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## **WORK PROGRAMME ON ELECTRONIC COMMERCE**

### **HOW CYBERSPACE "INTRUDES" ON THE PHYSICAL SPACE? CASE STUDIES: 3D PRINTING AND THE SHARING ECONOMY**

*Non-Paper from the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu*

The following non-paper, dated 15 February 2018, is being circulated at the request of the delegation of the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu.

## **1 INTRODUCTION**

1.1. Since the WTO Ministerial Meeting in 1998, Members have agreed to temporarily maintain their practice of not imposing customs duties on electronic transmissions, a decision which has been renewed in subsequent Ministerial Conferences. On 20 December 2016, the WTO Secretariat circulated a report (Job/GC/114) studying the fiscal implications of the customs moratorium on electronic transmissions, focusing on the case of digitisable goods, which includes cinematograph film, books, newspapers and journals, other printed matter, video games, computer software, musical records, tapes and other sound or similar recordings, and other recorded media.

1.2. The results of this WTO study show that the digitisable goods' share of the total trade in goods in both developed and developing countries is less than 1%; the average MFN duty on digitisable goods was 6.7% in 2014, which is only one-quarter lower than in 2000; and, the fiscal revenues estimated to be collected from these goods are small, averaging about a quarter of 1% of all customs revenues in 2014.

1.3. The above-mentioned study, however, also confesses to one major gap in the information collected - it cannot capture the amount of trade in digitisable goods that has already moved to trade in digital form.

## **2 THE UNOBSERVED CHANGES IN TRADE PATTERNS**

2.1. In reality, most digitisable goods are already traded on-line, and this is the main reason why the digitisable goods' share of total trade appears in the WTO report as being so insignificant that the fiscal impact of the customs moratorium on electronic transmissions would be limited. Moreover, the WTO's analysis has not taken into account the *shifting effect* of activities, either from physical space to cyberspace (such as in the case of *3D printing*), or from organized businesses to part-time individuals (such as in the cases of the *sharing economy*), or from traceable local firms to untraceable paper companies registered in tax havens.

2.2. A major feature of the new e-commerce trade is that, due to its digital nature, many of the transactions are by-passing the controls traditionally made by border measures.

2.3. In "trade-in-goods", for example, the advent of *3D printing* makes it possible for a digital blue-print to be sent electronically from one country to anywhere in the world, and the physical products to be "locally manufactured" in the "consumer country" by a 3D printer from that blue-print. These kinds of goods will be identified as "local products". The GATT rules, which used to deal with border measures, cannot entirely apply to these new trading and manufacturing patterns.

2.4. In "trade in services", if a foreign tourist uses an on-line matching service to book a private room in his/her destination country, and pays the service provider by foreign credit card, the local government of the destination country cannot trace the transaction and therefore cannot regulate it. No tax will be paid, either. The GATS rules cannot fully apply to these situations.

2.5. We would like to suggest that WTO Members focus on discussing the problems raised by these new technology and e-commerce trading patterns as a matter of some urgency. Below, we elaborate further by way of two case studies.

### 3 CASE STUDY NO.1: 3D PRINTING

3.1. 3D printing is an emerging technology that makes three-dimensional solid objects from digital blueprint files by adding material layer-upon-layer. 3D printing makes it possible to create very complex products; the spectrum of products is constantly expanding along with the advances in materials sciences. These technologies have become widely used in a large number of sectors, including electronics, motor vehicle parts, medical and dental parts, industrial machines and aerospace. The practice of 3D printing is also spreading rapidly and transforming the current manufacturing supply chain as well as international trade as it grows. According to a *World Economic Forum Survey in 2015*, the really big breakthrough for 3D printing products is expected to come in 2025.

3.2. 3D printing is changing the location of where the production takes place, what is traded, and who participates in the production and trade. Moreover, 3D printing involves many service tasks, namely, the design and transfer of the digital blueprint files. The manufacturing process may be shifted to the final consumer market, and data transfers could replace some of the physical activities that are currently part of the value-added chain. Thus, we can expect increases in the services trade and decreases in the trade in manufactured goods. Typically, 3D printing radically changes some key aspects of traditional international trade. Take a commodity like a table, for example, which previously had to be transported physically through customs borders. 3D printing changes that trading method into a combination of 1) the possible importation of the printing inks (raw material) and (one-time) importation of the machine, 2) the local "printing" (manufacturing) of the table, and 3) the international transmission of the design blueprint.

3.3. In the traditional trading model, a producer makes physical goods and ships them to the importing country. The importing country has the opportunity to levy a tariff and other taxes upon the traded goods at the border. As the physical products move across the border, the customs administration can easily collect the customs duty and value-added tax (VAT), etc. on the imported goods.

