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Digitalization and the transnational corporations.

Rethinking economics

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Digitalization and the transnational corporations. Rethinking economics

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1. Introduction

Digitalization has been with us for a couple of decades and is now all pervasive. It affects every sphere of economic activity: from production to consumption to the interaction between the State and its citizens. The latter interaction is in terms of: the delivery of public services; the collection of revenue; and the development and implementation of public policies.

The transnational companies (TNCs)² have been with us for much longer. Steven Hymer (1976 [1960]) - who developed the first theory of the international firm - dates the *modern* transnational to after the Second World War. Its very distant antecedents can be dated much further back even before the birth of nation-states. Transborder direct business operations were indeed part of the activities of the Medici bank with headquarters in fifteenth century Florence.

More recently-established companies, such as the East India Company, the Royal African Company, the Hudson Bay Company and others dating back to the seventeenth and eighteenth centuries, are sometimes considered to be the forerunners of the modern TNC. However, these companies were chartered by governments to carry trading business operations in colonies. The specificity of their operations and the fact that the charter was for business in the colonies – which were considered part of the country whose government had granted the charter – make these companies substantially different from the modern transnational corporation.

Hymer does not consider any of these companies to have been the forerunners of the modern TNC because they lacked a key element of modernity on business: the ability to control and manage at a distance³. This became possible only with the modern means of transport and communication available after WWII. Management and control of operations became possible owing to cheaper and faster transportation and communication technologies. Changes in the internal organization of companies developed alongside

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² The terms transnational company/corporation (TNC) or multinational company/corporation/enterprise (MNC or MNE) or international firm/enterprise (IF/IE) are used interchangeably in the literature and in this text.

³ More on these historical and definitional issues in Ietto-Gillies (2019, Chs 1 and 2 pp. 8-35)

improvement in such technologies and they all contributed to the increase in the number and activities of transnational companies worldwide.

In this paper I shall concentrate on developments in the last decade, the years that have seen the emergence and growth of the digital transnational corporations though I shall deal with wider issues linked to technology transnational in general.

The next section deals with digitalization and the TNC. Section three and four tackle, respectively, issues of theory and policy with regards to the transnational companies and which arise from digitalization. Section five deals with macro issues and the last section summarizes and concludes.

2. *Digitalization and the TNC*

Digitalization is part and parcel of the activities of transnational companies at an even greater extent than of other agents in the system. It plays a key role in strategies regarding: the movements of resources across space and frontiers; the development of production processes and of value chains across space and countries; and strategies regarding internalization versus externalization of production whether the latter takes place as sub-contracting or collaborative ventures or arm's length procurements. It also plays a big role in the governance of large institutions and their internal organization be they private – like the transnational corporations – or public.

Box 1. Digital and ICT MNEs

1. **Digital MNEs** are characterized by the central role of the internet in their operating and delivery model. They include purely digital players (internet platforms and providers of digital solutions) that operate entirely in a digital environment and mixed players (e-commerce and digital content) that combine a prominent digital dimension with a physical one.

a. *Internet platforms*: digitally born businesses, operated and delivered through the internet, e.g. search engines, social networks and other platforms, such as for sharing.

b. *Digital solutions*: other internet-based players and digital enablers, such as electronic and digital payment operators, cloud players and other service providers.

c. *E-commerce*: online platforms that enable commercial transactions, including internet retailers and online travel agencies. Delivery may be digital (if the content of the transaction is digital) or physical (if the content is tangible).

d. *Digital content*: producers and distributors of goods and services in digital format, including digital media (e.g. video and TV, music, e-books) and games, as well as data and analytics. Digital content can be delivered through the internet but also through other channels (e.g. cable TV).

