

# **The new wealth of nations: How STEM fields generate the prosperity and inequality of individuals, companies, and countries**

**Boris Podobnik**

*Zagreb School of Economics and Management, Zagreb, Croatia*

Fundamental research in physics has long been a prerequisite for computer scientists and engineers to design innovative products, such as laptops and cell phones. Technological innovations and fundamental research are both part of the so-called STEM fields (Science, Technology, Engineering, and Mathematics), which are known to substantially contribute to economic growth. However, the questions still remain: how much contribution do these fields make to both wealth accumulation and inequality at different levels of analysis? First, analyzing the lists of world's wealthiest individuals, the Zipf plot analysis demonstrates that STEM billionaires contribute more to wealth inequality than their non-STEM counterparts. Analyzing the companies in the S&P500, we find that STEM firms contribute more to wealth inequality and have larger growth rates on average than the non-STEM firms. Finally, we show that the more STEM graduates in a country, the larger its GDP growth rate. In combination, we demonstrate that STEM is a fractal mechanism that drives wealth accumulation—and the wealth inequality— at different scales of economy—from individual wealth to firm valuation to country GDP. This insight is particularly useful for the financial sector. We demonstrate a functional dependence between a country's number of patents and its STEM graduates. Finally, motivated by the fact that the U.S. heavily surpasses the E.U. in terms of Venture Capital, we model wealth inequality at different scales of the economy.