

**Middle East Technical University**  
**Department of Science and Technology Policy Studies**  
**STPS 590: Social Science Aspects of Innovation**  
**Fall Semester/2015-1016**

**Instructor:** A. Ulaş Emiroğlu and Umut Yılmaz Çetinkaya

**COURSE OBJECTIVE**

Main objective of the first part is to define and determine the role of state for catch-up of latecomers via analyzing the recent high-tech industrialization cases. The goal of the second part of the course is to provide a working knowledge of the concepts and methods used for analyzing social networks.

By the end of the course, the students will

1. Get information about recent high-tech catch-up cases (South Korea, Taiwan and China) in which state play one of the major roles. By guidance of these cases, be capable to define the role of state for latecomers' catch-up attempt in state-led development model.
2. Implement social network analysis.

**LEARNING OUTCOMES**

- 1.1. Students will study neoliberal vs. state-led development models and their effect on latecomer economies.
- 1.2. Students will analyze state-led catch-up policies for latecomers.
- 1.3. The role of state will be underlined for newly industrialized emerging economies (South Korea, Taiwan and China) in the concept of high-tech industries.
- 2.1. Students will organize and arrange data for network analysis at the end of the ninth lesson.
- 2.2. Students will understand the basics of social network analysis techniques such as path-length, degree, clustering, centrality, etc. to examine social networks by the end of the tenth lesson.
- 2.3. Students will know differences among random, small-world and scale-free networks at the end of the eleventh lesson.
- 2.4. Students will be able to do social network analysis by using software at the end of the thirteenth lesson.

**PREREQUISITES (for Part 2)**

For the second part of the course, students are expected to be familiar with basic algebra, and some knowledge of linear algebra will be helpful, but not required. Computer literacy is assumed. This should allow students to work on Windows operation system based environments and employ software such as MS Excel, Gephi, NodeXL, OpenRefine, etc.

## REQUIREMENTS

- 1) Attendance and Participation in Discussions:** Regular and positive attendance is, as always, expected, as well as keeping up with the readings stated below. All student will be expected to participate in class by reading the assigned material as well as asking and answering questions (frequency of relevant and constructive contributions are expected).
- 2) Assignments:** Assignments, designed to build familiarity with topics discussed in the second part of the lesson, will be given weekly and students should turn these in one week after assignment.
- 3) Term Paper and Presentation:** Each student will prepare and present a term paper. Details of terms paper will be introduced during the semester.

## GRADING

A student's final grade will be determined based on the following criteria. Final grade will be calculated as the average of the grades from the first and second parts.

	<b>First Part</b>	<b>Second Part</b>
Attendance	5 points	5 points
Participation in Discussions	15 points	15 points
Presentation	30 points	20 points
Term Paper	50 points	40 points
Assignment	-	20 points

## SOFTWARE (for Part 2)

There are number of software, which you can use in order to clean and organize data and analyze social networks. You are free to choose the software you want to use. It is planned to use OpenRefine for data cleaning and organizing; Gephi and/ or NodeXL to analyze social networks.

## COMMUNICATION

e-Mail addresses:

First part of the course: [ulas\\_emiroglu@yahoo.com](mailto:ulas_emiroglu@yahoo.com)

Second part of the course: [uycetinkaya@gmail.com](mailto:uycetinkaya@gmail.com) ; [cumut@metu.edu.tr](mailto:cumut@metu.edu.tr)

## **COURSE OUTLINE AND READING LIST**

### **Week-1 Introduction**

### **Week-2 Neoliberalism vs. State-led Deveopment**

Cardoso, F. H., Faletto, E. (1979). *Dependency and Development in Latin America*. Berkeley: University of California Press.

Chang, H. J., Grabel, I. (2004). *Reclaiming Development An Alternative Economic Policy Manual*, London: Zed Books.

Polanyi, K. (2006), *Büyük Dönüşüm, İletişim: İstanbul*, 35-70, 196-216.

