Freelancer Taxation:
From Shadow to Digital Light

By:
Myah Caplan, Emily Donovan, Peter Murray, and Kyle Staubi

In Collaboration With:
Alexander Kozlov, Ekaterina Kucherova, Andrey Rashevskiy, and Oleg Rybtsov

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Svetlana Nikitina PhD, and Ivan Mardilovich PhD
Worcester Polytechnic Institute

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Abstract

The recent and rapid growth of the freelance sector in economies worldwide has led to more participation in the informal, or *shadow,* economy. Freelance workers who operate in the shadow economy are deprived of government protections, benefits, and legitimacy. To facilitate their emergence into full legitimacy, taxation policies must be amended to incentivize these workers to file taxes. In partnership with the Federal Tax Service of the Russian Federation, our project was to provide specific recommendations for improving the tax experience for freelancers by comparing the Russian and German shadow and gig economies. We found that Russia has a more accommodating taxation structure dedicated to freelancers, while the logistics and user experience for paying taxes is smoother in Germany.

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Executive Summary

Increasing accessibility for digital technologies has allowed for an exponential growth in the freelance sectors of many economies. This unprecedented growth in freelance work brings about challenges of accountability as more people switch from established, corporate work to strike their own paths as freelancers or self-employed workers. As a result, freelancers who avoid officially registering with their government's taxation system, or conduct business 'off the books', are contributing to the informal, or *shadow*, economy. The shadow economy has become an acute problem in Russia over the last few decades, as it has been estimated to be equal to almost half of the country's total GDP. The Federal Tax Service (FTS, Федеральная Налоговая Служба– ФНС) of the Russian Federation posits that in order to facilitate freelance workers' official registration, or bring them "into the light," upgrades need to be made to their current tax payment service, MyTax, as well as their taxation policies overall. While Russia has seen a massive rise in this illicit economic sphere in the decades following the dissolution of the USSR, this problem is not common to all of Europe. Germany enjoys one of the smallest shadow economies, despite the drastic socioeconomic changes it has undergone in the last century.

To this end, the goal of our project was to compare and contrast the Russian and German approaches to freelancer taxation by identifying the common and unique problems they face, and to evaluate the benefits and shortcomings of each. This comparative analysis highlighted the strengths and weaknesses of the Russian and German freelancer experiences, which guided our creation of a set of recommendations for both countries to ultimately streamline their freelancer taxation.

In this report, the Russian and German freelance economies were compared via statistical analysis as well as comparative case study to assess differences in their shadow economies, areas in freelance accommodations, like tax bracket structures, deductions, and the logistics of paying taxes, and freelance payment platforms, such as their accessibility and transparency. This comparative analysis allowed for several specific recommendations to be made for both the German and Russian government regarding methods for improving the freelance experience when filing taxes. Through our research, we found that the Russian taxation system is much more beneficial and supportive to freelance workers than the German system, while the logistics and user experience of paying taxes is better in Germany than Russia.

Methodology

Working towards meeting our goal of comparing and contrasting the Russian and German approaches to freelancer taxation, to extrapolate how Russia and Germany can improve their practices and policies, we formulated two main objectives:

1. Assess the extent and scope of the shadow economy
2. Conduct a case study analysis of the Russian and German freelancer taxation environments

For our first objective of assessing the extent and scope of the shadow economies in Russia and Germany, our team, along with our Russian student counterparts from the Financial University under the Government of the Russian Federation, collected data on various economic indicators. The following indicators were chosen based on their presence in existing shadow economy measurement and predictive models: tax burden, economic freedom, GDP per capita, regulatory quality, inflation rate, government effectiveness, total labor force, and GDP growth rate. Using data on these indicators from 2001-2015, a regression analysis was conducted on the relationship between each of these 8 indicators against the size of the shadow economy. This yielded 1st-5th order polynomial fits showing the relationship between these indicators and the shadow economy, as well as the correlation strength of these models to the data from which they were created. This information was then used to create a predictive MATLAB script which takes several user inputs to output a predicted shadow economy size.

To conduct a case study analysis of the Russian and German freelancer taxation environments, our team identified two key elements of freelancer taxation we wanted to explore: taxation policy and payment platforms. Investigating taxation policy gave us insight into accommodations made for freelancers as well as an overall view of the structure and logistics of Russia and Germany's taxation systems. Accommodations included tax brackets and exemptions and deductions, whereas logistics involved the systemic division of labor, payment schedule, and necessary paperwork. Our study of payment platforms helped us understand both the perception and the performance of both public and private tax software in the real world. We investigated seven payment platforms in total, including two state-backed programs from both Russia and Germany and five private German platforms. Having thematically analyzed these platforms through inductive and deductive coding, we extracted key customer satisfaction data that allowed us to qualitatively evaluate these platforms' performance in order to provide useful recommendations to the Russian and German governments.

Findings

Our objectives allowed us to create several deliverables. The statistical analysis demanded several linear regression models between economic indicators and the size of the shadow economies of Russia and Germany. Correlation with the shadow economy was estimated by the regression coefficient, or R^2 values of each model; the higher the R^2 value, the stronger the correlation. The two strongest ($R^2 \geq 0.7$) indicators of the Russian shadow economy were GDP per capita and total labor force, while the strongest indicators of the German shadow economy were total labor force and economic freedom.

Our case study had two major focuses: comparing Russian and German freelancer taxation policies, and comparing Russian and German tax payment platforms for freelancers. When researching taxation policies we found that Germany's approach to freelancer taxation is more organized and streamlined, while Russian taxation policies give more consideration to freelancers, with policies in place specifically for them. Our research on tax payment platforms offered to freelancers in both countries revealed German freelancers have far more options of

platforms to choose from, while the only tax payment platform for freelancers in Russia is entirely state-backed, meaning there is no third party processing users' personal information, or augmenting the user experience.

Recommendations

Having conducted a case study on both the logistics and payment platforms of Russia and Germany, our team came up with a set of recommendations for both the German and Russian government. Our investigation into the *logistics* of both Russian and German tax systems allowed us to explore the structure and design of their respective laws, as well as any accommodations made for freelancers. Our investigation into the publicly and privately owned *payment platforms* of both Russia and Germany gave us insight into the perception and performance of these systems. Although these recommendations originated across our investigation as detailed in our methodology, our recommendations here are organized by category.

New Policy Programs. These recommendations involve sweeping, structural policies that have not been created yet. They may prove to be more difficult to implement as the scope of these changes are larger than other recommendations.

- Guarantee data security through government guidelines in Russia
- Include a government sponsored health insurance option for the German self employed,
- Lower German freelance taxes

Policy Amendments. In contrast to entire new policy implementations, these recommendations include smaller, logistical alterations to existing laws.

- Increase Russian due date flexibility
- Lower the frequency at which Russians pay taxes
- Mandate Russian freelancers file and pay tax returns
- Allow Russian freelancers using TPI to claim deductions

Public Relations. Interfacing with taxpayers is a two-way street. Payment platform operators need to understand their user's needs and opinions, and users need to understand and trust the payment platforms they use. These recommendations aim to improve communication between platforms and users.

- Create a public feedback forum
- Explain the encryption process of My Tax to users
- Publish more information online regarding Russian taxation

Procedural Changes. After investigating the physical forms and requirements of both Russian and German taxpayers, improvements to tax procedure became clear. These recommendations adjust the process that taxpayers are required to follow.

- Decrease the length of Russian tax forms
- Offer on paper options for all forms
- Streamline areas to which Russians pay taxes

Priorities. After analyzing seven different tax payment services, our team found some common features and attributes that proved more significant to platform performance than others. These recommendations are based on how existing priorities might change to improve aspects of different payment platforms.

- Simplify the tax process
- Prioritize customer satisfaction over price
- Focus on ELSTER user experience
- Integrate a function in MyTax which calculates whether PIT or TPI is more beneficial

Project Impacts

By providing the Federal Tax Service with these recommendations, we hope to give them a means to better enable freelancers to pay their taxes, thereby decreasing the amount of elicit activity that ultimately contributes to the shadow economy. These recommendations for new policy programs, policy amendments, procedural changes, public relations, and priorities will help to provide the FTS the freelance perspective for paying taxes. The recommendations postulate ideas for new and improved policies and decision making with regards to the taxation of freelance workers. In the future, this project and its deliverables may be used to inform future efforts to combat the Russian shadow economy by facilitating freelancer taxation.

