



Civilian-Military Integration in Ukrainian Defense Supply Chain

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Problem Scope

Ukraine Data Explorer

People Affected

21.3M

Feb 15, 2023 | OCHA & Humanitarian Partners | [DATA](#)

People Targeted

11.1M

Apr 25, 2023 | OCHA & Humanitarian Partners | [DATA](#)

People in Need

17.6M

Feb 15, 2023 | OCHA & Humanitarian Partners | [DATA](#)

People reached within Ukraine (total)

9.0M

Sep 30, 2023 | Humanitarian partners | [DATA](#)

Civilian Casualties - Killed

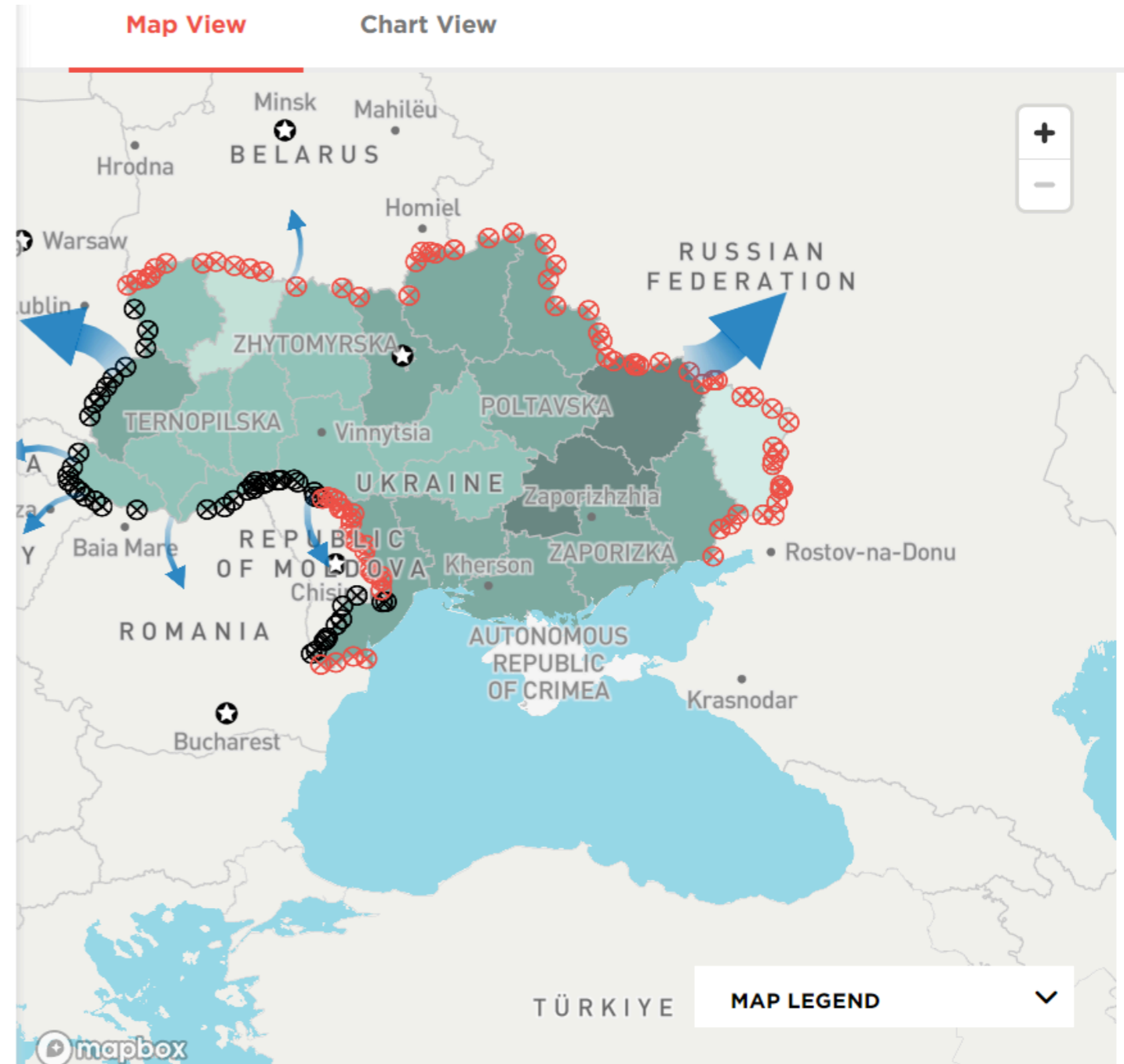
9,701

Apr 15, 2024 | OHCHR | [DATA](#)

