Digitalization of Tax: Epistemic Tax Policy

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Abstract

Digitalization, automatization, and social media interaction do not only influence our everyday lives but also change the way we think (Naughton, J. The internet: Is it changing the way we think? *The Guardian*, 2010) and especially, how we solve complex tasks. People search and find answers to complex questions via Google,

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Apple Siri, Amazon Echo, and all different types of expert-platforms. The more complex the questions are, the more often online-based answers are searched, and it seems to work in a lot of cases: in 2011, "IBM's Watson question-answering system won the TV gameshow Jeopardy" (Jurafsky and Martin 2017). This analysis is about a special sort of jeopardy. It is about one of the most dominant topics for entrepreneurs and self-employed people: the tax system. In the following, the complexity of tax regimes will be discussed within the frame of its digitization ability and with a modern interpretation of the concept of disruption, an economic concept by twentieth-century economist Josef A. Schumpeter (Pyka and Andersen 2013): What can be digitized will be digitized – sooner or later. By analyzing digital tax administration, this analysis is an academic contribution to the ongoing debate of digital facilitation versus digital disruption, how far digital applications should be used to make old systems just more efficient or can only be efficient, if used to design new disruptive digital systems. In near future, digital end-to-end tax systems might replace today's complex preregistration tax regimes for entrepreneurs and self-employed people. Online tax accounts eliminate the problem of "unreported income" and can make the tax declaration of individuals (employees or self-employed) and of companies (particularly of small-sized and medium-sized enterprises) much easier and cheaper, because then public tax authorities also would provide new services and service qualities. In addition, there is a need for an Epistemic Tax Policy, which offers opportunities to see, whether the designed and applied tools in taxation meet the test of reality; this furthermore leads to routes of further improving tax systems.

Keywords
Blockchain · Cash register · Corporate tax · Digitalization · Digitalization of tax · Online tax accounts · Epistemic Tax Policy

Introduction

This analysis is a contribution to the discussion on how cyber-development and digitalization will change the way how public administrations deal with their residents. Citizenship and monetary participation are linked since the third millennium BC. Documents of that time show that in Egypt administrators called for a harvest tax and a Nile-tax (Klinkott et al. 2007). Today, federal and local budgets are still tax based. But over the time, tax systems and regimes became more and more complicated. It has gotten so complex that there is a ranking of the "easiest and most complex jurisdictions in the world for accounting and tax compliance". The "Financial Complexity Index 2017" (The Financial Complexity Index 2017), published by the "Netherlands-headquartered TMF Group," examines "the varied complexities of maintaining accounting and tax compliance across 94 jurisdictions worldwide." But with new digital structures and mobile applications, there are new possibilities to raise tax-income without raising taxes.

Digitalization of Tax Regimes: The Macroeconomic Dimension

A study of the University of Chicago showed that in 2012 Greek self-employed workers and freelancers hid almost half of their income in front of the financial authorities in 2009. According to the study, the deducted taxes amounted to 11.2 billion euros. If freelancers and self-employed honestly pay their taxes, the country would be far better off, the study concludes (The Financial Complexity Index 2017).

Tax fairness has a lot of dimensions, but it is a macroeconomic truth that when everyone pays taxes, everyone pays less taxes (Smith 1776; Wagner 1880; Neumark 1970). For that reason, the IMF started to consider the implementation of electronic devices in different developed states and evaluated the results (IMF, WP/15/73).

After several administrations implemented electronic fiscal devices (EFDs) in their tax system for sales and value-added tax (VAT), the IMF concluded that it hakes "effort and has costs both for the administration and for the taxpayers that are affected by the requirements" and "despite their widespread use, and their considerable cost, EFDs can only be effective if they are a part of a comprehensive compliance improvement strategy that clearly identifies risks for the different segments of taxpayers and envisages measures to mitigate these risks" (Casey and Castro 2015).

