International patterns of firm investment in technology: an interpretation based in how market size limits innovation[1]

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Abstract

The empirical evidence presented in this study suggests that there is high variability in the technological investment behavior of firms. It was found that within Colombia and the U.K., and within any size and any industry, a major part of the population of business units are not engaged in technological investment, a smaller group invests with medium level of intensity, and a very small number of business units dominate technology investments. The pattern appears to be robust and is only subject to measurement problems related to the qualitative aspects of innovation and industry aggregation. This pattern is explained in part by the large number of small and medium sized business units in any industry in any country that do not invest in technology. Unfortunately, it is not possible to explore why these firms do not invest in technology. However, the usual arguments related to the inability of small and medium sized firms to reach the threshold size that enables them to take full advantage of process innovations subject to technological opportunity and appropiability conditions and financial constraints it is a plausible explanation. Additionally, small and medium firms face important growth constraints. Moreover, it is shown in this study that firms are substantially smaller in Colombia than in the U.K.. It is argued that these differences arise as a consequence of the smaller market size of Colombia compared to the U.K. one. As national market size increases, higher division of labor and specialization arise in the economy, and for a given product firms are larger and have access to more densely and articulated networks of suppliers. In terms of technological opportunity literature, firms in a larger national market face higher technological opportunity to exploit advances of science and advances in technology in other industries than firms in smaller national markets. Although it is possible to overcome these limitations through access to international markets, evidence is put forward that suggests it is extremely difficult. Finally, history, institutional environment, and geography, for example, may reinforce markets size effects making even more or less difficult for firms to use international trade to overcome domestic market size limitations.

Keywords:

[1] This article is based in my MSc dissertation at SPRU, “International comparisons of firm non-investment in technology: an analysis and interpretation. The influence of my two supervisors, Ed. Steinmueller and Nick von-Tunzelmann is evident, however any mistakes are my responsibility.