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Legal and Illegal Money Flows: Challenges and Opportunities

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Let us get straight to the point: it is easy to see that 'corruption' is a rather a very broad concept denoting as illegal money flow which cannot be expressed meaningfully by a single number. Since almost every country is confronted with different types of corruption and shadow economy, the importance of the topic is undeniable. Therefore, this special issue is trying to approach legal and illegal money flows from different perspectives.

In the first paper, Dirk-Hinnerk Fischer proposes a set of tools to give control organizations like central banks more insights into the market of digital currencies. Shadow banking, digital currencies and distributed ledger-based systems are growing on a daily basis, while the regulatory response is in its early development. Hence, a new, original and specialized form of electronic money, so called 'Monetary Tracking' which is traceable through the markets is proposed.

The second paper is written by Erika Jáki, Endre Mihály Molnár, and Walter György The purpose of this paper is to evaluate the Hungarian government's participation and intervention on the Hungarian's venture capital market. The main characteristics of start-up companies and market failures that might lead to government intervention include asymmetric information, high transaction costs and the positive externalities in the economy. By analysing relevant studies, the authors are showing that indirect government intervention can have positive and negative effects on the venture capital market.

Maria Kostritsa and Inken Sittler are analysing the influence on voluntary tax compliance by replicating the structural model of Jimenez and Iyer (2016). In this model, it is assumed that one's moral standards and perceived fairness directly influence voluntary tax compliance while social norms and trust in governments have an indirect impact on tax compliance via influencing personal norms and perceived fairness.

The fourth paper written by Gabriela De La Torre Campos, Katharina Radler, and Bramantio Utomo Saptoadi examines in how far different wage levels in the private purchasing sector relate to the level of corruptibility. In an experiment, the participants took the role of employees of a purchasing department of a multinational enterprise. Their analysis shows that the wage level cannot be associated with the level of corruptibility.

According to Zaman and Faiz-Ur-Rahim (2009), existing paradigms of measuring 'corruption' should be assessed carefully with regard to the object of measurement. Burböck, Macek, Vuckovic, Lipar and Bojnec observed the development of the changes in the methodology of the Global Corruption Barometer of Transparency International in detail and collected data for their research in Austria and Slovenia. Within their analysis, they focused in particular on the perception of corruption in the public sector. The results show that the level of corruption differs significantly between Austria and Slovenia, and gender differences are largely not significant.

At last, I want to thank all the reviewers for doing such a great job. Each of them were from different international universities and facilitated the reviewing process tremendously. A special thank goes to Alen Ježovnik and Štefan Bojnec for their great support and the opportunity to give room for this controversial topic.

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How Tracking of Electronic Money might Improve Financial Market Crisis Intervention

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Technology has changed and will continue to change the financial system. This paper proposes a set of tools that can give control entities a more profound insight into the markets and enable them to react to crises more efficiently. The theoretical proposal presented in this paper is a control tool that has its foundation in digital currencies and enables central banks to trace some of their freshly issued money in order to understand the current market activities more profoundly. The second purpose of this basic tool is to enable further tools, which are based on the same technology. The tool that exemplifies the possibilities of the concept in this paper allows money to be targeted to a particular market sector or another market. This paper introduces this original, theoretical system and investigates its possible positive and negative impacts on the economy.

Key words: finance, crisis intervention, electronic money, monetary policy, central bank, blockchain
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Introduction

Multiple causes lead to financial market crises, and the past has shown that it is particularly hard to keep the markets controlled in the end. Now, through the growth of shadow banking and through other continuous technological developments central banks are losing their formerly profound insight into the markets. Attempts to determine the markets schematically are already outdated, but they are still able to show the historical origins of the development (Pozsar et al. 2010).

This paper proposes a new, original and specialised form of electronic money, which is traceable through the markets, Monetary Tracking (MT). The objective of such money is to improve the understanding of systemic monetary flows. The objective is not to provoke a complete surveillance of the financial sector but to enable the detection of possible future issues through trade patterns. The second objective of this tool is to enable the development of more advanced control and intervention tools.

The example used to exemplify the possibilities of the tool in this paper is Monetary Restricting (MR), which has the objective to improve the accuracy of market interventions, particularly in times of crisis. MR allows the central bank (CB) to restrict the use of specially determined money only for a particular market or section of the economy. One of the core ideas behind MR is to prevent the spread from the financial markets to the 'real economy.' Credit crunch and thus interrupted liquidity flows towards the 'real economy' in times of financial distress could be prevented or at least minimised with this technology.

The importance of this piece derives from the current developments within the financial markets. Shadow banking, digital currencies and distributed ledger-based systems are growing day by day, and the regulatory response is still only in its early development. The main intention of the paper is to create an awareness for the problems and to start a discussion about the possible solutions that technology is able to provide. These adaptations need to be discussed thoroughly before being introduced, which is why this very first proposal of such technology-based tools is limited to two basic tools. The two systems or adaptations of trackable money are introduced in this paper to provide an appropriate reaction to the technological developments and systemic changes in the financial markets. Even those two tools would require a monograph to cover all aspects with the thoroughness they deserve. Hence, the objective of the paper is to propose the systems and to start a discussion on all aspects of this particularly multi-layered issue. Monetary Tracking, as proposed in this paper, is not a way to prevent financial crises, but it is a tool that enables a continuing insight in, and hence an understanding of, the markets. The follow-up tools might be able to ease the effects of a crisis or prevent its spread or even its emergence, but that has to be the subject of future debate. This first introduction is only focused on starting a debate on tools based on similar technologies that allow an effective supervision and intervention in the constantly changing financial markets.

The concept might sound farfetched to some, but issues like these will and must occupy all scientists working on financial markets in the coming years and decades. The current Chief Economist of the Bank of England, Andrew Haldane, argued for an idealistically similar solution to MT: 'I have a dream. It is futuristic, but realistic. It involves a *Star Trek* chair and a bank of monitors. It would involve tracking the global flow of funds in close to real time (from a *Star Trek* chair using a bank of monitors), in much the same way as happens with global weather systems and global internet traffic' (Haldane 2014).

The paper first shows the technological basis and origins of the concepts and provides a background for the adaptations that are proposed in sections three and four.

Digital Money

Only three kinds of money are important for this paper: Physical, electronic and digital money. However, to believe that these are all kinds of money in existence would be absurd, as money is disguised and created in many ways today.

Physical money is our everyday and official currency consisting of paper money and coins. We can touch it and transfer it from hand to hand. The definition of electronic money used here is very rudimentary, as it is just seen as the same thing as physical money, the only difference being that it is not tangible. Electronic money makes up for the biggest share of all issued money today. It is just the not printed version of physical money that is transferred electronically.

The last category is digital money, which is a broader variety of specially designed online currencies that are used in certain subcultural or market segments, like Bitcoin, BitMint or Digicash. They work like any 'normal' currency. The personal accounts in the respective currency are convertible into any or most official currencies, with a flexible exchange rate. The private issuer guarantees the accuracy of the currency. These currencies can be seen as non-official online substitutes for the official currencies, but up to this point, they play only a marginal role within our system and are not yet able to pose a threat to monetary stability. However, the volume and number of transactions has grown substantially over the last few years (Robleh et al. 2014a; 2014b; see https://blockchain.info/stats). The growth of digital currencies is exponential, but along with this growth, the number of problems increases as well. The velocity as well as the intensiveness of financial crises within digital currencies are increasing (CNBC 2017). The fact that central banks are already concerned about the possible threat shows their apprehension of possible future challenges. All over the world, numerous government entities have invested money and time into the creation and study of digital currencies. The Bank of England, for example, has established a team to investigate numerous research questions related to central bank-issued digital currencies, which would be a public countermeasure to the currently leading privately owned digital currencies (Bank of England n. d.). Also the German central bank and the German stock exchange have joined together in an endeavour to create a blockchain-based settlement system for securities (Deutsche Börse 2016). These are just two of the multiple examples of the different and internationally distributed trials with digital currencies.

Some of the currently dominating privately issued digital currencies may play an increasingly important role in the future of our economy, but there is still a chance that they might vanish, as well. However, what they will definitely leave behind are some technological advancements like 'distributed ledgers,' based on blockchain technologies, which is a concept that is about to revolutionise the financial markets. A group of 40 major institutions have already formed a research network to develop the topic (see https://www.r3.com). The number of funding companies grew rapidly from 22 in 2015 (R3 2015), and as mentioned before, multiple other entities are also moving ahead with this technology. These ledgers enable a decentralised payment system without a central third party that secures the payments. The ledgers are based on advanced programming tools that enable a secured peer-to-peer transaction with the help of cryptography. Digital signatures, encryption and the presence of money ensure the authenticity of the authorship of a particular transition or message. The transaction can then be verified by any third party within the network, which means that a centralised ledger becomes obsolete (Robleh et al. 2014a; 2014b). This could mean that distributed ledgers might make obsolete the role of a clearinghouse, which is often held by the CB. However, CBs are not alone in being impacted by the fundamental market changes. The classical banking model will disappear over time, as digital banking and even more advanced systems than that are able to provide the services for the people in a more direct way (Lipton, Shrier, and Pentland 2016).

Monetary Tracking

Monetary tracking is money issued by the Central Bank that is traceable with the help of a mapping system and the technology deriving from the digital currencies. It is primarily an analysis tool that shows entities and at least an insight into trade flows, but its technology can also be the basis for numerous further developments. It is a concept focused on electronic money. The simplified explanation of the concept is that predefined electronic money is marked with an individually identifiable key. The key or mark gets pinned on one electronic 'coin,' which can be pictured as the serial number on printed money, but that does not have to mean that one coin has to be one Euro or Dollar but might be one million Euro. The mark could then be dividable in order to minimise the required server space. The electronical mark would make the particular note traceable through a mapped system of companies and entities. Hence, the CB gets a notice of transition if a coin is transmitted from one entity to another. This would allow mapping the interactions when the master accounts are cleared at the end of each trading day. General tendencies and flow tendencies could be deducted. A limitation is of cause that most money used in the system is privately created money and not issued by the central bank, but models are able to respect this fact in the analytics of the system. MT is a highly automated system, as the marking, tracking and analysis of the movement is made automatically. MT does not require any changes, as the appearance of the electronic money remains the same. The only accountable change is that the money will need a little bit more disk space than before, but even this difference will not be significant, when a smart technical design is employed. The analysis output would not only allow more profound insight into the markets, but some important key indicators should also be made available publically. The rest of the database should be accessible for companies, central bankers and researchers with a particular research interest in order to improve the acceptance of the stakeholders.

For a better understanding of the system, a possible issuance of MT-marked money is exemplified here: The CB management decides to mark a certain percentage of newly issued money, which is then issued together with all the rest of the regularly issued money. The marked coins are issued randomly to the receivers of central bank cash. The movement of this money is then tracked through the financial system, until the money is either exchanged to another currency, withdrawn as printed money or paid back to the CB. The two first barriers are legal barriers for a first introduction and not necessarily technical issues. The documented movements of the 'marked coin' are saved within the CB and can then be analysed. The private banks handling money do not see which money is traced, but they have to provide the CB with a mapping system of their accounts in order for the CB to see where the coin moved.

The system introduced here is a first step that can trigger many follow-up innovations and developments, such as international coordination to keep money trackable across currency borders. MT could become the basis for even more tools, if all electronic money was marked, i.e. all high-powered money and the bank reserves, as well. Such a universal system would enable a very detailed market analysis for all stakeholders of the financial markets, especially as this would include the money created within the system. However, these and many other possibilities for further developments have to be discussed in other papers, as the implications of all of these issues exceed the confines of this paper.

The advancements in cyber security, in particular those in digital signatures and public-key cryptography, as well as the advancements in digital currencies show that the system is feasible. The possibility for all parties involved to analyse the worldwide trading patterns opens new opportunities for strategic behaviour, but it prevents one entity from controlling the rest. Of course, the limits of the system have to be determined in order to prevent a totalitarian state. Clear restrictions have to be the core legal borders for MT and all of its tools, and they are crucial for its success. These will be evaluated in the last chapters of this paper.

Monetary Restricting

Monetary restricting is a freely chosen name for a monetary tool that builds on the technology used for MT. MR is one example of a tool based on the technology behind MT, but it does not need an introduced system of MT to function. MR is money issued by the central bank with a particular purpose or target area. The central bank is able to limit its usage to a market or region in order to fight monetary outflow or credit crunches in times of crises. MR works on the basis of marked money and is nothing else than the permission for the CB to assign some of the marked money to a specific use, area, partial market or purpose, for example the European or even the Greek real economy. Such a tool would be able to provide the so-called real economy indirectly with fresh credit even if the private banks are struggling with liquidity or asset difficulties. The central bank has hence not the power to finance a state with this tool, but it is only able to support a particular 'real economy,' market or region. The use of MR presented here, to prevent credit crunches is only an exemplified use of the tool, as other applications or political targets are imaginable, but it is a very rewarding example, as it shows the power, but also the problems, of the tool without being too controversial a topic. A brief discussion on credit crunches will follow after this part, and it will show the remaining reasoning behind the tool's design. MR can obviously be a very controversial tool, which is why it needs to be restricted carefully. Unlike MT the money issued under MR needs to be easily identifiable for all stakeholders in order to enable the banks to deal with it appropriately.

MR distinguishes itself from direct governmental funding and selective credit controls, as the CB provides the money to the private banks, as always, through credit. The difference, if MR is implemented for a determined period, is that a certain share of the money is marked. The marked share of the issued money is determined in use by the CB. The size of the share cannot be influenced by the private banks. It is solely determined and implemented by the CB, which in the current example means that under MR the CB would dedicate a share of all money credited to private banks, in a particular period, to crediting the 'real economy.' The CB on the other hand does not have the ability to influence the private banks in the decision which company from the 'real economy' receives a credit and which does not. The share has to depend on the severity of the crisis, but it should always ensure the survival of the private banks. The banks and financial entities need to be able to rebuild their equity ratios and prevent their bad assets from impacting their entire company in times of crisis, especially if ratings are dropping and obligatory equity cushions have to grow exponentially (Beck 2012; Mizen 2008; Ioannidou 2012).

The trick with the marked money is that the serial numbers in use are prohibited from being accounted for in equity ratios and asset coverage in general. This step circumvents the banks' own need for liquidity and forces the banks to rethink the possibility of distributing credit to the real economy. The private banks are thus still fully in charge, but some of the money they received from the CB is not usable for anything other than for the distribution to the real economy. Therefore, they only have the chance to either provide credit and gain a possible profit from it or leave the money in their accounts without doing anything with it. This also means that they are, as usual, stuck with the risk of an investment, so that MR does not help to keep unprofitable companies alive, but it prevents monetary outflow and many aspects that lead to a credit crunch, which helps to keep well performing companies from getting impacted by systemic financial struggles.

The technical side of the exemplified restricting goes along with the introduction of an easy categorisation process based on a traffic-light system. Trackable or marked money will be distributed to the market with the restriction that it can only be used for investments, credits and any other form of monetary flow to the green and yellow traffic-light market sections.

The traffic-light system distributes all companies of one economy into different groups. All companies represented in the traffic system of one CB need to be part of the underlying common or national market. Foreign companies cannot be accounted for in one of the categories. A company's affiliation within a particular section is calculated by its main source of revenue. These affiliations must be proven, which can be done rather easily, as the private banks have profound insight into the company's situation in any case. The CB then only has to use a randomised sample to control these affiliations.

The green section comprises companies gaining less than five per cent from financial activities within a three-year averaged period. Companies in the yellow area are companies with averaged revenues of five per cent to less than 50% through financial activity over the last three years. All companies above this percentage are grouped together in the red section. In critical cases, the CB is supposed to investigate individually if the assignment to one of the groups is correct or not. To improve the success rate of MR all tendencies like the investment into letterbox companies or other circumvention mechanisms that private banks might want to employ should be penalised.

The groups of this provisional determination have been chosen because most small and medium-sized companies are in the green, but also in the yellow group, without direct access to CB money. These companies are impacted the quickest and hardest by credit crunches, as there is a reported tendency of financial institutions to prefer loans to larger companies in credit-crunch situations (Buera, Fattal Jaef, and Shin 2015). Additionally, these companies are statistically not as agile with their production factors as bigger companies, which leads to higher rates of laid-off employees among these companies in comparison to bigger or more established companies (Zhang, Yang, and Long 2014). This process, together with the reallocation and the contraction of investments leads to a macroeconomic recession (Buera, Fattal Jaef, and Shin 2015), which emphasises the importance of a working intervention tool. MR is intended to provide a first monetary policy tool that can help to impact credit crunches.

The objective of MR is thus to direct monetary flows towards a specific objective, in this case to the green and yellow areas of an economy. The purpose of this is to minimise the risk of credit crunches and thus to contain the spread of a financial crisis to the rest of the economy.

Credit Crunches and the Central Banks

Bernanke and Lown (1991) describe a credit crunch as an abnormally large decline in the credit supply for a given stage of the business cycle. Owens and Schreft (1995, 65) define the same 'as a period of sharply increased nonprice credit rationing.'

A credit crunch is thus a situation in which banks and other lenders retreat from lending and focus most of their resources on other activities with higher potential profits within the financial markets or in other regions of the world. The limited resources force the real economic market participants to reallocate their own resources, cut back investments and lay off employees. This circle can lead an economy into a deepening recession. Mishkin (2008, 67) outlines one possible scenario in his description of a feedback loop between lending and rising equity values: 'At some point, however, the bubble bursts. The collapse in asset prices then leads to a reversal of the feedback loop in which loans go sour, lenders cut back on credit supply, the demand for the assets declines further, and prices drop even more.'

On the other hand, a credit crunch is not necessarily a consequence of an economic downturn (Clair and Tucker 1993). It is important to know that lending does not only react to the creditworthiness of a project but also to the capacity of the bank's balance sheet and the capacity of off-balance sheet entities owned by the bank to compensate further risk, which leads to pro-cyclical behaviour. The last important issue that lending depends on is the soft factor of trust. If the companies distrust each other, lending decreases (The Committee on International Economic Policy and Reform 2012; Mizen 2008; Aliber and Kindleberger 2000).