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1. Introduction

The rise of the internet and globalization has instigated massive change in how people around the world conduct business. In the past, workers were localized to specific regions and entrepreneurs incurred much personal risk when starting businesses due to economic instability and complex taxation policies. Today, one can work from the comfort of their home, and yet still be connected to anyone around the world. These developments undoubtedly serve to liberate the individual to pursue freelance work and entrepreneurship more easily than ever, but also create complications as a result of new challenges that arise with tax policy changes which affect freelance business transactions. The ease with which workers, freelancers, and entrepreneurs can engage with business introduces a problem of accountability, especially with regards to taxation. This is one of the key factors that has allowed the growth of an informal, or *shadow,* economy, where earnings are not reported properly to the government. This results in the undermining of not only the local and national economies, but also the international economic sphere engaging with workers in the region (Foster, 2021).

The freelance economy, also referred to as the *gig economy*, gives workers independence from formal business entities. In large part due to the internet's increased connectivity of individuals, this independence motivates small businesses, specialized contractors, artists, and a variety of service workers to grow in number. However, with the increased connectivity of individuals and the combined, steady distancing from centralized business, comes another consequence: the *shadow economy*. As workers stray from well established, regulated businesses to work on their own terms, compliance with tax law is still an obligation. With more transactions between individual citizens taking place outside of traditional avenues, governments of all countries are playing a smaller active regulatory role in a vital economic sector, the freelance market. The shadow economy, comprised of those transactions that are obscured from taxation authorities, thrives under an increasingly connected market; particularly where the laws between countries, business, and individuals are far less defined than in domestic affairs (Putnins & Sauka, 2020). Freelancers often operate in this ambiguous territory by nature of their work. As individuals split from formal business structures, the burden of tax reporting and compliance is shifted onto the worker alone, and oftentimes the laws that exist for this type of taxation have not been adequately tailored to freelancers.

While this problem has affected many countries all over the world, there have been a variety of approaches to mitigating it that have been met with an equal variety of outcomes. Both Russia and Germany have undergone extreme systemic changes over the last century, including the emergence and dissolution of entire governments. Despite this commonality, the extent and presence of the shadow economy in Russia and Germany is very different. This is in part due to the increasing difficulty faced by the Russian government, specifically the Federal Tax Service of Russia (FTS, Федеральная Налоговая Служба– ФНС), of keeping track and legitimizing this new economic sector.

Facilitated by recent globalization and digitization, the gig economy in Russia has grown rapidly. In 2020, about 14 million Russian citizens reported that they do freelance work,

compared to the 144 million total Russian population (Elagina, 2021). Among those that reported they do freelance work, about 70% are younger, aged between their early twenties to mid-thirties, and about 40% have another occupation aside from freelancing (Davis et al., 2014). These statistics provide some insight into the demographic representation within the gig economy. However, understanding the makeup of something like the shadow economy is not a simple task; after all, it is defined by what is left 'off of the record.' When it comes to the size of the Russian shadow economy, the best estimate made by researchers suggests that in 2018 it was equivalent to nearly 45% of the country's national GDP (Putnins & Sauka, 2020). The Russian government has been employing strategies to monitor and restrain the growth of the shadow economy, including various models and simulations that can predict the future status of the economy or show the effect had by modifying taxation policies (Gontmakher, 2021). Germany has undergone very similar socioeconomic conditions throughout the past century, however it has taken a different approach to policy making, and seen very different results when compared to Russia. The estimated size of the German shadow economy, as a percentage of GDP, has been steadily decreasing from 16% in 2005, 15% in 2008, and most recently 9.1% in 2019 (Feld & Schneider, 2010; Fyodorov, 2020).

The recent rapid growth of the Russian informal economy has created a need for a more transparent system for on-demand, self-employed, and freelance workers to file and pay taxes. There is no 'perfect' system that freelancers can use to pay their taxes, perhaps exacerbating the extent of the shadow economy. Russian freelancers are severely lacking a means to comply with the FTS policies that is user-friendly yet comprehensive, seamlessly end-to-end yet transparent, and is tailor-made to fit the Russian economic sphere. Examining countries with greater success in limiting the growth of the shadow economy, such as Germany, may provide some insight into how policies and priorities in Russia could be modified to better combat this illicit activity. Working to this end will bring increased opportunities, transparency, and social entitlements to gig economy workers in the short term. It will also improve freelancers' legitimacy in the eyes of society, protection from economic uncertainty and legal repercussions of noncompliance, and respect from the FTS and society alike in the long term. This has been done in collaboration with students from the Financial University under the Government of the Russian Federation.

The goal of this project is to compare and contrast the Russian and German approaches to freelancer taxation by identifying the common and unique problems they face, and to evaluate the benefits and shortcomings of each country's solutions. This comparative analysis will allow us to advise the FTS of both improvements which can be made and their current strengths to ultimately streamline their approach to freelancer taxation. This will be achieved through the following objectives: (1) assess the extent and scope of the shadow economy, and (2) conduct a case study analysis of the Russian and German freelancer taxation environments. In this way, we hope to deliver a comparative analysis to help the FTS make progress meeting the challenge of minimizing underreporting activities, thereby bringing gig workers increased legitimacy, transparency, protection, and respect in the eyes of Russian society. Moreover, this inquiry will

not only help advise the Russian FTS of possible areas to improve, but may also provide insight to the German government in terms of their own freelancer taxation mechanisms.

2. Background

In this chapter, we provide a brief overview of the concepts surrounding and governing the economic status of Russia and Germany relative to the development of our project. We will first set the scene by describing the economy in Europe: how it has seen momentous change over the last several decades with the rise and fall of the USSR, the aftermath of World War II, the creation of the internet, and the aspects of increased globalization that are altering many domestic economies. We will then focus on the gig economy; composed of on-demand, self-employed, and freelance workers. We discuss what the gig economy is, its opportunities and benefits, as well as its relation to the shadow economy. Additional information regarding the extent, harm, and measurement of the shadow economy in both Germany and Russia will be explored before we move on to applicable taxation mechanisms. In this area, we will discuss some general practices and policies, followed by their applications to freelance workers. This discussion will use existing German solutions to make recommendations to the Federal Tax Service of Russia (FTS, Федеральная Налоговая Служба– ФНС) and vice versa. These recommendations will aim to minimize the shadow economy as well as bring legitimacy, respect, transparency, and protection to freelance workers in the modern economy.

2.1. The Economy of Europe

One of the ultimate testaments to the strength of an economy is how it adapts over time. The Russian and German economies have faced many challenges over the course of the last several decades. The Russian economy under the United Soviet Socialist Republic (USSR) was *planned*, where the means of production (land, labor, and capital) belonged to the state. After the USSR's collapse in 1991, the Russian economic model transitioned to a *market economy*, where the means of production are owned by private institutions. The dissolution of the USSR forced the Russian economy to adapt to global changes while also transitioning from a planned to a market economy (Smirnov, 2015). Lessons learned from this transition can be applied to modern day, as there is once again a need for Russia to adapt to global trends. Currently, Russia is heavily dependent on oil production, and the rise of the internet and increasing globalization demand that Russia adapt to a more e-commerce friendly economic model (Smirnov, 2015).

Germany has similarly undergone immense changes over the last century with the end and aftermath of World War II. The war not only left the country divided into east and west, but economically crippled as well. As West Germany pioneered a capitalist *social free market economy*, and communism was established in East Germany, the country acted as a geographical confluence of the Cold War. West Germany's economy prospered, while East Germany's suffered. This disparity contributed to the rejoining of the country, but more importantly presented a side-by-side comparison of two economic systems (Gethard, 2021). Examining the historical context of Russia and Germany can provide some insight into the present economic state of each country.

2.1.1. Over the past century

The collapse of the economy under the USSR in 1991 is crucial to understanding the state of the Russian economy today. The fall of the USSR led to two waves of the Great Russian Depression, one from 1989-1991 and the other from 1992-1996. During the first wave ending in 1991, industrial production fell by 12%. Monetary reform was attempted by the Russian Soviet Federative Socialist Republic (RSFSR: the Russian state after the collapse of the USSR, but before formal Russian independence) based on free-market ideas of liberalization of prices, foreign trade, and privatization of state enterprises (Smirnov, 2015). There was major pushback on this plan as a result of its Western influences, and ultimately major monetary reform as proscribed by the Ministry of Finance was unsuccessful (Martinez-Vasquez, 1999). The second wave, during the transition from a planned economy to a market economy, was much more devastating: industrial production fell by 56% (in comparison, the United States' industrial output fell by 47% during the Great Depression which began in 1929). The cause of this depression was threefold: (1) the output of military goods and low-cost products was too high to meet demand, (2) there was low competitiveness in the economy, and (3) business owners were inexperienced operating in the new market economy (Smirnov, 2015).

Currently, the Russian economy is largely privatized, however it is highly dependent on oil production, which has proven to be volatile (Smirnov, 2015). Due to this volatility, and pressure to transition from fossil fuels to green energy sources, there is a growing need for Russian authorities to bolster other sectors of its economy. Increasing support for independent e-commerce, self-employed, on-demand, and freelance workers is one such way the Russian government could aid economic development.