Civilian Casualties - Injured

17,748

Apr 15, 2024 | OHCHR | [DATA](#)





Research Objectives

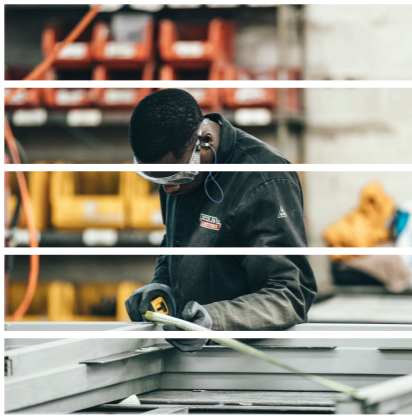
To describe and visualize the structure of the defense supply chain in the Russian-Ukrainian war.

To analyze the roles played by key actors, including manufacturers, NGOs, donors, and conscripts, in sustaining the defense supply chain.

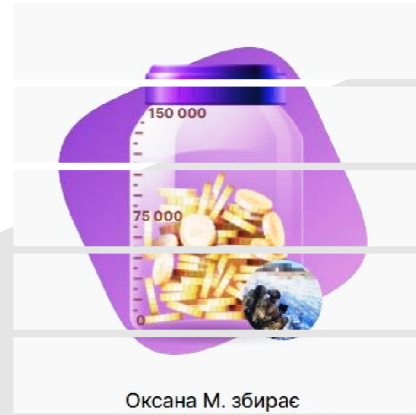
To investigate the vulnerabilities of the defense supply chain.