The financial market has also proven itself to be able to absorb the greatest part of the issued money without preventing contagion at all, as observable in the problems following the sub-prime crisis (Mizen 2008; Ait-Sahalia et al. 2009). Models have estimated that financial shocks on leveraged sectors and the redistribution between these sectors accounted for approximately two-thirds of the output collapse in the time after the subprime crisis (Iacoviello 2015). In the case of the subprime crisis, the cycle of an increasing accumulation of problems, which is nothing else but a crisis, was also driven by the cross-market linkages and spread via liquidity channels (Allen and Gale 1999; Longstaff 2010). The habitual business-cycle movement does usually not cause a credit crunch. Usually the lending entities recover relatively quickly after a downturn. The actual causes for credit crunches are multiple, like overestimation of risk, the necessity for banks to rebuild their equity base, capital adequacy ratios and misregulation (Clair and Tucker 1993; Zhang, Yang, and Long 2014). In conclusion: The credit crunch can be a result of the willingness to lend. The basis of this issue is trust, which is a big issue that MR cannot solve, but other than that monetary restricting is able to circumvent all of the described problems and should thus be able to help to stabilise the system.

Economic Impacts

The financial markets were able to partially outgrow the direct influence of the CB with the help of technological advancements. The outgrowing process can mainly be credited to the so-called shadow-banking sector. These unregulated parts of the financial markets are already responsible for a third of the market activity in finance, and the growth tendencies indicate that the market share of the shadow banking sector will continue to increase faster and faster over the next few years (European Central Bank 2014; Constâncio 2015a; Kregel 2010). The shadow-banking sector grew faster than its financial competitors did. The sector grew from 2003 to 2013 from 9 trillion Euro to 19 trillion euro. The volume of insurance companies and pension funds ‘only’ doubled from 4 trillion Euro to 8 trillion Euro within the same period. The banking sector residing in the Euro area, excluding monetary financial institutions, grew from 19 trillion Euro to 30 trillion Euro in the same period (European Central Bank 2014). Since mid-2012, the velocity of the growth of the highly diversified shadow-banking sector has even increased, as the assets of the shadow-banking sector already amounted to 23 trillion Euro in mid-2014. This means that such a development, if continued, will lead to a financial system within the entire Euro area in which the shadow banking system will be bigger than the regulated banking sector within five years as of 2015 (Constâncio 2015a).

These entities emerged through a market need for security and accountable promises that the central banks did not provide, while regulatory reforms were suspended. These markets developed an exceptional system of money creation that was, and for the most part still is, completely out of reach for any regulatory power (Gorton 2010; Kregel 2012).

The shadow banking activities go hand in hand with advanced technological products. These uncontrolled activities are highly profitable for the most part, but at the same time they are a source of systemic instability and a risk for the entire financial market (Tonveronachi 2015). The growth tendencies of the shadow-banking sector are not surprising, as the banking, system underlies a set of regulations and ratios, which do not apply to the shadow banking entities. Many vehicles of the shadow banking markets work with extremely high leverage ratios, which comes not only from the reuse, repackaging or re-pledging of collateral, but also from reusing or re-pledging securities to obtain new loans. This re-pledging process of using collateral multiple times leads to hidden leverage and a multiplying effect (Kalinowski 2012). This cyclical behaviour leads to the conclusion that the vehicles of the shadow banking sector and their asset managers are crucial suppliers of collateral and at the same time important demanders of 'safe, short-term, liquid instruments, or non-deposit money-claims' (Singh and Pozsar 2011, 3–4). This means that the continuously growing shadow banking sector has created a well performing, 'self-refuelling' circle of money creation, which works in multiple layers so that the description above is only a short cut-out of the entirety of the process. Kalinowski (2012, 6) explained the reason for the cycle with these words: 'For assets managers, it is cheaper to obtain liquidity in this manner than borrowing in the old-fashioned way. For commercial banks, securitization offers substantially higher profits than traditional lending.'

For this paper, the shadow banking tendencies mean that the central bank is continuously losing control over the monetary system and thus over the outcome of its own policies, especially if distributed ledgers and digital currencies continue their growth and destroy another part of the insight on the markets that the CB currently still has. The less the controlling entities are able to keep a profound insight on the markets, the less effectively they are able to work. MT is a first step on the side of monetary policy; the issues of financial regulation remain unresolved, but monetary tracking can make market estimations more realistic and meaningful. Already in the first stage, it is able to shed light on the interaction patterns within the shadow banking markets, and with that, it could deliver possible arguments for more precise financial-market regulations. In more developed stages MT is actually able to depict the monetary flows with precision, and even the issue of private-entity money creation is not a problem as described above, but MT is no miraculous tool either, as it can only engage one side of the problem.

The ECB is very open-minded with regard to modern tools, which are able to improve the performance of the CB in any way. Vítor Constâncio put it thus: 'The monetary policy experience of the past seven years is reviewed. In pursuit of its objectives, the ECB has been very flexible in adjusting and expanding its toolkit' (Constâncio 2015b, 1). The ECB Banking Structure Report 2014 states: 'This increased divergence of financial cycles in boom periods calls for differentiated and well-targeted policy responses that are properly tailored to individual jurisdictions in order to address specific emerging risks in those countries' (European Central Bank 2014, 50–51). This clearly shows the ECB's determination to adopt new and technically adequate tools for more precise monetary activity, which is why this proposal should be considered to be one alternative.

Limitations and Research Outlook

All tracking tendencies are always two-sided, and one should understand both the positive and the negative sides, the misuse and trade of private data and the improved online-surfing experience. The same is true for the data generated through MT. So tracking of numerous activities on- and off-line is very famously in use and leads to the creation of billions of electronic portraits. The question remains why central banks should not be enabled to create rough 'electronic portraits' of the financial entities within their area of influence to improve the systemic stability. These data sets could be used to identify possible contagion risks, credit crunches and other eruptions within the monetary flows, which could then trigger more efficient reaction tools.

Another problematic side of such a tool is the possibility for private companies or hacker groups to build a subsystem with available private datasets, which has to be prevented, as this could trigger a race-to-the-bottom situation in which all companies compete on such analysis systems without helping anyone, while incentivising gaming behaviour. The system is only beneficiary for the society if either all stakeholders or only the public control has access to the produced data or a share of the data. Of course, the micro data from within the companies has to be protected from the private users in order to prevent espionage.

MT allows generating data in a quantity and quality that has never existed before, which enables an understanding of the current situation of the markets with much more profundity. This capacity of analysing monetary flows within the financial system can improve crisis prevention and reaction mechanisms, especially if private and public entities join their analytic tools to stabilise the system.

Cybersecurity generally is a crucial topic for this system, but also in general is it a field of growing importance for our society. Different financial market entities have already repeatedly been targets of cyber-attacks (CPSS-IOSCO 2011). Cybersecurity and cyberterrorism are two important issues that will take up more space in the future. International treaties and co-joined international working groups on cyber security between different big international players emphasise this fact (Williams 2015; The Associated Press 2014; Zhernov 2014). The security of the systems thus has to be up to the highest standards. Otherwise, the trust that the system tries to improve would vanish and reverse quite quickly.

A particularly beautiful aspect of MT is that it is a monetary policy tool. The CB can introduce it without needing the consensus of governments on how to restrict or control the shadow banking sectors. MT can be introduced by the CB in a trial run and could be perfected over time with ever-growing trial rounds before thinking about a complete systemic introduction.

Conclusion

A much more profound analysis of the consequences will be required in order to develop the concept further. This introductory paper was only able to touch upon many issues and hence further papers regarding the numerous critical aspects are needed for a further development of the tools. Monetary Tracking and especially Monetary Restricting are controversial technologies, but they might be less controversial than the long-term effects of some monetary policies that are in place at the moment.

MT is a technology-based analysis tool that enables an insight into the markets, but it is also the technological basis for much more profound tools. Monetary Restricting, one of many possible tools based on the same technology, is able to tackle some issues that financial market crises create. The tool helps to contain the crisis within the market it originated from.

This paper is too short, of course, to mention all aspects in necessary depth, but it is a contribution to the discussion on how to deal with the upcoming technological changes that will impact the financial system profoundly.

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Government Sponsored Venture Capital: Blessing Or Curse?

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Young companies with growth opportunities face serious problems when it comes to financing. The private venture capital (VC) market fails to provide sufficient funding for this segment. First, we present the main characteristics of start-up companies and market failures that can lead to government intervention. These failures include asymmetric information embodied in the business plan; high transaction costs of the investment process from the investment decision to the exit; and positive externalities in the economy, as the government prefers other goals than profit realization. Government participation is categorized as direct or indirect intervention. We present international studies showing that indirect government intervention can have both beneficial and negative effects on the VC market. Finally, the Hungarian government's participation and intervention are evaluated on the domestic VC market.

Key words: venture capital, state involvement, EU funds, seed stage
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Start-Ups and Seed Stage Companies

According to Berger and Udell (1988), three factors influence the financing opportunities of companies: firm size, firm age, and the availability of information regarding the company. This means that the smallest, youngest firms with the least amount of available information get access to the fewest investors: usually friends and angel investors. As the firm matures and reaches a certain size, it becomes a potential investment target for venture capital (VC) and private equity investors. There is no sharp boundary between the stages of the life cycle. In the following, we present only those stages – start-up and seed stage – which are relevant to our current research (see also Jáki and Molnár, 2017).

1. The 'seed stage enterprises' often possess merely a product/service idea ('idea company'). We can further categorize these companies into the following categories:
   - *Incubation stage* – the R&D stage of creating the product or service. Companies in this stage require only a small amount of financing. In the case of state intervention, the governments usually aim to provide funds to this sector based on a short and quick evaluation process.
   - *Establishment stage* is when the firm starts to set up their legal framework and operational organization. Investors of these companies are usually business angels or the 3F (Family, Friends, Fools). In the last decade – due to the EU-Jeremie program – seed funds and accelerators also took part in the financing of these companies.
2. The 'Start-up enterprises' have already developed an operational prototype and have some market feedback on the product or service. We can further distinguish the following sub-stages:
   - *Introduction stage:* the company operates but does not realize revenues yet. Sales and marketing are the key processes.
   - *Growth stage:* in this stage, the company starts to realize revenues but usually faces negative earnings. These enterprises are beloved targets of traditional private VC funds.
   - *Expansion stage enterprises* have an established business but need additional financing for marketing expenses to expand further. VC funds and private equity investors are the typical investors of these companies. In this stage, less government intervention is needed, so it is out of the focus of our study.

Seed and many start-up stage companies do not realize revenues. Most of them have negative earnings and cash flows. These companies work on their idea and create the prototype of the product or make the service available for costumers. The financial resources are needed usually to cover operational costs, like R&D, personal expenses, or marketing costs. Strong marketing activity is needed to boost sales. There are also considerable costs of seeking new investors, including travel expenses, PR costs. In these early stages, enterprises are obviously out of the scope and risk tolerance of commercial banks, so they cannot count on standard bank loans (Sahlman and Scherlis 2003; Walter 2014).

In this paper, we focus on seed stage and start-up companies where high risk and market failures obstruct the private investors. Based on the relevant literature and local market practices, our objective is to analyse market failures (Kovács 2011; Karsai 2004) which result in the inability of the private sector to provide enough equity to seed stage and start-up companies. Our objective is to answer the main research questions: why state involvement is needed in this sector and how these involvements are practically embodied on a local market. Another important question is, whether state intervention helps start-ups and seed stage companies to access financial resources. For the time being, we can only investigate the number of the investments as an indicator that can validate or invalidate the state involvement.

Market Failures on the vc Market

Market failures can appear in several forms and all can indicate market distortions: problems with public goods, the presence of monopolistic and oligopolistic market participants, asymmetric information, transaction costs and externalities (Szentes 2006; Lovas 2015). The following failures occur in vc market financing (Lovas 2015):

- *Asymmetric information:* as start-up companies have no track record in their business model, there is few and uncertain information about the company's past and especially about their future. Therefore, it is difficult for investors to assess the quality and the feasibility of the project.
- *High transaction costs:* young companies usually require a small amount of capital while the fixed cost of each investment process is high.
- *Externalities:* supporting these innovative start-up and seed stage companies can result in some positive macroeconomic effects in the domestic economy.

ASYMMETRIC INFORMATION: THE BUSINESS PLAN

To find an appropriate financing partner, seed and start-up companies must present a business plan. Apparently, all inventors, contractors and entrepreneurs believe in their idea, but their business plan is obviously overoptimistic. Business plan based decision-making is discussed in the literature in details. The cognitive sources of overoptimism during the preparation of a business and financial plan is presented by Jáki (2010). Kirsch, Goldfarb, and Gera

(2009) studied the VC decision-making process based on the submitted business plan. Balboni et al. (2014) gave a literature review of the growth drivers of start-up firms and their business modelling. VC decision makers are often forced to make fast decisions and in such settings, decision makers rely on heuristics to facilitate decisions. Kirsch, Goldfarb, and Gera (2009) found that the presence of business plan documentations and information contained therein are weakly associated with VC funding decisions.

In all financing cases, the elaboration and evaluation of all business plans are characterized by asymmetric information, which can also be simplified as lack of trust by the investors in the original owners and their submitted business plans. Trust was identified by Paliszkiewicz (2011) a major factor influencing capital investments.

High-level uncertainty and therefore severe asymmetric information problems arise by almost all classic parts of the business plan (marketing and sales plan, operational plan, investment plan, and organizational structure) and can be hardly treated. A seed stage company cannot give a detailed *product/service description* – especially in the information technology sector. VC investors usually reject these companies because of the undeveloped nature of their business. In the case of seed stage companies, it is a challenge for the founder to create a detailed *marketing and sales plan* without the exact knowledge of what the product/service is. Since start-up companies already possess a working prototype, the marketing and sales plan is a crucial part of the development of their business. The expertise and experience of the marketing/sales director have significant importance, which must be convincingly communicated to the investor. Industrial analysis is often a struggle since the product/service can create an entirely new, untouched, 'blue ocean' industry (Kim and Mauborgne 2004). A seed stage company typically has a delineated idea about the exact *operational process* since even the central concept of the business is not finalized. Start-up companies can usually go into more details and can make the operational plan more credible. Finally, seed stage and start-up companies usually spend most of the invested capital on labour and personnel, therefore one of the most important parts of the business plan is the introduction of the *management team and the organization* (Sahlman 1997).

Based on all this we can see that a seed stage and a start-up company tries to sell merely a business idea. The organization is incomplete; its supply, demand and industrial risks are hardly forecastable. The initial investment will be spent on the intellectual property, R&D

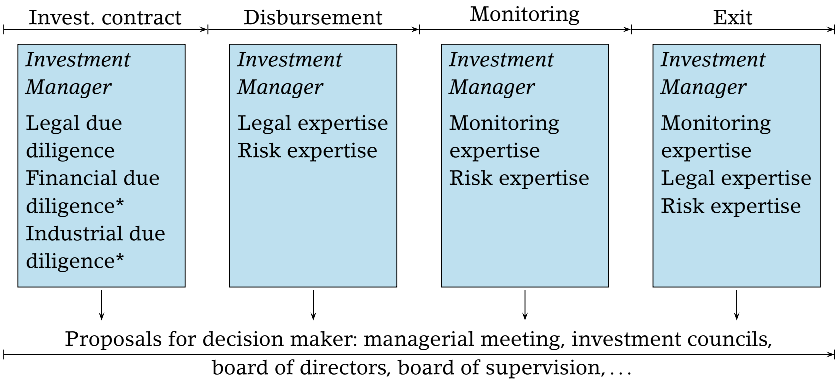

FIGURE 1 Venture Capital Investment Decision Making Process

or marketing, the efficiency of which is hard to measure. It is understandable why angel investors and the so-called 'family, friends and fools' are the main source of capital for seed companies, as the information asymmetry is usually too high for classic institutional vc investors. Since investors get more (but still insufficient) information about start-up companies, vc funds focus more commonly on start-ups rather than on seed stage companies.

TRANSACTION COSTS

To see how the market failure of transaction costs manifests on the vc market, we examine the vc investment process. The fund manager company collects liquid funds from different investors into a vc fund. It invests from the fund into target companies in line with the authorized Management Guidelines. The investors of the fund expect a return on their investment, so the investment decisions must be made carefully by the fund management to meet return expectations (Jáki and Molnár 2017). To understand why transaction costs is a market failure at the vc market, the decision-making process is presented.

The investment process is composed of four different phases (see figure 1):

1. *Investment decision.* Before signing the investment contract, the investment manager should assemble the investment proposal and submits to the decision maker boards. First, the investment manager must filter the fund requests and carefully evaluate the chosen projects in cooperation with the legal and risk division of the fund manager company. Based on legal requirements, vc fund manager companies must operate an independent risk

management division and employ a lawyer. Commonly legal, financial, operational or another type of due diligences is made, where the investment manager coordinates the whole process. Overall, a minimum of three divisions are required to prepare an investment proposal: investment managers, legal experts, risk experts and finally the forum of decision makers, which can be a committee, board, etc. are required, too. After a positive investment decision, the fund manager company signs the detailed investment contract (terms of ownership rights and obligations, terms of disbursement and exit, etc.) with the target company on behalf of the fund.

2. *Disbursement.* The contract signing and founding of the company is followed by the disbursement. This is done after verification of the financial and legal contractual obligations. This review process is done by the investment manager, the legal expert and the risk management representative for maximum prudence.
3. *Monitoring.* Following the disbursement, the ownership rights of the fund must be exercised. The target company must be monitored continuously based on quarterly, semi-annual or at least annual reporting specified in the investment contract. Monitoring is responsible for checking the realization of the business plan, main financial data, customers' and suppliers' contracts made during the investigated period and to measure all risk factors. This is executed by the monitoring manager, in some cases in cooperation with the investment manager. The monitoring report must be also reviewed by the risk division. The fund manager company's representative gets a mandate to take part and vote at the general assembly and the fund manager company also has the right to mandate one or more members of the board of directors or supervisors. Overall, monitoring managers, risk and legal experts are required to monitor the investment.
4. *Exit.* In case of a successful investment, the fund can realize the return by exiting form the company. This process also requires active involvement by legal and risk manager experts in addition to the monitoring representative's opinion.

Overall, the typical investment decision, disbursement, monitoring and exit process is long, complex and expensive. Therefore, it is not economic for the fund manager company to even start the investment decision-making process under an investment threshold.