2. **ICT MNEs** provide the enabling infrastructure that makes the internet accessible to individuals and businesses. They include IT companies selling hardware and software, as well as telecom firms.

a. *IT*: manufacturers of devices and components (hardware), software developers²

Source: Adapted from UNCTAD (2017: p. 165)

But the symbiosis between digitalization and transnational activities has, in the last decade, taken a much stronger connotation than the facilitating of strategies and activities across frontiers and institutions. This change has occurred via the activities of the digital TNCs.

Box 1 reproduces categories taken from a UNCTAD Report on the Digital Economy. It distinguishes between Digital MNEs and ICT (Information and Communication Technology) MNEs. The latter companies provide hardware and software infrastructure as well as the communication infrastructure.

The digital MNEs are those transnational companies whose *raison d'être* has to do with digital technology – specifically the internet - in terms of their products, processes and interaction with customers, labour and markets. The *digital corporations* cannot but be transnationals: from Google to Amazon to Uber to Facebook. They have penetrated a variety of sectors from information to consumer products to transportation. They are generating enormous effects on established business, on the workforce and on governments.

The contribution of all the sectors reported in Box 1 to the population of TNCs worldwide is now very relevant and has been increasing. For example, the number of largest MNEs – part of the world top 100 non-financial multinationals - in Category 2a of Box 1 (manufactures of hardware and software as well as providers of software services) has increased from 4 in 2010 to 10 in 2015 (UNCTAD, 2017: p. 159).

The growth in number and relevance of operators in the digital field changes the sectoral landscape of industry. Moreover, there are important qualitative differences between traditional transnational corporations and the digital ones. Specifically:

- (a) Many digital companies such as Google or Facebook or Twitter use specific and novel business models based on non-coincidence between users of their services and sources of revenue for the company. The revenue is raised via advertising and the users have free access to the information services.
- (b) It is difficult to allocate the business of many of these digital companies to specific sectors: Is Uber a transport company or – as they claim – a technology company? Is Facebook in the publishing business or not?
- (c) Digital technology has been used to change the landscape of industrial relations in most sectors. We have, increasingly and worldwide, seen the move towards business models which involve the utilization of labour without responsibility on the part of large companies and indeed, in many cases, of public institutions.
- (d) For some digital companies in particular, there tends to be non-location bound production processes and products.
- (e) The digital TNCs exhibit low level of foreign investment and assets with high foreign sales and revenues.
- (f) The digital and ICT TNCs tend to keep large cash holdings all over the world.
- (g) The digital and ICT sectors are dominated by very large companies with enormous market power.
- (h) Most digital corporations have their main headquarters in the USA.

In facing up to the full impact of the digital revolutions and specifically of digital TNCs we must be aware that they raise issues not just in terms of quantitative growth of the sector. There are very important qualitative issues which beg questions about our theoretical approach to the TNCs as well as policy issues for governments. Let us look at them in more detail. I shall first deal with theory issues; in particular, the theory of the transnational corporation.

4. Theory issues

4a. The digital companies and the definition of TNCs

Are our conceptualization, definition and empirics of TNCs compatible with the characteristics of TNCs listed in Section three and in particular with the development and growth of digital TNCs? Theory issues arise from two main structural changes which have emerged in the last few decades. The first one is the most recent one having emerged and grown in the last decade. It relates to characteristic (e) above: the relative low level of foreign assets in digital TNCs in relation to other TNCs.

Transnational companies are defined by their ownership of assets abroad leading to direct business activities – international production - in foreign countries. The traditional definition of TNC is as *a corporation that owns assets and uses those assets to operate direct business activities in at least two countries*. Foreign assets – built up via foreign direct investment (FDI) – are therefore part and parcel of the definition of TNC.

