

HOW FLAT IS THE WORLD?

By Tomas Hult

Executive Briefing: In his 2005 bestseller, *The World Is Flat*, Thomas L. Friedman argues that countries compete on an increasingly level playing field. But, does that argument hold over time when tested empirically? In some economic sectors the answer is “maybe,” while in most sectors the answer is a simple “no.” So, what does this mean for global business strategy?

 Friedman's (2005) book *The World Is Flat* has been a *New York Times* bestseller for more than two years and has received great attention among businesspeople, scholars, and public policy makers. Executives encourage their employees to read Friedman's book, they discuss it at meetings, and strategic initiatives are being implemented based on it. But how flat is the world really? And, what does it mean for investments in research and development?

Friedman's basic premise is that advances in technology and increased geopolitical interconnectedness are creating a global world without borders. The competitive playing field between industrial and emerging countries is leveling. This shrinking world is converging on a single integrated global system. In particular, Friedman questions whether a firm's home country really matters to achieve a business advantage. This is contrary to popular practices – where the country has been one of the key influential factors affecting firms' performance along with others such as initiatives implemented by the firm and the opportunities in the firm's industries.

A central component of Friedman's argument is that research and development (R&D) has led to technological advances that have “flattened” the world. These new technologies have made competition stronger and more even not just among developed nations but between all countries. With R&D spending increasing throughout the world – at what level (i.e., the firm, industry, and/or country levels) and to what degree should R&D efforts be located for firms to achieve superior performance?

Answering this question is critical given the tremendous emphasis on R&D. The National Science Board (2006) estimated that global R&D expenditures were \$810.24 billion in 2003. This represents an increase of 91.2 percent over the previous decade. During the same decade in the U.S., R&D expenditures grew 71.2 percent to an estimated \$284.58 billion. More importantly, firms enjoy on average a 4.3 percent increase in their market-to-book ratio with each 1 percent increase in R&D investments.

Research Study

Data on 13,101 firms in 448 industries and 57 countries across 10 years (1995-2004) from the Global COMPUSTAT database were used to examine the effects of R&D at the firm, industry, and country levels on three types of business performance (i.e., return-on-sales, sales turnover, and market performance). The three performance variables were selected to address financial performance (return-on-sales), operational performance (sales turnover), and overall effectiveness (market performance).

A sophisticated statistical technique called “hierarchical linear multilevel modeling” was employed to assess the R&D effects at the firm, industry, and country levels across each of the three performance variables. The 448 industries were divided into ten economic sectors. R&D was averaged across the first five years of the dataset (1995-1999) and the performance variables were averaged across the second five years (2000-2004). This allowed for a direct “causal” test of the R&D effects. It also allowed for a very robust test of the “flatness” of the world.

Maybe Not That Flat

On average, R&D at the country-level explained 26.6 percent of firms' return-on-sales, 8.5 percent of the sales turnover, and 53.7 percent of the market performance. These results varied considerably across the ten economic sectors. Across sectors, the country-level accounted for .6 to 99.7 percent in return-on-sales, 4.5 to 99.6 percent in sales turnover, and 8.4 to 91.2 percent in market performance.

So, Friedman's (2005) premise of a “flat world” has not yet been realized in most economic sectors. The finance/insurance/real estate sector is the closest to Friedman's “flat world.” In this sector, the country-level accounted for .6 percent in return-on-sales, 11.9 percent in sales turnover, and 8.4 percent in market performance.

Even more telling, the results show that the country level has important implications for R&D effects on firms' performance in 32 of 33 analyses (i.e., across the three performance variables and the ten economic sectors). In more detail, we found that firm-level R&D has a greater effect on sales turnover than the other two performance

variables; industry R&D affects return-on-sales the most; and country-level R&D has the most association with market performance. These results underscore the importance of developing R&D strategies that align with the preferred performance achievement for a firm.

For example, some firms strive to achieve an increase in market share (operational performance) at times, and an increase in stock price at other times (financial performance). The results of this study make clear that R&D at different levels of analysis drive each performance variable differently. Thus, if the firm is focused on return-on-sales, it should carefully examine opportunities for collaborative industry R&D efforts. If the objective is sales turnover, firm-level R&D efforts drive the performance. At the same time, the most robust and perhaps telling performance variable is market performance (overall effectiveness). For market performance, the country level had a greater effect than the firm and industry effects combined – a finding that is probably disconcerting to Friedman’s supporters.

Interesting results can also be found by closely examining the economic sectors. For example, economic sectors that are characterized by tangible products, the dependence on raw materials in the home country, and/or a strong public infrastructure have a strong association with country-level R&D in most cases. Country R&D explained the vast majority of the performance in these sectors (i.e., mineral industries; construction industries; and transportation, communication, and utilities). In fact, country R&D explained an average of 90.15 percent of performance in the tangible product, raw material, and infrastructure-based sectors (with the exception of return-on-sales in the transportation, communication, and utilities sector).

Some Takeaways

The results of this large-scale study (involving 13,101 firms in 448 industries and 57 countries from 1995 to 2004) support the long-standing notion that public capital is critical in the production of output. It also places public policy in the forefront; policies need to be enacted that support R&D efforts at the country level to assist firms in their development efforts.

Oftentimes, tax benefits and other incentives are used to lure firms from one country to another. But, countries also need to go beyond investments in sectors traditionally supported by governments (e.g., public administration) and provide R&D benefits in other economic sectors (e.g., mineral, construction).

Lastly, the results indicate that country-level R&D may be too centered on product-specific sectors. As seen in firms’ return-on-investments, the service-sectors remain an area underserved by country R&D efforts. More specifically, governments appear to be lagging corporations in making R&D investments in service sectors. This practice can become troublesome if governmental changes are not implemented to support services to the same extent as they do in manufacturing industries. ♦ [gBR Article 01-01](#), Copyright © 2007.

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