EXTERNALITIES

High transaction costs and severe asymmetric information problems are obvious obstacles for private investors to be more active in this segment of vc financing. However, without financial resources, many promising ideas of these seed stage and start-up companies could not be introduced into the market. Therefore, programs helping to finance these companies can also be explained and justified by the positive externalities associated with financing innovative young companies. These positive externalities may also justify active participation from the government's point of view. According to Karsai (2013), state participation is needed on the vc market, because the state considers other goals than just profit realization. These include motivating the local innovation, supporting social and regional economic development, establishing new jobs and increasing tax income spent on social services, etc. If the entrepreneurs cannot find investors in their homeland, they turn to foreign investors and possibly bring their idea abroad.

Although positive externality is one of the most powerful and easily understandable explanations for government intervention, quantification of these benefits is extremely difficult. In the following part, we present several studies, which examined how government vc programs in various parts of the world.

Evaluating the Government Interventions: International Experiences

Despite obvious market failures described above, there is an intensive debate about the role of government in the financing of seed stage and start-up companies. State involvement has a long history worldwide and it is severely debated by researchers (Kovács 2011; Szentes 2006). There are several types of state involvement based on development area or motivator factors used by the state (Gilson 2003) or according to the contract's characteristics (Jääskeläinen, Maula, and Murray 2007; Cumming and Johan 2009). In our study, in accordance with Kovács (2011) and Karsai (2015), we distinguish two types of state involvement: direct and indirect. Direct involvement means that both fund and the fund manager company are owned by the state. Indirect involvement means that funds are partially or completely provided by the state but they are managed by a private sector fund manager company.

The following studies evaluate the efficiency of different government sponsored vc programs around the world, leading to controversial conclusions. These studies evaluate the various government sponsored vc programs based on the analysis of the number of patents held and number and size of initial public offerings. They do not evaluate efficiency by the realized profit on the individual investments.

There are numerous studies, which found that *direct state involvement on the* vc *market is inefficient.* Cumming and MacIntosh (2006) analysed Canadian government owned vc fund manager companies. They concluded that these had not only higher agency costs and lower profitability than funds managed by the private sector, but their presence also decreased the vc availability to young companies in Canada. Brander, Egan, and Hellmann (2008) also examined the Canadian vc market and found that companies that were directly financed by the government possess fewer patents; they have a lower probability to accomplish initial public offerings, acquisitions than firms who did not receive direct investment from government venture capitalists. Moreover, they also found evidence of a crowding-out effect.

Grilli and Murtinu (2014) examined the growth of the number of employees and the growth of sales of European young companies directly financed by government venture capitalists. They found that direct financing by the state had no effect on the growth of these companies. Luukkonen, Deschryvere, and Bertoni (2013) analysed data from seven European countries and concluded that private sector fund manager companies could provide better strategical support to young companies to grow than government owned fund manager companies. Bertoni Colombo and Quas (2012) found that European government owned vc fund manager companies failed to attract private venture capitalists to fund seed stage companies.

Another group of researchers found *indirect involvement by the state beneficial* in various countries. Colombo, Cumming, and Vismara (2016) found that the Australian Innovation Investment Fund (iif) was a significant help in easing market failures in Australia. They also state that government vc programs are not successful in every country by nature. According to them, the biggest mistake of government programs is that they do not mandate the most successful private sector vc fund manager companies to manage the state funds.

Brander, Du, and Hellmann (2015) analysed an international database and found that companies who received vc funds provided by both the government and the private sector, received more funds overall. In those cases, funds also had a higher chance for a successful exit compared to firms that only received either public or private investments. Additionally, in countries with more government sponsored VC investments, more companies receive greater amounts of financing on average. According to the authors, the government involvement does not crowd out private investors but augments them.

Murray et al. (2012) analysed seven government sponsored VC programs in the United Kingdom. They concluded that these programs were successful in providing financial resources to firms that would not have been funded by private sector venture capitalists. However, they also warned that these programs could only be beneficial to the economy when they are accompanied by a constant development in entrepreneurial culture and innovation.

Both direct and indirect involvement was found inefficient by Lerner (2009), who analysed the American government sponsored VC programs. He started with the Small Business Innovation Research Program (SBIR) in 1999, which distributed directly billions of dollars over the years. He found, that the program had a significant impact on sales and employment growth only where the VC sector was already active before the program. After examining multiple phases of government VC programs, he concluded that these programs were designed faulty and the state does not understand entrepreneurship. However, he also adds that even privately managed state funds cannot be justified based on performance, he essentially condemned indirect involvement of the government.

The Hungarian VC Market and State Involvement

Hungary participates in the European Union's VC program called JEREMIE (Joint European Resources for Micro to medium Enterprises). The program was announced for 2007–2013 and was available for VC fund managers from 2009 in multiple rounds. In each round, hundreds of millions of EUR were distributed to Hungarian private sector VC fund manager companies to invest in start-up, seed SME companies. The private sector fund manager companies were required to provide at least 30% own participation from their total managed capital. The latest investment period to seed and start-up companies ended on mid of 2016. The principal objective of the program was to revitalize the Hungarian VC sector and provide sources to innovative young companies that would have otherwise do not have access to funding.

To assess the effects of the Jeremie program on the Hungarian VC market, the size of seed and start-up investments made in the country from 2007 to 2016 and the number of investment from 2014–2017

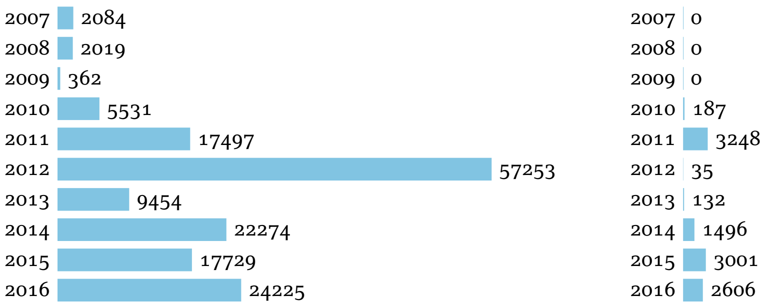

FIGURE 2 Venture Capital Investments in Hungary to Start-up (Left) and Seed (Right) Companies from 2007 to 2016 in Thousand EUR (adapted from Invest Europe 2017)

TABLE 1 Total Number of Investments and the Share of JEREMIE Funds

Item	2014	2015	2016
Total number	96	109	94
JEREMIE share (%)	50	61	84

NOTES Based on data from Hungarian Private Equity and Venture Capital Association (www.hvca.hu).

Q1 can only be investigated. As only a few investments ended and many investments are still in its early stage, there is a limited opportunity and publicly available information to assess the total investment phase from funding to exit and their value-added effect on macroeconomic factors.

Figure 2 shows that before the start of the Jeremie program in 2009, there was very weak seed and start-up VC activity on the Hungarian market. From 2010, the VC market began to speed up, reaching the peak point of its investment activity in 2012. After a decline in 2013, VC activity remained stable during 2014–2016. Interestingly, seed investment activity remained on a low level, development was much more apparent on start-up market.

Examining the last three years of the program in Hungary, around 100 investments were made annually between 2014–2016, see table 1. The Jeremie funds' share of these investments increased year by year from 50% to 84%.

Figure 3 shows the number of investments from 2016 Q1 to 2017 Q1. It can be stated that after the end of the investment period of the JEREMIE program, the number of investments drastically decreased form 59 investments to 2 investments in Q2, and remained low at the end of 2016.

Just before the Jeremie program's closing in the second quarter

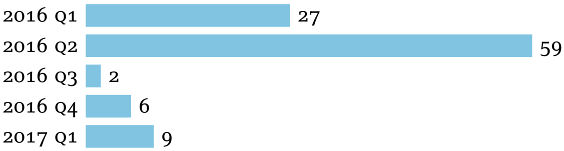

FIGURE 3 VC Investments in 2016 and Q1 of 2017 (based on data from Hungarian Private Equity and Venture Capital Association, www.hvca.hu)

TABLE 2 Széchenyi Venture Capital Fund Investment Activity

Item	2012	2013	2014	2015	2016
(1)	13	17	30	25	9
(2)	3109.71	5 388.72	15226.88	11939.20	6100.23
(3)	66819.00	18376.00	29902.00	23798.00	28940.00
(4)	4.65	29.32	50.92	50.17	21.08

NOTES Row headings are as follows: (1) number of investment made by SZTA, (2) investment made by SZTA in thousand EUR, (3) total VC and PE investment in Hungarian VC, (4) SZTA proportion of total VC and PE investment in Hungary (%). Based on data from Széchenyi Venture Capital Fund (www.szta.hu) and Hungarian Private Equity and Venture Capital Association (www.hvca.hu).

of 2016, fund manager companies made tremendous efforts to finish ongoing investment processes so the number of investment doubled from 27 to 59 in this period. After the end of the program, the number of VC investments fell drastically and there is no sign of improvement even in the first quarter of 2017.

On the Hungarian VC market, 19 fund manager companies operate in 2017 and two of them are owned by the state: Hiventures (before Corvinus Venture Capital Fund Management Plc. – CVCFM) and Széchenyi Venture Capital Fund (SZTA). SZTA was launched on the 1st of June 2011. We need to note that despite being labelled as a VC fund manager company, SZTA also makes later stage investments. CVCFM originally was founded in 1999 as Regional Fund Management and was appointed as the State Venture Capital Fund in 2016. To accomplish this task, the organization and the managed funds had to be restructured and the company was renamed to Hiventures.

According to the openly available figures of Hiventures, it possesses 9 investments at present but due to its organizational restructuring, its investment activity cannot be thoroughly examined. According to the Széchenyi VC fund website, they accomplished 94 investments in the period 2012–2016, see table 2. Due to the typically three to five-year investment period, most of the investment exits will take place after 2018.

According to table 3, the government owned SZTA – the fund manager company – made a very significant portion of all VC and PE investments in Hungary during its lifetime so far. It has provided half of the total invested capital in 2014 and 2015. Based on this, we can state that despite the major indirect VC program Jeremie, the government still has a significant direct presence on the Hungarian VC and PE market. As it was written on the SZTA website, the efficiency of their investments can be evaluated after 2018 based on the realized exits.

As the majority of investments are still running in their early stage, it is too early to draw down conclusions about the efficiency of these programs and institutions on a macroeconomic level. There is only one research available (Becsky-Nagy and Fazekas 2015) at present which evaluate the program efficiency on the Hungarian VC market. They concluded that direct state involvement is not efficient, as they believe that private sector fund manager companies have better skills in selecting target companies than the state. In addition, as the government plays an inactive role in the management of the target company, it cannot control the management of the financed companies adequately. These conclusions are in harmony with results of Cumming and MacIntosh (2016), Brander, Egan, and Hellmann (2008), Grilli and Murtinu (2014), and Luukkonen, Deschryvere, and Bertoni (2013).

Despite questions concerning efficiency, we can state that the Hungarian government plays a significant role on the VC market and counts as a very active participant. There is no doubt about that it largely influences the market. The efficiency of these investments can be investigated more in detailed only later based on the exits made by the SZTA and Hiventures fund manager companies.

Conclusion

Nowadays governments actively participate in VC financing. Several market failures occur in the financing of seed and start-up companies like asymmetric information, high transaction costs, and externalities. Information asymmetry and high transaction costs are obvious obstacles for funding of potentially good companies. Positive macroeconomic externalities originated from the development of these successful companies can justify government interventions, too. Government intervention can be categorized in several ways. In our research, we categorized it as direct and indirect form corresponding with international research. There are several studies evaluating the direct and indirect intervention of the governments all around the world. Results are controversial. Numerous studies showed that direct state involvement on the vc market is not efficient. Another group of researchers found indirect involvement by the state beneficial. Most of the positive evaluations emphasize that government and private investors together had a positive effect on the vc market especially if private investors can make the final investment decision. We can also definitely state that the government sponsored vc (direct and indirect) programs have a huge impact on the Hungarian vc market. It is obviously shown in market statistics: in the number of new investment, in the dynamic of fund volumes, the number of funds. However, the efficiency of these investments and its macroeconomic impact is still questionable, as these projects are still in their early stages and exits are expected only after 2018.

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The Impact of Social Norms, Trust, and Fairness on Voluntary Tax Compliance in Austria

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Existing literature stresses the importance of economic factors when aiming to increase voluntary tax compliance. However, emerging voices also point out to relevant social factors, but emphasize that more research needs to be carried out for their verification. Therefore, in this article, research was conducted to provide further evidence to show how social factors have an influence on voluntary tax compliance. The research is the first attempt to replicate the results of the structural model of Jimenez and Iyer (2016) outside of the US, claiming that one's moral standards (personal norms) and perceived fairness directly influence voluntary tax compliance, meanwhile social norms and trust in government have an indirect impact on tax compliance via influencing personal norms and perceived fairness. To achieve a beneficial result, 333 Austrian taxpayers were surveyed in Austria. The data was analysed in SPSS using frequencies, correlations and regression analysis. The results verify the aforementioned assumptions and emphasize its consideration when aiming to increase voluntary tax compliance.

Key words: voluntary tax compliance, trust, fairness, social factors, Austria
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Introduction

According to Statistik Austria (2016), over 6.7 out of 8.6 million inhabitants in Austria are reported as being active taxpayers. The total gross earnings from taxes in 2015 amounted to €182,515.6 million. Assuming that tax authorities generally aim to maintain and increase tax compliance to ensure a source of earnings, one needs to investigate how tax compliance can be achieved and increased, especially when considering that an avoidance of taxes might hamper the legal economy, and cause losses for the state. When examining negative effects of tax avoidance in Austria, one can mention Schneider, Buehn, and Montenegro (2010), who argue that tax burden is the main contributor to the development of shadow economy in Austria. Therefore, the provision of managerial implications through the elaboration of effective and convenient measures for increasing voluntary tax compliance can be assumed to be of a high interest for researchers and tax authorities worldwide.

However, a universal managerial implication may seem difficult to derive when facing possible factors with diverging characteristics (possibly affecting voluntary tax compliance), and when inferring that every country is embedded into a specific context. After testing the slippery slope framework in Austria, Hungary, Romania and Russia, Kogler et al. (2013) concluded that Austrians want to comply with paying taxes. Because by doing so, they would fulfil their responsibility, not only before the government, but also before the society. This draws attention to the relevance of profoundly examining, where aspects need to be taken into account when aiming to achieve voluntary tax compliance. In conclusion, not only the laws and penalties oblige people to pay taxes.

Additionally, when wishing to elaborate effective measures for achieving tax compliance, a careful preparation and selection of specific measures is necessary, as wrongly chosen measures could turn out to be rather self-defeating than achieving expected positive effects. In the case of Austria, Gangl et al. (2014) provides results that underline this apprehension, arguing that a deterrence approach (laws and supervision activities) chosen to achieve tax compliance in Austria does have a negative influence on tax compliance itself. In conclusion, there must be something else, in need of capturing, that influences people's willingness to comply voluntarily.

When considering a possible variety of influencing factors, one should also take in mind that these factors might require different implementations as they can have unequal characteristics. Although a deterrence approach exclusively focuses on control measures implemented from the outside of an individual's sphere (not directly taking into account a person's inner characteristics such as norms and specific beliefs of a person), an approach of targeting social factors does so. At the first glance, it may appear difficult to understand how the inner sphere of an individual is shaped, and how it could be influenced from an external perspective. However, the prospect of a lower need of supervision activities and, hence reduced expenses in return of people's will of increasing compliance (based on their inner conviction), clearly shows the importance of considering social factors by tax authorities and researchers. Specific models, which allow one to derive managerial implications that comply with this prospect, should be focused.

Focusing on recently developed models, which can be described to be in accordance with the aforementioned goal of efficiently improving tax compliance, one can emphasize the structural model of Jimenez and Iyer (2016). The authors of this model claim that social factors encourage people to voluntarily pay taxes. Used variables of this model can be divided into dependent and independent variables. As dependent variables, one can state intentions of tax compliance, whereas independent variables can be listed as norms, perceived fairness, and trust, summarized as social factors.

A further breakdown of social factors that are declared as independent variables let one distinguish more easily between social norms and personal norms. Within social norms, the authors of the applied model differentiate between injunctive, descriptive and subjective norms. Injunctive norms refer to the perceptions of which behaviours that most people in a group approve or disapprove of (Aronson, Wilson, and Akert 2010; Cialdini and Trost 1998). In other words, injunctive norms define what one person believes other people's moral standards are. Descriptive norms describe how a person perceives other people's general behaviour (Aronson, Wilson, and Akert 2010). Lastly, subjective norms incorporate peer-pressure. They refer to a one's perceptions about how people close to him/her want him/her to behave (Fishbein and Ajzen 1975). Personal norms are a person's own moral standards and behavioural expectations (Cialdini and Trost 1998; Wenzel 2004a). To distinguish more generally, the three different types of social norms involve an interconnection between the society and the individual, whereas personal norms only look at the individual him/herself. This also helps make visible why social norms appear to be more accessible of an external perspective than personal norms, as they include external factors. This constitutes a possible target for managerial implications.

In a second step of outlining further independent variables, trust in the government can be described as a firm belief in the reliability and ability of the government. Perceived fairness refers to an individual's subjective perceptions that the government acts in a fair way (Bordignon 1993). Furthermore, one has to consider the already stated aim to understand how the inner sphere of an individual, more precisely personal norms, are formed and therefore could be influenced. Jimenez and Iyer (2016) stated two assumptions, which allow one to also presume a certain order of the above listed dependent and independent variables. First of all, they claim that social norms influence personal norms that in turn directly influence tax compliance. Secondly, they state that trust in government shapes the individual perception of fairness of the governmental institutions, which then in sequence influences voluntary tax compliance.

Jimenez and Iyer (2016) conclude that social norms influence tax compliance indirectly through personal norms, which successively have a direct impact on tax compliance. Asides from that, they also report an 'interrelated influence' between trust and perceived fairness of the governmental institutions. They claim that trust is an antecedent of perceived fairness, and therefore shapes the fairness perception of an individual.

Considering the above-mentioned assumptions and related recommendations, social factors are important to look at, and may turn out to be an effective and convenient measure to increase tax compliance. On the other hand, however, they still require further evidence and profound elaboration. One can stress the importance of supplementary studies in this research field. Therefore, to provide further evidence for Jimenez and Iyer's assumption that social factors do matter when achieving tax compliance, and comply their recommendation that further research in other countries should be carried out, our research can be classified as the first replication of their model outside of the US.