Table 1. Average ratios of foreign sales to foreign assets by sector. Largest world non-financial TNCs, 2015

Sector	Ratios for subsectors	Ratios for main sectors
Internet platforms:		2.6
Search engines	2.6	
Social networks	2.4	
Other platforms	3.7	
Digital solutions:		1.9
Electronic payments	2.9	
Other	1.7	
Digital content&e-comm:		1.1
Internet retail	0.9	
Other e-commerce	2.4	
IT (hard & software)		1.8
Telecoms		0.9
Other TNCs		1.0

Source: Author adaptation from UNCTAD (2017, Fig IV8: p. 171)

Table 1 presents data for 2015 on the ratios between foreign sales and foreign assets. The data relate to the whole sector of TNCs and is detailed for those operating in the ICT and digital sectors. The table shows that the internet-based MNEs such as Alphabet (parent company of Google) or Facebook have a ratio of foreign revenue to foreign assets of 2.6. For the non-digitally based MNEs – which are, nonetheless users of digital technologies – the ratio is 1. This means that some of the most recent and powerful MNEs in the world use relatively little capital in relation to their revenue. Most of them use also very little labour force directly. Does that make the companies less transnational? It would seem absurd to consider Google or rather Alphabet and Facebook or Tweeter non-transnational. They obviously are. However, their emergence, growth and characteristics mean that we may need to rethink our definition and conceptualization of a TNC.

It might seem plausible to shift the definition of a TNC from the focus on foreign assets to a focus on foreign revenue. In fact, as noted in characteristic (a) above, the social media TNCs raise their revenue not from the sale of their services but from selling advertising space on their platforms. Nonetheless, the emphasis is on revenue rather than foreign assets.

However, when we shift the focus from foreign assets to foreign revenue/sales we encounter another problem: foreign revenue and sales can also be achieved by exports: the traditional modality for reaching foreign markets. Are the big digital companies exporting products produced in the home country? Where, indeed, are the products of Google or Twitter or Facebook produced? Difficult to say given characteristic (d): ‘non-location bound production processes and products’.

Moreover, as noted in (f) above most of these companies keep large liquid assets overseas. How common is this practice among other TNCs? Are we witnessing the emergence of TNCs characterized by decrease in foreign fixed assets but with increase in liquid ones?

In other words the whole field of the nature and characteristics of digital TNCs and indeed, possibly, of many other TNCs, needs further thoughts.

4b. Labour and the definition of firms and TNCs

In the previous sub-section we discussed a specific structural change - related to foreign assets - in the universe and typology of TNCs caused by the internet. We raised the issue of whether such changes might lead to a reconsideration of our definition and approach to the TNC.

In the last few decades there has been another very relevant structural change affecting all firm – national and transnational ones – as well as other institutions: changes in the organization of production with great effects on the labour force. The changes we are interested in affect TNCs to a higher degree than other firms/institutiona. They relate to the organization of the production process with externalization of large amount of production components and business functions. Such changes have started a few decades ago under the neoliberal agenda and have been aided by the digital technologies.

Externalization can take place to a variety of degrees: from full arm's length transaction where the company buys components or services on the open market; to contractual externalization in which the company uses a variety of contractual outsourcing arrangements – from sub-contracting to franchisees to licensing among others - to secure the supply of components and delivery of services. Companies want to outsource but they also want to retain control over their brand, the quality of products and, possibly, delivery times. In all these forms one element remains common to all outsourcing modalities: they all involve full externalization of the responsibility for the labour employed in the production of the outsourced components. In many cases the contractor is also responsible for investing capital in the business.

This is the case, for example, of McDonald who retains control over the brand, the quality of the product and services. However, responsibility for the labour employed in the franchises rests with the franchisee as does the cost and risk of investing in the outlet serving McDonald hamburgers. So, the business model is based on: externalization of responsibility for labour in the context of control.

These trends in the externalization of production have greatly contributed to the relative decline in employment for which the TNCs have direct responsibility in relation to their revenue. UNCTAD (1995) reports total employment by TNCs in headquarters and affiliate to be 86m. Later data show a decline, namely to 77m in the early 2000s (UNCTAD, 2009a) and 73m more recently (UNCTAD, 2018: Table 1.6). This declining trend has taken place alongside large increases in the number of TNCs worldwide, their revenue and their activities in general.

