SEMINÁRIO

3 de maio de 2012
Sala Delta (Quelhas)
14H00

Departamento de Gestão / Advance

“Industry Location Shift through Technological Change - A Study of the US Semiconductor Industry (1947-1987)”

Orador:

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ABSTRACT

Silicon Valley is a storied region regarded by many as a model for economic development. Many governments have attempted or considered implementing policies or projects aimed at re-creating the success of Silicon Valley. However, it is not clear that we truly know what led to Silicon Valley’s success, as existing work has not pursued industry-wide firm-level analyses to examine the mechanisms that allowed Silicon Valley to emerge as a key region. This work seeks to begin to address this literature gap in order to better inform regional economic development policy moving forward. In examining the development of Silicon Valley and the semiconductor industry, a detailed analysis of the technological developments leading to both transistors and integrated circuits was performed. From this analysis, it became clear that the nature and availability of knowledge changed significantly between the transistor and integrated circuit eras, with knowledge becoming more complex, tacit, and less available throughout the industry. From this understanding, specific predictions and hypotheses regarding firm and industry development were generated guided by existing theory.

Using a novel dataset of US semiconductor production between 1947 and 1987, this work examines empirically the development of the semiconductor industry to test these hypotheses. The results show that the mechanisms driving success differed between the two eras of the semiconductor industry. As the industry transitioned to the transistor era, existing electronics firms dominated the industry, which resulted in a build-up of transistor firms in the same clusters that previously produced electronics products; however, this was not the case as the industry transitioned to integrated circuits. The nature of the knowledge in the integrated circuit era allowed spinoff firms to emerge as an important force in the industry, out-performing incumbent firms, which ultimately led to the emergence of Silicon Valley as the primary semiconductor industry cluster. It is important to understand the technological context that created an opportunity for spinoff firms to fuel Silicon Valley’s ascension to significance within the industry, as this work demonstrates that the applicability of existing theories regarding firm entry and development are influenced by the nature of technology. Understanding the conditions under which various mechanisms can be effective in promoting firm entry and performance, and thus regional clusters is vital in order to craft efficient public policy and projects aimed at building industry clusters in the future.

This work contributes greatly to that understanding.

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