Main Actors

Manufacturer



NGO



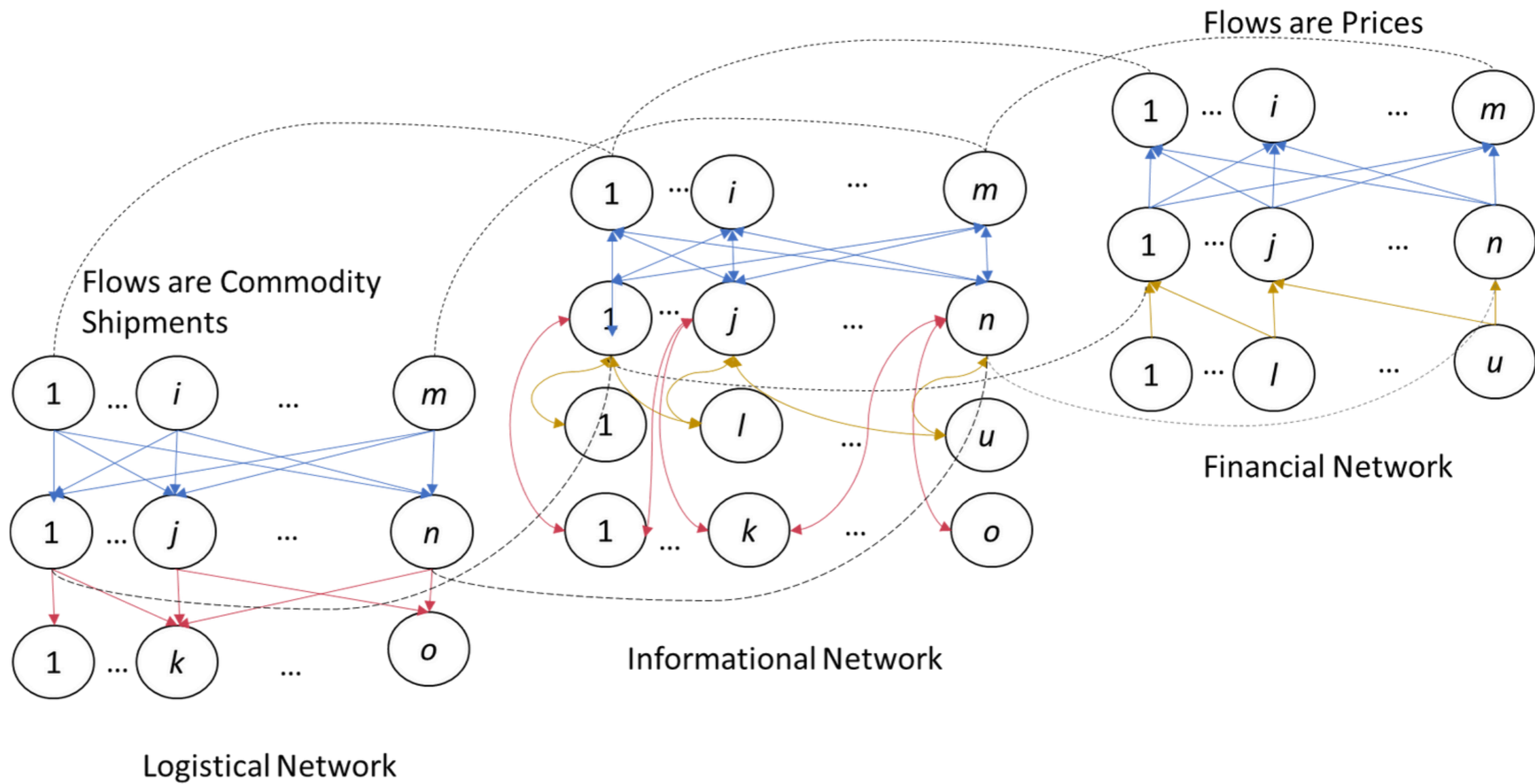
Оксана М. збирає

Donor

Defender

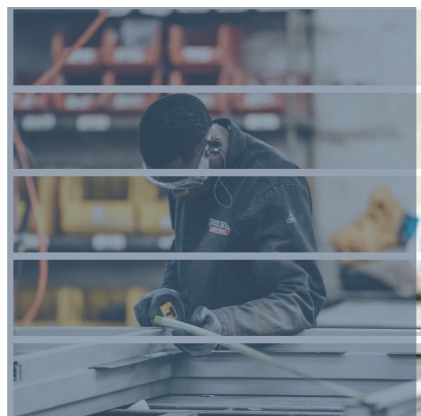


Supply Chain Network



Logistical Network

Manufacturer



NGO



Defender