Some economists have been thinking that, in the context of large scale externalization with retention of control on the part of big companies, a new definition of firm and of transnational firm is necessary. Cowling and Sugden (1987: 12) demarcate between firms and transnationals and thus define the two: '*A firm is the means of coordinating production from one center of strategic decision-making. A transnational is the means of coordinating production from one center of strategic decision-making when this coordination takes a firm across national boundaries*'. Similarly, and more recently, Dunning and Lundan (2008) shifted the focus of the firm from the legal definition in terms of ownership of assets towards the strategic coordination of business networks some of which may be wholly or partly owned and some are controlled without ownership but via contractual arrangements.

The model with shifted responsibilities for labour applies to McDonald and, to an even stronger extent, to Uber where the responsibility for labour lies with...the individual workers themselves: they are deemed to be self employed. Here is where issues of labour law, sectoral demarcation and labour relations all play a role.

One problem for capital is that the use of digital technologies is no longer confined to big firms and institutions: your humble, geographically-dispersed workers have access to the internet: in fact, in many cases, to be able to work for large companies, access to the internet is essential. But the internet can also be used to organize labour by trade unions and/or by willing and pro-active workers themselves and not just for the organization of global value chains or the movements of large sums across the globe by companies.

Signs of change are in the air. We have, recently, witnessed strikes in many states and countries. What is more relevant is that some of the strikes have been organized across borders and some across firms in the same industry. Examples of the first type are the strikes organized by workers employed in McDonald's franchises across many US States in 2015 (Ietto-Gillies, 2017) as well as a similar strike by Ryanair pilots across several European countries in 2018 (*The Guardian*, 2018a). There have also been cross-country industrial action by Google workers (*The Guardian*, 2018b). The second type of industrial relations conflict – cross firms action - can be exemplified by the strike organized across several fast food companies – and therefore across the industry – in the UK (*The Guardian*, 2018c).

Shift in the balance of power between labour and transnational capital involves the law not just in terms of labour law in the various countries in which they operate; it comes also in terms of sectoral definition. We mentioned characteristic (b) which highlights the difficulty in assigning companies to specific sectors. So far, legal deliberations have considered Uber to be part of the transport sector in terms of obligations for insurance and employment relations.

As regards the social media companies, the issue of sectoral belonging is hotly debated in a more political context: if they are deemed to be part of the publishing sector then they become responsible for the content they publish and may have to reveal sources. This is not so much an issue of industrial relations as an issue of accountability: the information released on social media has a large impact on countries' election and thus on democratic processes.

The two structural changes we considered in this section have a further impact partly connected with theory and partly with empirics: the impact on indicators of transnationality.

UNCTAD has, for many years, developed and estimated a transnationality index (TNI) for the world largest 100 TNCs. It is computed as the arithmetic mean of the share of: (i) foreign assets in total assets; (ii) the share of foreign revenue in total revenue; and (iii) the share of foreign employment in total employment. The conceptual framework behind this index is to help “assess the degree to which the activities and interests of companies are embedded in their home country or host countries.” (UNCTAD, 2007: Chapter V, p. 13). In the same page, two drawbacks are mentioned about the index: “...that it does not take into account the size of the home country, nor does it distinguish between companies whose activities are concentrated in a few countries and companies whose activities are spread across numerous host countries.”⁴ I would like to add a further drawback: the construction of the index – as a simple average of three separate indicators – has always been problematic. The two structural changes we have been discussing make it more so because the composite index makes it difficult to identify possible sources of structural breaks in time sequences.

In the context of business models based on externalization, is it still meaningful to include the employment component in the transnationality index? The

⁴ The relevance of geographical spread of TNCs' activities is captured in the Network Spread Index developed in Ietto-Gillies (1998 and 2009).

direct employment of the specific TNC - and for which it takes responsibility - no longer represents the overall control over employment and its conditions over which it presides. Could we try and consider separately an indicator of the employment trends taking account of the full value chain? There is, in other words a mismatch between responsibility and control. In terms of transnationalization, such mismatch leads to a decoupling of employment and revenue: a company can be very internationalized in terms of sales and revenue but NOT in terms of employment.