In summary, the presented research combines a number of relevant social factors under a common model, and analyses their influence on voluntary tax compliance in Austria. The primary data acquired through online and offline surveys in 2017 is used to test the structural model of Jimenez and Iyer (2016), and identify the relationship between various social factors and tax compliance in Austria, hence allowing one to derive beneficial managerial implications.

Theoretical Background

The topic of tax compliance occupies minds of researchers all over the globe. Tax compliance literature is rather extensive in identifying a broad list of variables influencing tax compliance behaviour. James and Alley (2002) distinguish between economic and behavioural approaches to tax compliance. According to the former approach, taxpayers are viewed to be concerned primarily with financial gains. The latter approach treats taxpayers as honest people willing to comply, if they can trust authorities and perceive their actions as fair and equitable. Representatives of the traditional economic approach are Allingham and Sandmo (1972) who propose the utility theory, which explains non-compliance through solely financial gains. Kirchler, Hoelzl, and Wahl (2008) explain tax compliance through power and trust in authorities with the aid of their Slippery Slope Framework. They distinguish between enforced tax compliance, which can be achieved through exercising power, and voluntary tax compliance, which is promoted by building trust-based relationships with taxpayers. Their model clearly shows that there are two approaches when explaining tax compliance behaviour: deterrence (through power) and non-deterrence (through trust and perceived fairness).

Torgler (2002) states that besides economic factors, social norms have a strong effect on tax compliance. In addition, he mentions that traditional deterrence models are not able to explain why people choose to voluntarily comply with tax regulations. Alm, Sanchez, and de Juan (1995) claim that a holistic approach to measure tax compliance needs to be adopted. They argue that when using only the traditional economics-of-crime approach while researching tax compliance behaviour and ignoring an individual's behaviour and motivation, one will not be able to produce consistent results. Paldam (2000) declares that the research field which focuses on the impact of social factors, or social capital on tax compliance, aroused the interest of researchers just recently and still lacks comprehensive and reliable data. Frey and Torgler (2007) stress the importance of social aspects on tax compliance behaviour by stating that the tax behaviour of others defines the individual's behaviour through conditional cooperation. Furthermore, some authors emphasize trust as one of the primary sources of tax compliance behaviour (Kirchler et al. 2008; Slemrod 1998; Gobena and Van Dijke 2016).

When it comes to tax compliance behaviour and its motives, there is a significant difference between voluntary and enforced tax compliance. Enforced tax compliance relies mainly on the system of fines and penalties, which can become very expensive for the government (Alm et al. 2012; Kirchler, Hoelzl, and Wahl 2008), and has little to do with how people's moral standards about tax compliance are formed (Graetz and Wilde 1985)

On the other hand, voluntary tax compliance is cheaper and provides a more efficient way to ensure that taxes are being collected. Silvani and Baer (1997, 11) describe voluntary tax compliance as 'timely filing and reporting of required tax information, the correct self-assessment of taxes owed and the timely payment of those taxes without enforcement action.' The opinions on what promotes voluntary tax compliance vary among authors. Farrar (2015) and Murphy and Tyler (2008) state that perception of fairness plays an important role in improving voluntary tax compliance in a country. Hartner et al. (2008) additionally mention the effect that national identification has on citizens' compliance behaviour. Van Dijke and Verboon (2010) state that trust functions as a moderating effect in the relationship between perceived fairness and voluntary tax compliance. The authors argue that perceived fairness shows stronger positive effects on compliance behaviour of citizens with low trust in authorities.

Research Questions

Many authors attribute high importance to the impact of trust on tax compliance (Kirchler, Hoelzl, and Wahl 2008; Slemrod 1998; Gobena and Van Dijke 2016). However, in the model used for the research we can see that, rather than influencing voluntary tax compliance directly, trust affect it indirectly via perceived fairness. Trust is also formed under the impact of personal norms, which in fact, directly affect voluntary tax compliance. Therefore, we concluded that it is crucial to investigate the relationships between trust, perceived fairness, and personal norms. We attempt to prove that there is a relationship between trust and fairness. In order to understand how trust and fairness relate to in other, the first research question is introduced, and formulated as follows:

RESEARCH QUESTION 1 *How strongly is fairness perception related to trust in government in Austria?*

H0 *There is no relation between fairness perception and trust in government in Austria.*

H1 *There is a relation between fairness perception and trust in government in Austria.*

One of the main points of the current research is to provide evidence that individual taxpayer's personal norms to a certain extent influence the formation of trust towards authorities. Therefore, the second question looks into the relationships between trust and personal norms.

RESEARCH QUESTION 2 *How strongly are personal norms of tax compliance related to trust in government in Austria?*

H0 *There is no relation between personal norms and trust in government in Austria.*

H2 *There is a relation between personal norms and trust in government in Austria.*

After determining the relationships between personal norms and trust, and perceived fairness and trust, we analyse how various social factors influence voluntary tax compliance in Austria. Under the research question, a number of hypotheses are formulated. The hypotheses assume a relationship between such social factors, as injunctive, descriptive, subjective, and personal norms, as well as perception of fairness, and tax compliance behaviour of taxpayers in Austria.

RESEARCH QUESTION 3 *What is the contribution of social factors in explaining the variation in tax compliance in Austria?*

H0 *There is no relationship between social factors and tax compliance in Austria.*

H3 *There is a relationship between social factors and tax compliance in Austria.*

H3A *There is a relationship between injunctive norms and personal norms.*

H3B *There is a relationship between descriptive norms and personal norms.*

H3C *There is a relationship between subjective norms and personal norms.*

H3D *There is a relationship between personal norms and tax compliance.*

H3E *There is a relationship between fairness perceptions and tax compliance.*

Methodology

PROCEDURE

For collecting the required data, a survey was used. The original questions that were combined under the questionnaire are available in English. Because the data collection takes place in Austria and among Austrian population, the questionnaire had to be professionally translated into German.

The questionnaire was pretested on a group of 20 people. The pretest allowed to spot mistakes in the questionnaire, such as typos, confusing wordings of some of the questions.

The survey was distributed both online and offline to mitigate the risks of non-response, respondent errors, and increase the coverage, namely the chances to reach the minimum defined sample size of 312 respondents. Bonnel, Bayart, and Smith (2015) claim that various modes can be used simultaneously to improve coverage, and decrease the coverage biases. Moreover, the mix of online and offline survey modes allow to significantly boost response rate and reach a wider population, which otherwise would not be cost efficient (Nulty 2008).

Therefore, the data was collected via online and offline questionnaire. The online questionnaire was designed with and administered through QuestionPro. The link to the questionnaire was distributed via social media channels, like Facebook groups and event pages and WhatsApp, as well as via direct e-mailing, and snowball sampling.

The offline questionnaire was distributed among students in various degree programs at FH Joanneum, as well as among the teaching and non-teaching staff at FH Joanneum campuses in Graz and Kapfenberg. Moreover, street polls in Graz and Knittelfeld were used to collect responses, as well as BFI office in Graz. In order to ensure that anonymity of respondents is ensured and the sensitivity of the topic is taken into account, offline questionnaires were distributed in enveloped that could be sealed and dropped into a box without field researches being able to identify identities of respondent and their answers. For improving response rates an incentive system for participants was introduced in a form of 0.15 EUR donation per participant to an Austrian charity organization 'Herz bewegt' working to provide free of charge heart surgeries for children in Austria.

Both online and offline surveys were opened on May 5th 2017 and closed on May 26th 2017 when the sample size was overreached. The final response rate for the period of three weeks is 333 respondents.

MEASURES

The questionnaire consists of two qualifying questions in the introductory part. The main part of the questionnaire consists of 26 questions divided into eight sections (see Appendix). Each one of the first seven sections relate to the variables under research. The last section collects demographic data of respondents, such as age, education level, and gender. Table 1 presents the sources of the questions used in the survey.

The basic data is collected on a 7-point Likert scale, where 1 signifies strong disagreement with a statement, and 7 strong agreement. In the case of the seventh section, where hypothetical tax compliance is measured, 1 on the 7-point Likert scale denotes that a decision in a certain situation is very unlikely, and 7 very likely.

SAMPLE

In order to make sure that statistically significant results can be achieved, and a small interaction effect detected, the appropriate

TABLE 1 Measures and Sources

Variable	Source
Injunctive norms	Bobek, Roberts, and Sweeney (2007)
Descriptive norms	Bobek, Roberts, and Sweeney (2007)
Subjective norms	Blanthorne and Kaplan (2008)
Personal norms	Bobek, Roberts, and Sweeney (2007)
Trust	Kogler et al. (2013)
Perceived fairness	Nakayachi and Cvetkovich (2010); Herda and Lavelle (2011)
Voluntary tax compl.	Blanthorne and Kaplan (2008); Kogler et al. (2013)

sample size was determined. According to Cohen (1988, 75) that those researching behavioural differences 'in personality, attitude, and ability, frequently take recourse to correlational analysis as an investigative tool in both pure and applied studies.' He continues by stating that in order to be able to investigate such individual differences between variables using statistical analysis 'the Pearson product-moment correlation coefficient, *r*' shall be applied (p. 75). What is important to note is that it is acceptable to assume a normal distribution of the data, since a significantly large sample is used in the analysis.

According to the guidelines from Cohen (1988), a small effect size of 0.2 for the survey was adopted, because the research is rather new and it is hard to estimate the influence of all extraneous variables. Since the direction of the relationship between variable are clearly specified in the Structural Model of Jimenez and Iyer (2016), one is able to use one-tailed test with a significance of 95%, or 0.5 significance criterion (with only a 5% probability of making a Type I mistake by accepting that there is an effect, when in reality it is not), and power of 0.8, in other words the probability of 80% of detecting an effect that is actually found in the population. Based on the above-mentioned criteria, the sample size is estimated at a number of 312 respondents.

Results

The first step of the data analysis was to check the collected data on its reliability using the Cronbach's alpha analysis. The Cronbach's alpha for the data set reached a value of 0.852, which means that the data set can be classified as highly reliable. The total number of items checked was 23 and includes the variables for each of our main categories which are called Injunctive Norms (INJ), Subjective Norms (SUBJ), Descriptive Norms (DESC), Personal Norms (PERS), Trust (TRU), Perceived Fairness (FAIR), and Voluntary Tax Compliance (COMP).

TABLE 2 Sample Description

Characteristics		Frequency	Percentage
Age	18–24	93	27.9
	25–34	138	41.4
	35–44	44	13.2
	45–54	29	8.7
	55–64	19	5.7
	65–74	7	2.1
	Missing	3	0.9
Gender	Male	152	45.6
	Female	173	52.0
	Other	5	1.5
	Missing	3	0.9
Education level	Middle school	9	2.7
	High school	123	36.9
	Professional training	40	12.0
	Bachelor degree	79	23.7
	Master degree	59	17.7
	Doctorate degree	20	6.0
	Missing	3	0.9
Total		333	100

The main age-group of our survey-participants was '25–34' which includes 138 out of 333 participants and accounts for 41.4% of the total answers. The second frequently used answer for the category 'age groups' was '18–24' with 93 participants out of 333 stating that they belong to this age category. This category accounts for 27.9% of the total answers. The minor age group of our participants was '65–74' which included seven out of 333 participants and accounts for 2.1%.

The targeted gender-mix was reached in our survey and the balance in terms of gender-based answers is given. The female group amounted for 173 out of 333 participants or 52% of the total answers. 152 male participants account for 45.6% of the total answers. Five out of 333 participants picked 'other' as their gender, which is 1.5%.

The major number of participants picked 'high school diploma or equivalent' as their education level, which includes 123 out of 333 participants and accounts for 36.9% of the total answers. The second frequently used answer for the category was 'bachelor degree' with 79 participants out of 333 (45.6%). The minor education level group of our participants was 'middle school or equivalent' which included nine out of 333 participants and accounts for 2.7%. Also, it is noticeable that although when depicting a high number of respondents stating to have a high school diploma or equivalent, a good mixture

TABLE 3 Correlations between Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	1	0.438*	0.329*	0.264*			
(2)	0.438*	1	0.344*	0.191*			
(3)	0.329*	0.344*	1	0.270*			
(4)	0.264*	0.191*	0.270*	1		0.215*	0.343*
(5)					1	0.701*	0.190*
(6)				0.215*	0.701*	1	
(7)				0.343*	0.190*		1

NOTES Column headings are as follows: (1) injunctive norms, (2) descriptive norms, (3) subjective norms, (4) personal norms, (5) perceived fairness, (6) trust, (7) voluntary tax compliance. * Correlation is significant at the 0.01 level (1-tailed).

of answers of all age categories is given and showing a mixed opinion of people of all education levels.

The number of missing values in all demographic questions is 3 out of 333 responses, which accounts for 0.9% of the total answers.

With the support of a product-moment correlation, we wanted to check if there are relationships among variables. As seen from table 3, all correlations are significant at the level 0.01 (1-tailed). The correlation coefficient between trust and perceived fairness reaches a value of 0.701, meaning that there is a strong correlation between the two variables. There is also a moderate correlation between voluntary tax compliance and personal norms with a correlation coefficient of 0.343.

The correlation between trust and personal norms is weak at 0.215. Similar weak correlations are identified between personal norms and injunctive norms (0.264), personal norms and descriptive norms (0.191), personal norms and subjective norms (0.270), and voluntary tax compliance and perceived fairness (0.190).

The bivariate regression analysis of personal norms and trust shows that the significance of this regression reached a value of 0.000, which means that the alternative hypothesis (H2) needs to be accepted. Furthermore, the beta-weight of this regression reached a value of 0.227, which states that the variable 'Personal Norms' has a weak positive influence on the variable 'Trust.' The Durbin-Watson test reached a value of 1.737. This means that the regression does not lack any form of an autocorrelation error of the residues.

The regression between the variables 'Personal Norms' and 'Voluntary Tax Compliance' with the significance of 0.000 and the beta-weight of 0.343 shows that the variable 'Personal Norms' has a moderate positive influence on the variable 'Voluntary Tax Compliance.'

The Durbin-Watson test reached a value of 1.927. The regression between 'Trust' and 'Perceived Fairness' is significant at 0.000. Furthermore, the beta-weight of this regression reached a value of 0.703, which states that the variable 'Trust' has a strong positive influence on the variable 'Perceived Fairness.' The Durbin-Watson test shows a value of 1.959. The regression analysis of 'Perceived Fairness' and 'Voluntary Tax Compliance' is significant at 0.000 with the beta-weight of this regression reached a value of 0.209, which states that the variable 'Perceived Fairness' has a weak positive influence on the variable 'Voluntary Tax Compliance.' The Durbin-Watson test reached a value of 1.898.

The multiple regression analysis between variables 'Injunctive-,' 'Descriptive-,' 'Subjective-Norms' and the variable 'Personal Norms' starts with the results of the Durbin-Watson test. The value of 1.983 represents a perfect model fit.

The significance of the regression between the variables 'Injunctive Norms' and 'Personal Norms' reached a value of 0.002, which means that the alternative hypothesis (H1) for this regression needs to be accepted. The beta-weight of this regression reached a value of 0.183, which states that the variable 'Injunctive-Norms' has a weak positive influence on the variable 'Personal-Norms.'

Also, the significance of the regression between the variables 'Subjective Norms' and 'Personal Norms' (significance value of 0.002), reached a score below 0.05, which leads to the fact that the alternative hypothesis (H1) for this regression needs to be accepted. The beta-weight of this regression reached a value of 0.199, which states that the variable 'Subjective-Norms' has a weak positive influence on the variable 'Personal-Norms.'

On the other hand, the significance of the regression between the variables 'Descriptive Norms' and 'Personal Norms' reached a value of 0.459, which means that the null hypothesis (H0) for this regression needs to be accepted. It means that descriptive norms have no influence on personal norms.

Discussion

The presented research was carried out to provide further evidence that social factors do matter when aiming to achieve voluntary tax compliance. The research field of voluntary tax compliance represents a rather complex thematic area as it may be affected by many different factors. However, when revising existing literature, one can recognize that approaches still mainly rely on deterrence factors and/or do not capture the impact of social factors sufficiently. Based on this research gap, we replicated the structural model of Jimenez and Iyer (2016) that shows how social factors influence tax compliance. In contrast to the original study carried out in the US, we conducted our research in Austria, focusing on current and previous Austrian taxpayers.

Our findings support the results of Jimenez and Iyer, observing only some slight differences. The used model claims a relationship among the different variables and lets one arrange a specific model order. When revising our results based on the product-moment correlation, one can stress the strong relationship between the two variables of 'Trust' and 'Perceived fairness.' A moderate relationship can be observed between 'Personal Norms' and 'Voluntary Tax Compliance.' All other relationships are classified as being 'weak.' A further regression analysis let us accept all alternative hypotheses with an exception of H3B, where a null hypothesis is to be accepted. The results clearly show that social factors should be considered in the research field of voluntary tax compliance.

To our knowledge, our research constitutes the first attempt to replicate the study of Jimenez and Iyer outside the US. Therefore, a direct comparison of results to other attempts carried out are limited and relies on the results of the original study. The findings of both papers suggest that social norms have a significant influence on tax decisions. One can highlight the different sample size, as Jimenez and Iyer (2016) conducted the survey with 217 US taxpayers whereas our results include the responses of 333 people in Austria, who pay taxes or have previously paid taxes in the country. Coherent with the findings of Jimenez and Iyer, we identified a low correlation between injunctive and personal norms, and subjective and personal norms. Descriptive norms and personal norms depict a weaker correlation than in the research of Jimenez and Iyer. One difference can be seen in the correlation between personal norms and compliance intentions. Jimenez and Iyer researched a value of 0.56, which represents a medium correlation, whereas our findings in Austria show a low correlation (0.343). There is a similarity in the correlation of trust in government and perceived fairness as they represent the highest correlation between two variables in both surveys. The correlation between trust and compliance intentions is the lowest.

There is evidence in literature showing that not only deterrence, but also social factors can positively influence tax compliance. To provide a broader comparison, other studies including social factors can be used. Unfortunately, we are not able to provide evidence that gender or education influence tax compliance. Other studies, however, consider the impact of gender on tax compliance behaviours. Kogler et al. (2013), for example, state that females are more tax compliant and show higher tax morale than males.