3.4. However, the situation is not the same when the production process is made by 3D printing. Let us suppose that this printing happens in the consumer market. Figure 1 below shows how a seller/designer with 3D printing blueprints in a tax haven could easily avoid certain taxes. After receiving a customer's order via the Internet, the seller/designer can transmit the (IP-protected) blueprint digitally to a local producer, who then produces the final product using a 3D printing machine and ships it locally to the consumer. The key point is that 3D printing divides the traditional trade into a digital transmission (of the blueprint) and a local production (printing) of the object.

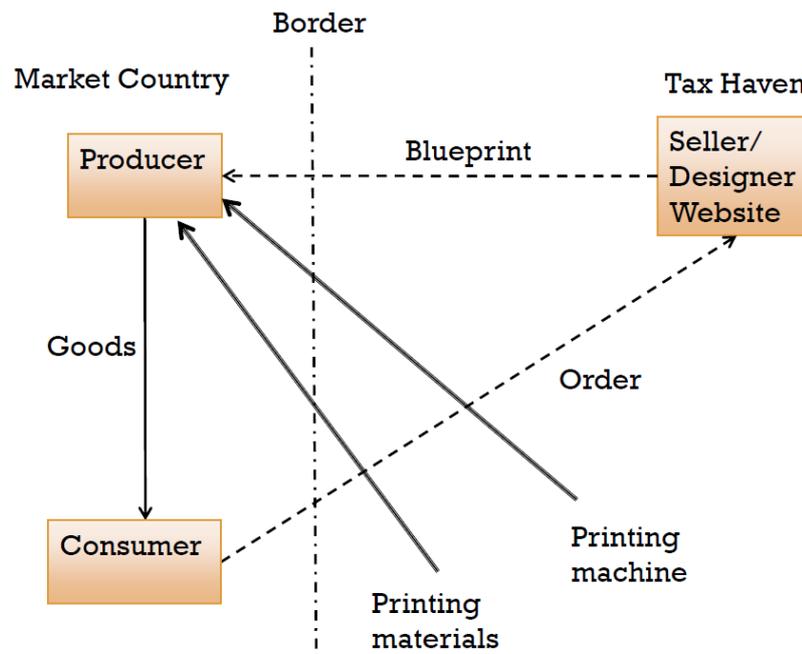
3.5. If the overseas seller/designer makes a tax registration to the government, the tax administration of the government can impose VAT on the overseas seller as well as the local producer. However, in the case of an unregistered overseas seller, the tax administration has difficulties in tracing the whole transaction process and in finding out the value of the transaction on which VAT should be levied.

3.6. Because the transmission of a blueprint is duty-free according to the 1998 WTO Ministerial Declaration on Global Electronic Commerce and the subsequent Ministerial Decisions, this technological division seems to become a window for avoiding taxes. Furthermore, 3D printing shifts the need for inputs from intermediary goods to raw materials, such as the printing "ink". And, because custom duties on intermediary goods and finished goods are generally heavier than those on raw materials, the trend to 3D printing will also result in a reduction in total tax revenues.

3.7. While the combination of 3D printing technology and the digital environment shrinks the physical trade domain, the trade in cyberspace will be increased. The tax erosion issues brought about by this new trade pattern will pose great challenges to many Members, especially developing country Members whose customs duty accounts for a large part of their total tax revenue.

3.8. There are also some regulatory problems to be found. If the locally printed-out product fails to work, where should buyers go for compensation or repair services - to the local printer or the overseas blue-print company? In the 3D printing example, if the product (say, a child's toy) causes harm to children, which company should take the final responsibility for possibly heavy damages - the local printer or the blueprint holder? Since product liability in many countries is strictly imposed, are we going to allow such new business models to avoid the strict liability doctrine?

**Figure 1 3D printing producer model with e-commerce**



#### 4 CASE STUDY NO.2: THE SHARING ECONOMY

4.1. The sharing economy is another potentially significant new trading pattern within the digital economy, which is basically manifested by the peer-to-peer sharing of goods and services. Advances in technology have reduced the transaction costs, increased the availability of information, and provided greater reliability and security for consumers. Recent years have seen the emergence of numerous innovative sharing applications using different business models and focusing on one particular service or product, such as accommodation or motor cars.

4.2. It should be noted that most individuals who participate in the sharing economy are not doing so mainly to make a living, but to serve a cause that inspires them, or simply in order to "make ends meet". Because the supplementary income is a net benefit, and often does not involve much quantitative cost-benefit analysis, amateur providers have a tendency to share their available resources at a lower price than that which professionals might have charged, thus bringing down overall prices, including those of the professionals. Through time, as certain