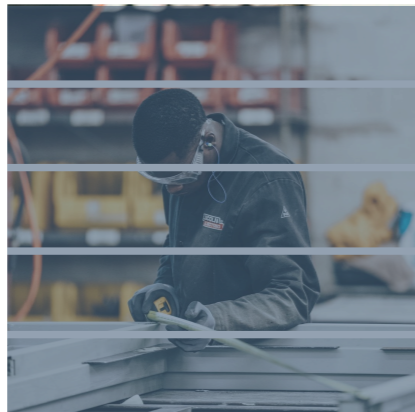


Commodity shipment

Commodity shipment

Information Network

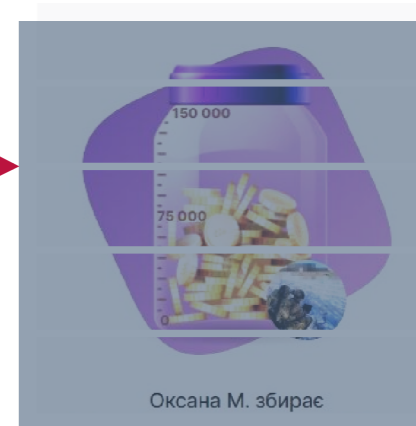
Manufacturer



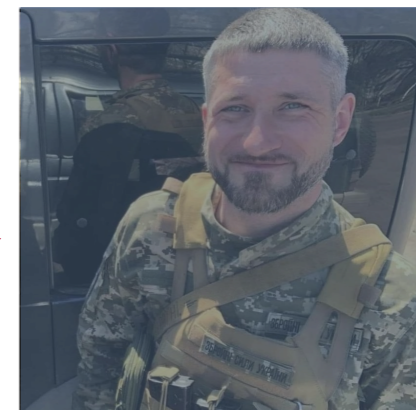
NGO



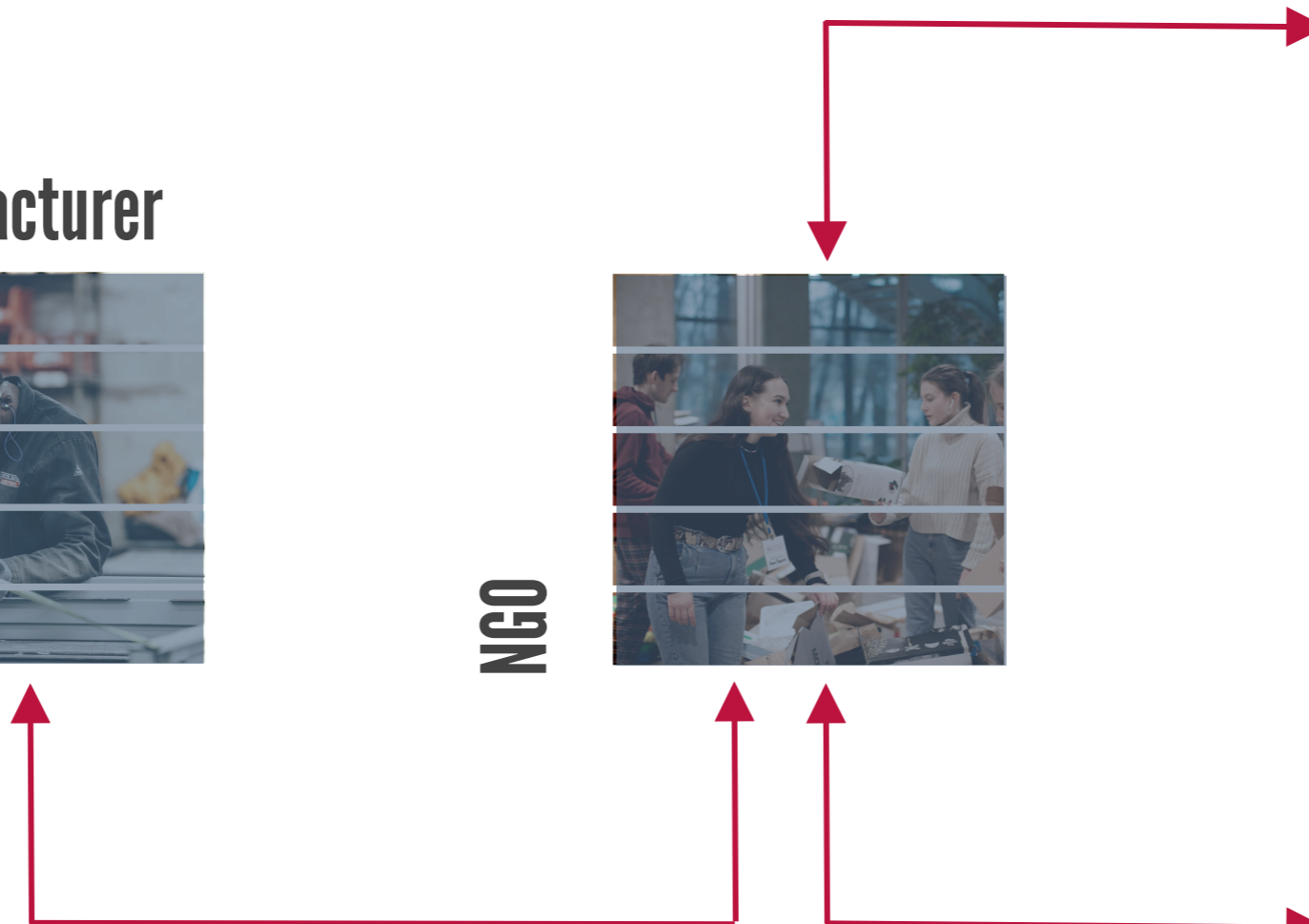