Considering the different social factors that may influence voluntary tax compliance, one can state a varying focus on different factors in literature. Kirchler, Hoelzl, and Wahl (2008) state that trust is, besides power, one major dimension of their Slippery Slope Framework and see the perceived fairness of the tax system as an antecedent of trust. Our research shows that the perceived fairness stimulates voluntary tax compliance in Austria, particularly among taxpayers with low trust in authorities (Van Dijke and Verboon 2010). Thus, according to the used model of Jimenez and Iyer, trust is an antecedent of perceived fairness, which contradicts to the aforementioned order stated by Kichler, Hoelzl, and Wahl (2008).

The findings of Mas'ud, Manaf, and Saad (2014) provide further evidence for social factors using the Slippery Slope Framework. According to the authors, trust is an important variable when examining voluntary tax compliance and they pinpoint a direct link between trust and power. Therefore, the interconnection between the power of and trust in tax authorities can be emphasized, which significantly changes the behaviour of people to be tax compliant. In our study, trust in government strongly influences the perceived fairness of the people who pay taxes. In turn, perceived fairness is directly related to the tax compliance intentions. Therefore, the model of Jimenez and Iyer may not include the power of tax authorities, but rather focuses on perceived fairness, which can be seen as an important variable as well. This comparison clearly shows the difficulty in examining which variables should be tested while confronting the dilemma of keeping the model applicable, efficient, and understandable.

Wenzel (2004b) conducted a survey about tax compliance in Australia focusing on social and personal norms. The results showed that the behaviours of people, who strongly identify with a group, are more influenced by social norms than those of people who do not identify with a group. Controlling the personal norms reduced the effect of social norms on the people who identified with the group. In addition, his research showed that the effectiveness of approaches to achieve tax compliance depends on perceived social norms, which are later on incorporated as personal norms. Thus, perceived tax honesty in the society reduces the requirement of a deterrence measurement. In our research project, we did not divide our participants into two different groups, but the results are comparable to the effect of trust and perceived fairness investigated in the used model. There is a strong correlation between trust in government and perceived fairness. If the people feel they are being treated fairly, they are more likely to not evade taxes. In turn, trust has a relation to personal norms. Hence, the more trusted the government is, the higher the moral standard of the population. Moreover, the model of Jimenez and Iyer, similar to the approach of Wenzel, states a specific order of social factors, claiming that social norms are antecedents of personal norms. Considering that social norms include external factors and are therefore easier to influence than personal norms, their consideration can be evaluated as crucial even if they only affect voluntary tax compliance indirectly.

Conclusions

The current paper is the first study of tax morale based on the structural model of Jimenez and Iyer (2016), after the original model had been introduced and tested among taxpayers in the US. The research adopts the proposed model and tests it in a new environment, focusing on taxpayers in Austria. This empirical study allows the identification of interrelated non-deterrence variables effects on voluntary tax compliance in Austria, in comparison to a large body of existing studies that only partially look at social factors, giving preference to mostly economic factors. Thus, this study rose from the research gap that social factors in conjunction with voluntary tax compliance are not sufficiently captured in current research and agrees with former literature that further studies are required.

We used a deductive verification to successfully replicate Jimenez and Iyer's model in Austria. The theoretical model contains seven variables, which are injunctive norms, descriptive norms, subjective norms, personal norms; trust in government, perceived fairness, and compliance intentions. Based on the number of used variables, the model can be classified as being rather complex, but also as approaching the reality more precisely as the model does not reduce the complex research field to a few variables. However, one needs to mention that the model disregards economic factors entirely.

This research was carried out to investigate and to prove the relationship between social factors and voluntary tax compliance. Despite challenges with measuring voluntary tax compliance in Austria, the research offers valuable insight into the relationship between social factors and tax compliance, emphasizing the importance of addressing voluntary tax compliance separately from enforced tax compliance. The results clearly show that the listed social factors do influence voluntary tax compliance in Austria, but can be distinguished further, according to how they exert their impact. While the variable of trust and social norms such as injunctive, descriptive, and subjective norms have an indirect impact on voluntary tax compliance, personal norms and perceived fairness can be assumed as direct influencing factors of voluntary tax compliance. Our results only differ slightly from the results of Jimenez and Iyer and we can therefore approve their model.

Moreover, we were able to reach 333 responses and therefore passed our estimated sample size of 312. The participation of genders was almost equal, the common age groups were between 25 and 34 years, and the average education level of participants was a high school diploma. The overall Crombach's Alpha of 0.852 shows that the results are reliable. The strongest correlations can be seen between trust in government and perceived fairness. Finally, we could accept all alternative hypotheses with an exception of H3B.

When pointing out possible beneficial managerial implications that could be derived from the outcomes of this study, one can stress the importance of considering social factors when aiming to increase voluntary tax compliance. We also recommend being aware of the complexity of aspects that can influence tax compliance behaviour and to consider policies carefully with respect to the status quo in Austria, due to the consequences which instruments and strategies could have. However, we recognize that strategies involving social factors would need to be developed according to a long-term approach and are more difficult to observe and to transform into numbers. Nevertheless, taking into mind possible beneficial outcomes, the importance of considering social factors cannot be stressed enough.

Furthermore, the structural model of Jimenez and Iyer provides an orientation regarding where to act when aiming to increase voluntary tax compliance. The used model differentiates between direct and indirect influencing variables of voluntary tax compliance and therefore offers a specific order of the variables. Whereas direct influencing variables do not include external factors, indirect influencing variables do and can therefore be assumed to be more easily shaped. Moreover, the model is based on personal perceptions of individuals and offers insight into how these perceptions are formed and let one assume where corrections could be carried out.

Limitations and Research Outlook

The present study made clear that looking at only social factors nor just deterrence factors is an appropriate approach to finding all of the answers. Speaking about a sensitive topic such as tax compliance, we can say that social factors have a big influence on voluntary tax compliance in Austria, but we cannot say that a strong ethical view about paying taxes makes deterrence factors ineffective. The used model of Jimenez and Iyer is limited to only social factors, and does not consider economic factors, which could matter.

As economic and social factors can both explain tax compliance, one could suggest modifying the model of Jimenez and Iyer through including an economic dimension. However, this claim would result in the need of an amplified questionnaire, which therefore could lead to a higher risk of impeding the data collection through overexerting respondents and through requiring more time, effort and costs. Therefore, one needs to balance the trade-off between striving for accuracy of the current model and the risk of overburdening respondents because of the need for more information.

Moreover, as the model of Jimenez and Iyer was developed quite recently, it appears to be difficult to find comparable literature for our results. To our knowledge, we are the first ones replicating their study in another country. Similar to the research of Jimenez and Iyer, our results cannot be generalized beyond all countries. Considering that social factors might vary geographically, our results need to be seen in the regional context of Austria. One should keep in mind specific conditions and the context of a country, e.g. the state system, history, tax system, which might have an influence on social factors and therefore why results cannot be generalized across borders.

A further limitation is the difficulty to grasp real compliance behaviour as the model focuses on compliance intentions. When evaluating the results, one should be mindful of the validity of the hypothetical scenarios, as they do not compulsorily depict reality. This limitation needs to be stressed in context of the used sample of this study as well. Taxpayers may need to be differentiated more specifically according to different criteria, e.g. whether they are employed or self-employed. This aspect was not included in our survey.

In conclusion, this study focused on bringing evidence that social factors do have an impact on compliance intentions. In order to better understand the impacts on compliance intentions, further research could be completed on distinguishing differences in social norms and tax behaviour regarding different groups, e.g. employed and self-employed people, men and women, or according to a certain income, age or education level. A group comparison was not conducted in this research, but could be an incentive for further research.

Appendix: Scales Used in the Questionnaire

INJUNCTIVE NORMS SUBSCALE

1. Das Umgehen von Steuerzahlungen ist gesellschaftlich akzeptiert, egal durch welche Mittel.
2. Meiner Meinung nach sind Steuerhinterziehungen ethisch vertretbar, wenn ich mit ihnen ungestraft davonkomme.
3. Die meisten Leute würden alles tun, um Steuerzahlungen zu umgehen.

DESCRIPTIVE NORMS SUBSCALE

4. Steuerhinterziehung ist weit verbreitet in Österreich.
5. Ich glaube, die meisten Leute denken, dass es in Ordnung ist, Vorsteuerabzüge in kleinem Umfang zu »polstern« um zu versteuerndes Einkommen zu reduzieren.

SUBJECTIVE NORMS SUBSCALE

6. Meine Familie bestärkt mich, Einkommen bei meiner Einkommenssteuererklärung zu niedrig anzusetzen.
7. Meine Freunde bestärken mich, Einkommen bei meiner Einkommenssteuererklärung zu niedrig anzusetzen.
8. Meine Arbeitskollegen/Studienkollegen bestärken mich, Einkommen bei meiner Einkommenssteuererklärung zu niedrig anzusetzen.

PERSONAL NORMS SUBSCALE

9. Ich denke, es wäre moralisch falsch, zusätzliche 1000 Euro, welche nicht separat als Verdienst angegeben werden, anzunehmen.
10. Wenn ich dabei erwischt werden würde, wie ich Steuern hinterziehe, würde ich mich schämen.
11. Wenn ich damit »durchkommen würde«, keine Steuern zu zahlen, dann würde ich mich schuldig fühlen.

TRUST SUBSCALE

12. Ich kann der österreichischen Regierung allgemein vertrauen, dass sie immer das tut, was richtig ist.
13. In Österreich werden die Interessen einiger eher berücksichtigt, als die Interessen der Gesellschaft.
14. Die in der Regierung sitzenden Personen verschwenden viel Geld, welches wir als Steuern gezahlt haben.
15. Die meisten Leute der gewählten Regierung sind klug und wissen, was sie tun.
16. Wenige Leute in der gewählten Regierung sind ehrlich.

PERCIEVED FAIRNESS SUBSCALE

17. Die Regierung schlägt gerechte Politikmaßnahmen vor.
18. Die Regierung setzt Politikmaßnahmen gerecht durch.
19. Im Großen und Ganzen werde ich fair von der Regierung behandelt.
20. Im Großen und Ganzen kann ich darauf zählen, dass die Regierung gerecht ist.

HYPOTHETICAL SCENARIOS: VOLUNTARY TAX COMPLIANCE SUBSCALE

21. Stellen Sie sich vor, dass Sie auf einer Geschäftsreise in eine Stadt gegangen sind, in der auch gute Freunde von Ihnen wohnhaft sind. Nachdem das Geschäftliche erledigt ist, entscheiden Sie sich, Ihre Freunde zum Abendessen in ein Restaurant einzuladen. Wie wahrscheinlich werden Sie diese Restaurantrechnungen als Geschäftsessen angeben.
22. Stellen Sie sich vor, Sie erhalten zusätzliche 2,000 Euro Geschäftsumsatz in bar, welches nicht separat den Steuerbehörden gemeldet wurde. Wie wahrscheinlich würden Sie diese Einkünfte bei der Steuererklärung angeben?
23. Stellen Sie sich vor, Sie erhalten 1,500 Euro Mieterträge in bar, welche nicht separat den Steuerbehörden gemeldet wurden. Wie wahrscheinlich würden Sie diese Einkünfte bei der Steuererklärung angeben?

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Fighting Greed with Money: How Wage Levels Impact Corruption in the Private Purchasing Sector

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The purpose of this research is to see whether different wage levels in the private purchasing sector relate to the level of corruptibility. An experiment was conducted that put participants in the role of employees of a purchasing department of a multinational enterprise. The employees were allotted to different wage levels and had to choose between options with different levels of corruption. The research is of a deductive nature and complemented by a descriptive quantitative approach containing the Chi-Square analysis. The results show that there is no association between the wage level and the level of corruptibility of employees in the private purchasing sector. This outcome contributes to the under-researched field of corruption in the private sector and gives further insight into the influence of wages on corruptibility, as well as the usability of the principal-agent theory in the field of corruption.

Key words: corruption, purchasing sector, private sector, wage levels, principal-agent theory
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Introduction

Corruption is a complex social, political and economic phenomenon. Due to the many aspects involved in the concept of corruption, a comprehensive definition is hard to create (Ortiz-Ospina and Roser 2016). Nevertheless, the following definition can grasp the core of the concept: 'Corruption is the abuse of entrusted power for private gain' (see https://www.transparency.org/what-is-corruption).

The importance of the topic of corruption is undeniable in all countries worldwide. It can impact societies on a variety of levels – from politics to the economy, from social impact to environmental factors (see https://www.tranpsarency.org/what-is-corruption). Tackling the problem of corruption would not only lead to a more just distribution of money, it is further assumed that it would be a working measure against organised crime, better enforce the rule of law and enhance trust in public institutions (European Parliamentary Research Services 2016). On an economic level, less corruption would lead to more just competition and more stable market structures (see https://www.transparency.org/what-is-corruption). However, the effects of corruption are not only severe in emerging and developing markets. A recent study by European Parliamentary Research Services (2016) estimate the annual cost of corruption in GDP terms in the EU between 179 and 990 Billion Euro.

As a result, finding the causes and the ways to stop corruption have been the aim of the observed research field, especially in the last two decades, which leads to a vast amount of literature concerning the topic of corruption. However, while there seems to be evidence on what favours corruption on a macro-level, at a micro-level, there is not as much understanding as to what the contributing factors for corruption are (Dusek, Ortmann, and Lízal 2005). Furthermore, as corruption is generally a secretive and often illegal topic, it is quite difficult to measure, whether with hard or soft data (Ortiz-Ospina and Roser 2016). This leads to the need for ongoing research and new ways of trying to understand the phenomenon of corruption.

When scrutinising current literature about corruption it becomes apparent that most research is focused on the public sector. Public sector will be defined in this paper as the 'portion of the economy composed of all levels of government and government-controlled enterprises' (see https://www.britannica.com/topic/public-sector), in comparison to the private sector, which includes 'all for-profit businesses that are not owned or operated by the government' (see https://www.investopedia.com/terms/p/private-sector.asp). Reasons for the focus on the public sector are stated by various authors. For example, Gray and Kaufmann (1998) see it as far more sees private-to-private corruption even less studied and states further reasons why the private sector has not been regarded as much as the public sector. Firstly, he assumes that the public sector will have better measures to stop corruption as it is in the own interest of the managers to stop their employees from being corrupt. Secondly, he believes that, as there are less incentives and a more effective competition, public-to-public corruption might not be as big of an issue. Thirdly, and this might be the most interesting reason in our regard, research does not concern itself so much with corruption on a private level, as there is less attention and information regarding the topic.

Argandoña's (2003, 254) last argument already leads to the reason why corruption in the private sector needs to be more in the focus of contemporary corruption research. He further adds that '[...] private-to-private corruption has been relatively neglected, this kind of corruption is important, no less widespread, no less harmful' and '[t]he subject has become increasingly important in recent years.' Impactful institutions, such as the International Monetary Fund (2016, 21) see it as imperative that 'enforcement should also target the private sector.' Ernest and Young's international business corruption report (2015, 21) found out that 51% of companies state that 'bribery/corrupt practices happen widely in business in this country,' but 42% of the interviewed companies have no anti-corruption measures set in place. Also public impression of the problem shows that citizens are concerned about the danger of corruption in the private sector. Transparency International (2016) found out that the corruption among business executives is 26% according to the perception of participating citizens in Europe and Central Asia. This sum up to a definite need for a new focus in research on the reasons and mechanics of corruption in the private sector.

Research Gap and Literature Review

In order to specify the existing research gaps, primarily literature in the field of corruption and the principal-agent theory was regarded. For the field of corruption, mainly research about the corruption in the private sector influencing determinants on corruption as well as working methodologies in the sensitive field of corruption were scrutinised. As stated before, the lack of research concerning private corruption was apparent. Therefore, in a first step understanding what drives employees in the private sector to act corrupt had to be understood. Rashid and Rashid (2012) found out that employees of the public and the private sector have in fact different types of motivations. Their research proved that, as shown in other literature, 'Public sector employees were more motivated by work contents and experience more balance between work and family life, whereas, private sector employees are more motivated by financial rewards, career development opportunities, and supportive environment [...]' (p. 24).

In the case of corruption research, many possible determinants of what can prevent people from acting corrupt have been scrutinised in former literature. Examples for this are monitoring, punishment, or transparency measures. An interesting and highly controversial determinant in this regard is the topic of wages, which is widely discussed in corruption research. From the early work of Becker and Stigler (1974), whose paper shows that rising wages along with monitoring can be used as an anticorruption strategy, conventional knowledge, as well as literature, both theoretical and empirical, suggest that one of the main causes of bribery in the public sector are actually the low wages (Goel and Nelson 1996; Klitgaard 1988; Van Rijckeghem and Weder 2001). This made it an interesting topic to be regarded in the light of private-to-private corruption.

On the one hand, Barr, Lindelow, and Serneels (2004) found evidence that suggest that public servants who receive a higher wage are less corrupt, but that the effect is small. Van Rijckeghem and Weder's (2001) research finds that large increases in civil-service pay will be an effective measure against corruption. In addition, Azfar and Nelson (2007) found that corruption will be reduced by increasing government wages and the difficulty to hide a corrupt act or gain. Moreover, Boly and Armantier (2011) found that the effect of higher wages could be quite ambiguous. Meaning that higher wages lead to lower bribe acceptance, but at the same time, they foster reciprocation. On a very logical level, Frank and Schulze (2003) argue that either reciprocity of receiving a higher wage and therefore wanting to work harder for the employer or the enhanced opportunity costs, if the well-paid job is lost, might lead to lower corruption through high wages.

On the other hand, Frank and Schulze's research (2003) found that agents are not less corrupt when adding a fixed payment in addition or independently of a bribe. However, when adding monitoring to the equation, fixed payment became a significant influence on corruption. In addition, Abbink (2000) could not find evidence that high relative salaries lead to less corruption, even with fairness considerations. Besley and McLaren (1993) agree in their research by stating that the necessary wage level would be too high to be cost-effective, when either the possibility of detection is too low or the bribe too high. Overall, we can see that there is no set agreement as to if high wages can lower corruption, at least in the public sector.