Likewise, Germany has faced a great deal of economic changes in the twentieth century. These changes are integral to understanding the German economy today. One of these major changes was the debt brought on by the Treaty of Versailles, signed at the Paris Peace Conference in 1919 at the close of World War I. According to the terms of the treaty, Germany had to take full responsibility for the war, and pay a great deal of reparations (Boemeke et. al., 1998). As Germany's economy was already struggling due to the war, these reparations only further devastated it. This financial devastation was one of many elements that led to World War II, after which German food production was halved, industrial output decreased one third, and available housing decreased one fifth. The war-torn country was occupied and split into Eastern and Western zones as the Cold War ignited. Western Germany pioneered the social free market economy, and it was so successful that it became known as the "German economic miracle" (Gethard 2021). Eastern Germany, on the other hand, adopted communism and its citizens, economy, and society as a whole continued to suffer. Today's Germany looks a great deal different, with a united country and a strong economy. Germany's social market economy stresses the importance of worker's rights, strengthening work unions and putting a strong emphasis on the need for job benefits (The Economist, 2021). This structure is quite beneficial to the typical corporate employee, but it does not directly outline a niche for the gig economy.

Within this structure, it is not as easy for gig economy workers to take advantage of established benefits and protections, likely making self-employment a less appealing option.

2.1.2. Rise of the internet

The substantial growth and development of the gig economy throughout the world can be largely attributed to the rise of the internet. The internet offers many new opportunities for self-employed, on-demand, contract, and freelance workers to conduct their business. This was showcased through the significant boom in the number of freelancers in Russia between 2017 and 2020, during which the number of people who reported doing freelance work almost tripled. As of 2020, there were a total of 14 million freelance workers (Elagina, 2021). Increased internet access has helped companies, businesses, and freelancers alike gain additional economic advantages such as new revenue paths and the potential to utilize modern business models. The internet also provides the average layperson with access to important market information which allows for more aspiring freelancers to get their start in the industry. Paired with the birth of e-companies, this has created a boom of available jobs within the Russian gig economy (Maksiyanova, 2012).

Surprisingly, the rise of the internet did not have such an effect on the gig economy in Germany. The number of self-employed citizens in Germany stayed relatively stagnant from 2006 to 2019, at approximately 4 million, despite the advent of the internet, (Koptyug, 2021). Conen & Buschoff (2019) have found that the percentage of self-employed workers in Germany has actually decreased 0.8% from 2012 to 2016. The rights German employees receive as a result of their social free market system seem to outweigh the increased accessibility of freelance work as a result of the internet.

2.1.3. Globalization

Globalization is the increased political, social, and economic cooperation of people, companies, and governments. Believed to have originated with the Silk Road trading routes into Asia and the increased European involvement in the Americas, globalization continues to develop (Ghosh, n.d.). Steady improvements of transportation since the Middle Ages, and recently the rise of the internet, have allowed globalization to become an increasingly attractive endeavor for countries who want to remain competitive, efficient, and even out of war.

Eastern Europe presents an interesting setting for a globalized market, as it once supported the interconnected economy of the USSR; in some ways this is an obstacle that needs to be overcome, and in others it laid the much-needed groundwork, because of its pre-established, interconnected economic infrastructure (Pula, 2018). For Russia specifically, globalism was met with some hesitation after a turbulent beginning in the 1990s, after the fall of the USSR. At this point, domestic Russian companies were ‘thrown into the deep end’ of an increasingly interconnected European economy, with little experience and diminishing protections to be globally competitive (Seliger, 2004).

Conversely, Germany was already a large player in this interconnected European economy, as it was one of the founding members of the European Union (EU) (Auswärtiges Amt, n.d.). The EU is a major crux of globalization, connecting most of Western and Central Europe. It was created to define, harness, and embody the ideals of globalism (Ulgen, 2022). Nowadays, Germany is often regarded as the "export world champion" indicating that it has fully embraced and integrated globalist practices into its economy (Dauth, 2021).

2.2. The Formal and Informal Economies

The term *gig economy* covers a wide range of online platforms, on-demand services, and small businesses where independent workers make a living or simply find work on the side. Understanding the gig economy helps clarify the motivations of those involved, the difficulties they face, and the future of the market. This provides key context for our work, illuminating some of the problems freelance workers may experience in order to better create solutions. This includes the size and scope of the market, problems individuals face, how many people are affected, and the size and influence of the adjacent *shadow economy*. Selected aspects of the gig economy, the shadow economy, and both, can be visualized through the diagram in Fig. 1 below.

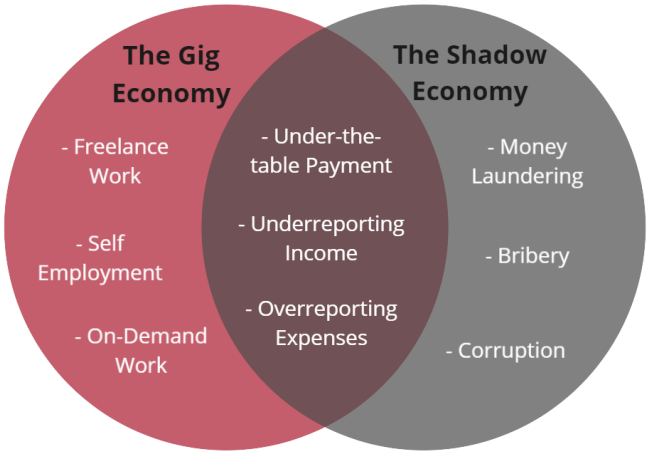


Figure 1: The Relationship Between the Gig and Shadow Economies (Authors' own work).

As seen above, the major overlaps between the gig and shadow economy are under-the-table payment, underreporting income, and overreporting expenses. Countries that have a large gig economy as well as an out-of-control shadow economy must find ways to mitigate these phenomena.

2.2.1. The Gig Economy

Currently, the Russian gig economy is made up of a younger workforce. The average age yielded from a survey was 29, with around 70% of all freelancers between their early twenties or mid-thirties (Davis et al., 2014). For context, the average age of the whole Russian workforce is 41 years (CEIC, n.d.). It follows that older citizens in Russia are more unfamiliar with the

prospect of freelancing (Gretchenko & Gretchenko, 2021). There is a geographic aspect of the sector as well. Gretchenko and Gretchenko (2021) note that, in general, “large cities express a more positive attitude towards freelancing than people from small towns and villages,” (p. 7). There has been a consistent population of freelancers hailing from high density regions, with two thirds of all Russian freelancers living in the fourteen most populated regions of Russia (Strebkov & Shevchuk, 2012). Due to the small size of the German gig economy, there is not enough data on the demographics of freelancers to make the same conclusion. Nevertheless, freelancing comes with its own benefits and drawbacks as a non-traditional form of work, which is still in its early stages given the age of the internet.

2.2.1.1. Pros and Cons of the Gig Economy.

The gig economy offers a greater flexibility in both form and specialty in work. The market encompasses part time jobs to highly-specialized or time intensive labor. About 70% of all Russian freelancers spend between 27 and 77 hours a week on their work, indicating job types vary widely and that workers also have more control over their own schedules (Davis et al., 2014). Gig workers transact with a wide variety of clients, from individuals to entire firms. About 40% of these workers are employed by a separate organization disconnected to their freelance work (Shevchuk & Strebkov, 2018).

The gig economy is a more informal style of business that creates some problems for both freelance workers and their clients. One of the most widespread of these problems is client opportunism.Freelancers encounter clients who do not pay, miss payment deadlines, and make changes to agreed upon schedules, compensation, or details about what work is being done. There are many options to counter these problems, but given the variety in the freelance economy, no solution is universal or standardized. In fact, some popular solutions come with their own drawbacks. Should a freelancer choose to use a contract, they might explicitly outline the requirements of a certain job, formally making the details and payments clear and unambiguous. In doing so, the freelancer can be perceived as cold, inflexible or untrustworthy (Shevchuk & Strebkov, 2018). Clearly delineated boundaries and payments provide some safety to the freelancer, but may restrict negotiations with their client. Contracts expressly place control in the freelancer’s hands, whereas a more friendly or informal social agreement might not require this. The amount and form of client interaction, screening efforts, and planning, are all things that freelancers must consider.