It should also be noted that the structural changes in employment we have highlighted affect employment in TNCs both at home and abroad. It might therefore not have effects on the ratio of foreign employment to total employment. There has been another structural change which affects TNCs only: the trend towards relocation of production abroad. This last trend would lead to a rise in the ratio of foreign to total employment.

Regarding the other structural change – relatively low level of fixed assets (characteristic e) – can transnationality be defined mainly in terms of sales/revenue abroad? Should we take account of liquid assets (characteristic f) and not just fixed assets abroad? Can we still draw a borderline between international production and exports in the case of digital TNCs characterized by (d), non location bound production?

The increase in liquid assets compared to total assets may be a characteristic of other TNCs – or, indeed, of most large firms – not just the technology ones. Should this characteristic be taken into account in specific indicators given the fact that it affects economies as a whole?

For all the above reasons I think that it is now advisable to consider the three separate indicators (of foreign employment over total employment; foreign assets over total assets; and foreign revenue/sales over its total) instead of - or alongside the - composite indicator. It may also be useful to develop indicators of liquid assets in relation to total ones. Thus the structural changes may also lead to a rethinking of indicator of transnational activities. The more so because important policy issues are at stake as we shall discuss in the next section.

In conclusion, we saw that changes in the balance between internalization and externalization of the production process and firms' functions are perceived by some economists as requiring a change in the definition of firms and transnationals. A rethinking of the concept and definition of TNC may also be necessary in relation to the shifting balance in the share of foreign sales to foreign assets. Moreover, the two structural changes make it desirable to change our approach to transnationalization indices.

5. Policy issues

In the introduction we mentioned that the modern theory of the TNC started with the work of Steven Hymer, a doctoral student at the MIT (Massachusetts Institute of Technology). Many more theories and works followed. However, the study of transnational has not been fully incorporated into the standard study of economic. It

has tended, on the whole, to be confined to courses in international business or economic geography or, partly, of industrial economics. Their impact on macroeconomics and policy issues has been neglected.

In (Ietto-Gillies, 2019, Introduction and Ch. 15) I claim that the reason why we need specific theories of the TNC is the existence of nation-states with their different regulatory regimes. In such an approach to the TNC the nation-state is seen as the locus of a set of *regulatory regimes*, that is, of a set of specific rules and regulations which apply to people, firms and institutions within the borders of the nation-state. Some of these rules and regulations stem from the legal or institutional system, some from government policies. Most of them embrace several or all aspects of both institutional and policy frameworks. They are the following.

- Rules and regulations regarding the social security system and in particular different regimes regarding labour and its organization.
- Fiscal regime including corporation tax and customs and excise duties as well as non-trade barriers.
- Currency regimes.
- Regime of industrial policy with regard to incentives to businesses.
- Rules and regulations regarding environmental and safety standards

The differences in regulatory regimes across different nation-states generate advantages of multinationality for companies. They are mainly in terms of advantages in bargaining with labour for wages and work conditions (Balcet and Ietto-Gillies, 2019); or in negotiations with governments for financial and other support to inward FDI; and also, very significantly, in terms of TNCs' taxation liability arising from different fiscal regimes of countries.

In that work I consider three types of distances between countries: spatial distance; cultural distance; and regulatory regimes distance. Traditional economics of international trade as well as economic geography in general have emphasized distance in terms of spatial distance as an element affecting the cost of transportation as well as the availability of resources. The internet has obliterated these costs for many services such as financial services. In fact, in the last decade or so, these two elements of distance have been pushed to levels never seen before and in opposite directions: the geography of space as distance is being obliterated while the geography of nation-states and their regulatory regimes is being encouraged, used, and often abused by TNCs. While spatial distance no longer matters to digital TNCs, distance in terms of the regulatory regimes of countries is important and used to minimize their tax liabilities. The business model of digital TNCs – digital products and processes – makes spatial distance almost irrelevant. However, there remains distance in terms of regulatory regimes between nation-states.