Furthermore, corruption is likely to happen in the procurement or purchasing area. Since, according to the OECD (2016, 6), there is evidence that 'public procurement is vulnerable to corruption. [...]

more than half of foreign bribery cases occurred to obtain a public procurement contract.' Besides, according to Passas (2007, 4), 'Procurement is an area that has long been recognized as being particularly vulnerable to fraud and corruption.' Hence, the decision was to also focus on the purchasing/procurement area, but this time within the private sector.

The data of research in the field of corruption is usually collected through direct observations, like audit reports or from perception survey, like public opinion surveys (Ortiz-Ospina and Rosa 2016). However, experiments on corruption and corruptibility, which seem a very fitting approach to finding causes and solutions (Dusek, Ortmann, and Lízal 2005), are few and far between. This resulted in the choice of conducting an experiment in the current research.

From the reviewed experiments, it was decided to take Frank and Schulze's experiment (2000; 2003) as a basis, but with several modifications, which are explained in detail below. The main reason to use the model of Frank and Schulze (2000; 2003) was that the model of their experiment has a clear mechanism that can be applied well in the chosen context of this research. Nonetheless, Frank and Schulze address a variety of possible factors that might influence corruption. This experiment is going to single out the factor of fixed wages. This comes on the one hand from the above-explained disputed debate about the topic. On the other hand, it is also an area in which the former experiment leaves space for further development. Frank and Schulze (2003, 158) state, 'For future research, it would be interesting to study whether it makes any difference if the agents' salary is paid directly by the principal instead of the experimenters.' This matter will be implemented in this research, also if just in artificial form. Furthermore, Frank and Schulze (2000; 2003) just use fixed payments; using fixed wages might lead to different effects as it implies results for a longer timeframe.

Regarding the underlying theory, Frank and Schulze (2000, 49) state, 'Corruption can be regarded as a special manifestation of the familiar principal-agent problem. The agent has an incentive to favor a third party at the expense of the principal and in exchange for some compensation (the bribe).' Besides the fact that the basis for the current research used this theory, the principal-agent theory (PAT) was also chosen as the underlying theory because it is well applicable in the field of corruption (Graf Lambsdorff 2002; Persson, Rothstein, and Teorell 2010). Furthermore, the PAT was proved to be an interesting approach, as there are quite contrary opinions about the use of fixed wages to fight corruptibility (Jost 2011; Sappington

1991; Fehr, Gächter, and Kirchsteiger 1997; Pratt and Zeckenhauser 1981).

In short, the aim of this paper is to help fill the research gap found between the focus of high wages as a tool for lowering corruption, and the research of corruption in the private purchasing sector through an experiment. This experiment was constructed in a way that the participant, or agent, played the role of an employee in a purchasing department of a company. In the company, an important machine breaks down and it is the responsibility of the respondent to choose one of the offers made by several repairing companies. His/her employer does not see, if the employee chooses a favourable offer or not. The employee has the chance to choose between ten different repair companies based on two values. Firstly, how much the service to repair the machine will cost his/her employer, and secondly, how much the employee receives from the repair company in order to choose it. This choice represented the dependent variable. It can therefore be seen how corrupt the participant would act in the specific situation, if he/she accepts the bribery, 'the giving or offering of the bribe' (see https://en.oxforddictionaries.com/definition/bribery) from the other party. Moreover, there were three sets of questionnaires with three different wage levels, representing the independent variable.

Research Questions and Hypothesis

From the resulting research gap, the subsequent research questions, which will be answered in this paper, emerged:

1. *Do low wages for employees working in the private purchasing sector increase corruptibility?*
2. *Do high wages for employees working in the private purchasing sector lower corruptibility?*

The purpose of this paper is therefore to examine whether a difference can be observed in the behaviour of agents that receive different levels of wages. The research will show if different wage levels will drive the agent to act more or less corrupt.

This will result in the following hypothesis:

H1 *Low wages are related to the different levels of corruption in the private purchasing sector.*

This means that respondents in the low wage category will act differently than respondents in the two higher wage classes concerning their tendency towards corruption.

H2 *High wages are related with different levels of corruption in the private purchasing sector.*

This means that respondents in the high wage category will act different from respondents in the two lower wage classes concerning their tendency towards corruption.

Theoretical Background

The underlying theory for the current paper is the Principal-Agent Theory. This theory was chosen out of the following reasons.

Firstly, Frank and Schulze (2000; 2003) use the theory as a background of their experiment. Therefore, it seems reasonable to choose it also for the present experiment, as the ground-laying mechanism is the same and the results will be comparable.

Secondly, in general, authors contest the PAT a 'great analytical clarity' (Levacic 2009, 33), by showing a clear mechanism in a simple manner (Kivistö 2008; Klitgaard 1988). Furthermore, it allows showing a holistic view of trade-offs and thereby grants to show a realistic process of actions. (Johnston 2008; Klitgaard 1988). On the other side, the main criticism against the used theory – that it is not well applicable in all contexts and that the principal might not always be benevolent (Johnston 2008; Arthurs and Busenitz 2003; Broadbent, Dietrich, and Laughlin 1996; Graf Lambsdorff 2002; Klitgaard; Graf Lambsdorff 2001; Aidt 2003) – do not matter in the current experiment. This clearly shows that the advantages of the theory can be used, while the disadvantages of the theory do not apply in the current research, which gives it a strong informative value and confirms its use.

Thirdly, the PAT is linked to all crucial parts of the experiment. Incentives play an important role in the mechanism of the theory (Bamberg, Coenenberg, and Krapp 2008), which supports the focus on wages. For the field of corruption it is even called the 'predominant theory' (Persson, Rothstein, and Teorell 2010, 4), which further underlines its usability for the current experiment.

As the PAT is a well-developed and commonly used theory, it will only be explained in its most basic functionality and with reference to the current research. The elementary PAT sees two parties as decisive: The principal, who is the 'affected party' that needs another party to conduct a certain action. He/she knows about their aims and tries to convince the agent, which usually has an information advantage, to act in his/her favour. The agent is thereby the 'acting party' that fulfils the demanded action, but usually with a wide

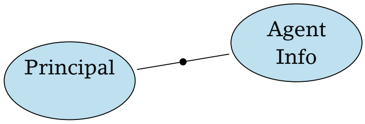

FIGURE 1 Information Asymmetry

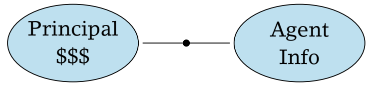

FIGURE 2 Effect of Incentives

range of possibilities in what way he/she can conduct the demand by the principal. The relation is regulated by a contract, which sets the framework of the cooperation (Pratt and Zeckenhauser 1991; Jost 2001, 13).

The PAT starts from the assumption that 'the principal cannot perfectly and costlessly monitor the agent's action and information' (Pratt and Zeckenhauser 1991, 2). Therefore, the PAT aims at being an instrument that helps finding the best structure for minimizing the costs of the second-best solution, which are referred to as the 'agency loss' and therefore raise the overall welfare benefit to the highest level possible (Pratt and Zeckenhauser 1991, 2).

In the current experiment, the underlying problem is the Moral Hazard, or also named 'hidden action' (Kiener 1990, 23). In this case, both parties had the same amount of information before and during the conclusion of the contract, but afterwards the principal has an information disadvantage (Schwaiger and Meyer 2011).

Literature discusses ways out of the Moral Hazard trap. Bamberg, Coenenberg, and Krapp (2008) state two ways of tackling the problem. Firstly, the principal could monitor all actions of the agent. However, this seems too costly and would therefore go against the principle of aiming at the maximisation of the overall benefit. Therefore, the second solution, giving incentives to the agent in order to make him/her comply with the principal's wishes, seems to be the better solution. Nevertheless, also the incentives have to include certain functions in order to be effective: the mechanism must be visible by both parties and must have an easily understandable underlying structure, so that the agent can see how his/her actions affect the outcome (Bamberg, Coenenberg, and Krapp 2008).

As can be seen, the PAT sees a solution of the principal-agent problem in offering the right incentives (Bamberg, Coenenberg, and Krapp 2008). Furthermore, the PAT assumes that all agents aim for their highest possible income. This does not mean that the actors only strive for monetary incomes, but as monetary incentives can be easier expressed in economic terms, they are mostly used in the PAT (Jost 2001). In the PAT, both parties want to maximise their personal benefit. While for the principal this means to get the most profit out of his/her undertaking, for the agent this means to earn the most with the least effort. Therefore, the crucial question is how to design wage schemes in order to align the aims of the principal and the agent (Jost 2001). This question is widely discussed in literature.

As a conclusion of the reviewed literature about the PAT it can be said that fixed wages in view of the theory are mainly criticised due to the fact that they do not show a clear relation between the effort that is put into work and the received incentive (Jost 2001; Pratt and Zeckenhasuer 1985). Furthermore, the principal would need to determine the fixed wage before knowing the characteristics of the agent (Sappington 1991). On the other side, research from Fehr, Gächter, and Kirchsteiger (1997) affirms the effectiveness of wages and Jost (2001) sees advantages of fixed wages in e.g. securing the agent against market risk or facilitating the payment scheme in continuous workflows, such as assembly lines.

Methodology

The following part will explain the experimental design and give insight into the data collection.

EXPERIMENTAL DESIGN

As mentioned before, the current experiment was based on the previous experiment by Frank and Schulze (2000; 2003). However, some changes were made to make it fitting to the context of the private purchasing sector. In order to understand how the content was developed, the following paragraphs will show how the current experiment was constructed based on Frank and Schulze's experiment (2000; 2003).

In Frank and Schulze's experiments (2000; 2003), students were asked to fill in a questionnaire before going into movies of the student's film club. The role of the participants was to act as an agent that has to decide which plumber company to choose in order to save a 200 German Mark bill of the film club that had fallen down a drainpipe. Also in Frank and Schulze's experiment, ten plumber companies with rising corruption levels were given as options. Half of the students would be promised a fixed payment of 40 German Mark after their contribution. Furthermore, through adding the chance of being detected for some students with and without the promise of a fixed payment, their studies were able to regard not only the influence of fixed payments, but also monitoring. Further hypothesis treated the influence of study programmes the students were enrolled in, as well as the gender of the respondents. High importance was added to make the situation as much based on common knowledge as possible.

To make the experiment fit to the chosen context of the private purchasing sector, the following decisions were made.

First, in order to align it with the context of the private purchasing sector, the student's film club was changed into a multinational company. The participants of this experiment had to play the role of the 'agent,' in that case an employee working in the purchasing department of said company. In this way, it was also easy for them to imagine or picture any real company, just as the students' organization on the previous experiment from Frank and Schulze (2000).

Second, the fixed payment of Frank and Schulze's experiment (2000; 2003) were changed into a fixed wage. The wages were decided on an average income of someone working in the purchasing sector with 5 years of experience (Pramböck 2014). The lower and higher level wages were always approximately a third more or less from this average wage, resulting in a low level net wage of 1.700 €, a medium level net wage of 2.400 € and a high level net wage of 3.100 €. This complies with the reality in the purchasing sector in Austria, since the experiment is done in this country and the average salaries in the sector might be common knowledge.

Third, since the context for the present experiment is more formal, it was decided to change the bill lost in the drainpipe to the fixing of a very important and expensive machine used by the company. Moreover, the plumber company was simply changed to a 'repair company.'

Fourth, it was decided to leave the same amount of choices, meaning ten, in order to have a good range. However, the amounts from the offers by the repairing companies ('The price the film club has to pay') and the sum the agents could get ('The amount you receive') was changed (Frank and Schulze 2000, 105). The reason behind it was that, in the present experiment, the amount had to match the repairing of a very expensive machine, as opposed to the retrieving of a bill from a drainpipe. Equal to the former experiment, one of the options was left with '0' as the amount the agent could receive, in order to portrait it as the 'no corruption' option. The offers were also presented in a table, for an easier visualization as seen in table 1.

Finally, the amounts that have been used for the current research project lower the overall benefit in every step in order to be in line with the assumption of PAT and the initial model of Frank and Schulze (2000; 2003). This means that corruption will not make a maximization of the overall benefit possible, as the Principal-Agent-

TABLE 1 Corruption Levels

(1)	(2)	(3)	(1)	(2)	(3)
R1	500 €	0 €	R6	2,650 €	300 €
R2	850 €	75 €	R7	3,200 €	380 €
R3	1,200 €	150 €	R8	3,600 €	450 €
R4	1,650 €	190 €	R9	4,000 €	510 €
R5	2,100 €	240 €	R10	6,000 €	600 €

NOTES Column headings are as follows: (1) repair company, (2) price that your employer has to pay, (3) amount that you receive from the repair company.

Theory aims at (Dietz 1998). This means that for every more corrupt step, there will be a higher overall cost:

$$\frac{\begin{array}{r}\text{Price the company has to pay } (R_x)\\ -\text{ Amount received by the employee}\\ (R_x)\end{array}}{\text{Overall Benefit}} < \frac{\begin{array}{l}\text{Price the company has to pay } (R_x+1)\\ -\text{ Amount received by the employee}\\ (R_x+1)\end{array}}{\text{Overall Benefit}}$$

In addition, three questions asking for classification information were included, in order to see the demographical background of the respondents (Malhotra 2012).

DATA COLLECTION

The questionnaire was distributed virtually as well as per hand. For the online distribution, the platform 'Question Pro' was used. The link was spread via social media, as well as a with a data list of 1033 employees in the private purchasing sector. Via this distribution, exactly 100 people took part in the online questionnaire. Physically, the questionnaire was distributed on different events and locations in the city of Graz, Austria. Besides a fair, also different events of the FH Joanneum Graz were visited, which led to the high response rate of younger people. Overall, 384 valid responses were collected.

As the instructions explained the situation, anyone could imagine the context and act as the purchasing manager. Therefore, everyone older than 15 years old could take part in the experiment. This age limit was set based on the minimum age for working in Austria, as it was believed that from this age on the role of the employee could better be imagined (see https://www.help.gv.at/Portal.Node/hlpd/public/content/171/Seite.171520.html).

Results

The chosen method to analyse the collected answers was the Chi Square method. The reasons for choosing this method of testing

TABLE 2 Frequency Distribution

Gender		Age		Work experience	
Female	166	15–18 years	9	No work exp.	48
Male	199	19–24 years	160	<2 years	71
Other	8	26–35 years	69	3–5 years	69
Total	373	36–46 years	53	6–10 years	33
Missing	11	46–65 years	70	11–20 years	53
		>65 years	12	21–30 years	48
		Total	373	31–40 years	34
		Missing	11	>40 years	12
				Total	368
				Missing	16

TABLE 3 Regrouped Basic Information

Repair company 1	Group 1	Not corrupt
Repair company 2–4	Group 2	Low corruptibility
Repair company 5–7	Group 3	Medium corruptibility
Repair company 8–10	Group 4	High corruptibility

are described in the following. Firstly, the authors of the initial experiment also used the Chi Square method (Frank and Schulze 2000), which enhances comparability of the results. Secondly, the dependent, as well as the independent variable are non-metric. The Chi-Square Test is in the case of a frequency comparisons a non-parametric test and can therefore be used with this type of data (Cohen 1977) and can take into account more than one variable simultaneously (Malhotra 2012).

Before scrutinising the outcome of the Chi Square analysis, a frequency analysis was conducted in order to see the distribution of respondents. The results are presented in table 2.

As can be seen, the gender distribution was equal. It also becomes apparent that the largest group of respondents were young respondents between 19 and 25 years, which is further reflected in the distribution of work experience. However, as this was an experiment and not a questionnaire, it is argued that external validity does not primarily depend on the equal representation of demographic groups (Lynch 1982). Furthermore, before conducting the Chi Square analysis the ten different repair companies were regrouped into only four groups. This step was taken in order to meet the requirements of the Chi Square Analysis to have at least five respondents in every category (Malhotra 2012).

TABLE 4 RU_recoded * Wage_Level Crosstabulation

			Wage_level			Total
			1700	2400	3100	
RU_recoded	1.00	(a)	72.0	79.0	81.0	232.0
		(b)	80.4	75.5	76.1	232.0
		(c)	31.0	34.1	34.9	100.0
		(d)	54.1	63.2	64.3	60.4
		(e)	−1.8	0.8	1.1	
	2.00	(a)	28.0	21.0	19.0	68.0
		(b)	23.6	22.1	22.3	68.0
		(c)	41.2	30.9	27.9	100.0
		(d)	21.1	16.8	15.1	17.7
		(e)	1.2	−0.3	−0.9	
	3.00	(a)	16.0	16.0	14.0	46.0
		(b)	15.9	15.0	15.1	46.0
		(c)	34.8	34.8	30.4	100.0
		(d)	12.0	12.8	11.1	12.0
		(e)	0.0	0.3	−0.4	
	4.00	(a)	17.0	9.0	12.0	38.0
		(b)	13.2	12.4	12.5	38.0
		(c)	44.7	23.7	31.6	100.0
		(d)	12.8	7.2	9.5	9.9
		(e)	1.4	−1.2	−0.2	
Total		(a)	133.0	125.0	126.0	384.0
		(b)	133.0	125.0	126.0	384.0
		(c)	34.6	32.6	32.8	100.0
		(d)	100.0	100.0	100.0	100.0

NOTES Row headings are as follows: (a) count, (b) expected count, (c) percentage within RU_recoded, (d) percentage within Wage_level, (e) adjusted residual.

Using IBM SPSS version 24, the data was analysed and produced the results, which are presented in table 4.

The Chi Square table reveals in different ways, that there is no significant difference and therefore HO1 and HO2 were not rejected. A first impression can be given by regarding the expected counts and the real counts. It becomes apparent that these values are not highly different in the extracted cross tabulation, which is already a first sign that shows that there might be no association (Malhotra 2012). This impression is confirmed when looking at the Adjusted Residuals. The Adjusted residuals represent Z-Scores that are significant when they exceed the score of 1.96. As can be seen in the cross tabulation, no cells show an adjusted residual that is higher than 1.96 or

TABLE 5 Chi-Square Tests

Item	Value	DF	AS
Pearson Chi-Square	4.936	6	0.552
Likelihood Ratio	4.940	6	0.551
Linear-by-Linear Association	1.965	1	0.161
No. of Valid Cases	384		

NOTES DF – degrees of freedom, AS – asymptotic significance (2-sided).

lower than 1.96, which shows that there is no significance (Garcia-Perez 2014).