Wallerstein, I. (2004). *Modern Dünya-Sistemi, Kapitalist Tarım ve 16. Yüzyıl'da Avrupa Dünya-Ekonomisinin Kökenleri*, I. Cilt, Bakış: İstanbul, 359-368

### **Week-3 Latecomers' State-led Catch-up**

Evans, P. (1979). *Dependent Development, The Alliance of Multinational, State, and Local Capital in Brazil*, New Jersey: Princeton University Press.

Karagiannis, N, Sadjadi, Z. M. (2007). *Modern State Intervention in the Era of Globalization*, Edward Elgar: Cheltenham, 181-254

Radice, H. (2008). "The Developmental State under Global Neoliberalism", *Third World Quarterly*, Vol. 29, No.6, 1153-1174

Shin, J.S. (1996). *The Economics of The Latecomers Catching-up, Technology Transfer and Instiutions in Germany, Japan and South Korea*, Routledge: London, 9-25, 109-138

Tan, L. (2005). *The Paradox of Catching Up Rethinking State-Led Economic Development*, New York: Palgrave Macmillan

### **Week-4 South Korea**

Amsden, A. H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, New York: Oxford University Press.

Evans, P. (2014) "The Capability Enhancing Developmental State: Concepts and National Trajectories", edited by Kim, E.M., Kim, P.H. (2014). *The South Korean Development Experience Beyond Aid*, Palgrave Macmillan, 83-110

Stiglitz, J. (2001) From miracle to crises to recovery: Lessons from four decades of East Asian Experience.. In J. Stiglitz & S. Yusuf (Eds.), *Rethinking the East Asian Miracle* (pp.509-526). Washington, DC: World Bank.

Uttam, J. (2014). "Situating Korea's Political Economy under Twin Transitions" in *The Political Economy of Korea Transition, Transformation and Turnaround*, Palgrave Macmillan.

Westphal, L.E. (1990), "Industrial Policy in an Export Propelled Economy: Lessons from South Korea's Experience", *Journal of Economic Perspectives* (4): 41-59.

Wong, J. (2004). "The Adaptive Developmental State in East Asia", *Journal of East Asian Studies* 4 (2004), 345-362

## **Week-5 Taiwan**

Chu, Y. (2007). "Re-engineering the developmental state in an age of globalization, Taiwan's quest for high-tech industries" edited by Robert Ash and J. Megan Greene *Taiwan in the 21<sup>st</sup> Century Aspects and limitation of a development model*, Routledge, 154-176.

Chuang, Y., Lin, C. (1999). "Foreign Direct Investment, R&D and Spillover Efficiency: Evidence from Taiwan's Manufacturing Firms", *Journal of Development Studies*, Vol.35.

Shie, V. H., Meer, C. D. (2010). "The Rise of Knowledge in Dependency Theory: The Experience of India and Taiwan". *Review of Radical Political Economics*, 42 (1), pp: 81-99.

Tung (2001). "Taiwan's Semiconductor Industry: What the State Did and Did Not", *Review of Development Economics*, 5(2), 266-288.

Wong, J. (2005). "Re-Making the Developmental State in Taiwan: The Challenges of Biotechnology", *International Political Science Review* (2005), Vol 26, No. 2, 169-191

## **Week-6 China**

Brandt, L., Rawski, T. G. (2008). *China's Great Economic Transformation*, Cambridge University Press: New York.

Cheng, L. (2006). "China's Telecom Industry on the Move: Domestic Competition, Global Ambition, and Leadership Transition", *China Leadership Monitor* No. 19.

Porter, R. (2011). *From Mao to Market: China Reconfigured*, Hurst & Company: London.

Fan, P. (2006) "Promoting Indigenous Capability: The Chinese Government and the Catching-Up of Domestic Telecom-Equipment Firms", *The China Review*, Vol. 6, No 1.

He, X., Mu, Q. (2012). "How Chinese Firms Learn Technology from Transnational Corporations: A Comparison of the Telecommunication and Automobile Industries", *Journal of Asian Economics* 23, 270-287.