This type of distance can generate advantages particularly, but not only, for the digital TNCs. By operating exclusively on the internet in terms of both products and processes, the digital TNCs can annul the costs of spatial distance while heightening the fiscal benefits of distance in terms of regulatory regimes of different nation-states.

Essentially, the peculiarity of their business means that the company can have large amount of sales and revenues in a country but declare very little in the way of profits in it. This is because the companies can easily shift costs into countries with high tax rates. In other words, we are in a world in which digitalization is making tax minimization strategies increasingly easier for companies as well as more difficult to detect by tax revenue inspectors.

Under pressure from public opinion, governments are becoming wary of these practices and some of them are putting forward plans to counteract them. Specifically, they are planning taxation of revenues/sales rather than profits. In fact, most manipulation happens on the costs side which affects the level of declared profits; sales figures and revenues are not easily manipulable and this explains plans to tax revenue. The European Union Commission has considered a tax on revenues. The UK Chancellor of the Exchequer under the May Government announced in his autumn 2018 Budget Statement a ‘2% charge on the UK revenues of “specific digital business models”, meaning search engines, social media platforms and online marketplaces’ (*The Guardian*, 2018d). Nothing has materialised from these plans in the EU or the UK. However, France has taken action following the *gilets jaunes* protests. She is the first country to have passed a law imposing a 3 percent levy on the revenue from digital services accruing to firms with more than 25 million euros in French revenue and 750 million euros worldwide. This move has been strongly criticized by President Trump in whose jurisdiction most of the large digital TNCs are based.

Another major issue from digitalization is not much discussed though its impact and policy implications are very relevant throughout the world. In many industries the technologies allow reproduction of products at zero or very low cost (Mason, 2015)⁵: from the music industry to publishing to medicines. How much longer can these industries survive? Can, indeed, that section of capitalism based on Intellectual Property Rights (IPRs) survive the possible onslaught of these industries? Can government intervention save them? In fact governments already intervene heavily in the pharmaceutical industries by supporting basic research in universities (Mazzucato, 2013) and in the cultural industries via support on education and research. Indirect support is given via the employment of researchers provided by the universities as well as via the acquisition of books and journals by publicly-funded libraries. It should also be noted that the content of academic journals is largely supplied for free by publicly-funded academics. Therefore further public support for these industries is possible for example: by further subsidies to the private sector or by the State taking on some of the activities currently done by the private sector. As I write the British Labour Party election manifesto contains plans for the establishment of a State pharmaceutical company.

Policy issues arise also from the role of social media in society specifically in relation to the data they generate. Some fundamental questions arise from such data: (i) who owns or should own the data? Currently the big digital companies own it. (ii) Should

⁵ A shorter, clear account of the issues in Mason’s book is in Gillies (2015)

the marketization of the data be restricted? Prohibited? Subject to conditions such as approval by the individuals who – indirectly and unknowingly - provide the data? (iii) Are users of social media – the very providers of the data – being manipulated as consumers and as citizens?

6. Some macro issues

Any economics undergraduate student of my generation used to be taught that the macroeconomy is not the same as the sum of its microelements. I hope the younger generations understand this principle – the fallacy of composition - even if they are no longer taught it. The principle holds whether the microeconomy does or does not have TNCs. However, in advanced economies dominated by TNCs the principle is even more relevant.

For a start, there are cases in which we are not clear where the micro stops and the macro begins. Transnational companies in general and the technology ones in particular are very large companies. This means that the impact on macroeconomies of the world TNCs can be very large indeed. At the macro level there are some important characteristics of the sector which have policy implications. In particular, the geographical configuration shows interesting but not surprising patterns, for example, the following.

