

OPINION PIECE

How artificial intelligence impacts international trade⁹

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Artificial intelligence (AI) is an emerging new general-purpose technology that promises to increase productivity and improve well-being. Within a generation, it will transform some of the largest categories of international trade in goods (e.g., autonomous vehicles) and international trade in services (e.g., financial services). Remarkably, AI technologies have already diffused to China, which is set to become an AI world leader in less than a generation. This is a development that has the potential to reconfigure world trade patterns.

Whether this potential is realized is an open question largely because regulatory frameworks surrounding AI will be major determinants of how AI-based products are traded. This is already apparent. Some of the largest US firms by market capitalization (Google, Facebook and Amazon) do not have access to the Chinese market due to regulation. Likewise, some of the largest Chinese firms by market capitalization (Tencent and Alibaba) may be excluded from the US market on the basis of national security concerns.

At the heart of these obstacles to AI-based trade is a fundamental regulatory tension. On the one hand, AI-based firms want a lax regulatory framework in their own country that allows them to harvest and deploy massive amounts of data. This creates a regulatory race to the bottom. (While it is theoretically possible that strict privacy regulation could create national advantage, the empirical evidence suggests a trade-off between privacy regulation and innovation). On the other hand, deployment often

requires industry standards which, if not coordinated internationally, will fragment world markets and drive demands for disguised protection by domestic players.

To illustrate these two forces, it is useful to consider them in the context of a specific policy. The most important of the many behind-the-border regulations that impact international comparative advantage in AI is privacy policy. Recent advances in AI have been driven by advances in machine learning. Machine learning is prediction technology in the statistical sense. It takes data and uses it to fill in missing information. In other words, a key input into today's AI is data. Companies with access to more data will be able to create AI that makes better predictions. More data mean better products.

By restricting the acquisition and use of data, privacy regulation hampers AI-driven innovation. Where this regulation is relatively strict, companies have struggled to use data in innovative and productive ways. Where this regulation is relatively permissive, companies have been able to develop remarkable new platform technologies with multiple apps, each generating data that enhances the predictive power of all apps on the platform. For example, Tencent is experimenting with credit scoring that uses data such as individuals' purchasing data, gaming behaviour and social media contacts to develop a credit score. Such credit scoring would likely violate US anti-discrimination laws and EU transparency rules (the General Data Protection Regulation or GDPR). This is just one of dozens of examples of

how AI-based products offered in one country may violate the laws of another.

This poses several challenges for the WTO. The WTO may be called upon to rule on whether domestic regulations are disguised protection. For example, are "algorithmic transparency" requirements that prevent foreign autonomous vehicles from operating in the domestic market a form of disguised protection, or a legitimate right of citizens who might be injured in an autonomous vehicle accident?

This example in turn points to the fact that the WTO may have to expand its role in fostering cooperation in the area of regulation. The domestic regulation of AI may lead to a regulatory race to the bottom, as it has been argued in areas such as environmental and labour policy. Trade agreements may have a role to play in encouraging cooperation on minimum privacy standards.

In summary, AI will generate transformative products and services that alter world trade patterns. This makes it essential to understand how behind-the-border regulatory and industrial policies affect comparative advantage in AI-based products.