Donor



Defender



Commodity shipment quantity and Prices



Financial Network

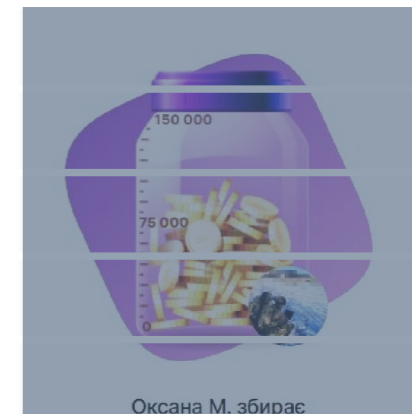
Manufacturer



NGO



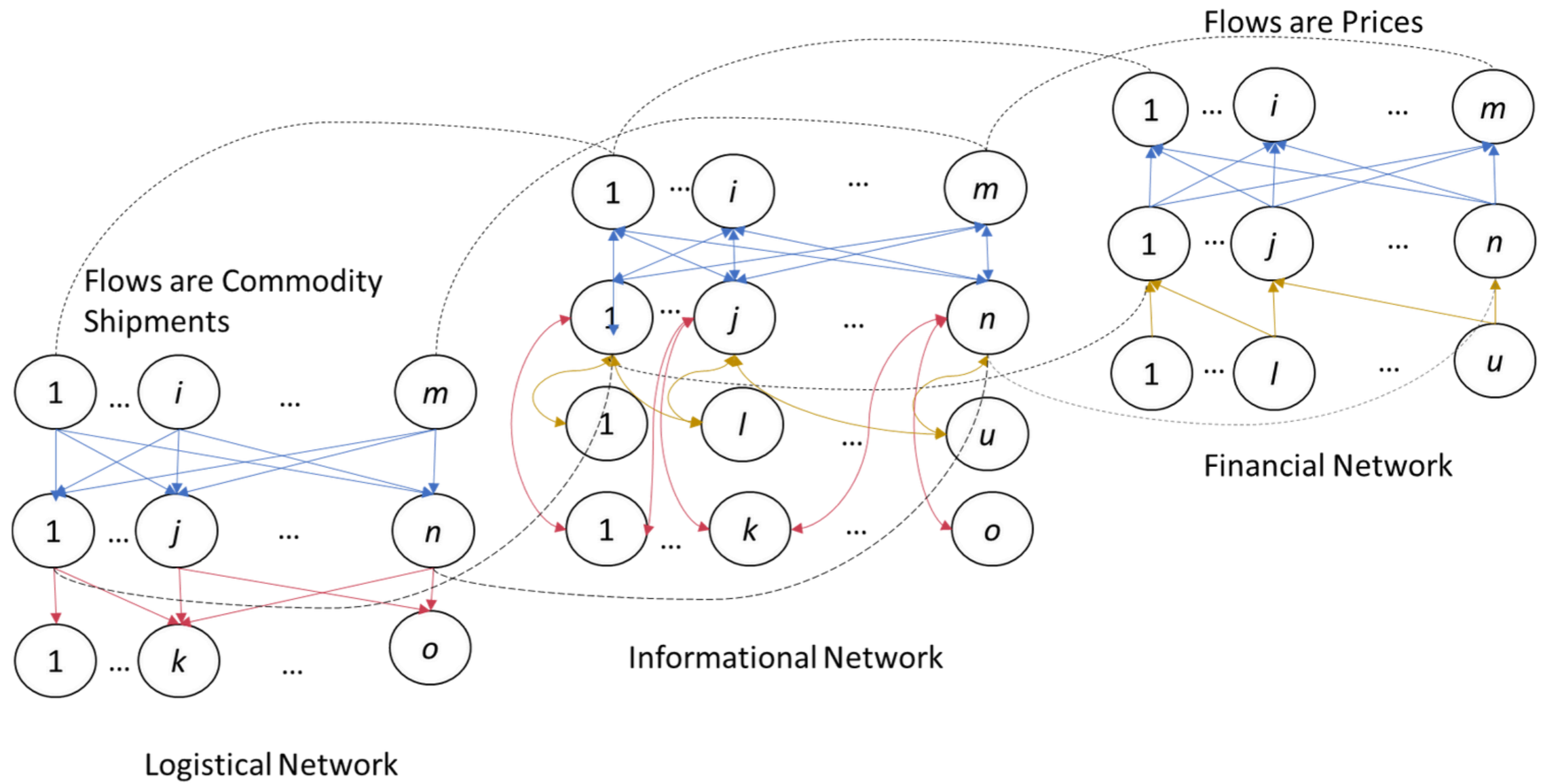
Donor



Prices

Prices