(i) At the global level the world TNCs are responsible for some 80 percent of world trade. Moreover, a third of this trade is on an intra-firm basis. The first feature means that trade policies cannot ignore the role and strategies of TNCs as is becoming clear in the context of Trump's trade war with China. The second feature – intra-firm trade – means that the scope of TNCs to minimize their tax liability is greatly heightened. TNCs have opportunities to invoice the movements of components or services across frontiers but to other parts of the company at prices which are not arm's length prices, those that would be charged to an outside customer. Pricing strategies leading to minimum level of overall profits world wide are likely to be followed. Such strategies are not legal but difficult to detect particularly because many components and services transferred intra-firm are company-specific and no open market price exists for them. The OECD (2010) gives guidance to companies and tax revenue inspectors on how to set prices for internal transfers and how to detect possible departures from the norm and legality.

(ii) The concentration of investment by digital and ICT companies in developed countries, particularly the USA. This raises political as well as economic issues which impinge on foreign policies. For example President Trump opposition to a revenue tax for digital companies and his overt criticism of President Macron of France for implementing such a tax (see Sec. 5) is bound to have effects on other countries' willingness to establish one.

(iii) A strong digital divide between regions of the world. The participation to the digital economy is very uneven world wide. This means that countries with a low participation rate may be lagging behind and suffer from competitive disadvantage. The Report gives the percentage of the population using the internet at 83 for developed economies and 39 for developing ones with Africa at 20 per cent.

Corresponding figures for the firms in those economies are, respectively: 81; 58 and 45 for Africa (UNCTAD: p. 189).

The tax minimization strategies of TNCs have important effects at the macro level as well as at the micro, company level. The strategy leads to minimization of overall tax revenue for the company; the other side of this is that there is a transfer of surplus from the international public domain to the private domain. Essentially, in the world as a whole less will go to the public sphere as tax revenues, and more will be kept in the private sphere of companies because they pay an overall tax bill lower than warranted. Moreover, a transfer of surplus takes place between countries because of this practice. Countries where value is created may see their legitimate, expected tax revenue being siphoned off towards low tax rate countries. In the last analysis the practice leads to divergence between private and social benefits worldwide and to the redistribution of surplus between different countries.

There are also effects on the volumes and structures of the balance of payments of the various countries involved in the transfers as the recorded values of the transactions are different from the value that should have been invoiced on the basis of arm's-length prices.

We listed characteristic (f) for digital TNCs: high levels of liquid assets abroad. UNCTAD (2017: p. 173 and Fig, IV, 11 at p. 174) reports that "Tech megacorporations from the United States in UNCTAD's 2015 ranking of the top 100 MNEs kept 62 per cent of their total foreign earnings unremitted, a share almost three times higher than that of other United States MNEs". The significance of this trend is twofold. First, keeping profits in foreign countries may be a tax avoidance strategy: i.e. companies keep their profits abroad to avoid paying the higher tax rates in developed countries: a strategy followed by other companies and not just the Tech ones. However, the digital TNCs have more scope for such strategies because most of their assets are liquid. Moreover, the huge size of assets held in liquid form has an impact on the financial markets and on the degree of financialization of the economic system in general: an issue with implications for the stability of the world economy.

The size and activities of TNCs generate also problems at the level of data collection and their interpretation. This, in turn, creates problems for policy development and implementation. Two examples on this. First round-trip investment. UNCTAD (2015: 188) reports the existence and growth of FDI activities in so-called offshore investment hubs. The expression refers to countries used for transit investment with funds moving between countries but transiting through these hubs for tax avoidance purposes. 'Some 30 per cent of cross-border corporate investment stocks... have been routed through conduit countries before reaching their destination as productive assets.' UNCTAD also reports in the same page that: 'In 2012, the British Virgin Islands were the fifth largest FDI recipient globally with inflows at \$72 billion, higher than those of the United Kingdom (\$40 billion), which has an economy almost 3,000 times larger. Similarly, outflows from the British Virgin Islands, at \$64 billion were disproportionately high compared with the size of the economy'. It also reports that some developed countries – such as Luxemburg or the Netherlands – also exhibit amplified investment patterns and act as hubs for the transition of FDI.

