The Political Economy of Economic Complexity

Models, Data and Policy

Workshop at the 2019 EAEPE Young Scholars Pre-Conference in Warsaw

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This workshop introduces measures of economic complexity as initially developed by Cesar Hidalgo and Ricardo Hausmann, and discusses their potential for research on the political economy of socio-economic development.

The complexity of a country, a city, or a region is meant to represent its ability engage in complex economic activities such as the production of complex products, i.e. products that require many technological and institutional capabilities. It has been argued that the complexity of a country is predictive for future economic prosperity. We critically discuss the potential of this concept and apply it to various country cases, illustrating its novel policy implications and its usefulness in explaining global inequality.

We pay particular attention to what the measure actually represents and what it does not. This not only leads us to an interesting discussion of economic measures *per se*, but – if the measure is complemented by other indicators and economic theory - also helps to delineate different development models in the global economy, and leads to a discussion of which global institutions are necessary to ensure just and sustainable development.

The workshop also contains an applied part in which students learn to work with the data online. Some exemplary R and Python code to work with the data in more sophisticated applications is also supplied, but not explicitly discussed.

At the end of the workshop we discuss various research avenues that can be pursued using the measure of economic complexity. Suggestions from the participants are particularly welcome.

Outline of the course:

1. **General introduction: drivers of economic development**
   We discuss potential explanations of why some countries are rich, and some are poor, and how this leads to the idea of economic complexity.

2. **The measure of Economic Complexity: historical genesis**
   We trace the development of the measure to the original publications and contextualize them into their historical context.

3. **The mechanics of the measures: how to calculate complexity**
   We learn how the measure is actually computed and how it works.

4. **The theory: structuralism, evolution and econophysics**
   Now that we know about how to calculate economic complexity, we learn about the underlying theory. This is not as straightforward as you might first expect. It turns out that economic complexity has many theoretical roots, including physics, Latin American structuralism, evolutionary economics, and more.

5. **Advantages and critique of the measure**
   We summarize the advantages of the measure, but also discuss common critiques. This helps to understand when the measure is actually useful.

6. **Applications**
   We look at applications of the measure in both academic research and policy design.

7. **Practice: using data on economic complexity**
   We look how we can get the relevant data and explore economic complexity with tools provided in the internet (most importantly, the Atlas of Economic Complexity, and the Observatory of Economic Complexity). I will also discuss how the data can be further processes, e.g. in R.

8. **Thinking further: the political economy of economic complexity**
   Many facts of economic complexity remain under-explored, including the political economy dimension. We discuss what it means to take the measure and the corresponding theory seriously, and how international and national trade and industrial policies must change if one aspires sustainable and egalitarian development. We also learn how the measure can be combined with other tools to identify various development models in the global economy, and what further tools are needed to make sense of the underlying political economy issues.

9. **Outlook: using economic complexity for your own research**
   In the general discussion we ask how you can – or cannot – use the measure and the theory in your own research.

Reading list

Core readings:

Hidalgo, Cesar A, Bailey Klinger, Albert László Barabási, and Ricardo Hausmann. 2007. "The Product Space Conditions the Development of Nations." *Science* 317 (7): 482–87. [Link] [Barrier-free]

Felipe, Jesus, Utsav Kumar, Arnelyn Abdon, and Marife Bacate. 2012. "Product Complexity and Economic Development." *Structural Change and Economic Dynamics* 23 (1): 36–68. [Link]

Gräbner, Claudius, Philipp Heimberger, Jakob Kapeller, and Bernhard Schütz. 2018. "Structural Change in Times of Increasing Openness: Assessing Path Dependency in European Economic Integration." *Journal of Evolutionary Economics* (forthcoming). [Link]

Optional and further readings:

Altenburg, Tilman, Maria Kleinz, and Wilfried Lütkenhorst. 2016. "Directing Structural Change: From Tools to Policy ." *DIE Discussion Paper*, no. 24/2016. [Link]

Fortunato, Piergiuseppe, Carlos Razo, and Kasper Vrolijk. 2015. "Operationalizing the Product Space: a Road Map to Export Diversification." *UNCTAD Working Paper*, no. 219 (March). [Link]

Gräbner, Claudius, Philipp Heimberger, Jakob Kapeller, and Bernhard Schütz. 2017. "Is Europe Disintegrating? Macroeconomic Divergence, Structural Polarization, Trade and Fragility." *ICAE Working Paper*, no. 64 (July). [Link]

Hartmann, Dominik, Miguel R Guevara, Cristian Jara-Figueroa, Manuel Aristarán, and Cesar A Hidalgo. 2017. "Linking Economic Complexity, Institutions, and Income Inequality." *World Development* 93 (May): 75–93. [Link], [Barrier-free link]

Hausmann, Ricardo, and Bailey Klinger. "Structural Transformation and Patterns of Comparative Advantage in the Product Space." Center for International Development and KSG Faculty Research Working Paper Series (CID-128 and RWP06-041), September 2006. [Link]

Hausmann, Ricardo, and Cesar A Hidalgo. 2011. "The Network Structure of Economic Output." *Journal of Economic Growth* 16 (4). Springer US: 309–42. [Link]

Hausmann, Ricardo, Cesar A Hidalgo, Sebastián Bustos, Michele Coscia, Sarah Chung, Juan Jimenez, Alexander J G Simoes, and Muhammed A Yildirim. 2014. *The Atlas of Economic Complexity*. Cambridge, MA: Puritan Press.

Hidalgo, C A, and R Hausmann. 2009. "The Building Blocks of Economic Complexity." *Proceedings of the National Academy of Sciences* 106 (26). National Acad Sciences: 10570– 75. [Link]

Hidalgo, Cesar A. 2015. *Why Information Grows*. New York, NY: Basic Books.

Hidalgo, Cesar A, Pierre-Alexandre Balland, Ron Boschma, Mercedes Delgado, Maryann Feldman, Koen Frenken, Edward Glaeser, et al. 2018. "The Principle of Relatedness." In *Unifying Themes in Complex Systems IX*, edited by Alfredo J Morales, Carlos Gershenson, Dan Braha, Ali A Minai, and Yaneer Bar-Yam, 317:451–57. Proceedings of the Ninth International Conference on Complex Systems. Cham: Springer International Publishing. [Link]

Tacchella, A, M Cristelli, G Caldarelli, A Gabrielli, and L Pietronero. 2013. "Economic Complexity: Conceptual Grounding of a New Metrics for Global Competitiveness." *Journal of Economic Dynamics and Control* 37 (8): 1683–91. [Link]