### PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 36th cycle

**Research Field:** COMPLEXITY AND CONNECTIVITY IN INTERNATIONAL ECONOMIC NETWORKS OF GOODS AND SERVICES

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<tr>
<th>Monthly net income of PhD scholarship (max 36 months)</th>
<th>€ 1400.0</th>
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<td>In case of a change of the welfare rates during the three-year period, the amount could be modified.</td>
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**Context of the research activity**

**Motivation and objectives of the research in this field**

Interdisciplinary PhD Grant
The PhD research will be carried out in collaboration with research groups of the PhD programme in "INFORMATION TECHNOLOGY".

Network analysis methods demonstrate fundamental exploratory skills in many areas of physical, natural and social sciences, including economic and organizational sciences. In this research project, we want to examine the applications of network analysis to the study of the globalization of production processes, seen as a complex and multidimensional phenomenon, and we want to explore the network properties of global exchange systems between countries, sectors and firms.

The analysis of the structure of the global trading system is fundamental to understand many features of the so-called Industry 4.0. Current advanced production and service systems often cross national borders, and require the horizontal and vertical integration of different production processes, including goods and services, information and knowledge along the production chain all the way to the final consumer. Network analysis suits very well the study of the organization of such complex systems.

**Methods and techniques that will be**
The project will use extensively network analysis in addition to other statistical tools for the analysis of international data. Network analysis is an extremely suitable tool to study the links in international production processes, both using the most consolidated and traditional analysis methodologies, which allow the description of the structure of economic links and their characteristics, and through newer tools, such as Multilayer analysis.

Educational objectives

The Ph.D. candidate at the end of the program should:
possess adequate research skills in the field of international economics and business; be able to analyze large dataset using statistical analysis and network analysis; be able to program using basic language for mathematical and statistical software.

Job opportunities

Academia, international institutions, financial institutions, large international corporations.

Composition of the research group

4 Full Professors
1 Associated Professors
1 Assistant Professors
1 PhD Students

Name of the research directors
Lucia Tajoli, Carlo Piccardi

Contacts
lucia.tajoli@polimi.it

Additional support - Financial aid per PhD student per year (gross amount)

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<th>Housing - Foreign Students</th>
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<td>Housing - Out-of-town residents (more than 80Km out of Milano)</td>
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Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Candidates with a background in Economics, or International Business, or Management Engineering, or Mathematical Engineering, or Applied Mathematics and strong quantitative skills are encouraged to apply.
The candidate might be involved as research assistant in additional research projects and as teaching assistant in courses in Economics.
Increase in the scholarship for stays abroad: Euros 566.36 per month, for up to 6 months.

Funding for educational activities: 1\textsuperscript{st} year: 1200 euros per student, 2\textsuperscript{nd} year: 1200 euros per student, 3\textsuperscript{rd} year: 1200 euros per student.

Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

Desk availability: shared use
Computer availability: individual use