The IMF summed up EFDs "as with any other technological improvement the deployment of fiscal devices alone cannot achieve meaningful results, whether in terms of revenue gains or permanent compliance improvements" (Casey and Castro 2015).

After considering these experiences by the IMF, one can say that EFD implementation would be more effective with the use of an online tax account system communicating with mentioned fiscal devices. EFDs, like electronic tax registers, are more effective when they are not stand-alone-units but work together with fiscal data applications of governments (tax administrations). Information exchanges between tax administrations and companies lead to better tax transparency, easier tax collection, and tax fairness.

Digital Facilitation Versus Digital Disruption

Today, especially tax consultants are responsible for tax transparency. In many cases, they are the link between the tax administration and tax payers, particularly when they are companies or self-employed people. But tax consultants may face the end of their business basis when tax administrations start to implement digital tax systems to generate more information, payment, and legal security. From the time when the process of digitalization started in the 1990s, traditional tax consultants have tried to implement more online services in their customer relations business. But the question is, if this will be enough to compete with the possibility to a digitalized tax administration in future.

Digital Facilitation

Germany is one of the top-rated countries when it comes to tax consulting. Tax consulters state that a large share of the whole worldwide literature that is being published on tax is actually being published in the German language. But since digitization has advanced, German tax consultants face huge competition with digital tax consulting platforms, where clients get and receive personalized tax advice via the Internet. "Data and evaluations are exchanged via the secure entrepreneurial portal, the accounting is done in the cloud" (felix1.de AG 2017). Traditional German tax consultants are not used to face any sort of business-threatening competition. What happened in Germany some years ago, in the field of tax consulting, was some type of transformation of service: from human interaction to digital facilitation. Online tax consultants for companies, entrepreneurs, and private individuals facilitate tax management via online collection of data (incomes, revenues, expenses, salaries) by OCR-scanning (optical character recognition) applications or input by hand. Since online-tax-applications gained market shares, traditional tax consultants have to deal with the change of their business and try to develop new business areas for themselves using client consulting software (dpa in Handelsblatt 2016). It is pretty clear that all potentials of facilitation of online tax that consultants use today, could also be used by federal tax administrations, so:

- What if governments and tax administrations begin to digitalize their tax regimes?
- Is a future thinkable where individuals and small-company owners have the possibility to interact with tax administrations like with banking houses: having an always-on account?

Estonia already integrated digital signatures and electronic tax claims that have already lowered bureaucracy and facilitated tax management. "In Estonia 98% of companies are established online, 99% of banking transactions are made online and 95% of tax declarations are filed online" (e-estonia 2017). But Estonia is not the only country in Europe, changing the way of generating tax.

In the UK, the government's plan "to make it easier for individuals and businesses to get their tax right and keep on top of their affairs" is called "Making Tax Digital." The UKs "Making Tax Digital roadmap" was published in December 2015 and will be implemented completely in 2020. "By 2020, customers will be able to see a comprehensive financial picture in their digital account, just like they can with online banking" (UK Government 2017).

Since 2016, in Austria, taxable businesses are required to issue receipts via electronic cash registers to all customers for payments made in cash, by bank cards, credit cards, or debit cards and also electronic payments (paypal, mobile phone). All payments that are being made are registered by an electronic recording system in the cash register. This cash register requirement is mandatory for businesses with a minimum net annual revenue of 15,000 Euro or if annual cash transactions exceed 7500 Euro. The register collects data in a data collection log and since April 1, 2017, electronic cash registers have to have an electronic signature to be protected against any kind of manipulation.

Every receipt has a signature with a machine-readable code (in the form of a QR code), which is attributable to a certain data-record in the machine. So, as a consequence, all incoming payments can be followed by the tax administration.

It is likely that cash register obligations were only a first step in a direction of business (VAT) and corporate tax administration. The electronic cash register has been designed as an instrument for verifiability sales; the state has created an opportunity to examine the taxed turnover of companies with the help of IT systems. At the moment, the use of the registration system by the state ends with the verifiability of sales. But there are more possibilities by implementing digital end-to-end systems in tax regimes.