Conen & Buschoff (2019) found that self-employed workers comprised around 5.1% of all employees (~4 million) in 2016 in Germany. There are around 14 million self-employed workers in Russia, and around 71 million employed people, which suggests freelancers make up around 20% of Russia’s working population (Elagina, 2021). The number of freelance workers in Germany is lower than other neighboring countries, too. Conen & Buschoff (2019) found that for the same year (2016), freelance workers made up 10% of all employees in the European Union as a whole. These numbers might be explained by Germany’s focus on worker’s rights; as a freelance worker, one must take on the cost of buying what would otherwise be provided by an

employer. For instance, health insurance, sick/paid leave, and mandatory minimum working hours are all mandated by the German government for employees of companies and organizations (HG Legal Resources, n.d.).

2.2.2. Shadow Economy

The gig economy, especially as it expands, increases the potential for an 'informal' or 'shadow economy' to grow. The shadow economy constitutes any goods and services offered by firms that are intentionally hidden from authorities. This can include underreported income, unofficially salaried employees, money laundering, bribery, and tax evasion (Putnins & Sauka, 2020). A report by Gontmakher (2021) describes two 'hands' of the shadow economy: "on one hand, business activity that is not officially registered and therefore not subject to taxes and other mandatory payments, as well as cash payment of salaries at enterprises that work legally. On the other, there are criminal activities – drug and arms trafficking, prostitution, pornography, and smuggling," (para. 2).

2.2.2.1. The Extent and Causes of the Shadow Economy.

The shadow economy is extremely difficult to quantify for two important reasons: varying definitions of what constitutes this informal economic sphere, and people's reluctance to self-report perceived illegal activity (Bashlakova & Bashlakov, 2021). Nevertheless, Russia's shadow economy was estimated to be equivalent to 44.7% of the size of the national GDP in 2018 (Putnins & Sauka, 2020). In another study, the German shadow economy was found to be much lower: Mauleón & Sardà (2017) estimated it was on average 10.54% of German GDP between 2007 and 2012 .

The estimations proposed by Putnins and Sauka (2020) were consistent with what global economists have previously postulated. The Journal of Eastern European and Central Asian Research published an article by Lizina et. al. (2020) that stated the size of the Russian shadow economy has fluctuated between 30% and 50% for the past couple decades. As noted before, this estimate is significantly higher than most other countries studied, including Germany.

Researchers also found that about 6.1% of enterprises in Russia today are completely unregistered in terms of income reporting, as opposed to just partially unregistered. While this underreporting of income contributes to the shadow economy, bribery is also a major factor to be considered. Putnins and Sauka (2020) state that:

> The magnitude of bribery (percentage of revenue spent on 'getting things done') is estimated to be 26.4%, whereas the percentage of the contract value that firms typically offer as a bribe to secure a contract with the government in Russia is 20.6% in 2018. We also find that more than one-third of companies in Russia pay more than 25% of the revenue or contract value in bribes (Components and Determinants of the Shadow Economy in Russia section, para 3).

Underreported activity, along with tax evasion, money laundering, and under-the-table salaries, greatly contribute to the shadow economy. In general, it is estimated that at least 30 million Russian citizens are connected to the shadow economy in some way (Ministry of Labour and Social Affairs of the Russian Federation, 2021).

In Germany, Mauleón & Sardà (2017) found that the tax evasion contributor to the shadow economy was exacerbated by the global Financial Crisis in 2007. The paper includes analysis of two different timeframes: 1991-2012 and 2007-2012. It was found that the shadow economy grew when only looking at the 2007-2012 data, from 8.95% of GDP to 10.54%. The authors attribute this growth to "higher taxation, probably as a result of higher fiscal deficits originating in the financial crisis that began in 2007," (p. 3736).

Understanding the size and scope of the shadow economy is just as important as examining why it exists in the first place. Increased informal economic activity can be attributed to several different causes across institutions of all sizes. Newer and relatively smaller companies have a greater incentive to underreport earnings and evade taxes to stay competitive against older, established companies (Putnins & Sauka, 2020). Larger businesses also interact with the shadow economy, sometimes through the corruption of state officials. In another study, Lizina et al. (2020) explains:

> For big business, the shadow economic relations mean strong chances for abnormal prosperity, which is associated with financial flows connecting business structures and the state authorities and often not only in the form of banal corruption. The merger of business and government is becoming not only a desirable but also a necessary condition since it enables entrepreneurs to receive some privileges (p. 301).

Other experts believe that companies viewing tax evasion as acceptable, or lacking consequences, is another cause for under-the-table activities. Analysis found that people who viewed tax evasion as a tolerated behavior were more likely to contribute to the shadow economy. In the context of Russia, a study also found that entrepreneurs are unhappy with the government and taxation system; "this result offers some insights into why the size of the shadow economy in Russia is so large – it is at least in part due to relatively high dissatisfaction of entrepreneurs with the business legislation and the government's tax policy," (Putnins & Sauka, 2020, Components and Determinants of the Shadow Economy in Russia section, para. 4). In contrast, Germans are much more willing to pay their taxes, as demonstrated in a study by the Basel Institute of Commons and Economics. The study surveyed 16,000 residents of 141 countries, and asked them to rank on a scale of 1-10 (least - most) how willing they thought their fellow citizens would be to spend tax money on social programs. Germany had by far the highest average score of 7; the second highest score was Cambodia with 6.7 (Pearson, 2019).

Reports continue to corroborate that public wariness of the tax system, often brought about through corruption and excessive federal regulation, leads to increased informal economic activities. An economic theater that is perceived as unstable, unpredictable, or otherwise temporary, leads to a warranted distrust of the system. Instability invites shadow transactions,

and an unwillingness to pay taxes and fees. This sentiment of the people is exacerbated by high tax rates that further lessen the incentive to comply with an imperfect system (Gontmakher, 2021).

2.2.2.2. Why the Shadow Economy is Harmful to Society.

One of the most harmful impacts of a large shadow economy is that it leads to misrepresentation of macroeconomic data that governments use to enact social policy. A poor understanding of the overall economy can lead to uninformed and sometimes detrimental policy decisions by governments. When government officials do not have a clear understanding of the monetary exchanges among their constituents, they will not know how to cater to their needs. Additionally, the potential revenue governments miss as a result of shadow economic activity could be used for socio-economic development that would benefit citizens of all occupations, including freelancers. The shadow economy in and of itself has many severe economic and social consequences.

A study by Bashlakova and Bashlakov (2021) investigated the accuracy of different methods for measuring the shadow economy as a proportion of GDP. The authors point out a case study from the Great Russian Depression in the 1990's for how the shadow economy leads governments to misinterpret economic data, and thus render them unable to respond to problems. During this time, the government used macroeconomic data to inform policy decisions, as opposed to household survey data. Due to the higher transparency of shadow economic activity in microeconomic data, like household surveys, this data indicated that the depression was over much earlier than the macroeconomic data. As a result, the Russian government tried to stimulate consumption and growth through fiscal and monetary policy– like increasing the Ruble supply– when in reality Russian citizens had recovered from this depression years before (Bashlakova & Bashlakov, 2021). This discrepancy between the needs of the Russian people and the macroeconomic data of the Russian government had several economic consequences, including "hypertrophied growth in the financial sector, the appearance of 'bubbles' in the real estate and foreign currency markets, which, in turn, largely caused the crisis of 1997–1998, followed by devaluation, a[n] inflationary surge and default" (Bashlakova & Bashlakov, 2021, p. 472).

While misrepresentation of the shadow economy has implications on economic policy, the shadow economy itself has several negative consequences, the most obvious of which is the potential revenue governments miss out on. This aspect of the shadow economy is especially attributed to illegal practices like money laundering– the crime of moving money that has been obtained illegally through banks and other businesses to make it seem as if the money has been obtained legally (Cambridge, n.d.) – by the world's financial elite. About 2.7% of the global GDP is laundered annually (Zamir, 2021). Further exacerbating this issue is the rapid growth in the wealth of billionaires, as hiding these funds prevents governments from collecting revenue for socio-economic development (Zamir, 2021).

In addition to the loss of revenue, Lizina et al. (2020) noted that the size of the shadow economy had other severe social and economic consequences: "the manageability of the

economy decreases, the population differentiation increases, moral norms are destroyed, many social institutions are replaced, and the political consciousness, cultural level, and intellectual development are transformed" (p. 301). These ramifications of the shadow economy pose a threat to any country, including Russia and Germany. The shadow economy can have long-lasting, negative impacts on society as a whole if it is left unmanaged or unrecognized.

2.2.2.3. Measuring the Shadow Economy.

Predicting the trajectory of the shadow economy is important for developing effective economic policy. However, there are several obstacles in trying to quantify the shadow economy. This is because of the very nature of the shadow economy; those that participate try to hide their activity from the authorities, so scientists cannot directly measure the shadow economy. Additionally, the parameters scientists use to model a nation's shadow economy, normally through soft modeling or MIMIC (Multiple Indicators Multiple Causes), are not as applicable in some instances than others, and assume that economies are stagnant and unchanging (Bashlakova & Bashlakov, 2021). There is also a double-counting problem as legal resources can be used in shadow economic activities and shadow resources can be used in legal activities, as with money laundering (Bashlakova & Bashlakov, 2021).

