

Juryreport Van der Knaap Prize 2018

Dario Diodato

Technological and structural change. Understanding economic growth in countries and regions (Utrecht University, June 2017)

The jury had a difficult task as all the nominations were of high quality and a number of the theses nominated had also been awarded high honours (cum laude). It turned out to be a competition amongst equals. However, we finally made a choice.

In this dissertation you focussed on a classical problem, viz. the economic growth of nations and the underlying process of economic transformation. Although it is more than 50 years ago that Kuznetz published his book “Modern Economic Growth”, the mechanisms of this process remain largely a black box. You set yourself a courageous task, namely to delve into this black box. This is examined through the role of technology and starts from the position that investment in innovation may generate knowledge spillovers or technological externalities. You argue furthermore that the combination of partial spillovers and partial appropriation can be used to describe and analyse the process of economic growth.

The role of technological spillovers has been highlighted by evolutionary economists and they stress the importance of tacitness, specificity and complexity. To take these points further it is argued that the technology of a firm is complex because it is a coordinated combination of different pieces of knowledge held by different individuals. Knowledge spillovers require frequent face-to-face interactions and there is no better place than an urban agglomeration for this to happen, generating so-called Jacobs externalities. Since Alfred Marshall published his “Principles of Economics” in 1920 there has been an interest in the role of localized technological externalities. These externalities are based on a diffusion-adoption logic, whereas Jacobs externalities rely on the assumption that urban growth is caused by diversified environments. These two ideas are nicely combined and linked to economic growth theory.

The overall research goal in this dissertation is: To understand the influence that economic structure has on growth and the mechanisms whereby the structure of the economy changes. To achieve this goal you formulate four related research questions. The first question is: Does economic structure matter? Here you develop a new methodology for structural accounting and show that cross-country differences in total factor productivity can be decomposed into two main components, viz. a place effect and a composition effect. The analysis shows that 75% of these differences can be attributed to the place effect. These results in turn generate a number of very interesting questions both theoretical and methodological. The second broad question is: Do externalities differ by industry? Two Marshallian channels are analysed, viz. input-output relations and labour linkage as channels for technological transfer. In order to understand the different processes at work, the strength of these linkages are examined for 120 manufacturing industries and services,

taking into account the heterogeneity across industries in manufacturing and services, and revealing that on average labour externalities are stronger in services than in manufacturing. The third question examined in this thesis is: How do countries acquire new technologies? It has been convincingly shown that input-output relations and labour linkages can be used successfully to predict the evolution of economic structure. The dynamics of the product space suggest that there is a path-dependent transformation. However the economic structure of countries can develop leap frogging and through this process countries may change from being followers in to leaders. To understand underlying processes, you creatively focus on Mexican return migrants and reveal that they bring home technical knowledge from the United States that they could not have acquired otherwise. This very nicely links up to the fourth question: Is acquiring new technology sufficient for structural change? Here a novel and formal model has been proposed, that captures the endogenous dynamics of demand building and leap frogging and it is followed by a discussion under which conditions firms may overcome country-of-origin bias and become market leaders.

This thesis is a very good example of interdisciplinary research linking important concepts in classical economics to modern economic geographic theory. New models have been developed and tested successfully. These models have been used as a basis for further exploration and analysis. The jury was also impressed by the elaboration of the theoretical framework in this thesis, which was substantially more than a summary of the existing literature, and logically led to the four main research questions. Particularly admirable is that it did not stop at summarizing the results, but went beyond the framework of the four research questions to return to the theoretical structure presented at the beginning and reflected upon the consequences of the results for the current theory, indicating possible additions and extensions. There was also a critically reflection regarding the pros and cons of your own observations and findings. This created a comprehensive study, which the jury notes, was well written and finely balanced as a whole.

The jury therefore wants to congratulate you with this study and has awarded you the Van der Knaap Prize for Economic and Social Geography.

Prof. dr. G.A. (Bert) van der Knaap, em. Professor of Economic and Social Geography Erasmus University Rotterdam

Prof. dr. R.A. (Ron) Boschma, Professor of Regional Economics Utrecht University, Professor of Innovation Studies & President of CIRCLE Lund University Sweden

Prof. dr. P.A. (Pearl) Dykstra, Professor of Empirical Sociology Erasmus University Rotterdam

The jury deliberations took place 17 September 2018 and were presided by Ir. B.M.Th. Dortland-Bier, 'directeur' KHMW. Also attended Prof. dr. R.B. Andeweg, Secretary of Social Sciences KHMW and Drs. S. van Manen, Secretary KHMW.