Interview with

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Conducted by **Yves GASSOT**
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DW Economic Journal: Could you summarize your research area and your interest for Apple's global value chain?

Prof. Séamus GRIMES: About seven years ago I began to realise that if I was to say anything meaningful about multinational technology companies in regions like Europe, I would need to gain some insight into how these companies had shifted much of their production and assembly activities to China. The other important aspect of this study was to understand how emerging regions like China have become increasingly integrated into global value chains, which can present both opportunities and challenges.

Examining the global value chains of technology companies like Apple presents an opportunity to delve beneath the aggregate trade data which frequently hide quite complex interrelationships between global companies and their many suppliers across national boundaries. Much of China's trade in the ICT sector is of intermediate goods or components which are imported from elsewhere and assembled in China as final products before being exported to other countries or sold in China. Apple is one of many companies that have little choice but to exploit the extensive range of suppliers and contract manufacturers that constitute China's rich ICT ecosystem. Despite what some have suggested about attracting the manufacturing of Apple products back to the US, what Apple is doing in China would be very difficult to replicate in other regions. Part of the reason is the scale of operations of Apple's main contract manufacturer Foxconn, and also the availability and flexibility of both unskilled and engineering workforces, and the relatively lower cost of operations, particularly as production has moved further inland. Apple is a particularly good example of this phenomenon because despite outsourcing almost all its production to contract manufacturers, it controls its complex supply chain by having its own engineers monitoring each stage of product development. Analysing Apple's supply chain in China also provides an opportunity to evaluate the

extent to which China has benefitted from Apple's activities in the country, and how China's own role in the global ICT value chain is evolving.

You said in the introduction of your article (China's evolving role in Apple's GVC) that there are *a priori* 2 positions regarding the participation of emerging regions in the supply chain: one with a positive view and another one which sees a subservient relationship…, what is your final analysis? What is specific when we are talking about continental China? And what is specific when we are talking about Apple's policy?

The relationship between Apple and China provides us with a microcosm of a fascinating evolution in what could be called a "cat and mouse game" between western technology companies seeking to benefit both from the comparative advantage that China offers as a location for ICT production and testing, and gradually also for innovation, and how Chinese policymakers have been adapting their policies over time to try to ensure that China benefits from this relationship. In addition, while Greater China accounted for almost 25% of Apple's revenue in 2015, the company is becoming concerned about the growing capabilities of local companies like Huawei and Xiaomi and Oppo to displace it in the smartphone market.

Our analysis of Apple's supply chain in China, however, reveals that few Chinese companies are involved with most of the high value components coming from non-Chinese companies and often from suppliers in the US, Europe, Japan, Korea and Taiwan. This is also true of most Chinese smartphone companies, whose revenues are significantly reduced by high royalty payments to these core component suppliers. China's main role, therefore, within the East Asian value chain is that of assembly which is mainly carried out by Taiwanese companies such as Foxconn. The predominantly low value-added functions carried out in China present a major challenge for policymakers since China's traditional export-oriented model is increasingly under pressure from falling competitiveness. Despite their determination to move China's economy up the value chain, the ongoing dependence on core technologies such as semiconductors from other countries makes this major shift very challenging.

So, while China benefits in many respects from Apple's significant presence, the Beijing government is clearly not happy with the balance in the relationship. Apple brings much of its needed intellectual property from outside China, has the opportunity to exploit China's comparative advantage in assembling its products there, and continues to benefit from a growing market for its products. The Chinese policy approach, however, seeks to ensure that the country continues to benefit from the significant economic activity generated by the company, while giving Apple and other foreign technology companies clear signals that their days of growth in the Chinese market are numbered.

In particular, almost no foreign companies have succeeded in China in the internet sector and many suggest that the main reason is a lack of understanding of the peculiarities of the local market. But, while this sector experiences intense competition, the competition is primarily between Chinese companies as the regulatory environment makes it very difficult for foreign companies to grow in this market. The banning of Apple's iBooks Store and iTunes Movies service in 2016 is an example of how China exerts its influence in this market. Part of the difficulty faced by foreign internet companies in China is the local requirement to provide government access to user data and the need to control any material that might be politically sensitive. It should also be acknowledged, however, that Chinese regulators are equally tough in controlling the content provided by Chinese internet companies. Thus, despite the wide appreciation in China of the excellence of Apple's products, the potential for Apple to grow its services revenue in the country may be quite restricted. Apple has responded to these setbacks by making a $1 billion VC investment in China's rise-hailing service Didi Chuxing, and also announcing its plans to establish two new R&D centres.

Did you have the opportunity to analyse the modifications of the Apple supply chain between the first iPhones in 2007/2008 and the latest models?

