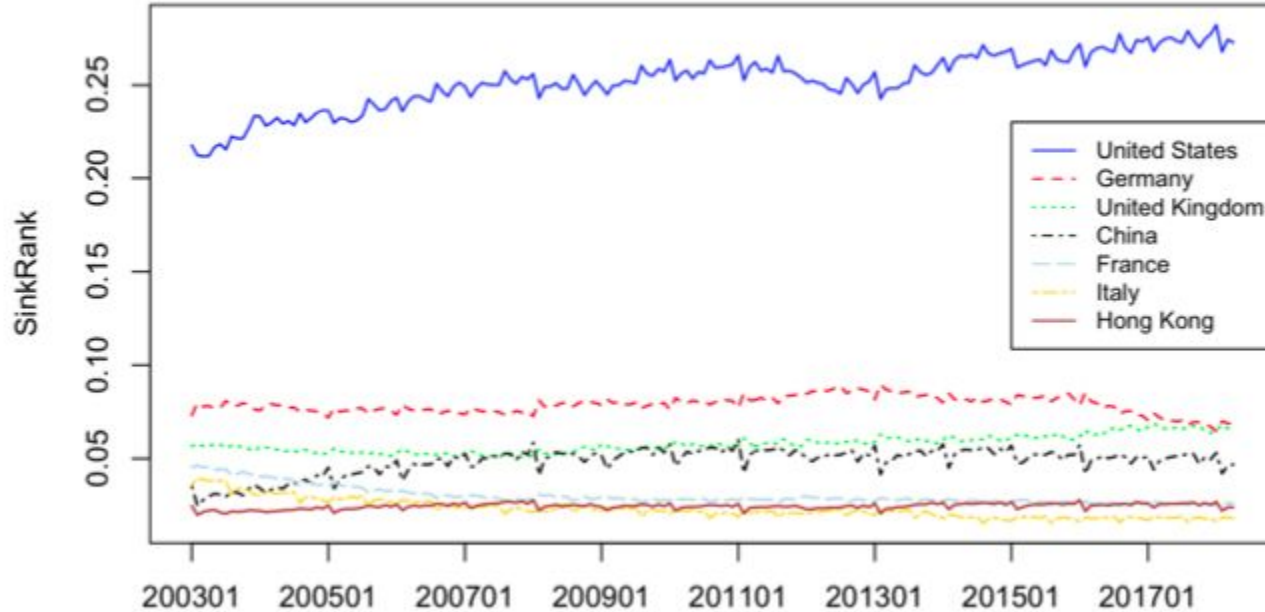


# Communities : April 2018





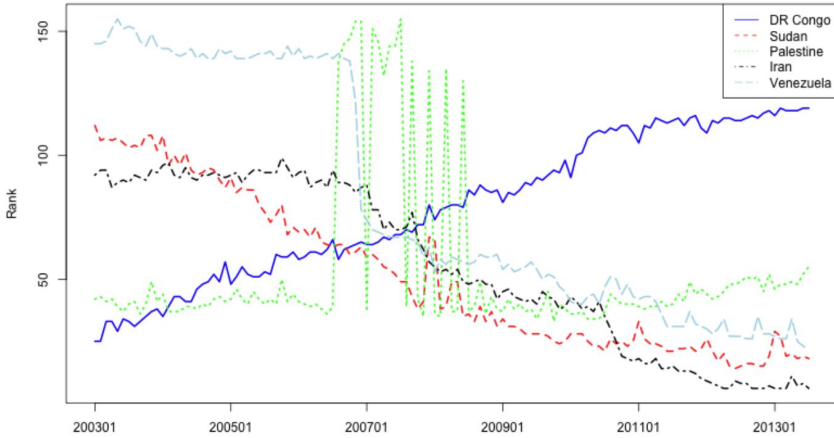
## Centrality - Most important countries



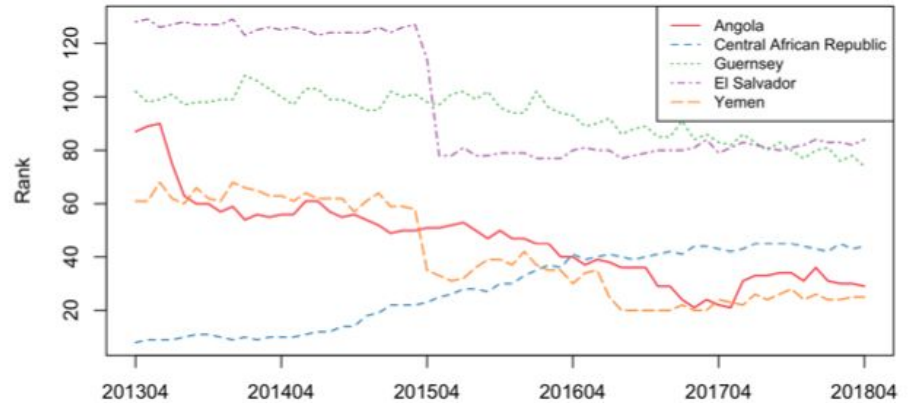
Countries with highest Sinkrank (Soramaki and Cook, 2013).



