Material Resources, Human Labour, and Data: The Long-Forgotten Elements of the Digital Economy's True Value Chain and an Indication for its Adequate Taxation

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Taxing the digital economy has been on the international tax agenda for almost 30 years, revolving about how to tax an industry increasingly based on intangibles, scale effect, and market reach without a physical presence. But following *Crawford* and *Joler's* concept of *extractivism* (2020; 2021), the digital economy is not only about BATX or GAFAM, but also about material resources, human labor, and data. The article analyses those long-forgotten elements of the Digital Economy's true value chain, and, as the most recent two-pillar-based reform of the Inclusive Framework does actively exclude them, how

those elements could be considered in the reform process.

I. The Digital Economy and its Key Value Driver – A Narrow Concept?

When taking about the digital economy, we tend to think that it is totally fundamentally different from the traditional economy as it existed during the 20th" (see Chohan 2020). In fact, the term "digital economy" has evolved since Tapscott's (claimed) first definition "where it is not only about the networking of technology… smart machines… but about the networking of humans through technology" that "combine intelligence, knowledge, and creativity for breakthroughs in the creation of wealth and social development" to the more recent focus of "the future of work, customer experience, digital supply networks, and Internet of things" (Bukht and Heeks 2017; Deloitte 2021).

As a result, it is argued that traditional theories fail to encapsulate the amorphous, global, intangible, oligopolistic, and knowledge-driven nature of the digital economy as it has taken shape thus far in the 21st century. This leads to the question of how to analyse and, in the end, value especially data and technology driven companies, their key value driver and underlying value creation process along elaborated global value chain analyses (Jalan and Winterhalter 2020).

If we look from an international taxation perspective, the use of the 'value creation' concept as "the performance of actions that increase the worth of goods, services or even a business" plays a central role in current OECD/G20 and European Union taxation work as a way of determining the taxation rights of countries, especially in the increasingly digitalized economy" (OECD 2015; Weiser 2020; critical, see Olbert and Spengel 2019; Becker and Englisch 2018). In this understanding, value creation in the digital economy is about the use of intangibles generated by (human, data, or technology) capital, network effects (of GAFAM or BATX), and a market reach without a physically presence (so called scale without mass, e.g., through Cloud Computing).

But is the production of digital goods and services, e.g., the building, maintaining, and value capturing of digital systems, only based on those "amorphous, global, intangible, and knowledge-driven" key value driver?

II. The Concept of Extractivism and its Underlying Factors Resources, Labor, and Data

As *Joler* argues, to understand the digital economy it is necessary to move beyond a simple analysis of the relationship between an individual human, their data, and any single technology company in order to contend with the truly planetary scale of extraction (2020). Resource extraction and the concept of extractivism can help in this analysis.

Resource extraction is an activity that humans can undertake in relation to land, resources, or elements of the earth, as Scott points out (2020): “Mining, forestry, drilling for oil, and fracking all entail extraction. On its face, it describes the act of taking, from nature, resources for human use, typically non-renewable resources”.

The concept of *Extractivism* has been theorized in critical development studies as a mode of accumulation in which a high pace and scale of ‘taking’ generates benefits for distant capital without generating benefits for local people (Riofrancos 2020). Riofrancos explains that it also encompasses the operations of digital platforms (“data extractivism”) and stock markets (“financial extractivism”), and the governing logic of the global transition to renewable energy (“green” or “aeolian” extractivism). Nearly anything, then, can be extracted: mineral resources, labor, data, and cultures (Mezzadra and Neilson 2020).

III. The True Value Chain of the Digital Economy

But what does the concept of *extractivism* mean for the true value chain of the digital economy?

Following Fuchs concept of digital labor (2015), the work of building and maintaining the stack of digital systems is far from ephemeral or virtual, but is deeply embodied in different activities. The scope is overwhelming: from indentured labor in mines for extracting the minerals that form the physical basis of information technologies; to the work of strictly controlled and sometimes dangerous hardware manufacturing and assembly processes in Chinese factories; to exploited outsourced cognitive workers in developing countries labelling AI training data sets; to the informal physical workers

cleaning up toxic waste dumps.

Mosco has also shown how the ethereal metaphor of 'the cloud' for offsite data management and processing is in complete contradiction with the physical realities of the extraction of minerals from the Earth's crust and dispossession of human populations that sustain its existence (2014). Accordingly, each object in the extended network of an AI system, from network routers to batteries to microphones, is built using elements that required billions of years to be produced.

According to *Mezzadra* and *Nielson*, there are therefore deep interconnections between the literal hollowing out of the materials of the earth and biosphere, and the data capture and monetization of human practices of communication and sociality in AI (2017). *Mezzadra* and *Nielson* note that labor is central to this extractive relationship, arguing that it has repeated throughout history, from the way European imperialism used slave labor, to the forced work crews on rubber plantations in Malaya, to the Indigenous people of Bolivia being driven to extract the silver that was used in the first global currency.

