


# Opinions

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## Education System and International Trade Patterns



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Reform in the education system is a key issue challenging both economists and policymakers. Since education is an important public-sector service that determines individual human capital accumulation, the debate over 'universal education' versus 'elite education' has become increasingly controversial and requires extensive economic analysis. This paper focuses on tertiary education which directly affects individual occupational choices, specifically on how the education system contributes to the endogenous formation of Ricardian comparative advantage and consequently, trade patterns.

Data reveals that the high-tech portion of manufacturing exports in four major developed countries - the US, UK, Japan, and

Canada - is negatively associated with their education attainment rates. On the other hand, education quality, measured by the number of high-quality, prestigious colleges, grows in the same direction as the high-tech portion of manufacturing exports. These empirical facts trigger interest in, among countries with similar development levels, how the education system drives distinct patterns of trade and consequence.

In order to address this question, we develop a three-sector trade model with endogenous education choices.<sup>1</sup> We consider three sectors: a sector (routine sector) with a routine production process, a sector (manufacturing sector) with sequential tasks and teamwork, and a sector (innovative sector) with independent and innovative tasks. This model setup is drawn from the study by Grossman and Maggi (2000) where in some occupations, because of information asymmetry, it is hard to measure individual work performance separately. This imperfect contracting varies across industries, and thus, work productivity is more measurable in some industries than others. This will induce more talented workers to choose a sector where compensation is higher if the productivity of their own talent proves to be better than the average productivity of the team. Potential workers can enhance their human capital through college education before they enter the labor market, based on their lifetime value change. One could think that improving the universal education system is associated with lowering unit education cost to make it equally accessible to the public, while reinforcing the elite education system is associated with boosting human capital growth from education. We then study which country specializes in which sectors in response to trade liberalization. Under autarky, both cheaper education costs and higher skill acquisition drive more workers to take education and raise product prices in the routine sector. On the other hand, they induce more workers to choose the innovative sector where the workers can be compensated based on their human capital.

After trade liberalization, the country with a higher education level has a comparative advantage in the innovative sector, while the counterpart country will specialize in the routine sector. This method of specialization promotes more education acquisition in the former country, thereby reinforcing its comparative advantage. We can also expect that countries with higher education levels experience higher income inequality in response to trade liberalization, due to higher dispersion of human capital distribution from educational choice. This suggests that countries aiming to concentrate in high-tech or service industries need to pro-

<sup>1</sup> This research is based on the author's working paper. It does not necessarily reflect the official opinion of KIEP and the Korean government.

mote selective education for high quality in the expense of higher income inequality. Higher education strengthens the comparative advantage of service and high-tech industries over other countries; however, it simultaneously escalates income inequality over time. In particular, our results suggest that education systems largely determine human capital distribution combined with the formation of comparative advantage in free trade.

Here we tried to endogenize education choices into a trade model, and investigate the underlying link. More in-depth analysis on the link between education systems and trade patterns may provide significant policy implications. 