Huang, C., Wu, Y. (2011), "State-led Technological Development: A Case of China's Nanotechnology Development", *UNU-MERIT Working Paper Series* 2011-013.

## Week 7 Introduction to Second Part

### Week 8 Introduction & Software

Easley, David, and Jon Kleinberg. 2010. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*. Cambridge University Press (Chapter: 2.4 Network Data Sets: An Overview).

Hardy, Melissa A., and Alan Bryman. 2009. *Handbook of Data Analysis*. Paperback Edition. Los Angeles ; London: SAGE Publications Ltd. (Chapter 1: Introduction)

Wasserman, Stanley. 1994. *Social Network Analysis: Methods and Applications*. First edition. Cambridge ; New York: Cambridge University Press (Part I.2: Social Network Data).

Documents related with Gephi can be found in <http://gephi.github.io/users> or googling.

Shneiderman, Ben. 2010. *Analyzing Social Media Networks with NodeXL: Insights from a Connected World*. First edition. Burlington, MA: Morgan Kaufmann.

Verborgh, Ruben. 2013. *Using OpenRefine*. 1<sup>st</sup> New edition. Packt Publishing.

### Week 9 Introduction to Social Networks

Borgatti, Stephen P., and Pacey C. Foster. 2003. "The Network Paradigm in Organizational Research: A Review and Typology." *Journal of Management* 29 (6): 991–1013. doi:10.1016/S0149-2063\_03\_00087-4.

Scott, John, and Peter J. Carrington. 2011. Introduction. In *The SAGE Handbook of Social Network Analysis*. SAGE. (Chapter 2: Social Network Analysis: An Introduction)

Wasserman, Stanley. 1994. *Social Network Analysis: Methods and Applications*. First edition. Cambridge ; New York: Cambridge University Press (Part 1.1: Social Network Analysis in the Social and Behavioral Sciences).

Watts, Duncan J. 2004. *Six Degrees: The Science of a Connected Age*. Reprint edition. New York: W. W. Norton & Company (Chapter 1: The Connected Age).

Please do not forget to submit Assignment 1 and bring your poster for the next week lesson.
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### Week 10 Basic Concepts

Burt, Ronald. 2004. "Structural Holes and Good Ideas." *The American Journal of Sociology* 110 (2): 349–99. doi:10.2307/3568221.

Easley, David, and Jon Kleinberg. 2010. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*. Cambridge University Press (Chapter: 2: Graphs, except 2.4).

Granovetter, Mark. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78 (6): 1360–80. doi:10.2307/2776392.

Uzzi, Brian. 1996. "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect." *American Sociological Review* 61 (4): 674. doi:10.2307/2096399.

Please do not forget to submit Assignment 2 in next week.

### **Week 11 Network Types**

Barabási, Albert-László, and Réka Albert. 1999. "Emergence of Scaling in Random Networks." *Science* 286 (5439): 509–12. doi:10.1126/science.286.5439.509.

Easley, David, and Jon Kleinberg. 2010. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*. Cambridge University Press (Chapter 18: Power Laws and Rich-Get-Richer Phenomena and Chapter 20: The Small-World Phenomenon).

Newman, M. E. J., S. H. Strogatz, and D. J. Watts. 2001. "Random Graphs with Arbitrary Degree Distributions and Their Applications." *Physical Review E* 64 (2). doi:10.1103/PhysRevE.64.026118.

Watts, Duncan J., and Steven H. Strogatz. 1998. "Collective Dynamics of 'small-World' Networks." *Nature* 393 (6684): 440–42. doi:10.1038/30918.

Please do not forget to submit Assignment 3 in next week

### **Week 12 Contingency Week**

#### **Week 13 Presentation**

Term papers will be presented by students.

#### **Week 14 Wrap-Up**

Topics, discussed throughout the semester, will be overviewed

Please do not forget to submit term paper in the last week of Final Exam Weeks.