ILLEGAL IMMIGRATION IN GREECE
SOCIAL NETWORK ANALYSIS IN CRIMINAL NETWORKS

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CONTENTS

- Illegal Immigration in Greece - Current Situation
- Social Network Analysis - Basic Theory
- Case Study: The disruption of a criminal network active in trafficking illegal immigrants in Greece.
ILLEGAL IMMIGRATION IN GREECE

TERRITORY: 131,957 Km²
LAND: 1,182 Km
SEA: 16,800 Km

246 Km
245 Km
476 Km
215 Km
MAIN ROUTES OF ILLEGAL MIGRANTS TO GREECE (2010)
MAIN ROUTES OF ILLEGAL MIGRANTS TO GREECE (FROM ALBANIA, FYROM, TURKEY)
ILLEGAL MIGRATION TO GREECE IN NUMBERS (LAST 5 YEARS)
In the first half of 2010 90% of illegal immigrants at the external border of E.U. were arrested in Greek territory (FRONTEX Semi-Annual Risk Assessment).
LAND BORDERS – EVROS PREFECTURE

High Risk Zone
Intermediate Risk Zone
Low Risk Zone

2009: 8,787
2010: 47,088
Increase: 435,88%

Source: Hellenic Police Headquarters
LAND BORDERS – EVROS PREFECTURE

January 2010: 665
January 2011: 2.156
Increase: 224,20%

Source: Hellenic Police Headquarters
SEA BORDERS

2009: 28.042
2010: 5.903

Decrease: -81.84%

Source: Hellenic Police Headquarters
SEA BORDERS

January 2010: 1.037
January 2011: 23
Decrease: -97.80%

Source: Hellenic Police Headquarters
<table>
<thead>
<tr>
<th>Location</th>
<th>Arrested Migrants</th>
</tr>
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<tbody>
<tr>
<td>GREEK-ALBANIAN BORDERS</td>
<td>33.979</td>
</tr>
<tr>
<td>GREEK-FYROM BORDERS</td>
<td>1.589</td>
</tr>
<tr>
<td>GREEK-BOULGARIAN BORDERS</td>
<td>983</td>
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<td>GREEK-TURKISH LAND BORDERS</td>
<td>47.088</td>
</tr>
<tr>
<td>GREEK-TURKISH SEA BORDERS</td>
<td>6.204</td>
</tr>
<tr>
<td>CRETA ISLAND</td>
<td>2.444</td>
</tr>
<tr>
<td>REST OF THE COUNTRY</td>
<td>40.237</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>132.524</strong></td>
</tr>
</tbody>
</table>
Facilitators of illegal migrants 2010

- ALBANIA: 363 (31%)
- GREECE: 183 (16%)
- IRAQ: 83 (7%)
- TURKEY: 75 (7%)
- BULGARIA: 60 (5%)
- SYRIA: 54 (5%)
- OTHERS: 332 (29%)

1,150 for 2010
1,716 for 2009
Nationalities of illegal immigrants 2005

Albanians: 8,540 (18%)
Afghans: 1,064 (2%)
Bulgarians: 1,195 (2%)
Romanians: 1,649 (3%)
Iraqis: 1,771 (4%)
Others: 1,195 (2%)

Total: 34,145 (71%)

Nationalities of illegal immigrants 2006

Albanians: 18,159 (19%)
Iraqis: 3,350 (4%)
Afghans: 5,260 (6%)
Pakistanis: 2,847 (3%)
Palestinians: 57,466 (59%)
Others: 8,157 (9%)

Total: 63,671

Nationalities of illegal immigrants 2007

Albanians: 10,671 (11%)
Afghans: 7,710 (8%)
Pakistanis: 3,656 (4%)
Somalis: 6,713 (5%)
Iraqis: 12,595 (13%)
Palestinians: 12,563 (14%)
Others: 7,120 (8%)

Total: 66,818

Nationalities of illegal immigrants 2008

Albanians: 17,828 (15%)
Afghans: 5,512 (4%)
Somalis: 7,120 (5%)
Iraqis: 6,713 (5%)
Pakistanis: 15,940 (11%)
Others: 7,245 (49%)

Total: 72,454

Nationalities of illegal immigrants 2009

Albanians: 18,619 (15%)
Afghans: 7,662 (6%)
Somalis: 7,710 (6%)
Iraqis: 10,763 (9%)
Pakistanis: 6,713 (5%)
Palestinians: 12,595 (13%)
Others: 8,157 (9%)

Total: 63,563
Illegal Migration in Greece 2010

- **Afghans:** 28,299
- **Pakistanis:** 8,830
- **Algerians:** 7,336
- **Palestinians:** 7,561
- **Others:** 30,323

**Albanians:** 50,175
• Difficulties in the deportation process. Only 2,5% of the arrested illegal immigrants are finally deported.

