FNA

LSESU DSS Data Science Weekend

FNA

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About FNA

FNA is a leader in advanced network analytics and simulation.

Our software is used to uncover hidden connections and anomalies in large, complex datasets, to predict the impact of stress events, and to optimally configure financial systems and infrastructures.

FNA's is trusted by the world's largest central banks, government authorities, commercial banks and financial infrastructures.

- Monetary Authority of Singapore
- US Department of Defense
- Payments Canada
- Hong Kong Monetary Authority
- The World Bank
- CLS Group
- Banco de la República-Colombia
- Fnality
- SWIFT
- Bank for International Settlements
- Giesecke + Devrient
- UK Finance

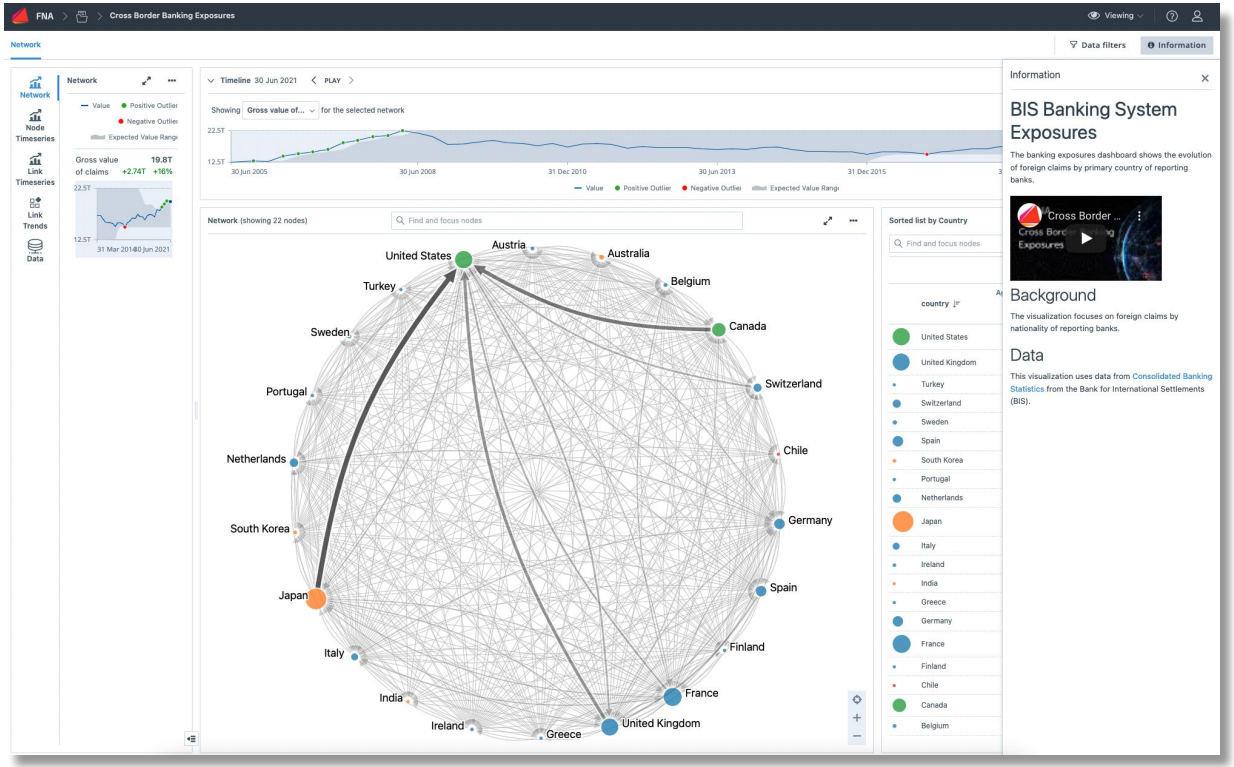
Problem Statements: Background

Sign up and explore yourself:

https://g20monitor.com/

We have provided two problem statements based on FNA's Cross Border Banking Exposure Dashboard

- The dashboard monitors the evolution in the consolidated foreign claims of banks by their primary nationality.
- It aims to understand banks' foreign exposures and how shocks might propagate globally.
- It can also inform the appropriate ex-ante response to future shocks.



Problem Statements

Research Option 1: Anomaly Detection Model

Develop a model for anomaly detection in cross border banking exposures that could help authorities anticipate potential financial stability implications. Anomalous behaviour could stem from sudden changes in exposures, changes in relationships between two countries or usual patterns of foreign claims.

Students are encouraged to backtest the model with the data provided to see if it would have picked up the European Sovereign debt crisis.

Research Option 2: Exploratory analysis

Conduct exploratory analysis on the global banking exposures data and develop a story of relevance to central banks and financial authorities. Students are encouraged to combine the data provided to them with additional publicly available datasets to generate new insights.

Students are expected to investigate questions such as:

- Are there any non-obvious communities structures in the network?
- What are the global and the individual systemic risk levels of each country?
- How do the network properties/statistics of the BIS Cross Border Banking Exposure evolve over time?

Problem Statements: Data

Data description:

We will provide you with the publicly available data used for FNA's Cross Border Banking Exposures dashboard: The Bank for International Settlements Consolidated Banking Statistics.

We have operationalised this data for network studies into two separate datasets:

1. BIS_verticies: This is data on all of the countries (nodes or vertices)
2. BIS_arcs: This is data on all of the links between countries (foreign claims)

The data includes:

- Quarterly data from June 2005 to March 20201 on the gross value of cross-border claims, as well as aggregate claims issued and held by each of the 22 countries.
- The country regions include the Asian Pacific, Europe the Middle East and Africa, North America and South America.

Data Example

1. BIS_verticies: This is data on all of the countries (nodes or vertices)

	A	B	C
1	net_id	vertex_id	country
2	2005-06-30	5A	All reporting countrie
3	2005-06-30	AU	Australia
4	2005-06-30	AT	Austria

2. BIS_arcs: This is data on all of the links between countries (foreign claims)

	A	B	C	D
16	2005-06-30	AU	GB	86839

In Q2 of 2005, the United Kingdom (GB) owned Australian (AU) assets worth $86,839 million ($86.8 billion)

Judging Criteria

A good submission will deploy network theory to turn raw data into insights that would help financial institutions and authorities make better decisions.

A great submission:

- Has relevance to FNA's mission to make the financial system safer and more efficient.
- Has the potential to be further developed and refined during an internship programme.
- Is presented with a non-technical summary (Word document, PowerPoint or video recording would be fine)
- Is country-specific when back-testing (if choosing to do research Option 1)
- Will combine data provided with other datasets

Prizes

On top of the cash prices being offered by the LSE, FNA is inviting the winning team in our category to **fast-tack the application process for an internship at FNA.**

- 3-months paid data science internship
- Where relevant, you can develop your project further or contribute to research and development on other exciting new solutions at FNA
- Solve real-world problems faced by central banks and financial institutions
- The opportunity to publish papers and content stemming from your projects at FNA

Thank you

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