Due to this ambiguity, MIMIC is not the only method for measuring the shadow economy. Researchers from the Baltic International Centre of Economic Policy Studies (BICEPS) used the following method to estimate the size of the Russian shadow economy: (1) estimating the degree of underreporting from survey responses, (2) converting shadow activities to a weighted average of a company's underreported activities in relation to GDP, and (3) calculating a weighted average of shadow production across firms (Putnins & Sauka, 2020).

Despite these issues, MIMIC has been the most relied-upon method for measuring and predicting the shadow economy. MIMIC is a statistical model that assumes the shadow economy can be observed and measured from several well-known proxy variables (Lizina et. al., 2020). According to Lizina et. al. (2020), there are 7 variables which are the most revealing of the shadow economy:

1. The number of secondary or higher educational institutions
2. Registered crimes
3. Road traffic accidents
4. Production and import taxes
5. Production subsidies
6. Money transfers
7. Cellular service revenues

These variables contribute to 4 broader indicators:

1. Economic factors
2. Educational factors

3. Criminalization
4. Communication

Using this method, societal aspects can be measured to estimate the extent of the shadow economy, which is necessary to implement effective policy changes.

Compiling knowledge on the size and extent of the shadow economy is the first step in minimizing its adverse effects. Through empirically-derived correlations using methods described in section 2.2.2.3 Measuring the Shadow Economy of this report, Putnins and Sauka (2020) found "increased penalties and better detection methods as possible policy tools for reducing the size of the shadow economy," (Components and Determinants of the Shadow Economy in Russia section, para 4). In November of 2021, a plan was set forth by the Russian Ministry of Labor aimed at reducing the amount of shadow employment to reduce the overall impact of the shadow economy. The plan puts focus on adding more legal guidance regarding labor relations, or worker-company relationships (Russian Federation, 2021). According to the terms of the plan, the appropriate authorities intend to monitor shadow economic activities and allow employers access to a registry in which they can report instances and information on illegal employment (Ministry of Labour and Social Affairs of the Russian Federation, 2021). In Germany, the pursuit of minimizing the shadow economy has been fourfold: (1) increasing deterrence, or the punishments received for tax evasion, (2) coordinating taxation between nations in the European Union, (3) increasing the transparency of transactions between individual bank accounts through auditing, and (4) reducing income taxes (Feld & Larsen, 2012).

2.3. Taxation Mechanisms

Like many countries, Russia has a highly developed taxation system that has been changed and modified for centuries to get to where it is today. Taxes are overseen by the Federal Tax Service (FTS, Федеральная Налоговая Служба– ФНС), which was formed in 1991 and is functionally equivalent to America's Internal Revenue Service (IRS). In Russia, the FTS is further overseen by the Ministry of Finance, in the same way that the American IRS is a subsection of the Department of the Treasury (Fernandez, 2022). Similarly, Germany collects taxes through the Federal Central Tax Office (Bundeszentralamt für Steuern– BZSt) and local tax offices (Finanzämter) that administer federal and regional taxes respectively. German taxation is supervised by the Federal Ministry of Finance as a parent agency (IamExpat, n.d.).

2.3.1. Practices and Policies

Russia's current tax system, governed by the Russian Tax Code, is based on a policy implemented in three stages between 1998-2003. The first was enacted in July of 1998 and provides general regulations such as establishing the roles of taxpayer, tax collector, and outlining the role of law enforcement. The second part of the code's implementation was in August of 2001 and is more specific in that it defines tax paying schedules, rates, and other relevant calculations. The final phase of implementing this tax code involved heavily amending

the previously released stages in order to better conform to Russian society in practice. To this effect, taxes were simplified for small businesses and additional options were provided to corporations (Sadykov, 2019).

Russia has three levels of taxation stipulated by the Tax Code: federal, regional, and local. Each tier is responsible for taxing different transactions. Federal taxes encompass value-added tax (VAT) which are added as value increases at each step in the supply chain, "mineral extraction tax, individual income tax, unified social tax, corporate profits tax, excise taxes, special tax regimes, and several other taxes," (Fernandez, 2022, Federal, regional, and local taxes in Russia section, para. 1). Meanwhile, regional and local taxes focus on assets such as corporate or individual property tax, and vehicle tax. This division of taxes between different levels of government is not as differentiated in the United States; for example, American citizens pay income tax to both the federal and state levels (save a few states without this tax). German taxation, like in Russia, is distributed among the federal government (Bundesregierung), the states (Bundesländer), and local municipalities (Gemeinden) depending on the type of tax. Income tax, VAT, and export tariffs are all set by the federal German government whereas real estate transfer tax (RETT), hotel stay taxes, and homeownership taxes are supervised by states and municipalities (Maunder, 2022).

The timeline for filing taxes in Russia is based on the calendar year: the tax year begins January 1st, the tax year ends December 31st, tax returns must arrive by April 30th, and July 15th is the last day to pay taxes. Tax returns are submitted to the FTS using a Tax Declaration form. Similar to the United States, Russia employs a progressive tax system, meaning that the percent you pay towards income taxes increases with your income. In Russia the brackets are such that one must pay 13% personal income tax (PIT) if they make less than 5 million rubles a year, and 15% if they earn above that threshold (as of April 6, 2022, 1.00 Russian Ruble ₽ is equivalent to 0.012 United States Dollar $, is equivalent to 0.011 Euro €). These numbers may be greater for non-residents depending on their income and employment. In terms of other federal-level taxation, the VAT tax has been a flat 20% on goods and services since 2019. The tax is reduced to 10% in certain cases, such as when purchasing medical supplies, food, or children's clothing. Moreover, there is no VAT tax on things deemed necessary, such as specific medical supplies, education, or public housing (Fernandez, 2022).

In Germany, the tax year also runs from January 1st to December 31st, and tax returns can be submitted any time before July 31st. As of 2022, the income tax brackets progress, after the €9,984 threshold, from 14% to 45%. Germany also maintains a 19% VAT (Umsatzsteuer – USt) rate on most goods and services. Nevertheless, "deliveries within the European Union (EU), medical services, financial services, insurance, and real estate are exempt from USt," (Maunder, 2022, Taxes on goods and services (VAT) in Germany section, para. 3). There is also a reduced VAT rate of 9% on certain items like newspapers, books, and food (Maunder, 2022).

Advancements in streamlining taxation policies and improving tax rates, since the turn of the century, have drastically improved the collection rate of Russia. A lower overall burden to taxpayers has just about doubled collection rate since 2011 (Fernandez, 2022). Taxes collected

amounted to about 10.9% of the country's GDP in 2019, which is significantly less than the United States' 25.0% and Germany's 38.6% the same year, and the Organisation for Economic Co-operation and Development (OECD) average of 33.4% (Organisation for Economic Co-operation and Development, 2021).

2.3.2. Taxing Freelancers

When it comes to freelance workers in Russia, tax policies specifically for them have only been enacted since 2019. The "Tax on Professional Income," or the TPI, was enacted as an experimental policy meant to give freelancers a chance to legalize themselves, (The Moscow Times, 2018). This experimental policy taxes the income of freelance workers depending on their customers; income from individuals is taxed at a rate of 4%, whereas income from entrepreneurs, companies, and legal entities are taxed at a rate of 6%. Transitioning to the new TPI rates is currently optional for freelance workers, meaning that they can choose if the TPI rates or personal income tax (PIT) rates are more advantageous for them. Electing the TPI method also gives freelancers perks, such as being exempt from VAT (Federal Tax Service of Russia, n.d.).

In Germany, freelance workers make up to €9,984 untaxed, as stipulated by the income tax brackets, and are also eligible for €2,800 untaxed to put towards mandatory health insurance. German freelancer's income exceeding the taxable threshold abides the same progressive brackets as any other income would. Incidental expenses associated with self-employment can reduce taxes, such as the use of an accountant, office supplies, business trips, or even telephone and internet access (Richardson, 2022).

Russian freelance taxes are paid monthly, using the mobile application made by the FTS called My Tax. The My Tax payment is due on the 25th of each month (Awara, 2019). German freelance taxes, on the other hand, are estimated by one's local tax office, and paid quarterly. They can be paid using a paper form, or through various online services such as ELSTER, Taxfix, or wundertax (Richardson, 2022).

