# In global commerce, a multitude of trade products is good for a country—up to a point, researchers find

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In today's dynamic global economic environment, companies or countries consider everything when it comes to expanding their economies.

Researchers at the University of Arkansas examined the relationship between products in global trade and the characteristics of a country's product specialization pattern and discovered that having a multitude of similar products can be beneficial to growth—up to a point, after which the benefit declines.

Raja Kali and Javier Reyes, associate professors in the Sam M. Walton College of Business; Josh McGee, vice president of public accountability at the Laura and John Arnold Foundation and Walton College doctoral graduate of economics; and Stuart Shirrell, a former Bodenhamer Fellow and 2011 magna cum laude graduate of the U of A, performed the study.

The researchers discovered that interaction between products plays an important role in economic growth. In the early stages of product development, these synergies allow for a quick growth rate. Specialization in a certain area, such as electronics, establishes the base for similar products to be developed and exported.

Kali and his colleagues use Ireland as an example of this growth pattern.

"We know that Ireland experienced a trade and economic growth acceleration episode in 1985, and from our data we can examine Ireland's country-level product specialization before and after the growth acceleration period," he said.

Ireland experienced increases in its chemical industry, manufactured goods, machinery and transportation and commercial manufacturing, all of which overlapped with food and animal production and crude materials. The researchers believe the inter-related nature of these industries played a key role in Ireland developing new products and expanding its export base.

A contrasting example is Greece, which had a high level of interaction within the manufactured goods industry, did not expand this interaction into other high-density industries. As a result, over the ten-year period studied, 1980-1990, the country experienced a relative decrease in synergies between it's export products

While inter-relatedness between products can help a country expand its economy, it can also cause an adverse effect, the researchers found.

"Essentially, one could say that too much of a good thing makes you fat and happy, and that ultimately is not so good for a country," Kali said.

The researchers developed a way of measuring density at the product and country level. Product density is the number of links between a single product and the other products in a country's export set, divided by the total number of links between that product and every other product, regardless of whether it is in the country's product set or not. Country density is computed by weighting the density of each product that a country exports.

As density increases, "inertia" becomes stronger, making the jump to new products more difficult. An increase in network proximity more proportionate than product density is required to maintain growth acceleration.

The researchers defined product space as the relatedness between products in global trade. This space can be thought of as a network in which each product represents a node, and the relationships between them represent the linkages. In their study, each country's network was superimposed on the country's specialization pattern.

The information allowed the researchers to "measure" the density of the links and to develop a measure of the proximity of the country's specialization to the products themselves. The proximity of the products indicated how easily a country could move from its current specialization to new products.

The researchers' study was published in the *Journal of Development Economics*. The study is available online at www.sciencedirect.com/science/ … ii/S0304387812000983 .

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