The New York Times https://www.nytimes.com/2021/08/06/opinion/covid-vaccine-supply-chain-bown-bollyky.html

Wonking Out: What Vaccine Supply Tells Us About International Trade

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By Paul Krugman
Opinion columnist

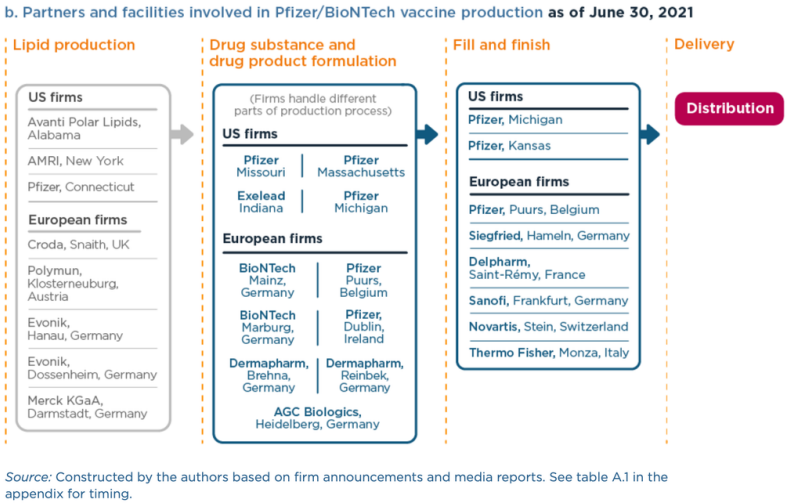
This article is a wonky edition of Paul Krugman's free newsletter. You can sign up here to receive it.

For many of us, Chad Bown of the Peterson Institute for International Economics — a boutique think tank specializing in, duh, international economics — has become the go-to guy for current developments in trade policy. His work tracking the evolution of Donald Trump's trade war was invaluable.

Now he has a highly informative new paper with Thomas Bollyky on the vaccine supply chain. I won't lie: There's a lot of detail, and the paper is fairly heavy going. But it's full of useful details, and it also, I'd argue, tells us some interesting things about the nature of world trade in the 21st century.

One thing that caught my eye — probably not the most important thing, but one close to my heart — is that the story of global vaccine production demonstrates the continuing relevance of the so-called New Trade Theory, or as some now call it, the "old New Trade Theory."

Background: Here's a sample graphic from Bown and Bollyky, showing what's involved in the production of the Pfizer vaccine:



The shots made round the world. Peterson Institute for International Economic

Producing these vaccines is evidently a complicated process, involving facilities in many locations, presumably implying a lot of cross-border shipments of vaccine ingredients. Notably, in Pfizer's case all these facilities are in the United States and Western Europe, which is typical across pharma firms, although other companies have a few facilities in Brazil and India.

So where do vaccine supply chains fit into the theory of international trade?

If you've ever taken an economics course, you probably learned about the theory of comparative advantage, which says that countries trade to take advantage of their differences. The classic original example, from the early-19th-century economist David Ricardo, involved the exchange of English cloth for Portuguese wine.

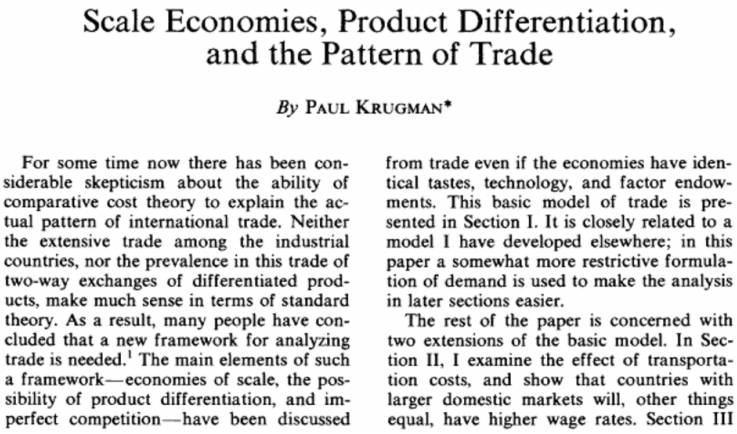
Comparative advantage is a powerful, illuminating theory — especially because it shows why countries export goods they're *relatively* good at producing even if they're less productive in those industries than potential competitors. Bangladesh is a low-productivity nation across the board (although it has been improving), but its productivity disadvantage is less pronounced in apparel than in other industries, so it has become a major clothing exporter.

In the 1960s and 1970s, however, a number of economists began suggesting that comparative advantage was an incomplete story. World trade had been growing over time, but much of that growth involved trade between countries that didn't seem very different — the United States and Canada, for example, or the nations of Western Europe. Furthermore, what these countries were selling to each other looked pretty similar: There was a lot of "intra-industry" trade like the large-scale, two-way trade in autos and related goods across the U.S.-Canada border.