Since freelance work today is increasingly becoming an easily obscured one-to-one digital transaction, it is easy for taxable activities to go under the radar of the Federal Tax Service of Russia. This not only allows freelancers to underreport earnings, but it can also leave them vulnerable and without many government protections. While there are some existing safeguards in place to protect freelancers in their work, there is often a fine line between ensuring online rules are being followed and fostering a digital surveillance state. When there are too many strict rules to follow when dealing with freelancers, customers may feel distrust towards the system and this can create tensions that further jeopardize the public reputation of freelancers (Shevcuck, & Strebkov, 2018).

2.3.3. Current and Future Endeavors

There have been many developments and systemic changes to the ways through which Russians of all economic statuses can file and pay taxes. Freelancing, as a career, has historically been loosely defined in Russian law. Policies catered to freelancers have been gaining attention

only in recent years in the eyes of the Russian government. In 2016, a Presidential Council identified the need for a definition of the legal status of self-employed workers, and in 2018, freelancer activities were set as a "strategic development [objective]" (Awara, 2019, para. 12). However, certain jobs that may be considered *freelance* were exempt from taxation starting in 2017: those involved with child or elder care, tutoring, and "personal [or] household" services (Awara, 2019, para. 12).

As of January 2019, a *freelancer tax* (as defined in Russian law, a Tax on Professional Income or TPI) has been formally established. This law defines a worker as 'self-employed' if they meet the following requirements:

1. their business is conducted anywhere on Russian territory
2. they do not work for an employer
3. they do not employ others
4. they receive income from properties located on Russian territory
5. their annual income is not larger than 2.4 million rubles (~30,900 USD as of the date of this writing) (Federal Tax Service of Russia, n.d.)

Workers who fall under these requirements can expect their annual income tax to be reduced to 4-6% (from Russia's typical 13% flat income tax) and are exempt from domestic VAT and insurance premiums (Federal Tax Service of Russia, n.d.). A worker can register and pay taxes entirely online with a passport or a 'public services account', with the help of My Tax.

There are some limitations to this digital taxation approach, notably the freelancer's "depend[ence] on the level of legal awareness" (Awara, 2019, The advantages of the special tax regime are: section, para. 27). The taxation mechanisms on which this digital infrastructure is based are also subject to change, as the 'freelancer tax' expires within ten years (Federal Tax Service of Russia, n.d.).

Addressing the increasingly digitized economy requires close attention to detail, and freelancer taxation is an important aspect of making this global economic shift. Moving forward, Milogolov and Berberov (2021) identify the most difficult challenges to Russia as: the taxation of business profits of companies without a physical Russian presence, the manipulation of corporate tax residence, and the uncertainty of digital tax characterization. They suggest interim legislation and working with international groups to be among the best approaches to this problem. The digitization of the German and broader EU economy presents its own unique challenges: problems with tax jurisdiction arising from digital platforms, evaluating the worth of data collected by users of digital platforms free of charge, and deciding whether or not royalties should apply to e-commerce transactions (Hadzhieva, 2016).

2.4. Conclusion

In this chapter, we have briefed the reader on some essential background that provides a foundation for our objectives moving forwards. First, we covered the European economy, with particular focus on how the fall of the USSR and the aftermath of World War II affected Russia

and Germany respectively. Next, we introduced the term *gig economy*, then delved into the pros and cons of this market sector while considering the recent growth of the gig economy following the rise of the internet. Within the discussion of the formal and informal economic spheres present in Russia, we also introduced the term *shadow economy*, and discussed how it is linked to the gig economy and how it harms Russian and German society. Finally, we covered the basics of Russian and German taxation mechanisms, general practices and policies, as well as how these mechanisms apply to freelance workers. With this background in mind, we will discuss our methodology for synthesizing our recommendations to the FTS in the next section.

3. Methodology

The goal of this project was to compare and contrast the Russian and German approaches to freelancer taxation in order to extrapolate how the Federal Tax Service of Russia (FTS, Федеральная Налоговая Служба– ФНС) can improve their practices and policies. This comparative analysis yielded recommendations for both Russian and German freelancer taxation. To fulfill this goal, we outlined two objectives:

1. Assess the extent and scope of the shadow economy
2. Conduct a case study analysis of the Russian and German freelancer taxation environments

As it currently stands, only a small percentage of freelance workers in Russia are registered as self-employed workers with the FTS. Our goal of creating recommendations for both the Russian and German governments to better streamline their freelancer taxation practices, serves to both legitimize freelance work as well as try to contain the growth of the shadow economy. The first objective was catered towards quantitative data collection via statistical modeling, and the second objective focused on qualitative data through a case study. A diagram of our methods can be seen in Fig. 2 below. The completion of these objectives resulted in the following deliverables: (1) a correlational model and statistical analysis of the Russian and German shadow economies in regards to several key indicators, (2) a case study report focusing on the taxation policy and payment platforms of each country, and ultimately (3) a list of recommendations for both Russia and Germany.

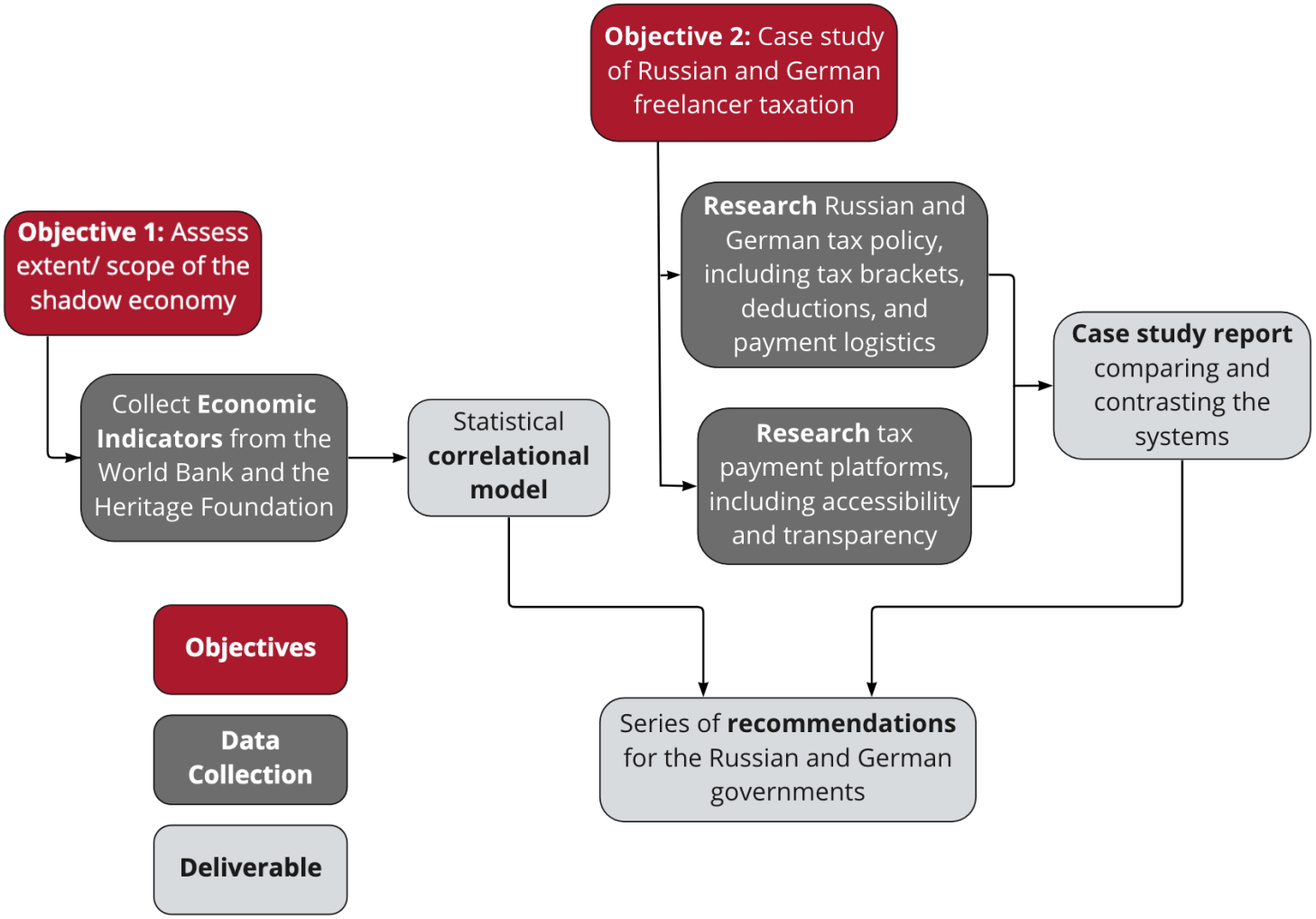


Figure 2: Our Methods: Visual Representation.