Digital Disruption

With the possibility of internet connected cash registers, sending information about turnover and sale volumes directly to the federal tax office, it would also be possible to deduct tax instantly after a business deal from an online tax account. Corporate tax obligations could be deducted automatically from a corporate tax account.

In 2012, the Austrian government started to automatically deduct taxes of stock exchange gains administrated by stock market platforms and banks that have a mandate and obligation to send volume, buyer, and seller information directly to the federal tax office (BMF 2017). The gain tax coming from stock exchange business is directly deducted from the account of the business practitioner who gains capital in the selling process. The result: full payment of tax obligations and legal security.

In other business activities, the tax prepayment is used to tax corporations (Casapicola 2016) which means that depending on revenue, managers and owners are obliged to send monthly or quarterly forecasts and tax payments to the federal tax office, including all problems concerting business volatility.

By linking the electronic accounting systems of companies (including all cash registers) with the online accounts that the companies have with the tax administrations, all tax obligations resulting from turnover could be received directly. The accounting system also includes tax-deductible items like fixed costs, social insurance, or payments to employees in the overall tax evaluation. Like a second bank account, with incoming and outgoing obligations, the tax-application becomes an integrated part of the daily accounting business.

Small- and medium-sized companies in particular would benefit from digitization, as they frequently do not have in-house tax experts, and furthermore, for self-employed persons, the implementation of such a digitalized turnover system would be a huge advantage: a virtual account that bundles all revenue, payments to social security system and pension funds. Economically, a direct link between turnover and tax via electronic applications would mean a reduction of current administrative tasks of companies and self-employed persons, particularly in the calculation of income taxes for small- and medium-sized enterprises.

An online tax account for the self-employed would also reduce bureaucratic hurdles of self-employment. The importance of taxes in entrepreneurial decisions

were also part of academic studies: "An irrational strong importance of taxes in an individual's decision-making behavior is one of the most popular assumptions about the behavioral effects of taxation" (Hundsdoerfer and Sichtmann 2008). In 2008, a study about the importance of taxes in entrepreneurial decisions showed that "tax aspects are over weighted in entrepreneurial decision-making" (Hundsdoerfer and Sichtmann 2008). A reduction of administrative tasks like tax accounting would also influence entrepreneurial decisions in a positive way.

The Development of Online Tax Accounts and Just-In-Time Taxation

How far are we away from digital "just-in-time taxation"? Tax administrations around the world are developing theirs regimes faster than companies may think.

Finland has created an income register that should be introduced at the end of 2018: The description of the project by the Finnish Tax Administration was, in May 2017, as is: "From 1 January 2019, the information contained in the Incomes Register will be used by the Tax Administration, the Social Insurance Institution (Kela), the Unemployment Insurance Fund and earnings-related pension providers. From 2020, the register will also be used by the Ministry of Economic Affairs and Employment's administrative branch, Statistics Finland, the Education Fund, non-life insurance providers, unemployment funds and the Occupational Safety and Health Administration. Information can be submitted to the Incomes Register through software interface, user interface or, on special grounds, on paper" (Vero.fi 2017).

All Finnish people will get a personal user account for taking care of taxes and receive updates on a monthly basis. The idea is that companies send "tax details directly from their accounting software without any manual labour" (Kotilainen 2015).

As described before, also Estonia (E-Estonia 2017) experiences already an advanced digital tax administration: "There is a central shared platform for all government agencies and large banks; data on taxable events is collected from employers and other third parties; and citizen identification is secure and robust, enabling the Estonian Tax and Customs Board to provide pre-populated tax returns, which take just minutes to approve and submit with a digital signature. However, there is some digital exclusion among older citizens and in remote areas with poor internet connectivity" (Meall 2017).