With this understanding, supply chains *hidden behind the engines of extractivism* are black boxes as much as neural networks or algorithms hidden behind interfaces. As *Crawford* and *Joler* point out in their anatomy of AI, the analysis of the invisible layers of digital infrastructure and product supply chains tell us to think about labor, resources, and data together. (Joler 2020).

Drawing out the true value chain of the digital economy means therefore drawing out the connections between resources, labor and data extraction in the context of the digital economy, which brings us inevitably back to traditional frameworks of exploitation.

IV. Material Resources, Human Labor, and Data – Forgotten Elements in the International Tax System?

But if material resources, human labor, and the extraction of data are significant key driver or at least elements of the digital economy due to *extractivism* – are they taken into account in the international tax system?

The central anchor point and tax nexus for the allocation of profit of an multinational enterprise (MNE) group and, above all, their permanent establishments (PE) is the *significant peoples' function (Aslam and Shah* 2020). In the case of an PE the principle of economic alliance claims a right in favor of the market state where the economic activity is carried out.

While the concept of data as a contributor to value creation seems to be established, the question of how to attribute value to the extraction, analysis, storage, curation and use of data is still unanswered and effectuates a broader tax challenge (*Olbert and Spengel* 2017/2019). For the international tax system, establishing a form of economic allegiance with the extraction of data and thereby considering the functions, risks, and assets performed related to data as a key allocation factor or even a nexus for splitting the profits of MNE group might result in a reallocation of taxation rights from resident countries more to the market countries (Langbein and Fuss 2018). Nevertheless, at the moment data does not play a crucial part in the actual tax system, nor does it in the most recent attempt of the OECD/G20 (2021), as the original idea of attributing profits along the concept of user value creation has been abandoned (Navarrro 2021), and data (driven goods and services) do not constitute a PE without establishing a physical presence.

But even if physical presence in the form of a *significant peoples' function* (so called "boots on the ground") is established, e.g., with a sales system of logistic (warehouses/shops, local rooted customer services and marketing), the market state does not necessarily get to tax the profits. Because they merely count as routine functions, leading to a low remuneration of the specific units, and, as they tend to use intangible property resident to the headquarters of US, EU, or China, even to a loss carried forward. A low tax revenue is even accelerated due to the use of tax avoidance measurements, which are hard to tackle from the perspective of developing states, as the MNE are mostly resident to states which might see the expansion of their digital economy as a crucial geopolitical location factor (see in general: Moore, Prichard, and Fjeldstad 2021).

The same classification as a routine function and the resulting low tax revenue counts for the extraction of resources of minerals, as well as for human work done in the production of digital goods or the underlying infrastructure of digital services and their modern information and communication technology system.

The most recent attempt of the OECD / G20 is expected to reallocate some profits to market jurisdictions each year, as well as setting a new minimum tax rate – but if they are in favor of developing states is highly debated (Brauner 2021 / Tax Justice Network 2021; Tandon 2020; Navarro 2020; Sacchi 2020; see also Eden 2021). This counts even more, as the extraction as well as finance industry is excluded from the reform process, despite their high profitability.

Although the extraction of resources, human labor, and data gives the extraction state same guarantee of tax revenue in specific cases, if considered merely as a routine function despite their role in the extraction process, from the perspective of international taxation they are not value key driver.

V. How to Include Resources, Labor, and Data in the Reform Process

The question arises: how can they be considered as key value driver?

Firstly, it might make sense to base arguments on the concept of *extractivism*, combining development studies, computer science, and tax law, arguing with the hidden layers especially in the case of hard to value intangibles.

Secondly, as the most recent reform process does not follow the concept of *extractivism* and considers the extraction of resources, labor, and data as key value driver of modern business models, a higher remuneration for routine functions, classical as data driven alike, should be included within the reform process. This could be easily reached by adjusting the guidelines regarding *low value adding intra-group services* (OECD 2017) and expanding the idea of this simplified procedure on routine functions based on extraction, in the end remunerating those specific activities with a higher rate. This could be a suitable consideration for developing countries for approving the OECD / G20 deal, and justified by sustainability aspects, taking into account the externalization of waste production during the extraction process.

Thirdly, we might start to consider data as a commodity, and establish structures allowing an interoperable data exchange on a national or international level, above all in cases for lack of technology transfer (Macmillan 2020) even obligating MNE to share their data or knowledge in form of a kind of taxes or duties with the extraction state, sparking a new wave of new innovation as well as preventing monopolistic structures (Winterhalter, Jalan

and Spiekermann 2021).

VI. Conclusion

The true value chain of the digital economy does not only consist of intangible, virtual properties but can also be explained by the concept of *extractivism*. But the realitiy of resources, labor, and data neither reflected in the current international tax system, nor included in the reform process proposed by the OECD/G20. A fruitful contribution to the actual debate might be therefore to rethink the way we remunerate such resource-, labor-, or data-based routine functions, considering an interdisciplinary analysis and even revolutionizing the system in a way that resources which got extracted can be used in and by the extraction state itself.

Nevertheless, this article only provides a brief overview. More research is necessary on how to integrate the concept of *extractivism* in the context of international taxation.

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