3.1. Objective 1. Extent and Scope of the Shadow Economy

Performed in collaboration with students from the Financial University under the Government of the Russian Federation, our first objective was to determine the main contributors to the Russian and German shadow economies. The shadow and freelance economies have been shown to be closely linked, so assessing the shadow economy gives important context for exploring the underreporting of freelancers (Putnins & Sauka, 2020). Data from 2001 through 2015 was compiled from the Heritage Foundation and the World Bank, and a regression model was run between each indicator and the shadow economy. For our models, the independent variables were the indicators, and the dependent variable was the shadow economy as a percentage of GDP. This allowed us to identify which economic indicators are most closely correlated to the shadow economy for both Russia and Germany.

3.1.1. Data Collection

After consulting several peer-reviewed studies measuring the shadow economy (Medina & Schneider, 2018; Lizina et. al. 2020; Bashlakova & Bashlakov, 2021; Mauleón & Sardà, 2017), we decided to examine the following economic indicators, seen in Table 1, for our analysis of the shadow economy:

Table 1: Selected economic indicators related to the size of the shadow economy.

Variable	Abr	Units	Definition	Source
Tax Burden	tb	%	100% * (tax revenue/GDP)	World Development Indicators
Economic Freedom	ef	index	Index ranging from 0 - 100	Heritage Foundation
GDP per Capita	gc	USD/ person	GDP/population	World Development Indicators
Regulatory Quality	rq	index	Index from -2.5 - 2.5 of market-unfriendly policies and burdens imposed by excessive regulation	World Governance Indicators
Inflation Rate	ir	%	GDP deflator %	World Development Indicators
Government Effectiveness	ge	index	Index from -2.5 - 2.5 of public service, political independence, policy formulation/ implementation	World Governance Indicators
Total Labor Force	lf	people	Number of people who are active in the labor force	World Development Indicators
GDP Growth Rate	gg	%	GDP/prev GDP - 100%	World Development Indicators

The specific values for each indicator from 2001-2015, for both Russia and Germany, are listed in Tables 6 and 7 in Appendix 8.2. After selecting these variables and establishing their meaning, we made preliminary predictions on each indicator's correlation. Specifically, if they were positively (directly proportional) or negatively (inversely proportional) correlated to the shadow economy. These hypotheses and a short justification can be found in Table 2 below.

Table 2: Hypotheses of the correlation of the indicators to shadow economy size.

Variable	Abr	Units	Hypothesis	Justification
Tax Burden	tb	%	negative	The larger the tax revenue, the more workers are legitimized, meaning the smaller the shadow economy
Economic Freedom	ef	index	negative	The more free the economy, the less illicit activity is seen as a necessity
GDP per Capita	gc	USD/ person	negative	A larger GDP means more workers are legitimized and productively contributing to society
Regulatory Quality	rq	index	negative	Greater regulation means more restrictions on workers, and the greater the draw of the shadow economy
Inflation Rate	ir	%	positive	Larger inflation means more people will be driven to shadow economic activities
Government Effectiveness	ge	index	negative	The more effective the government, the easier it is for workers to be legitimate and the smaller the shadow economy
Total Labor Force	lf	people	negative	The larger the total labor workforce, the lower the unemployment or illegitimate work, and the smaller the shadow economy
GDP Growth Rate	gg	%	negative	The faster GDP grows, the more successful the economy, the less the draw of the shadow economy

Our values for the shadow economy sizes in Russia and Germany as a percentage of GDP were compiled from a study by Medina and Schneider (2018). This study used a statistical technique called Multiple Indicators Multiple Cause (MIMIC), a form of Structural Equation Modeling (SEM), to estimate a latent variable from a set of indicators and causes, to measure the size of the shadow economy. The study included shadow economy sizes for 158 different countries from 1991 to 2015.We utilized the data after 2000, which can be seen in Table 8 in Appendix 8.3 for specific values.

3.1.2. Regression Model

First, a MATLAB script found in Appendix 8.5.1 iterated through each indicator and produced five 1st-5th order regression models, where the indicator was the independent variable (x-axis) and the shadow economy the dependent variable (y-axis). The script generated and stored an equation for each of these regression models. The correlation coefficient, or the R^2 value, was calculated to assess the goodness of fit for each dataset; the closer the R^2 is to 1, the more correlated the indicator is to the shadow economy, meaning that the regression more accurately represents the relationship. In this way, we could identify which indicator(s) were most correlated with the shadow economy in both Russia and Germany..

Another MATLAB script was then designed using the information yielded from the first. This second script was created to take information inputs from a user and use them in

conjunction with the regression models to predict a size of the shadow economy based on a known indicator (input).

3.1.3. Research Limitations

While calculating the R^2 values for each dataset does accurately produce conclusions for how correlated each indicator is to the shadow economy, it cannot be used to assess causation. A more robust statistical analysis, like Confirmatory Factor Analysis (CFA) or Structural Equation Modeling (SEM), would have to be used to draw conclusions about which variables actually *drive* the shadow economy, and which variables are *results* of the shadow economy. Furthermore, exploratory factor analysis (EFA) could have been utilized to determine which variables to analyze in the first place. The limitations of the simple statistical correlational model that we conducted were mitigated by also considering a case study of the Russian and German freelancer taxation mechanisms in order to gain an understanding of the greater context of the shadow economy.

Additionally, only data ranging from 2001 through 2015 could be used for our analysis, because consistent estimates for the shadow economy are not available for after this timeframe. As a result, any significant policy changes or economic shifts after this timeframe could not be analyzed for their impact on the shadow economy.

Furthermore, the shadow economy cannot be assumed to only consist of underreporting freelancers. There are many other activities that contribute to the shadow economy like bribery, coercion, and money laundering. While our analysis does indicate which economic indicators are linked to the shadow economy, these may not necessarily be linked to the freelancer taxation problem. Again, our case study analysis provided essential context for understanding the priorities of freelancers.

3.2. Objective 2. Case Study Analysis of the Russian and German Taxation Environments

In order to create a final set of recommendations for the Russian FTS, we conducted a case study on the Russian and German taxation environments, and created a stand-alone case study report detailing our findings which can be found in Appendix 8.7. Specifically, this case study examined the taxation policy and payment platforms utilized by both countries for freelancer taxation. The taxation policy aspect of this case study focused on the accommodations for freelancers in terms of taxation, as well as the logistics of the taxation system. The payment platforms portion of this case study looked at the accessibility and transparency of the various payment platforms available to Russia and German freelancers. By comparing and contrasting the current states of freelancer taxation policy and payment, the formal case study report ultimately made progress towards our final deliverable of creating a set of recommendations for both the Russian FTS and the German freelance market.

3.2.1. Taxation Policy

The taxation policy aspect of this project aimed to examine the freelancer accommodations and logistics of the taxation environment in both Russia and Germany. Freelancer accommodations include tax brackets, and tax exemptions and deductions. On the other hand, the logistics of freelancer taxation speaks to the systemic division of labor amongst local and regional and tax-collection institutions, the payment schedule, and also the paperwork and forms involved.

3.2.1.1. Freelancer Accommodations and Logistics.

In order to evaluate the freelancer accommodations and logistics for the purpose of this case study, the primary mode of data collection was research. Comparing the accommodations for freelancers in Russia and Germany, such as the tax brackets, exemptions and deductions, was informed through online research. The same held true for the logistics including tax office roles, payment schedule, and paperwork. To acquire this information, the official websites for the Russian Federal Tax Service https://www.nalog.gov.ru/eng/ and the German Federal Central Tax Office https://www.bzst.de/EN/Home/home_node.html were consulted along with various other websites such as https://www.iamexpat.com/ and https://www.expatica.com/. A potential limitation of this analytical comparison approach is that a lot of our research was conducted online and as a result some sources, specifically Russian ones, were intermittently inaccessible.

3.2.2. Payment Platforms

As our goal was to compare and contrast the Russian and German approaches to freelancer taxation, we assessed the payment platforms that freelancers use. In this respect, there is already a clear delineation between both Russia and Germany. While Germany is home to a wide range of different platforms, six of which we have considered in this case study, Russia has only one: My Tax (Мой налог).

To deliver a balanced assessment of the payment platforms found in each country, multiple attributes of each platform were considered. Ultimately, our team aimed to assess each platform's accessibility and transparency. This allowed us to determine the ultimate successes and failures of these applications from the perspective of the end users. We attempted to view the platforms from this perspective to find out how well software works for the tax-paying residents of each country. Where accessibility lends us information about user's opinions, transparency allows us to see how each platform has explained their security and encryption process for sensitive information.

The limitation of this approach is that it only examined two elements of these payment platforms. While these two aspects are valuable to our research, focusing on them may cause us to overlook other aspects that contribute to freelancers' views on payment platforms. Additionally, there was no way to distinguish which reviews were written by freelancers as

opposed to employees of companies who were using the services, specifically German payment platforms, to file their tax returns.