Tax digitalization in Brazil: Brazil's tax transparency already reached a level "that the ongoing need to file annual indirect or direct tax returns may soon be redundant, or at the very least turn into simple reconciliation events" (Kielstra 2015). How did that happen? For tax transparency reasons, Brazil has imposed two main changes in its tax regime:

– "First, all billing for goods and services must now take place through one of several electronic processes. Each of these involves, as an early step, communication of the invoice to the government. Tax authorities must evaluate and approve the information on it before the transaction it covers can proceed. In effect, the authorities now know of every sale before it is legally completed and can block ones where they dispute the level of indirect tax" (Kielstra 2015).
– "Second, Brazil now requires companies to use a standardized public digital bookkeeping system (SPED) with separate subsystems for accounting and tax. These replace traditional bookkeeping ledgers and, at the end of each year, companies must submit their complete SPED files – a detailed record of every single business transaction – to the authorities" (Kielstra 2015).

Brazil's development attracted attention and so another American state initiated electronic audits; Mexico's tax authority is considered to be at the forefront of "digitizing and automating taxation" by launching electronic audits based on information filed electronically by taxpayers: "All correspondence will be conducted electronically through taxpayers' registered email accounts, and documents will be made available to taxpayers in an electronic drop-box" (Mingram and Grosselin 2016).

Just-in-time taxation: "Global taxation is moving to a just-in-time environment." (Mingram and Grosselin 2016). And as another Ernst & Young tax digitalization study shows, Brazil and Mexico are not the only countries digitalizing their tax regimes (EY Center for Tax Policy. EYG no. YY3818. 2016).

Data Security: The Most Critical Aspect of Tax Digitalization

On-time-tax-data may be one of the most confidential data of individuals, corporations, and organizations that Governments will (may) have in near future. Data leaks then could easily be used by hackers, industrial espionage, and stock exchange speculation. Therefore, consulting companies around the world develop big data solutions that provide the security needed for public just-in-time applications.

In February 2017, the consulting corporation McKinsey & Company (2017) exhibited a possible solution for the risk of unauthorized access and data manipulation by "using blockchain to improve data management in the public sector" (see Box 1). In their model, "each person or organization would have all relevant data stored in a dedicated ledger within an encrypted blockchain database" (Cheng et al. 2017). Government tax enforcement via blockchain technology is even one of the top-rated blockchain application scenarios that the consulting company Ernst & Young reported in 2016 for the next years. The main reason for this assessment is the level of security that blockchain provides.

Box 1 Options of blockchain technology for quality network services and data control for and by citizens
Image and image source: https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Using%20blockchain%20to%20improve%20data%20management%20in%20the%20public%20sector/SVGZ-Using-blockchain-to-improve-ex1.ashx
Source: McKinsey & Company 2017

Ernst & Young explains the security of blockchain because of their nature being "distributed databases containing records of every transaction ever made among participants in a given network, encrypted into time-stamped blocks via a cryptographic hash function. Each block's hash result is a unique identifier and is incorporated into the next block for integrity verification. Blockchains further protect data integrity by distributing a full copy of the database to each participant; revisions must be agreed to by a majority of participants. Blockchain's hash function plus its majority consensus approach add up to a powerful new approach to information security" (Flynn 2016).

Another consulting company providing blockchain security models for governments and public administrations is IBM. On January 11, 2017, IBM Watson Health announced a collaboration with the US Food and Drug Administration (FDA) to study the "Use of Blockchain Technology for Secure Exchange of Healthcare Data" (IBM Watson Health 2017). And on July 29, 2017, the Chinese electronic taxation enterprise "Miaocai Network" announced on its official website that it develops a "tax electronic invoice system and social tax-collecting service" for China: "The Chinese government will utilize blockchain technology for social taxation and electronic invoice issuance matters" (Du 2017). From an analytical standpoint, it appears likely that blockchain technology will be the enabler or potential enabler of public just-in-time applications worldwide.