# Centrality - Countries with largest change

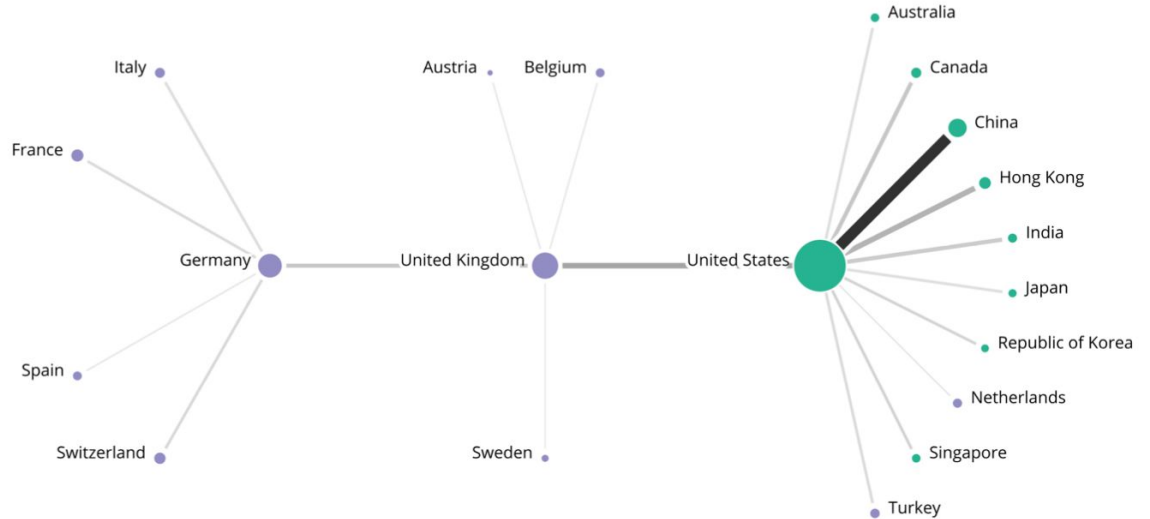
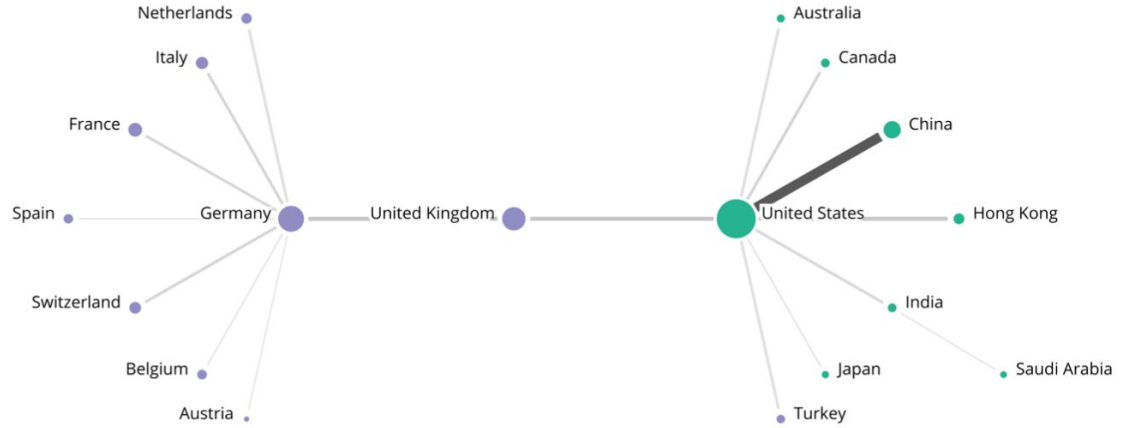


Countries where Sinkrank changed the most in the last 5 years



# Backbone Network

Countries that account for 50% of total traffic



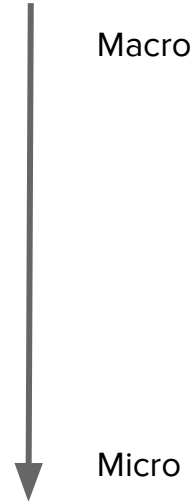




## Final thoughts

This paper shows some interesting insights drawn from payments data from a macro perspective. But payment data can be used for many other purposes too.

1. **Country** Level  
Geopolitical Insights (this paper)
2. **Bank** Level  
Liquidity & Solvency (Banco de la República)
3. **Company** Level  
Supply Chain analysis
4. **Customer/Payment** Level  
Payment Anomalies for AML/CFT/Fraud





Thank you



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