• **Difficulties in the implementation of the Memorandum of Readmission with Turkey:** Since 2002 Hellenic Authorities have submitted **-5.108-** readmission requests for **-83.810-** illegal immigrants. Turkey accepted to receive only **-10.141-** immigrants. Until February 2011 only **-3.080-** have been sent back to Turkey.
PROBLEMS-CURRENT SITUATION

• Lack of special infrastructure for the detention of illegal immigrants. Today’s special facilities have the capacity for only (1,004) individuals while **300-500 illegal immigrants are arrested in daily basis**.

• The asylum process is time consuming and insufficient

• **Overcrowded prison institutions** and police detention facilities
GREECE-TURKEY

[Image of a road between a field and an open sky]
PROBLEMS IN POLICE INVESTIGATIONS

- Big number of cases that extent in all the Greek territory
- Huge amount of data
- International dimension
- Difficulty in understanding the structure of criminal groups
- Identification of important members (key-players)
- Specialization and expertise in different criminal activities (document forgery, illegal border crossing, transportation etc)
STRUCTURE OF CRIMINAL ORGANISATIONS
(U.N. TYPOLOGY)

Standard Hierarchy
STRUCTURE OF CRIMINAL ORGANISATIONS
(U.N. TYPOLOGY)

Regional Hierarchy
Clustered Hierarchy
STRUCTURE OF CRIMINAL ORGANISATIONS
(U.N. TYPOLOGY)

Core Groups
STRUCTURE OF CRIMINAL ORGANISATIONS
(U.N. TYPOLOGY)

Criminal Network
SOCIAL NETWORK PERSPECTIVE

- Focus on relations-ties between persons (actors) and not on personal attributes (age, nationality etc).
- Systematic collection of data regarding relations-ties between members of a network.
- Use of visual diagrams (charts)
- Mathematic and computer tools for the analysis of information
Evolution of Social Network theory:

- Georg Simmel (Formal Sociology, dyad and triad, geometry of social life-1900)
- Jacob Moreno (Sociometry-1930)
- Harvard University (1970)
- International Network for Social Network Analysis (Barry Wellman-1978)
- Freeman L.C.(Social Networks-UCINET)
Social Network theory:

- Members of a social network interact with each other (they are not independent)
- Members of a social network are connected with relations-ties that operate as an exchange framework of information, emotions, and material goods
- The structure of these relationships limits but concurrently facilitates individual action
- Relation models are formed that define economic, political and social structures
Social Network theory:

- Social reality is divided between official and unofficial networks.
- Two basic forms of relations-ties: permanent or «strong ties» (like friendship, family) and «weak ties» (plain contacts, acquaintances).
- All relations-connections are important and can exert influence, even to individuals that are distant and not directly involved in them.
SOCIAL NETWORK TERMINOLOGY

- Actor
- Relation-Tie
- Dyad
- Triad
- Subgroup
- Network
SOCIAL NETWORK TERMINOLOGY
SNA METHODOLOGY

- Collection of Data
- Data format (Collation)
- Visualization
- Analysis
Collection of data:

- Questionnaires
- Archive research
- Observation
**SNA METHODOLOGY**

**Data Format (Collation):**

<table>
<thead>
<tr>
<th></th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>N4</th>
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<td>1</td>
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<td>N4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
SNA METHODOLOGY

Visualization:
Levels of Analysis:

- Actor Level
- Sub-group Level
- Network Level
Actor Level Analysis:

- Members of the network are examined on individual level based on the relations they develop with other members.
- Hypothesis about the role of certain actors in the network and the potential to exert influence to other members.
- The form and structure of an actor’s relationships can give an advanced position in relation to other actors revealing its structural centrality in the whole network.
Centrality measures indicate important actors in a network.

Actors with high centrality are more active and face less limitations.

Their superiority is not based on personal attributes but on the kind of relation-ties they develop in the framework of the network.
Centrality Measures according to Freeman L.C.

- Degree centrality
- Closeness centrality
- Betweenness centrality
**SNA METHODOLOGY**

*Degree Centrality*

- Calculates the number of direct contacts that an actor develops in a network.
- An actor with more direct contacts presents a higher degree centrality and is considered as a “hub”.
- Entities holding central position. High in-degree (receiving ties) or out-degree (sending ties) indicate prestige (prominence) and influence respectively.
SNA METHODOLOGY

Closeness Centrality

- Indicates how close actors are to everyone else in a network by measuring their direct and indirect connections to all others.
- Entities with high visibility, quick access to other actors, and good network knowledge.
- Closeness measures the extent to which an actor is independent from the control of others.
SNA METHODOLOGY

Betweenness Centrality

- Measures the extent to which actors fall in the shortest paths between all other pairs of network actors.
- Identifies potentially important entities that are not necessarily central regarding degree centrality.
- Actors that score high in betweenness may function as ‘bridges’, linking actors not linked to each other.
**SNA METHODOLOGY**

**Sub-group Level Analysis**

- Identification of clusters or special groups that operate in the network
- Sub-group level examination may identify key structural elements of a network like cohesion and density of relations among actors
- May help in conclusions about the faction of the network
- Algorithms: K-core, N-cliques, Lamda-sets
SNA METHODOLOGY