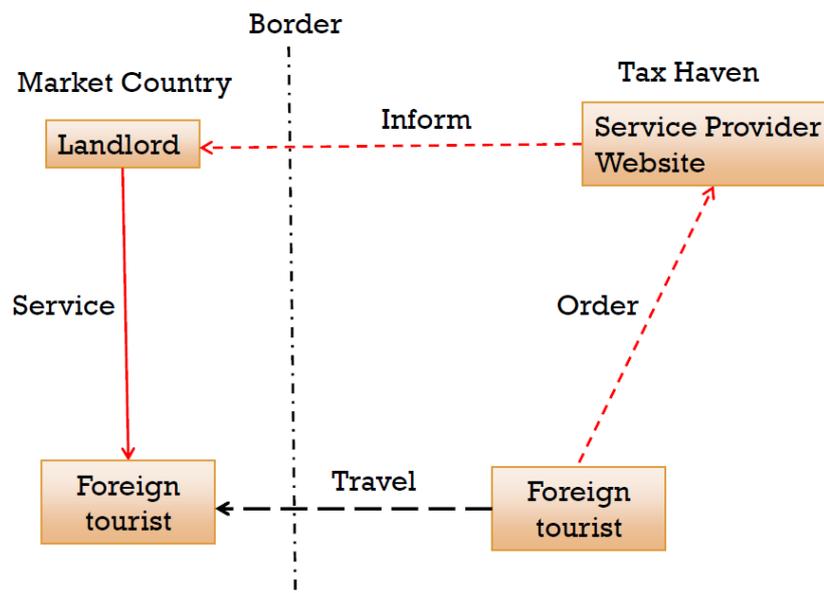
platforms attract substantial numbers of individuals, these platforms become the prime access point for customers via the online market, and they have the potential to provide serious competition for traditional business applications operated by professionals, which may find they have to cut their profit margins further.

4.3. Here we take the accommodation matching service as our example. This is a peer-to-peer accommodation market-place that connects hosts (the vendors of rooms/accommodation) with guests/travellers (the potential customers) via the website. This type of on-line matching service enables transactions between the two entities by charging a service fee without directly owning any rooms themselves.

4.4. Traditionally, when foreign tourists travelled to a country their consumption abroad was classified as "mode 2 supply" as defined by the GATS of the WTO, and they needed to find local accommodation for their stays. The foreign tourist would usually book a room in a local hotel and pay the local hotel directly. With this former "local hotel" method, the tax administration could easily collect the tax revenue generated by this activity from the hotels (which are virtually all registered businesses).

4.5. Now, with the help of on-line matching services for accommodation (as shown in Figure 2 below), the foreign tourist can find a local private vendor and stay in a cheaper spare room. The tourist is required to pay the accommodation fee by credit card straight to the on-line service provider, not direct to the local private house owner of the room. Therefore, it is very difficult for the regulatory authorities to trace the transaction or the payment for accommodation, which all happens abroad, and it is almost impossible to impose any taxes or regulations on this business model.

**Figure 2 Foreign tourists using the on-line matching service**



4.6. Not surprisingly, this type of on-line matching service is becoming popular, and local hotels will have more competition from private vendors with cheaper prices for their spare rooms. Total sales and profits of traditional hotel services will be reduced as a whole, and total tax revenues will decline as well.

4.7. Besides the tax issue, there are also regulation problems with this "sharing economy" business model. Regular hotels are usually subject to various emergency exit and safety checks, environmental and hygiene checks, food security checks, etc. But, for private vendors who provide the service on a casual basis, probably none of these are required. Thus, the cost advantage of this service may partly result from avoidance of many of the regulations. One fundamental issue here, therefore, is that this new business model changes the traditional trade pattern so

significantly as to confront many of the existing domestic regulations, of which taxation is just one example.

## 5 CONCLUSION

5.1. The WTO has seldom talked about taxation issues. The current practice may no longer be appropriate or feasible as more and more new forms of e-commerce and digital trade arise. Thus, we suggest Members start to think about this important issue.

5.2. In the case of 3D printing and the trade in goods involved, the implication is that the production location must be changed. WTO Members may consider the possibility of requiring the *localization* of the 3D printing machine. This would mean that the new manufacturing site, identified by the location of the 3D printing machine, must register to the local government. Then, at least, the manufactures' responsibilities are covered by regulations, and some taxes could be levied.

5.3. As for the demander-supplier matching services, WTO Members may want to consider a process whereby once the amount of matching service within a country reaches a certain threshold, mandatory local registration is required, with no possibility of local regulations being waived. The cost advantage of any new service model could be based on the true and genuine cost advantages, not on the cost-saving of avoiding the regulations.

5.4. Should the WTO choose not to look into the problems raised by these new e-commerce trade patterns, the authorities will continue to have increasing difficulty in levying customs duties and internal taxes, as well as implementing the due regulations and liabilities. As a consequence, e-commerce could enjoy lower costs and offer lower prices than the traditional trade in goods and services. This *asymmetric regulatory treatment* will create a business environment of unfair competition between the new and traditional trading models. Furthermore, this particular problem of unfair trading cannot be solved entirely by the current GATT and GATS rules. We therefore suggest that the WTO faces up to this situation and deals with it as a matter of urgency, before international trade competition descends into becoming "a race to the bottom".

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