Not really. This is an important question because it touches on the direction in which the value chain is evolving over time. From the many company interviews I have conducted in China in recent years I can say that local companies are improving their capabilities across the board, despite the continued major gaps in core technology areas. From the analysis which my co-author Yutao SUN and I did, it would appear that many foreign supplier companies found it necessary to have a presence in China, although this varied between companies from different countries. Japanese companies seemed to be somewhat more reluctant to locate their supplier subsidiaries in China. Over, time, however, with such a high volume of ICT production taking place in China, it is inevitable that functions such as R&D will also follow. Many foreign technology companies already have large R&D centres in China to support their growing business in the country. I think it is inevitable, that despite the current situation, with so few Chinese companies directly supplying Apple in China, over time this will change and local companies will acquire the necessary capabilities. It may take a longer period for this to happen in relation to core technology areas such as semiconductors.

It is difficult to find relevant data taking into account the net value added by a country in the "fragmentation" process of the digital goods (export value less importation). Beyond the geographical allocation of the suppliers (% of suppliers coming from regions/countries) do you have data on the value added of each region/country in the global iPhone value?

I'm afraid that I don't and I know that other researchers have made more specific contributions in specifying the distribution of value added between countries. Again, this is very important in the current climate of considerable confusion about how China and the US benefit from trade in the technology sector. Technology exports from China are dominated by foreign companies, but frequently these exports are by major contract manufacturers like Foxconn who themselves make very small profit margins from assembly work. Existing data show that Apple reaps most of the benefit from its supply chain and this is also the case for other key technology companies with ownership of core technology intellectual property. The ongoing preoccupation with the trade deficit between China and the US particularly in the ICT sector does not really help to explain how the benefits of the ICT global value chain are distributed. Investors in technology companies like Apple put pressure on management to establish supply chains in Asia, which will provide the greatest return on investment, and these investors reap most of the benefits of these value chains through the dividends they receive. The main losers in this process are the fellow citizens of these investors in the US who previously had production jobs in these companies. Despite the simplistic Trumpian view of the world, we are very unlikely to see any major short-term reversal in how these value chains function.

In addition to the digital goods there are all the less visible values like the patents and the licences agreements (cf. Apple which asked its suppliers to not pay Qualcomm…). How do you see the trend, which would give more and more importance to business models based on the control of the intellectual property? What are the issues for the global trade or for the commercial trade agreements between Europe and the other regions?

I think there is a lot of shifting ground in this area. The major global technology companies have had huge control over the trajectory of technology development mainly because of their ownership of core technology and patents. This obviously creates enormous barriers to entry for companies in countries like China. But the ground is definitely shifting in many respects. The traditional model was for these global companies to invest hugely in R&D to preserve their dominant position in the market and when necessary acquire innovative competitors. Qualcomm is a fascinating example in China where it gains more than half its revenue and much of that comes from license fees. But the recent fine of $1bn against Qualcomm for exploiting its monopolistic position in China has been followed by additional severe fines in other countries. Even Apple is currently refusing to pay Qualcomm the high fees demanded. Latecomer countries like China have faced major disadvantages in the race to catch up with IP-rich regions of the world and to some extent they are demanding a rewrite of the rules which preserve the advantages of those countries. China, because of its huge market, may well be the first country in a position to insist on a more balanced approach to intellectual property, which does not continue to

create obstacles for greater levels of innovation in emerging regions. The *quid pro quo* of an attractive market may well help to bring about this balance. This is evident in the recent joint ventures established in China between Qualcomm and Intel with local Chinese companies.

What are the other trends you see in the relationship between International trade and the digital goods?

The future as we know is not in the physical devices, but in the potential revenues which services can generate. And alongside these services one can observe in China how the mobile phone is transforming daily life. The WeChat phenomenon in China in many respects points to the future and despite China's many challenges in catching up with developed regions it is a major leader in technology applications. Some argue that the Chinese government has been very clever in creating a protective market in which its own internet companies can first thrive at home and then move internationally. I'm not convinced that this model will prove to be the most effective in the long run, but China is perhaps the first country that has had the political wherewithal to shape its future global integration. The convergence of these new internet services with China's rapid recent growth creates a dynamic for future change that is difficult to predict. There is little doubt, however, that the current culture of technology entrepreneurship in China which feeds off a huge consumer market impatient for the latest tweak in services will definitely bring about major changes in how we conduct our daily lives.

Whether this ecommerce dynamic which is evolving in China will result in Chinese internet companies like Alibaba and Tencent becoming global companies remains to be seen. For a variety of reasons, the western internet giants have not been successful in China, but it should not be overlooked that China's most successful internet companies have benefitted from considerable foreign investment. It is quite paradoxical that the internet sector, which should, in theory, be the one leading to significant global transactions is one of the most regulated areas of China's economy, resulting in a very controlled form of global integration. And this is happening at a time when there is growing networking between entrepreneurs in Silicon Valley and in China.

In 2018, Routledge will publish *China and Global Value Chains - Globalization and the information and communications technology sector* by Yutao SUN and Seamus GRIMES, which elaborates China's evolving role in the ICT global value chain. http://208.254.74.112/books/details/9781138289079/