Another data issue arises from special concessions – including preferential tax rates - for foreign investment but not available to domestic investment. If a government allows tax concessions for inward investment and a domestic company wants to benefit from them they may indulge in round-trip investment (Sutherland and Ning, 2011) in combination with other financial engineering activities. They set up a new company abroad and transfer funds to it. This shadow company will then invest in the original country benefitting from the tax concessions. The movements of funds are recorded as outward and inward by different companies and in different countries though, in reality, the funds originate from a single country and belong to a single company. These are not easy tricks to spot but there are ways around the problem. The point I want to make here is that the tax structure often leads to self-defeating behaviour for governments; moreover, it affects the reliability of data on FDI.

7. Summary and conclusions

The paper starts with an analysis of the impact of digitalization on transnationality. It examines the impact of the rise of ICT and digital TNCs for theory and policy. Macro-micro issues are considered in Section six.

My overall conclusions are the following. (1) The rise of Tech - ICT and digital - TNCs makes it compelling that economists devote more time to the incorporation of the study of TNCs within the body of economics. (2) The theory of the TNC in itself may need reconsideration on the basis of changes in the real economy in terms of the growing relevance of digital TNCs. They pose new challenges in that the foreign assets component of international production is becoming less relevant while liquid assets are increasing. (3) There are great policy challenges deriving from the differences in regulatory regimes between different nation-states and characteristics of these TNCs. These challenges allow TNCs in general - and the digital TNCs to an even higher extent – to: minimize their tax liability; avoid responsibility for their workforce; affect the democratic processes across countries.

Many digital TNCs also raise issues related to market power which is affected by (a) their sheer size; and (b) their multinationality which gives them added advantages compared to uninational firms. Many of the latter are being wiped out and the landscape of cities is changing under the advance of Amazon and Uber. This brings economic and social consequences.

What is to be done vis-a-vis this situation. The first point to realize is that most of the problems arise from the power of the companies in relation to: workforce; consumers; governments. Their size and market power together with their nationality – usually American in the case of digital and many ICTs TNCs - raises issues of monitoring and controlling power by single countries. The power can only be checked by concerted, agreed policies at the country and international level. This seems a chimera at the moment. In fact, we are in danger of going in the opposite direction. There are movements around the globe aiming at creating more differences in regulatory regimes from which the TNCs can further take advantage. This would be one of the outcomes of the secessionist movements in Europe: from Scotland to

Catalonia to the Italian Lega North to Brexit. That the big world powers – from Trump’s USA to Putin’s Russia to Xi’s China all want Brexit to happen should sound alarm bells as to who would benefit from it.

But these issues cannot be convincingly argued if the claim that the study of TNCs is the preserve of colleagues working in the Strategy and Management Department. We economists have the duty and right to be involved and I hope that younger colleagues than me take up the challenge.

Moreover, the digital companies are raising concerns that span wider than economics and touch on social and political issues. In particular, recent activities at Facebook have sparked anxiety about the privacy of individuals’ data and about the use of such data for political purposes. It appears that the democratic process in several countries may have been compromised by the misuse of data.

My conclusion on the above notes is that we may need to rethink our conceptualization and definition of TNCs to fit in with the growing digitalization of the economy. A definition that considers the following: (a) takes account of foreign sales and not just investment and assets; (b) acknowledges the possible coincidence of production and sales; and (c) distinguishes between sales abroad via non location-bound production from exports i.e. sales abroad from production located in the home country. Quite a task for twenty-first century researchers. The task of politicians who care for the fiscal revenue of their country may be even more challenging.

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