Defense Supply Chain Network





Network Structure Vulnerabilities



Non-All-to-All Connections



Difficulty in Information Flow



Intermediaries as Necessity



Logistics Gap Vulnerabilities

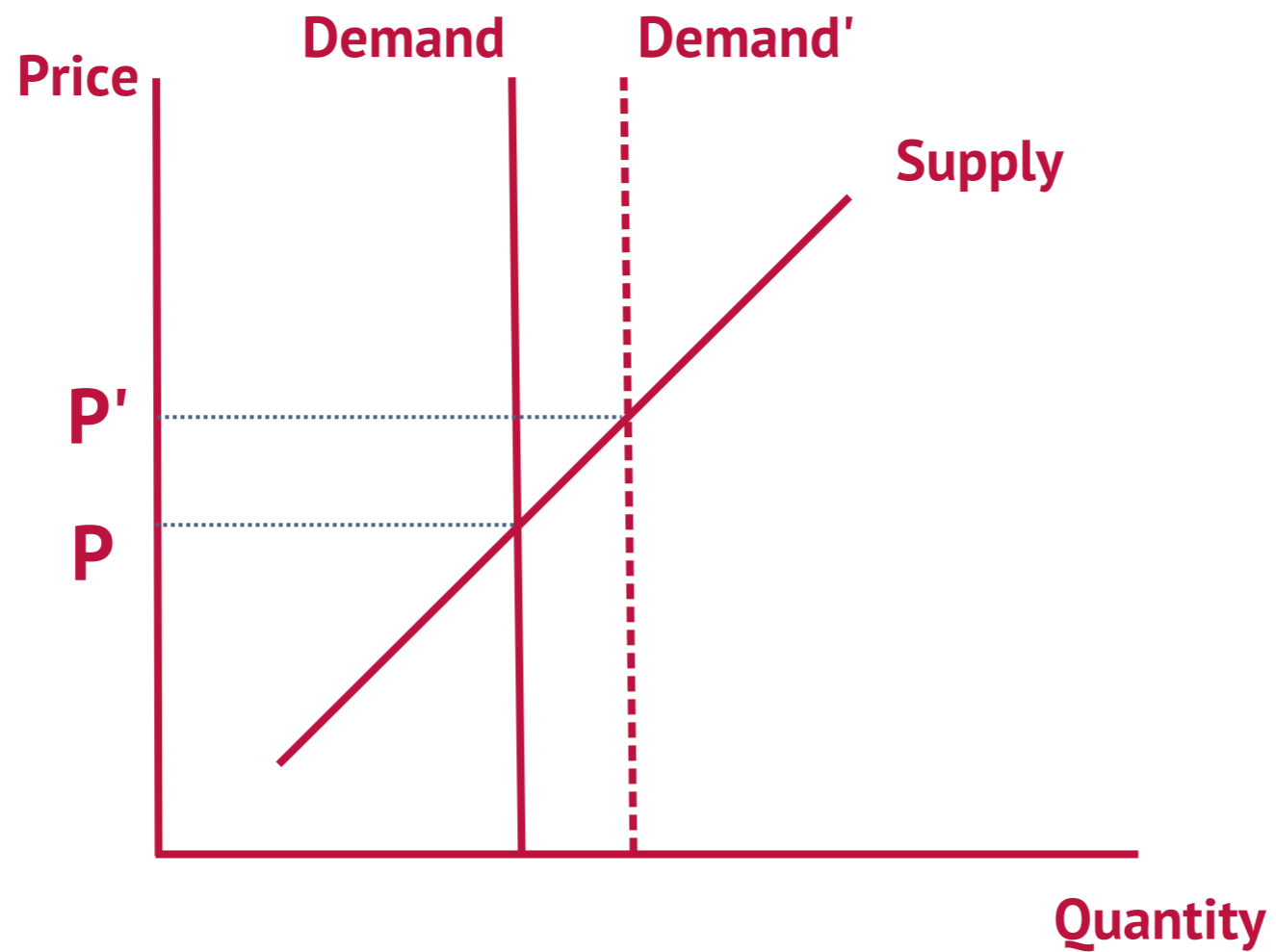