What was going on? A few economists had long noted that comparative advantage wasn't the only possible reason for international trade. Countries might also trade because production of some goods involves increasing returns — there are advantages to large-scale production, which creates an incentive to concentrate production in a few countries and export those goods to other countries. Automotive trade between the United States and Canada was a classic example: After the countries established a free-trade agreement for autos in 1965, North American car companies achieved economies of scale by limiting the range of items produced in Canada, exporting these goods and importing other items from the United States.

But if trade reflected increasing returns rather than country characteristics, which countries would end up producing which goods? It might be largely random, the result of accidents of history.

There was, however, remarkably little economic literature on increasing-returns trade until the late 1970s. Economists don't like to talk about stuff they find hard to model, and trade models with increasing returns tended to be messy and confusing. Eventually, however, some economists came up with clever ways to cut through the confusion, in papers like this 1980 piece in the American Economic Review:



Scale Economies, Product Differentiation, and the Pattern of Trade

By Paul Krugman*

For some time now there has been considerable skepticism about the ability of comparative cost theory to explain the actual pattern of international trade. Neither the extensive trade among the industrial countries, nor the prevalence in this trade of two-way exchanges of differentiated products, make much sense in terms of standard theory. As a result, many people have concluded that a new framework for analyzing trade is needed.[1] The main elements of such a framework—economies of scale, the possibility of product differentiation, and imperfect competition—have been discussed from trade even if the economies have identical tastes, technology, and factor endowments. This basic model of trade is presented in Section I. It is closely related to a model I have developed elsewhere; in this paper a somewhat more restrictive formulation of demand is used to make the analysis in later sections easier.

The rest of the paper is concerned with two extensions of the basic model. In Section II, I examine the effect of transportation costs, and show that countries with larger domestic markets will, other things equal, have higher wage rates. Section III

Niftiness is necessary. American Economic Review

(I'll note, with all due immodesty, that the journal would later name this one of the 20 top papers published in its first century of operation.)

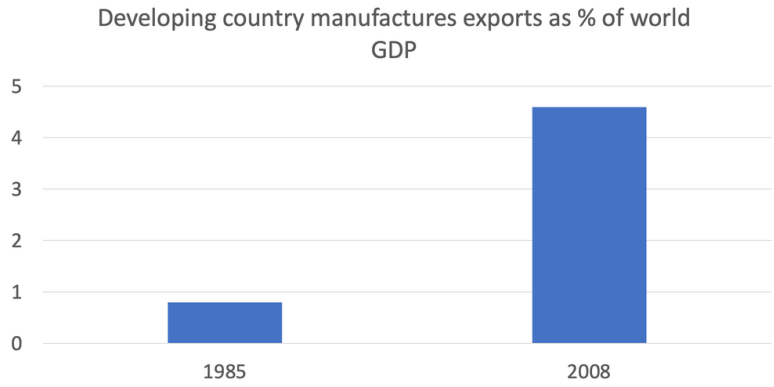
God, I was young!

Anyway, history has a sense of humor. No sooner had economists come up with nifty models of trade between similar countries, driven by economies of scale, than the world economy took a hard turn away from that kind of trade toward trade between dissimilar countries driven by things like large differences in wages.

World trade exploded from the mid-1980s until around 2008, a process sometimes called hyperglobalization:

Globalization gets hyper. World Bank

And where trade growth in the ’60s and ’70s had largely involved advanced economies selling stuff to each other, hyperglobalization involved a surge in exports of manufactured goods from relatively low-wage developing countries:



Everything old was new again. World Bank

So we had a New Trade Theory, but the new trade we were actually getting was much better explained by, well, old trade theory.

So what does all this have to do with vaccine supply chains? Well, as I already noted, vaccine ingredients are mainly produced in advanced countries — countries that are very similar in their education levels, overall level of technological competence and more. So why wasn’t each advanced country producing the whole ensemble of vaccine-related inputs? Here’s what Bown and Bollyky say:

> "The business model that much of the pharmaceutical industry had shifted toward over the previous 25 years involved fragmentation. As tariffs and other trade barriers had fallen globally, information and communications technology (ICT) developed, shipping and logistics efficiency increased, and protection of intellectual property rights steadily improved. *The fact that trade could play a greater role in distributing pharmaceutical products globally meant that companies could operate fewer plants but at a larger scale*." [Emphasis mine.]

Hey, it's New Trade Theory in action! And it sure looks as if there was a lot of random historical contingency determining national roles in the pattern of specialization. Europe was initially very dependent on Britain's exports of lipids — but I doubt that there's something about British culture that makes the country especially good at lipids. It's just one of those accidents that play a big role in economic geography.

Is there a moral to this story? There's been a lot of backlash against globalization over the past decade, to some extent justified: Advocates of free-trade agreements oversold their benefits and understated the disruptions they might cause. But the case of vaccine production illustrates a positive side of globalization we tend to forget. These miracle vaccines are incredibly complex products that would have been hard to develop and produce in any one country, even one as large as the United States. A global market made it possible to deliver all the specialized inputs that are saving thousands of lives as you read this.

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