This is further underlined by table 5. The value of Pearson's Chi Square exceeds the significance level 0.05 substantially. Also the value of 4.936 is far under the critical value of 12.592 that would be necessary to result in a significance for a table with the degree of freedom of 6 and a significance level of 0.05; as there is no significance, the strength of association does not need to be regarded anymore (Malhotra 2012).

Discussion

The outcome of the experiment showed that the research questions were not affirmed. Which leads to the fact that both HO were not rejected:

HO1 *High wages are* not *related with different levels of corruption in the private purchasing sector.*

HO2 *Low wages are* not *related to the different levels of corruption in the private purchasing sector.*

The result shows that the level of wages is not related to the level of corruptibility of the respondents, when acting as employees in a purchasing decision of the private sector.

This is in accordance with the findings of Frank and Schulze (2003), who also did not find a significant impact of the level of wages on the level of corruptibility, as long as they did not add the determinant of monitoring to their research. Therefore, this result also shows that the mechanism of pure wage level might not work neither in a non-profit organization, such as Frank and Schulze's student's film club, nor in the environment of a multinational company. It also showed that the question posed in Frank and Schulze's paper (2003), if it would make a difference to have a principal instead of the experimenter giving the payment or the wage, can be negated.

Limitations

As a form of understanding corruption on a micro-level, using an experiment was perceived as a well-working tool. Nevertheless, the question arises how well respondents can really empathize with the role they play in an experiment. Although literature (Stricker 1957; Opp 1967) sees experiments as a reasonable way to find valid results, in this special case, playing an employee in such a difficult situation might have led to a more risk-taking result. Furthermore, as the respondent only saw one wage level, he/she might not have thought about if he/she perceived the wage level as high or low.

Furthermore, as only imaginary payoffs could be given, it might also have influenced the results. It might be argued that this lead participants to not truly commit to the experiment. Literature argues that participants that are paid in cash might become more attentive to their task, as well as more risk averse (Holt and Laury 2002).

Conclusion

The current experiment aimed at finding a relation between the level of wages and the level of corruptibility in the private purchasing sector. Respondents were put in the role of employees in the purchasing department of a private company. By classifying the respondents in three different wage groups, it was analysed, if they would respond differently due to their wages, in a situation where they could choose between options of different corruption levels.

Although the results showed that wage levels do not directly impact the level of corruption, the focus on wages showed to be quite interesting. Fixed wages is a clearly understandable instrument that would have led to precise implications for managers. Moreover, the use of wages is also widely debated in corruption literature, which brings this paper to contribute to the discussion by agreeing with the group being critical of the usefulness of fixed wages to corruption.

A possible explanation for the result is the fact that fixed income might not be an incentive that is variable enough. This means that it is neither selective in rewarding the best employees, nor incentivising the employee to work harder (Bamberg, Coenenberg, and Krapp 2008; Jost 2011; Pratt and Zeckenhauser 1985). In addition, the missing link between the conduct of the agent and his/her wage might have led the agent to not feel a connection of being responsible of acting in favour of his/her principal. Sappington (1991) agrees by stating that fixed wages do not take into account the characteristics of the agent and are therefore not sufficiently influencing.

As the comparison with other authors and the idea of the PAT shows, it becomes also apparent that many other factors could have an influence in the corruptibility of purchasing managers. For the future, it would be desirable to conduct the same experiment, but without the focus on fixed wages. This also seems reasonable, as comparable experiments of other authors that added another variable to wages (Abbink 2000; Frank and Schulze 2000; 2003), did arrive at significant outcomes. Therefore, for example, satisfaction with the work place, monitoring, or the reciprocity, could be added as indirect variables. By singling out the different variables, the structure of this project might give valuable insight in what is important in order to create work places where corruptibility can be as low as possible. This is also supported by Frank and Schulze (2003) that see 'systematical evidence' as a necessity to 'assess the different proposals for fighting corruption.'

The current paper also added findings to the applicability of the PAT in the sector of corruption. In general, it can be said that the discussed advantages of the PAT, such as the clear mechanism it shows and the good applicability, were perceived as such during the experiment, while the stated disadvantages were not apparent. Especially, the advantages of using the PAT in the field of corruption, such as similar participating and decision-making parties, a similar mechanism of the PAT and corruption that includes a common focus on information asymmetry (Dietz 1998; Groenendijk 1997; Graf Lambsdorff 2001), are confirmed with this research. Furthermore, the central focus on institutions of the PAT (Dietz 1998) was seen as well fitting for the type of research that was conducted. Finding out what incentives work, in order to lower corrupt behaviour in employees, can help shape institutions in finding well-working measures.

Finally, this experiment also contributed to the highly discussed field of the role of income in a PAT setting. It was in line with the group of researchers that take a critical attitude against the use of fixed income to prevent corruption (Bamberg, Coenenberg, and Krapp 2008; Jost 2011; Pratt and Zeckenhauser 1985; Sappington 1991).

To sum it up, it can be concluded that fighting greed with money seems to not be a solution – at least not with fixed wages.

Implications for Practice

The research showed that only concentrating on a high fixed income might not be the most effective way to circumvent corruption. This should lead managers to think about a variable incentive scheme.

Furthermore, the present research should encourage businesses to support further research that could show how incentive schemes should be framed and what incentives could work to prevent corruption, also in the private sector.

Implications for Research

Firstly, it needs to be mentioned that the initial secondary research clearly showed that the topic of corruption in the private sector has not received sufficient attention so far. Although, comprehensible reasons from different publications were found that explained the high importance of research in the public sector, numbers from Ernst and Young (2017), Argandoña (2003), and Rashid and Rashid (2012) emphasized the necessity to focus more research on the private sector. Therefore, this paper aimed at adding further insight and drawing attention to the corruptibility in the private sector.

Secondly, the used model by Frank and Schulze can act as a simple model that should be reused with different determinants. Instead of different wage levels, different other factors, such as monitoring or satisfaction with the workplace could be used. This would result in an interesting comparison in order to see, what drives employees to act corrupt.

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Dark Friendliness in Austria and Slovenia

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The paper aims to analyse and compare personal opinion of respondents on corruption perception in Austria and Slovenia with the help of the adoption of the questionnaire of the Global Corruption Barometer of Transparency International. The research results on corruption perception are based on survey sample of 469 respondents in Austria and 410 respondents in Slovenia. The analyses confirmed that the level of corruption differs significantly between Austria and Slovenia, but differences within the country are largely not significant depending on gender. The study proves higher awareness on harms of corruption in Austria, while in the other fields of corruption fighting – corruption as a problem and effectiveness of national governments when fighting against corruption – do not differ much between the two countries. The study proves that with entering Slovenian and Austrian business environment the investors will be faced better anticorruption environment in Austria than in Slovenia but corruption risks can appear in each of the country.

Key words: perception of corruption, Global Corruption Barometer of Transparency International, Austria, Slovenia
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Introduction

The phenomenon ‘corruption’ is not new. Before the 1990s, research on corruption was mainly done in the fields of sociology, political science, history, public administration, and criminal law. Since then, the economics of corruption became an important field of study, with a wide range of related research (Shleifer and Vishny 1993; Ata and Arvas 2001; Abed and Gupta 2002; Bojnec and Fertő 2017). The descriptions of the term 'corruption' range from very broad terms such as 'misuse of public power' to legal terms describing corruption 'the illegitimate use of public or communal resources for private gain' (Roberts 2015, 82). Melgar, Rossi and Smith (2010) termed government corruption as the misuse of public office with the purpose of making private gain. These descriptions are coherent with the explanation of Transparency International (see https://www.transparency.org/what-is-corruption) which is understood as 'the abuse of entrusted power for private gain.' The most predominant form of corrupt actions occurs when companies bribe public officials (Luo 2004). Considering this fact, international business scholars and economists follow the definition of Transparency International (Judge, McNatt, and Xu 2011).

A body of literature has developed analysing the corruption focusing on developing or emerging countries. For example, Olken (2009) investigated the situation in the road-building industry in Indonesia. Godinez and Liu (2014) studied the relationship between corruption and foreign direct investment (FDI) and tried to explore if corruption deters FDI or not. A different study concentrated on the relationship between corruption and moral schemas in public procurement on the example of Uganda (Ntayi, Ngoboka, and Kakooza 2013). Nevertheless, corruption is not solely a problem in developing or emerging markets, but also in industrialized countries.

To measure the actual corruption rate seems to be difficult, as this particular 'business' is rather secretive and of course illegal. Therefore, involved people tend to avoid talking about this particular issue or participating in experiments dealing with 'corruption' (Armantier and Boly 2011). Therefore, Transparency International (2017) is trying to capture this phenomenon with two indices like the Corruption Perception Index (CPI) and the Global Corruption Barometer (GCB). The main difference between the CPI and the GCP is that the CPI is focusing on the attitudes of business people while the GCP is an opinion survey that reflects the attitude towards corruption of a country's population (Seligson 2006). Several aspects allow criticising the corruption indices. These are too many definitions of corruption as indices and even more subdivisions and interpretations, depending on the country's conduction of the data collection because experts and respondents might have a different idea of the term 'corruption' (Zaman and Faiz-Ur-Rahim 2009). Ogwang and Cho (2014) describe as the main weakness of the CPI the different methodology applied in each year and country/territory by Transparency International (2017), which hampers year-to-year and cross-country comparisons in the levels of corruption perceptions. Experts systematically overestimate the frequency of corruption. Therefore, experts do not provide an ideal target group in order to measure the real level of corruption (Razafindraktoto and Roubaud 2010). Furthermore, the CPI measures the general perception of corruption but does not measure specific types of corruption (Ko and Samajdar 2010). The GCB has changed also its methodology over the years. While different research companies conducted the research in each country in 2011, in 2013 and 2016, but only two companies (TNS and Efficience 3) carried out a stratified data collection across all regions. Furthermore, TNS used Computer Assisted Personal Interviews (CAPI) while Efficience 3 used Computer Assisted Telephone Interviews (CATI). Additionally, different questionnaires were used each year, which makes a comparison difficult. Furthermore, the GCB was not measuring corruption in all three time periods in all countries. For example, the GCB was measured in Slovenia in all three periods, while Austria was excluded in 2013 and 2016. However, an exclusion of the GCB does not infer that there is no corruption in Austria.

Research on gender differences is vast but rather limited in the context of corruption. One research stream is for example measuring the effect of women as public officials on corruption. According to Dollar, Fisman, and Gatti (2001) and Swamy et al. (2001), a higher percentage of women as public officials would lead to a decrease of corruption in the subsequent country. Women tend to be less tangled in cases of bribery and are not as tolerate when bribery is at stake. Additionally, if women are more present in the parliament, meaning the share of women is higher, the degree of corruption is not that high (Swamy et al. 2001) because women are more relationship-oriented due to their higher degree of moral behaviour (Rivas 2013). Torgler and Valev (2010) as well as Fišar et al. (2016) show significantly greater aversion to corruption among women because males rather tend to be individualistic or more selfish than females. The resistance of public servants towards corruption is found to relate less to a willingness to report and are less inclined to reciprocate as found by Lambsdorff and Frank (2011). Consequently, women are less willing to harm the common good for an increased personal gain than men are. In particular, this statement holds true for public positions like in the government (Dollar, Fisman, and Gatti 2001). Esarey and Chirillo (2013) argue that this corruption gender gap might exist in some countries because women rather comply with political norms as a result of gender discrimination and risk aversion.

We argue that the investigation of the gender difference in corruption should be extended for at least three reasons: First, Rivas (2013) who used a laboratory field experiment for her investigation suggested that further research concerning the relationship of corruption and gender should be conducted. Second, Swamy et al. (2001) also indicated that researchers a very far from reaching a consensus on this issue and further research is required. Third, although research has already been done in the field of corruption in Austria and Slovenia, such as the CPI and GCB, no study has compared how the corruption perception differs among male and females in these two countries.

Theoretical Model

The theoretical model in figure 1 is based on the Social Role Model, the Evolutionary Theory and the Artifact Model. According to the social role model, the social role assigned to males and females influence the development in the personality, which again influences behaviour. As a result, thinking patterns, feeling and behaviour of men and women are derived from the social roles that are attributed to them (Schmitt et al. 2009). However, Eagly (1987) claims that these roles may also be related to other factors such as childhood socialisation pressures or biological predispositions, but the social roles remain the most influential part.

According to the evolutionary theory, differences in gender are biologically inherent and can be put down to preindustrial age, where men were responsible for hunting and exploring new territories while women took care of the children (Schmitt et al. 2009).

The artefact model can be seen as a combination of the social role model and the evolutionary theory. This model assumes that social roles as well as biology determine differences in gender (Feingold 1994). Therefore, our assumptions are based on three theories in which men are more assertive, aggressive and adventurous than females (Eagly 1987; Feingold 1994; Meyers-Levy and Loken 2015). In other words, we assume that men are more willing to take corrupt actions or are less willing to report cases of corruption than females.

Research Design

For this research, in addition to the gender question, four questions of the GCB of Transparency International have been adopted and asked:

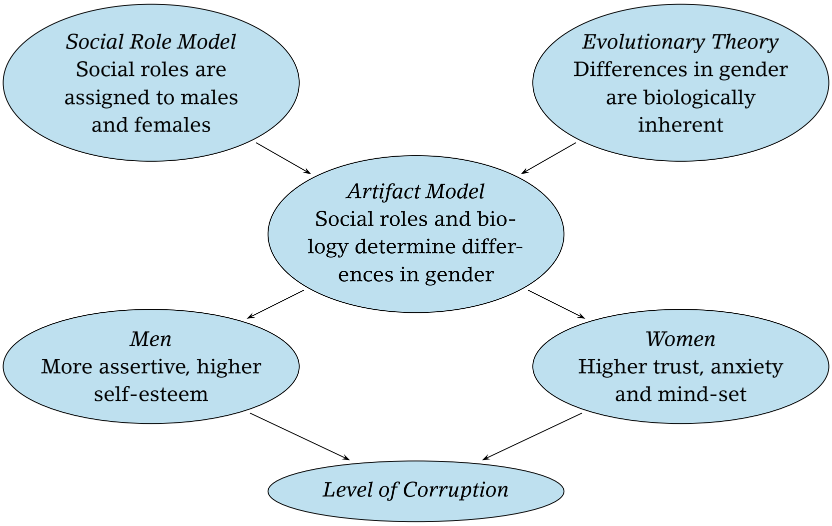

FIGURE 1 Explanatory Model of Level of Corruption (based on Eagly 1987; Feingold 1994; Schmitt et al. 2009)

1. How has according to your opinion changed the level of corruption in Austria/Slovenia?
2. To what extent do you think that corruption in the public sector poses a problem in our country? With the public sector, we refer to employees in organizations/institutions that are owned and/or under the authority of the public sector.
3. In your relations with the public sector, how important is the personal contact/relationship/acquaintance in managing the things that are in the domain of the public sector?
4. How effective do you think is the government in the fight against corruption?

The data collection took place in Austria in the year 2015 and in Slovenia in the year 2016 with a non-stratified sample. The respondents in each country had to be a country citizen with 25 years and older, employed, students with work experience or pensioners. Full-time students were excluded from the target population. In Austria, the data collection used a mixed method with online-questionnaires as well as paper questionnaires. The reason for additional paper questionnaire was the goal of the researchers to increase the sample size by not excluding those respondents who fulfil the criteria for participating in the survey, but who do not have access to the Internet. The online questionnaire was sent to employees of sev-

TABLE 1 Respondents by Age Structure

Age group	Austria		Slovenia	
	n	%	n	%
25–34	194	41.4	71	17.3
35–44	100	21.3	125	30.5
45–54	95	20.2	127	31.0
55–64	66	14.1	76	18.5
Over 64	14	3.0	11	2.7
Total	469	100.0	410	100.0

eral companies as well as the customs office. The paper questionnaires were distributed at different gas stations. 518 responses could be collected, among them 378 were collected via the Internet questionnaires and 140 via paper questionnaires. 49 respondents had to be excluded from the analysis, as they have not fulfilled the required criteria for the research. Therefore, only 469 questionnaires could be used for the Austrian analysis.

In Slovenia 1,500 randomly selected e-mails were sent accompanied with an invitation letter to complete the survey via the on-line placed questionnaire. E-mail addresses were found on various websites, both business and private. On the invitation letter responded 789, which is more than 50%. However, only 417 respondents completed the on-line questionnaire and seven were excluded, because the respondents were below an age of 25 years. Therefore, the sample size of 410 for Slovenia was used, which corresponds to the purpose of our study.

The analysis of data collected for Austria and Slovenia has been conducted using descriptive statistics, independent paired t-test, cross-tab Pearson Chi-Square, Likelihood-Ratio test, and Cramer's V-test. The analyses were carried out with Statistical Package for the Social Sciences (SPSS24). For the analysis we used a total sample size for Austria of $n = 469$ and for Slovenia $n = 410$. However, it should be noted that for Slovenia on the questions (Q1 and Q2) in the GCB questionnaire are used 408 observations, because one male and one female did not answer on the question, on Q3 406 observations, because four females did not answer on the question, and on Q5 408 observations, because two females did not answer on the question. In both countries, respondents under the age of 25 were excluded. Our research question and hypothesis focus on the difference in the corruption perception between Austria and Slovenia and whether gender can be associated to the corruption perception in the coun-

TABLE 2 Respondents by Gender

Gender	Austria		Slovenia	
	n	%	*n*	%
Male	257	54.8	137	33.4
Female	212	45.2	273	66.6
Total	469	100.0	410	100.0

try. In this paper, we investigate only four questions (Q1, Q2, Q3 and Q5) in the GCB questionnaire, which has been used in our survey to test the following null (HO) and alternative (HA) hypothesis:

- HO *There is no significant difference in the corruption perception between Austria and Slovenia.*
- HA *There is a significant difference in the corruption perception between Austria and Slovenia.*

Results

According to the age of respondents, the age distribution for Austria and Slovenia is similar with the most significant groups between 25 and 64 years old (table 1). For Austria, the most represented age groups are 25–34 and 35–44 years old, while for Slovenia age groups 35–44 and 45–54 years old.