Under-Responsiveness



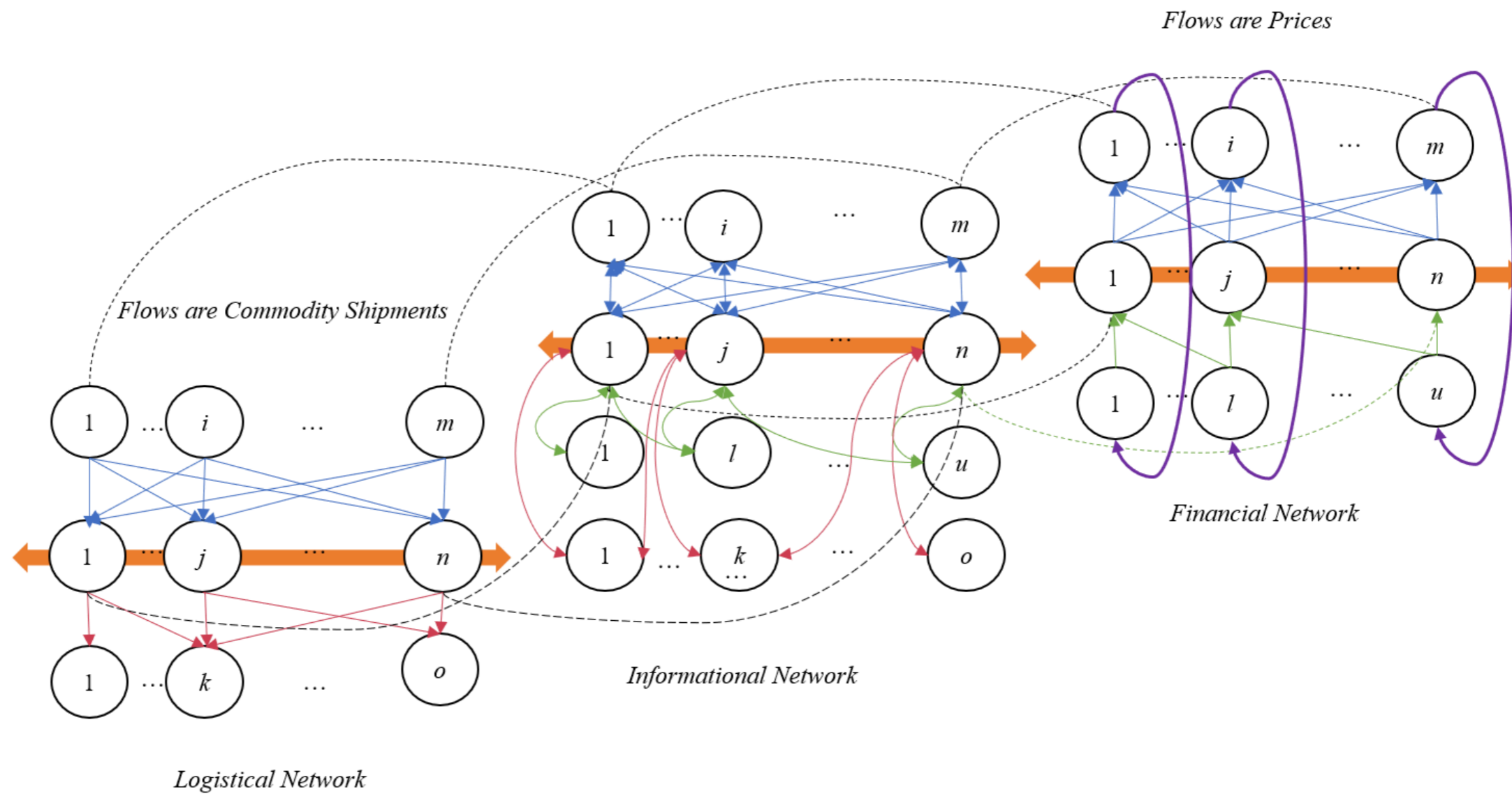
Cumulative Shortfalls

Financial Vulnerability



The demand function is a function of defender needs (N_k) and donors' income (Y_l) : $dk = F(N_k, Y_l)$.