Outlook

Cyber-development and digitalization will lead to just-in-time services of public administrations. By implementing online services, the tax administration will lose complexity and new digital applications will make it easier to handle tax accounts and *to raise tax-income without raising taxes*. As different countries digitalize their tax regimes, one of the biggest issues is data security. With the implementation of blockchain technology in public administration services, it appears likely (or at least possible) that one of the biggest hurdles for implementing just-in-time tax administration can be solved in the near (or next) future.

In the following, the analysis on the digitalization of tax and taxes should be complemented by referring finally to the following issues and challenges. This opens up perspectives for further discussion opportunities:

1. **Online tax accounts for employment-based and self-employment-based incomes of individuals (individual income tax returns)**: The creation of online tax accounts by (and for) individuals (self-employed or also employed in a standard setting) implies that tax authorities know about these incomes and that because of this, this is a declared income and by definition no "black money." Based on the flows through these online tax accounts, tax authorities either automatically could create taxes or report possible taxes but should also inform the individuals (or tax payers) about options of tax deductions (for now or later). Tax authorities also could automatically repay a possible overpay in tax. *The advantage here is that individuals do not have to consult expensive tax consultants and do not have the risk to have "unreported income."* Taxation (and reporting) of self-employed income then would also not be more complicated than the taxation of employment-based income.
2. **Online tax accounts in support of small businesses**: Should companies (here particularly the small- and medium-sized enterprises) create such online tax accounts, for example, for their employees, this also may imply that administrative work is taken from these enterprises, because the public tax administrations are then in a position to provide such services. The risk of failure in reporting then also would be with state (the public) and not with the (private) enterprises.
3. **Online tax accounts to be taught about at schools**: The installment and use of such online tax accounts (by and for individuals, but also for companies) could be part of the public school curriculum, meaning that pupils (as future mature citizens) are receiving here information and training of practical relevance for their lives.
4. **Companies should pay taxes based on "where" the revenues are being (have been) created**: One current problem in tax systems is the different taxation treatment of individuals in comparison with the tax options of the bigger companies (corporations). Individuals must pay taxes on the basis of their actual residence and/or location of their work place. What matters here is the real residence and real location of the work place. Corporations can create "tax headquarters" in selected countries or regions, based on specific tax incentives, meaning to finally set up headquarters there, where the tax shares are lowest. This may lead to completely artificial constructions. This also puts tax systems under comparative pressure and has led to situations of creating complex corporate structures for the purpose of minimizing the payment of taxes by exactly these corporations. Therefore, the one crucial argument here is *that companies should pay their taxes there, where the revenues actually have been created*. Digital tax regimes can provide tools for more precisely identifying and locating the "location of revenue."
5. **The possible use of tax reporting for developing statistics on the funding and funding trends of research and innovation**: It would be interesting, if public authorities would use (anonymized) information on taxes and tax revenues for creating new statistics. For example, information on research-related tax deductions could serve as an input for estimating aggregated expenditure on research (R&D) that is being generated by a multitude of companies and the business

enterprise sector as a whole. Perhaps also tax-based statistics on innovation activities would be possible.

6. **Epistemic tax policy**: The further evolution of tax regimes always is being challenged by new trends and further developments. As one possibility, unconventional types of companies may emerge, for example "academic firms" (Campbell and Carayannis 2016a). Furthermore, global tax regimes are also arising. So how can the taxation of individuals or of companies be made easier that live or that operate in different countries (more than one country) at the same time? *Therefore, tax regimes and tax policy should also be "epistemically" sensitive, in the sense that there must be a continuous reflection about the validity and reliability of the designed and applied tools in taxation: Do they fit reality and what are options for improvement* (Campbell and Carayannis 2016b)? Epistemic Tax Policy moves here forward in a strategic sense and clearly offers crucial opportunities.

Cross-References

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- ▶ Epistemic Governance and Epistemic Innovation Policy in Higher Education for Cyber-Development
- ▶ Quadruple and Quintuple Helix Innovation Systems and Mode 3 Knowledge Production

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