Economics: An Umbrella Field for Undergraduate Research in STEM fields & the Social Sciences

Nestor Garza
College of Business Administration & Public Policy
California State University Dominguez Hills
Theoretical Traditions in Economics

• There are at least seven different theoretical traditions in economics: Classical, Marxist, Neoclassical, Keynesian, Developmentalist, Austrian, Institutionalist, Evolutionary, and Ecological.

• These doctrines are different according to their methodological approach, not their assumed ideological positions or policy prescriptions.

• The Neoclassical tradition is predominant in education and research, and it is considered the “Mainstream”.
• Neoclassical economics builds upon the utilitarian logic of political philosophers of the 19th century.

• It gained importance between academic economists during the 1900s by seemingly offering an ideological alternative to Marxist political movements in Europe and the USA.

• It entered the mainstream of policy making after the economic depression of 1929-1932, and it further engaged with private sector (manufacturing and finance) after WWII.

• Contrary to popular opinion, economics, neoclassical economics in particular, does not directly engage with money or money issues.
Primacy of the Method

• In Neoclassical economics all the social agents (producers, consumers, government, etc.) are rational, they want to optimize their objective(s) (profit, utility, re-election, etc.) subject to restrictions (money, time, skills, etc.).

• This logic builds upon calculus to develop abstract quantitative models of the functioning of entire social systems (general equilibrium). The models can “experiment” with different structures and shocks, incorporate dynamic elements, and offer “quantitative restrictions to the facts”

• The neoclassical economic models are deductive, logically built upon simplifying assumptions, and offer a “hard” testing framework for a high diversity of empirical models
Neoclassical Empirical Models

• In neoclassical economics there are a series of purely abstract core models of social interaction (general equilibrium), not oriented to testing or analyzing any “real world” question or hypothesis, but to logically prove the existence of self-organized social systems comprising decentralized agents guided by their own interests.

• The applied models are derived from the core models and include ad-hoc hypothesis that resemble real world observations and/or problems.
Neoclassical Empirical Models

• The models (core or applied) cannot be rejected by the degree of realism of their assumptions but by their logical development (mathematics), and by their predicting ability (adjustment to data).

• Econometrics is the use of statistics to test the validity of the applied models, and to make predictions or simulations
Diversity of Topics: generalizability of the method

• The applied models can be about any hypothesis, problem or idea that a scholar wants to explore. They do not have to necessarily “solve problems”, but merely describe situations where there is interaction between individual agents (markets, politics, warfare, sports, computer games, etc.), and eventually test their corresponding output hypotheses.

• The models are therefore about social issues in the widest possible sense of the term
Diversity of Topics: generalizability of the method

Chapter 9

Economics and evolution: Alfred James Lotka and the economy of nature

Sharon E. Kingsland
Diversity of Topics: generalizability of the method
Example: my connection with geography and urban planning
Economics in Graduate Programs

B.A. and B.Sc. in Economics are a STEM subject in USA Higher Education Classification:

**45 45.0603 Econometrics and Quantitative Economics**

The program that focuses on the systematic study of mathematical and statistical analysis of economic phenomena and problems. Includes instruction in economic statistics, optimization theory, cost/benefit analysis, price theory, economic modeling, and economic forecasting and evaluation.


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Economics in Graduate Programs

Ph.D. in Economics with an M.A. in Statistics

Ph.D. Program in Financial Economics

Tepper School of Business

Claremont Graduate University
Economics in the Labor Markets

Pay
The median annual wage for economists was $113,940 in May 2022. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than $62,480, and the highest 10 percent earned more than $207,230.

In May 2022, the median annual wage for economists in the top industries in which they worked were as follows:

- Management, scientific, and technical consulting services: $130,180
- Federal government, excluding postal service: $130,100
- Scientific research and development services: $109,720
- Local government, excluding education and hospitals: $80,910
- State government, excluding education and hospitals: $80,320

Most economists work full time, and some work more than 40 hours per week.

Summary
Quick Facts: Economists

- 2022 Median Pay: $113,940 per year
- 2022 Median Hourly Wage: $54.78 per hour
- Typical Entry-Level Education: Master's degree
- Work Experience in a Related Occupation: None
- On-the-Job Training: None
- Number of Jobs, 2022: 17,600
- Job Outlook, 2022-32: 6% (Faster than average)
- Employment Change, 2022-32: 1,000

What Economists Do
Final Remarks: Economics, an umbrella field for undergraduate research in STEM & Social Sciences

• The mainstream of economics research and education comprises neoclassical models with a high degree of generalizability in terms of topics, and clear protocols to interpret what is considered a valid approach to scientific knowledge, data analysis, and prediction.

• This approach and the skills and instincts it instills in students, are useful as a pathway to graduate programs in both, STEM fields and the social sciences.

• Economics also performs well (above average) in the labor markets.