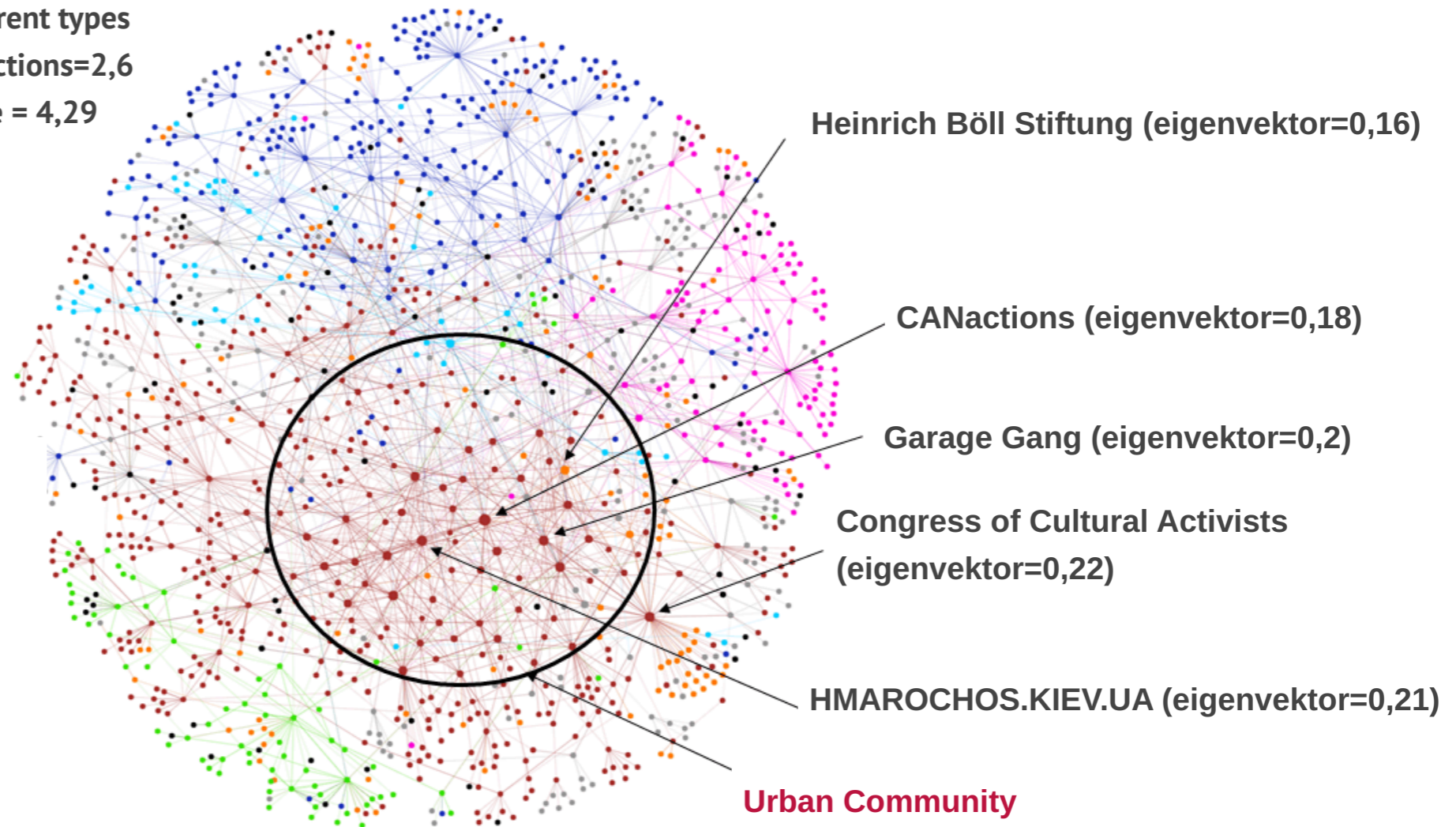
Resilient Defense Supply Chain

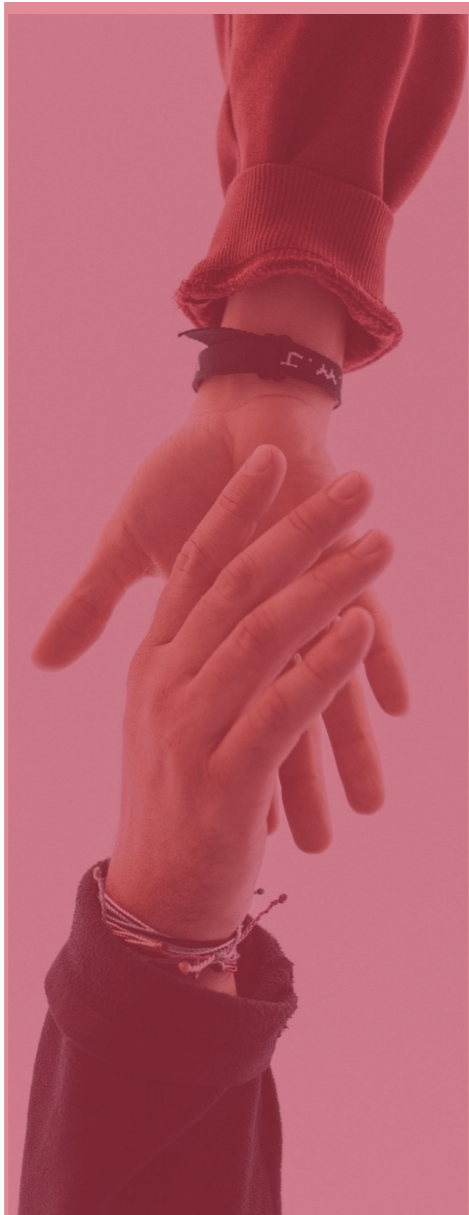


Further Work

1375 actors
3436 connections of different types
Average number of connections=2,6
Average geodesic distance = 4,29
Network density = 0,002

- Ivano-Frankivsk
- Kyiv
- Lviv
- Odessa
- Kharkiv
- National
- International
- Other cites





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