Network Level Analysis

- Centrality measures define the cohesion of the network
- Structure affects faction
- Example:
  Low density – members can’t express influence or power in the network
  High density - members are more influential

Low density – members can’t express influence or power in the network
High density - members are more influential
Background

- Random cases of trafficking illegal immigrants in whole the Greek territory for the period 2008-2010
- Areas of origin: Africa and Asia
CASE STUDY

Data

- Telephone records obtained through the legal judiciary procedures from arrested facilitators
- 6,450 telephone numbers
- 7,329 telephone calls (communications)
CASE STUDY

Scope of the Analysis

- Correlations - connections between different cases
- Identification of groups and networks engaged in the illegal activity
- Identification of key targets (as telephone number users) in the activities
- Structure of criminal networks (hierarchy, cohesion etc)
**Methodology**

- Communication can be regarded as influence in a social network (flow of information)
- Telephone numbers as actors-telephone communications as relations-ties
- Software: UCINET 6.205 and Net-draw 2.097 (Borgatti, Everett and Freeman).
Results

- One major component of 6450 telephone numbers
- All cases are connected
CASE STUDY

Diagram of the Network
Results

4 main sub-groups (K-core algorithm)
- 6450 telephones (whole network)
- 705 telephones (2/3/4-core)
- 206 telephones (3/4-core)
- 63 telephones (4-core)
CASE STUDY

Diagram of the main core
### Results-Degree Centrality

<table>
<thead>
<tr>
<th>Actor</th>
<th>Degree</th>
<th>Betweenness</th>
<th>Closeness</th>
</tr>
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<tbody>
<tr>
<td>A-7978</td>
<td>527.000</td>
<td>2.837</td>
<td>26681.000</td>
</tr>
<tr>
<td>A-7971</td>
<td>358.000</td>
<td>2.399</td>
<td>27743.000</td>
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<tr>
<td>A-8042</td>
<td>285.000</td>
<td>1.034</td>
<td>29916.000</td>
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<td>A-7823</td>
<td>276.000</td>
<td>0.849</td>
<td>29829.000</td>
</tr>
<tr>
<td>A-7801</td>
<td>273.000</td>
<td>0.870</td>
<td>30837.000</td>
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<td>A-7988</td>
<td>270.000</td>
<td>1.442</td>
<td>32918.000</td>
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<td>A-7817</td>
<td>244.000</td>
<td>0.270</td>
<td>32878.000</td>
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<td>A-8010</td>
<td>229.000</td>
<td>0.849</td>
<td>32704.000</td>
</tr>
<tr>
<td>A-8051</td>
<td>215.000</td>
<td>0.102</td>
<td>34646.000</td>
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</table>
CASE STUDY

Main core-Degree Centrality
### Betweeness centrality-main core

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
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<tbody>
<tr>
<td>A-7910</td>
<td>461.461</td>
</tr>
<tr>
<td>A-7844</td>
<td>322.916</td>
</tr>
<tr>
<td>A-7827</td>
<td>306.340</td>
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<tr>
<td>A-7812</td>
<td>205.959</td>
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<td>A-9530</td>
<td>102.086</td>
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<tr>
<td>A-7785</td>
<td>73.072</td>
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</table>
Main core-Betweenness Centrality
Conclusions-Network Level

- One criminal network active in trafficking illegal immigrants responsible for all cases
- “Sparse” network with no significant clusters
- Core-periphery typology: A network which expands from a central core to regional actors with a lower density of ties
- Central core important in leading the illegal activities
Conclusions - Actor Level

- Telephones A-7978 and A-7971 present the highest scores in degree centrality - they hold important leading role in the network.
- Telephones A-7910, A-7844, A-7827 and A-7812 present the highest score of betweenness centrality in the main core - important role in the information flow inside the main core.
The users of A-7978 and A-7971 telephones (highest degree centrality) had already been arrested as leading members of a criminal group active in trafficking illegal immigrants.

Their role as important members of a large criminal network wasn’t examined.
Comparison with Police Investigation

- User of telephone A-7910 (highest score of betweenness centrality) was not known to the police.
- Users of A-7844, A-7827 and A-7812 had already been arrested as facilitators but their role as important members of the network was not known.
CASE STUDY

Comparison with Police Investigation

- From the main core (63 telephone numbers in total) 33 new targets unknown to the police were identified
CASE STUDY

Comparison with Police investigation
CASE STUDY

Added Value

- All cases were linked under the activity of one criminal network
- Understanding of the structure of the network (Core/Periphery typology)
- Understanding how the network operates (main core as a leading part)
- Identification of new targets
- Roles of known facilitators must be investigated further
Limitations

- Investigation material/Police bias
- One telephone doesn’t always represent one user
- The analysis didn’t consider quality features on each case (locations, nationalities, routes, time, etc)
- The material includes also personal contacts of the facilitators (non criminals)
Conclusions

- SNA can be an important tool in police investigations on large and complex criminal networks
- SNA is based on scientific knowledge which can be exploited in police investigations
- Reliability of results must be always checked in relation with other available data/information
- Networks are dynamic
QUESTIONS

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