

Time difference have significant negative impact on international trade

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(Phys.org) —International time differences have a negative and economically significant impact on trade between countries, according to research published this week.

The study by Dr Edward Anderson, of the School of International Development at the University of East Anglia (UEA), found that each hour of time difference reduced international goods trade by between two and seven per cent. The effect of a five hour time difference, such as that between London and New York, was equivalent to an increase in geographical distance of between 1,000km and 3,000km.

However the findings, published in the Review of World Economics, also show that the [negative impact](#) of time differences has fallen over recent decades, which may be due to the emergence of new communication technologies. There is also evidence that the negative impact of time differences is smaller where travel and communication would be expected to be less important for trade, for example where people working on a project are based in different countries but share a common language or ethnic background.

While research has been conducted into the effects of geographical distance, it is only recently that economists have begun to investigate the impact of time differences on [international trade](#). Dr Anderson, a lecturer in development studies, said: "The issue of whether time differences affect trade is of relevance for governments and policymakers and proposals to change time differences need to take in account potential impacts on international trade, which haven't really been considered. A lot of the debate around time zones has focused more on social aspects such as work habits, safety, making the most of daylight hours and energy use.

"One of the interesting things about globalisation is that although we have all this communication technology, physical travel is still increasing very rapidly. These new technologies are not replacing the need for actual travel, face to face contact is still important. Because business travel is still important that makes it more costly and difficult with time differences."

To determine whether time differences affected trade Dr Anderson analysed 55 years' worth of data on exports between 146 countries, details of the geographical distance between them and other factors such as whether there was a common language, a common border or a shared colonial history. He used two main measures of time difference - official time difference, which can be changed by government policy, and solar

time difference, which is fixed by the geography of the country.

"Time differences have had a negative and statistically significant impact on merchandise trade, at least until recently," said Dr Anderson. "They raise the non-pecuniary costs of travel and communication, by causing jet-lag among travellers and reducing the amount of time in the normal working day in which simultaneous communication, such as telephone conversations and video-conferencing, can take place. This in turn can lead to less trade.

"If travel and simultaneous communication are important for trade, for example, by helping to establish and maintain trust, by spreading information about trading opportunities, or by helping the flow of complex knowledge among production networks based in different countries, then greater time differences should lead to less trade."

Previous research has suggested time differences promote opportunities for trade in certain business services, such as call centres and software design and development. For example, by employing teams in different time zones, people calling a helpline out of normal working hours in one time zone will automatically be transferred to a call centre in another time zone where the local time is within normal working office hours, while firms can work on product design and development around the clock, thereby reducing product turnaround times.

Dr Anderson said: "The impact of time differences could be positive or negative, depending on the sector. However, when considering overall bilateral trade, these results suggest that the negative impact of time differences on goods trade may outweigh the positive effect on trade in business services."

The findings come amid ongoing debate about time differences and changes to daylight saving time. In 2011 Russia decided not have

daylight saving in the winter and reduced the number of time zones in the country from 11 to nine. However, the changes have proved unpopular and there are proposals to reverse the decision. Meanwhile Spain is considering changing time zones by an hour after a parliamentary report said it would improve eating sleeping and working habits. Some countries that span large east-west distances do not have multiple official time zones. For example China has one official [time zone](#), based on solar time in Beijing, yet certain parts of the country such as Xinjiang, about 2,000km east of the capital, remain on unofficial local solar time and base their working day around that.

Dr Anderson said a further issue for research was whether official and solar time differences have different impacts on trade. "We might expect official time differences to matter more, on the grounds that people organise their work-day to fit the official time in their location. However, if official times differ significantly from solar times, as in China, there is evidence that people tend to follow unofficial solar time instead, which suggests that solar time differences also matter.

"Changes to official time differences do not affect [solar time](#) differences, so if it is the latter which primarily affect trade, the anticipated gains in economic efficiency may not be forthcoming. If we change the UK clocks to make more use of long evenings that would also move us closer to Europe, so we could benefit from better [trade](#) to Europe, but at the same time it takes us further away from the US and makes trading with them more difficult."

More information: The study 'Time differences, communication and trade: longitude matters II' (DOI 10.1007/s10290-013-0179-9) is published in the *Review of World Economics*.

Provided by University of East Anglia

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