Table 2 shows the frequencies in the gender distribution. In Austria 54.8% of the respondents were male and 45.2% female. In Slovenia 33.4% of the respondents were male and 66.6% were female.

During the most recent years, the level of corruption has changed more in Slovenia than in Austria (table 3). In Slovenia there is also a stronger believe that corruption is a problem in the public sector, while in Austria there are more important personal contacts and/or relationships when dealing with the public sector to get things done. In Slovenia there is also a higher believes in the ineffectiveness of government actions in the fight against corruption than in Austria.

Regarding the question Q1 on how has according to your opinion changed the level of corruption in the country, it has been found that 43.6% of respondents in Slovenia believe that the level of corruption in Slovenia remained unchanged in the period of last two years. Other answers go up in the direction of increasing. Finally, 15.4% of the respondents in Slovenia believe that the level of corruption was little or greatly reduced.

According to gender, 50.7% of male respondents in Slovenia consider that the level of corruption in Slovenia in the last two years remained the same, just under 19%, however, that the level of cor-

TABLE 3 Comparisons of Corruption Perceptions between Austria and Slovenia

Question	Country	Mean	Standard deviation	Std. error of the mean	Significance (2-tailed)
Q1	Austria	3.23	0.869	0.043	0.001
	Slovenia	3.45	1.001	0.049	
Q2	Austria	3.44	0.963	0.047	0.000
	Slovenia	3.95	0.965	0.047	
Q3	Austria	3.98	0.967	0.480	0.000
	Slovenia	3.57	1.140	0.056	
Q5	Austria	3.43	0.813	0.040	0.000
	Slovenia	4.00	0.789	0.039	

NOTES Q1 – Over the past two years, how has the level of corruption changed in Austria/Slovenia? (1 = decreased a lot, 5 = increased a lot). Q2 – To what extent to you believe corruption is a problem in the public sector in your country? By public sector we mean all institutions and services that are owned and/or run by the government (1 = not a problem at all, 5 = a very serious problem). Q3 – In your dealings with the public sector, how important are personal contacts and/or relationships to get things done? (1 = not important at all, 5 = very important). Q5 – How effective do you think your government's actions are in the fight against corruption? (1 = very effective, 5 = very ineffective).

TABLE 4 Over the Past Two Years, How Has the Level of Corruption Changed in Austria/Slovenia?

Answer		Austria		Slovenia	
		Male	Female	Male	Female
Decreased a lot	C	1	2	0	3
	E	1.6	1.4	1.0	2.0
Decreased a little	C	51	20	25	35
	E	38.9	32.1	20.0	40.0
Stayed the same	C	125	99	69	109
	E	122.7	66.0	59.3	118.7
Increased a little	C	50	66	17	67
	E	63.6	52.4	28.0	56.0
Increased a lot	C	30	25	25	58
	E	30.1	24.9	27.7	55.3

NOTES C – count, E – expected count.

ruption has increased significantly. On the other hand, 40.1% of female respondents are of the opinion that the level of corruption in Slovenia in the last two years remained the same, while 24.6% believe that the level of corruption has increased slightly.

It is believed that corruption stayed at the same level, which is more frequently expressed by male in Austria and female in Slovenia

TABLE 5 To What Extent Do You Believe Corruption Is a Problem in the Public Sector in Your Country?

Answer		Austria		Slovenia	
		Male	Female	Male	Female
Not a problem at all	C	8	3	0	5
	E	6.0	5.0	1.7	3.3
A small problem	C	36	19	7	24
	E	30.1	24.9	10.3	20.7
A moderate problem	C	86	72	28	51
	E	86.6	71.4	26.3	52.7
A serious problem	C	88	89	44	115
	E	97.0	80.0	53.0	106.0
A very serious problem	C	39	29	57	77
	E	37.3	30.7	44.7	89.3

NOTES C – count, E – expected count.

(table 4). That corruption decreased a lot is least important answer by respondents both in Austria and in Slovenia. On the other hand, more frequent answer in the Austrian sample is that corruption decreased a little and increased a little among male, and particularly increased a little among female. In Slovenia, female evaluated more critically than male particularly for increased a little and increased a lot.

Statistical differences in rankings by gender – male vs. female – on how has the level of corruption changed over the past two years in Austria and in Slovenia are confirmed by Pearson Chi-Square (0.004 for Austria and 0.013 for Slovenia), Likelihood-Ratio test (0.003 for Austria and 0.007 for Slovenia), and Cramer's V-test (0.004 for Austria and 0.013 for Slovenia).

That corruption is a problem in the public sector is recognized in both Austria and Slovenia (table 5). As the public sector is defined with all institutions and services which are owned and/or run by the government.

Both in Austria and Slovenia only a small percentage of respondents believe that corruption in the public sector is not a problem. The most common single answer in Austria and in Slovenia was that corruption in the public sector is a serious problem. This is confirmed also by gender, particularly for male in Austria and female in Slovenia. A moderate problem of corruption in the public sector is recorded as the second most frequent answer in Austria, while a very serious problem in Slovenia. For example, almost 42% of male respondents in Slovenia answered that corruption in the public sec-

TABLE 6 In Your Dealings with the Public Sector, How Important are Personal Contacts to Get Things Done?

Answer		Austria		Slovenia	
		Male	Female	Male	Female
Not important at all	C	3	3	5	13
	E	3.3	2.7	6.1	11.9
Of little importance	C	26	14	24	36
	E	21.9	18.1	20.2	39.8
Moderately important	C	35	29	38	65
	E	35.1	28.9	34.8	68.2
Important	C	108	92	40	83
	E	109.6	90.4	41.5	81.5
Very important	C	85	74	30	72
	E	87.1	71.9	34.4	67.6

NOTES C – count, E – expected count.

tor represents a very serious problem, while no one thinks it is not a problem. On the other hand, 42.3% of female respondents in Slovenia believe that corruption in the public sector is a serious problem and only 1.8% that it is not a problem. Statistical differences in rankings by gender on the extent of corruption in the public sector in Austria and Slovenia are not confirmed for Austria, but they are confirmed for Slovenia: Pearson Chi-Square (0.201 for Austria and 0.02 for Slovenia), Likelihood-Ratio test (0.192 for Austria and 0.01 for Slovenia), and Cramer's V-test (0.113 for Austria and 0.169 for Slovenia). This means that there is no association between gender and attitude towards corruption in the public sector in Austria, while it is in Slovenia.

In relations with the public sector are important the personal contact/relationship/acquaintance in managing the things that are in the domain of the public sector as this is the most frequent single answer in Austria as well as in Slovenia (table 6).

Only small percentage of respondents believes that the friendships they have no influence on managing the things that are within the domain of the public sector. In Austria, on the second place is ranked that the acquaintances were very important, while in Slovenia almost equally important are moderately important and very important. Statistical differences in rankings by gender on how important are personal contacts to get things done in dealing with the public sector in Austria and Slovenia are not confirmed by Pearson Chi-Square (0.754 for Austria and 0.604 for Slovenia), Likelihood-Ratio test (0.747 for Austria and 0.604 for Slovenia), and Cramer's V-test

TABLE 7 How Effective You Think Your Government Actions Are in the Fight against Corruption?

Answer		Austria		Slovenia	
		Male	Female	Male	Female
Very effective	C	1	2	0	2
	E	1.6	1.4	0.7	1.3
Effective	C	32	23	4	5
	E	30.1	24.9	3.0	6.0
Neither effective nor ineffective	C	97	89	23	64
	E	101.9	84.1	29.2	57.8
Ineffective	C	101	85	68	131
	E	101.9	84.1	66.8	132.2
Very ineffective	C	26	13	42	69
	E	26.4	17.6	37.3	73.7

NOTES C – count, E – expected count.

(0.064 for Austria and 0.082 for Slovenia). This means that there is no association between gender and attitude towards corruption in terms of dealings with the public sector using personal contacts to get things done.

Regarding how effective is the government in the fight against corruption, in Austria, most of male and female respondents think that government actions in the fight against corruption are neither effective nor ineffective or even they are ineffective (table 7). Ineffective and very ineffective is even more important for Slovenia. Almost half of the respondents (48.8%) in Slovenia were of the opinion that the government in the fight against corruption is ineffective. According to gender in Slovenia, male in 49.6% believe that the government is ineffective in the fight against corruption, while female in 48.3%. This was also their most frequent single response. Barely 2.7% of respondents in Slovenia believe that the government is very or only effective in the fight against corruption. Effective is more frequent answer in Austria than in Slovenia, while very effective is not important neither in Austria nor in Slovenia. Statistical differences in rankings by gender on how effective is the government in the fight against corruption, neither in Austria nor in Slovenia are not confirmed by Pearson Chi-Square (0.467 for Austria and 0.604 for Slovenia), Likelihood-Ratio test (0.458 for Austria and 0.604 for Slovenia), and Cramer's V-test (0.087 for Austria and 0.082 for Slovenia). This means that there is no association between gender and attitude towards effective government actions towards corruption neither in Austria nor in Slovenia.

Discussion

The paper is based on the analysis and comparisons of the results from own surveys data with used a questionnaire for GCB in Austria and Slovenia, the two neighbouring countries, both members of the European Union (EU). A sample population represented residents in the country aged at least 25 years old, employed students with work experience and pensioners. The sample was non-stratified, assigned to the randomly selected respondents. Our research question and hypothesis have focused on the difference in the corruption perception of respondents between Austria and Slovenia and separately in relation to gender associated the corruption perception. Our research has answered on the question of corruption perception in the Austrian and Slovenian societies. By using the descriptive statistics, we show a sample characteristics of the survey data and/or demographic characteristics of the respondents in connection with the chosen first four questions in the GCB questionnaire.

The higher level of economic development measured by gross domestic product per capita, earlier membership of Austria in the EU, cultural and some other differences can be reasons for more clean of corruption behaviour in Austria than in Slovenia, which is also consistent with the CPI by Transparency International (2017). For example, in 2016, among 176 countries, Austria with CPI score of 75 is ranked at the 17th place on the top among the most clean of corruption countries, while Slovenia with CPI score of 61 on the 31th place, considering that CPI is scaled between 0 (highly corrupt) and 100 (very clean).

Conclusion

The main novelty and contribution of this paper is in comparison GCB measures in Austria and Slovenia. The empirical results have confirmed significant difference in the perception of corruption between Austria and Slovenia. The change in the level of corruption and corruption in the public sector is found higher in Slovenia than in Austria. Personal contacts are more important in Austria than in Slovenia, while the ineffectiveness of government action to fight corruption is perceived higher in Slovenia than in Austria. Gender cannot explain the different perception of corruption in Austria and Slovenia.

Although this paper covers more aspects of corruption on a gender perspective, the study also has some notable limitations and thus possible direction for research in future. Firstly, the research does not take any other demographic variables, such as age and occupation, into account. These variables could be considered in future research when analysing different aspects of corruption. Secondly, it would have also been interesting to find out whether corruption is influenced by other characteristics in both countries, such as its national competitiveness. For example, Ulman (2014) found out that the level of national competitiveness, including factors as the standard of living, the rate of employment, significantly influences the perception of corruption. Thirdly, this research focuses only on Austria and Slovenia and does not compare results with other countries. Therefore, an idea to extend this research would be a cross-country comparison. However, when considering a cross-national study, the culture and history have to be considered, as Bhargava (2005) found out that corruption is heavily influenced by these factors. Finally, among limitations of this study is relatively small sample size and the sample has not been stratified.

In addition, the questionnaire was based on four GCB index questions, while the data collected for the remaining questions in the GCB questionnaire have not been analysed in this paper. Therefore, among issues for further research are improvements in sampling procedure towards stratified sample, bigger sample size, analysis of additional answers of the GCB index questions and comparisons with CPI index questions.

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Abstracts in Slovene

Kako bi lahko sledenje elektronskemu denarju izboljšalo krizno intervencijo na finančnem trgu

Dirk-Hinnerk Fischer

Tehnologija je spremenila in bo še naprej spreminjala finančni sistem. Ta članek predlaga vrsto orodij, ki lahko nadzornim subjektom omogočijo poglobljen vpogled v trge in jim omogočijo, da se učinkoviteje odzovejo na krizo. Teoretični predlog ki ga v tem članku predstavimo je nadzorno orodje, ki ima temelj v digitalnih valutah in omogoča centralnim bankam, da sledijo nekaj njihovemu na novo izdanemu denarju in tako bolje razumejo svoje trenutne tržne dejavnosti. Drugi namen tega osnovnega orodja je omogočiti nadaljnja orodja, ki temeljijo na isti tehnologiji. Orodje, ki ponazarja možnosti koncepta v tem članku, omogoča, da se denar usmeri v določen tržni sektor ali na drugi trg. Ta članek predstavi ta izvirni teoretični sistem in preučuje možne pozitivne in negativne vplive na gospodarstvo.

Ključne besede: finance, posredovanje v krizi, elektronski denar, monetarna politika, centralna banka, »blockchain« tehnologija
Management 12 (4): 301–316

Vladno sponzoriranje kapitala podjetij: blagoslov ali prekletstvo?

Erika Jáki, Endre Mihály Molnár in Walter György

Mlada podjetja z možnostjo rasti se srečujejo z resnimi težavami pri financiranju. Trg zasebnega kapitala (ZK) ne zagotavlja zadostnih sredstev za ta del. Najprej predstavimo glavne značilnosti začetnih podjetij in tržnih neuspehov, ki lahko privedejo do intervencije vlade. Tej neuspehi vključujejo asimetrične podatke, ki jih vsebuje poslovni načrt; visoki transakcijski stroški naložbenega postopka od odločitve o naložbi pa do umika; in pozitivne zunanje učinke v ekonomiji, saj ima vlada rajši druge cilje, kot pa realizacijo dobička. Udeležba vlade je opredeljena kot neposredna ali posredna intervencija. Predstavimo mednarodne študije, ki kažejo, da ima posredno posredovanje države lahko ugodne in negativne učinke na trg ZK. Nazadnje ocenimo sodelovanje in intervencijo madžarske vlade na domačem tržišču ZK.

Ključne besede: tveganje kapitala, vključenost države, skladi EU, stopnja semena
Management 12 (4): 317–331

Vpliv družbenih norm, zaupanja in pravičnosti na prostovoljne davčne prispevke v Avstriji

Maria Kostritsa in Inken Sittler

Obstoječa literatura poudarja pomen gospodarskih dejavnikov pri povečanju prostovoljne davčne usklajenosti. Vendar pa je poudarek tudi na pomembnih družbenih dejavnikih, ki pravi, da je za njihovo preverjanje treba opraviti več preiskav. Zato je bila v tem članku izvedena raziskava, ki zagotavlja nadaljne dokaze, ki kažejo, kako imajo družbeni dejavniki vpliv na prostovoljne davčne prispevke. Raziskava je prvi poskus ponovitve rezultatov strukturnega modela Jimeneza in Iyerja (2016) izven ZDA, ki trdi, da moralni standardi (osebne norme) in zaznavanje poštenosti neposredno vplivajo na prostovoljne davčne prispevke, medtem ko imajo družbene norme in zaupanje v vlado posreden vpliv na davčno skladnost z vplivom na osebne norme in dojemanje poštenosti. Za doseganje ugodnega rezultata je bilo v Avstriji anketiranih 333 avstrijskih davkoplačevalcev. Podatke smo analizirali z SPSS z uporabo frekvenc, korelacij in regresijske analize. Rezultati preverjajo zgoraj navedene domneve in poudarjajo obravnavo, ki stremi h povečanju prostovoljnih davčnih prispevkov.

Ključne besede: prostovoljni davčni prispevki, zaupanje, družbene norme, Avstrija
Management 12 (4): 333–353

Boj proti pohlepu z denarjem: kako ravni plač vplivajo na korupcijo v zasebnem sektorju nabave

Gabriela De La Torre Campos, Katharina Radler in Bramantio Utomo Saptoadi

Namen te raziskave je ugotoviti, ali se različne stopnje plač v zasebnem sektorju nabave nanašajo na stopnjo korupcije. Naredili smo poskus, v katerim so udeleženci postali zaposleni v nabavnem oddelku multinacionalnega podjetja. Dodeljeni so bili različnim plačnim razredom in izbirali med različnimi stopnjami korupcije. Raziskave so predvidevajoče narave in jih dopolnjuje opisni kvantitativni pristop, ki vsebuje analizo hi-kvadrat. Rezultati kažejo, da ne obstaja povezava med ravnjo plač in stopnjo korupcije zaposlenih. Ta rezultat prispeva h premalo raziskanemu področju korupcije v zasebnem sektorju s pomočjo poskusov in nam poda dodaten vpogled na vpliv plač na koruptivnost, pa tudi na uporabnost teorije ki nam pove, kateri so glavni elementi na področju korupcije.

Ključne besede: korupcija, nabavni sektor, zasebni sektor, nivo plač, teorija glavnih elementov
Management 12 (4): 355–374

Temačno prijateljstvo v Avstriji in Sloveniji

Birgit Burböck, Anita Macek, Mladen Vuckovic, Sonja Lipar in Štefan Bojnec

Članek stremi h temu da analizira in primerja osebna mnenja anketiranih glede dojemanja korupcije v Avstriji in Sloveniji s pomočjo adaptiranega vprašalnika Globalnega korupcijskega barometra Internacionalne transparentnosti. Rezultati raziskave o dojemanju korupcije so na podlagi ankete 469 udeležencev v Avstriji in 410 anketirancev v Sloveniji. Analiza je potrdila da je nivo korupcije zelo raznolik med Avstrijo in slovenijo, vendar so razlike med državami ne preveč pomembne glede na spol. Študija potrjuje večje zavedanje negativnih vplivov korupcije v Avstriji, medtem ko je na drugih nivojih boja proti korupciji – korupcija kot problem in učinkovitost nacionalnih vlad pri boju proti korupciji – ne razlikujejo veliko med obema državama. Študija dokazuje, da se bodo vlagatelji z vstopom v slovensko in avstrijsko poslovno okolje soočili z boljšim protikorupcijskim okoljem v Avstriji kot pa v Sloveniji, vendar tudi da se lahko korupcijska tveganja pojavijo v vsaki državi.

Ključne besede: dojemanje korupcije, Globalni korupcijski barometer internacionalne transparentnosti, Avstrija, Slovenija
Management 12 (4): 375–389