3.2.2.1. Accessibility.

To evaluate the accessibility of these platforms, we read and recorded platforms' reviews as written by both customers and blogs. To effectively analyze reviews and extract meaningful quantitative data, we used thematic analysis with both mixed inductive and deductive coding. We started with inductive coding, having initially made a small codebook of words, themes, and phrases that we anticipated popular amongst user reviews. Table 9 with both our inductive and deductive codebook can be found in the Appendix 8.4.

As we read through reviews, user feedback, and software guides online, we extracted the written content of each review and placed it into a text file. We took care to eliminate any superfluous text so we could only analyze information about the taxation platform. A simple python script, as seen in Appendix 8.7, was then used to go through each file to manually tally each occurrence of a word or idea in our codebook. This way, we could count and consider more complicated ideas. For any payment platform there are usually several hundred, if not thousands of reviews. We took a small sample of these by selecting the reviews that appear on the first two or three pages of a review website. In practice, this is around 20-40 reviews per source. By counting the amount of positive and negative experiences, as well as more specific ideas and opinions that each platform has, we can compare one to another to gauge the accessibility from a prospective customer's perspective.

3.2.2.2. Transparency.

Security is a top concern for taxation platforms, since these platforms have access to extremely sensitive information about their users. Also, platforms advertise their software's ability to simplify a convoluted tax process to make their customer's experience as smooth as possible. These two features are critical to the success of a tax platform. We took a look at these features through the customer's perspective mainly in terms of each platform's transparency. For a typical user, how is the tax process explained, and how well is privacy prioritized?

To evaluate the transparency of these platforms, our team conducted further research into the security policies of each software. This information is often available, either published on company websites or located within downloadable files. These security policies could be how users submit sensitive information, login and account safety features, or what measures are being taken by a company to keep databases secure. Given the wide range of platforms and the specificity we desire, some information was inaccessible even after being requested directly from a platform's customer service avenues.

How transparent a company is can also be reflected by how well the platform conveys information to the user. This could include features like a step-by-step process, showing mathematical formulas for certain deductions, or additional detailed information about a certain

step in the process. If full transparency is promised by a tax payment platform, its users should know exactly where their money is going, and for what reason.

4. Results and Discussion

As outlined by our methodology, there were two main research objectives; Objective 1 compared the shadow economies of Russia and Germany using statistical analysis to find what indicators are most closely correlated with the size of the shadow economy and how the shadow economy could be predicted from specific indicators. Objective 2 involved the creation of a case study comparing the freelancer taxation environments of Russia and Germany, in order to extrapolate how they could make improvements to their respective systems. This case study can be found in its entirety in Appendix 8.5. These objectives were carried out to fulfill our goal of comparing and contrasting the Russian and German approaches to freelancer taxation in an effort to recommend to the Federal Tax Service of Russia (FTS, Федеральная Налоговая Служба– ФНС) how they can improve their practices and policies. Our findings yielded recommendations for both Russia and Germany for specific improvements to their freelancer taxation policies, as presented in Section 5: Recommendations for Russia and Germany.

4.1. Objective 1. Statistical Modeling

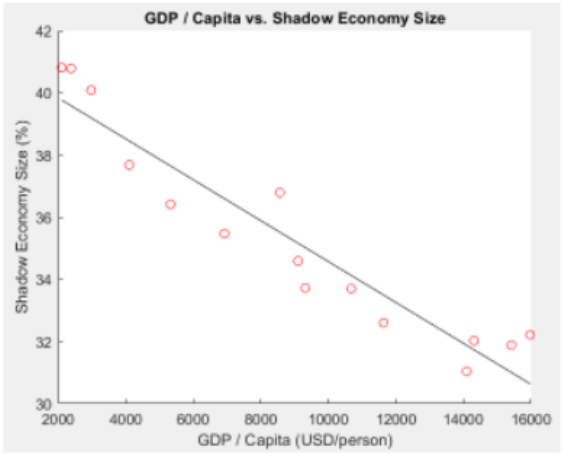
Our first objective was to examine some indicators of the shadow economy and gain some insight into which showed the most correlation via statistical analysis. This was done with indicator data collected from two databases in the World Bank, the World Development Indicators and the World Governance Indicators, as well as data collected by the Heritage Foundation, which can be found in Appendices 8.2 and 8.3, and two MATLAB scripts included in Appendix 8.5. The shadow economy size data for 2001-2015 was collected from a paper by Medina and Schneider (2018) on shadow economies around the world. In summary, the first script– which was applied for both Russia and Germany separately– fits polynomial equations for 8 indicator variables vs. the shadow economy size, and calculates the R^2 values for each. Using the polynomial regressions from this first script, the second script takes user inputs in order to estimate the size of the Russian or German shadow economy based on a known indicator value.

4.1.1. Equation Fitting and Correlation

The aim of the first MATLAB script, which can be found in Appendix 8.8.1 with the Russian data, was to take the raw indicator data, process it, and transfer the relevant results to the second script. The 2001-2015 data of the following indicators was imported: tax burden (tb), economic freedom (ef), GDP per capita (gc), regulatory quality (rq), inflation rate (ir), government effectiveness (ge), total labor force (lf), and GDP growth rate (gg). The GDP equivalent of the shadow economy for each year was also imported; this served as the dependent variable whereas the indicators were the independent variables. As such, each of the ten indicators (x-axis) were plotted against the shadow economy size (y-axis) in a scatter plot. The results plotted for all 8 indicators for both Russia and Germany can be found in Appendix 8.6. An example of the Russian GDP per capita indicator can be seen in Fig. 3 below. The raw data is

shown on the left and the resulting scatter plot can be seen on the right. Next, a linear (first order) polynomial fit was applied to the scatter plot.

Year	GDP/ Capita	Shadow Economy %
2001	2100.353	40.81
2002	2377.530	40.78
2003	2975.125	40.08
2004	4102.365	37.68
2005	5323.463	36.41
...	...	...
2015	10126.720	33.72



Linear fit (1st order):
$y = 6.44x + 37.4$
$R^2 = 0.90$

Figure 3: Indicator data, scatter plot, and linear polynomial fit yielded from MATLAB script.

In total, five polynomial regressions were performed on each relationship, of orders 1-5. This can be seen for Russian GDP per capita in Fig. 4 below.

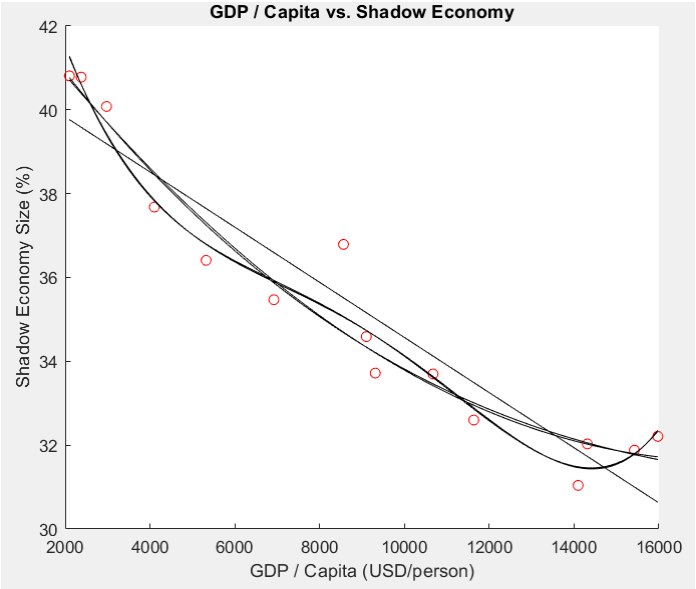


Figure 4: 1st-5th order polynomial fits of GDP per capita yielded from MATLAB script.

After each indicator was evaluated and each equation was calculated, the relationship of each indicator to the shadow economy could be compared with our original hypotheses. The results of this comparison can be seen in Table 3 below.

Table 3: Indicator correlation hypotheses in relation to the shadow economy.

Variable	Hypothesis	Results		Correct?	
		Russia	Germany	Russia	Germany
Tax Burden	negative	positive	negative		
Economic Freedom	negative	negative	negative		
GDP per Capita	negative	negative	negative		
Regulatory Quality	negative	positive	negative		
Inflation Rate	positive	positive	negative		
Government Effectiveness	negative	negative	negative		
Total Labor Force	negative	negative	negative		
GDP Growth Rate	negative	positive	negative		

The majority of our hypotheses were correct, if not for both Russia and Germany, for one of the two countries. Using these models fit to each relationship, an R^2 correlation coefficient was then calculated for each order polynomial, of each indicator, for both Russia and Germany. A bar graph of the correlation coefficients for the linear regression of each Russian indicator can be seen in Fig. 5 below.

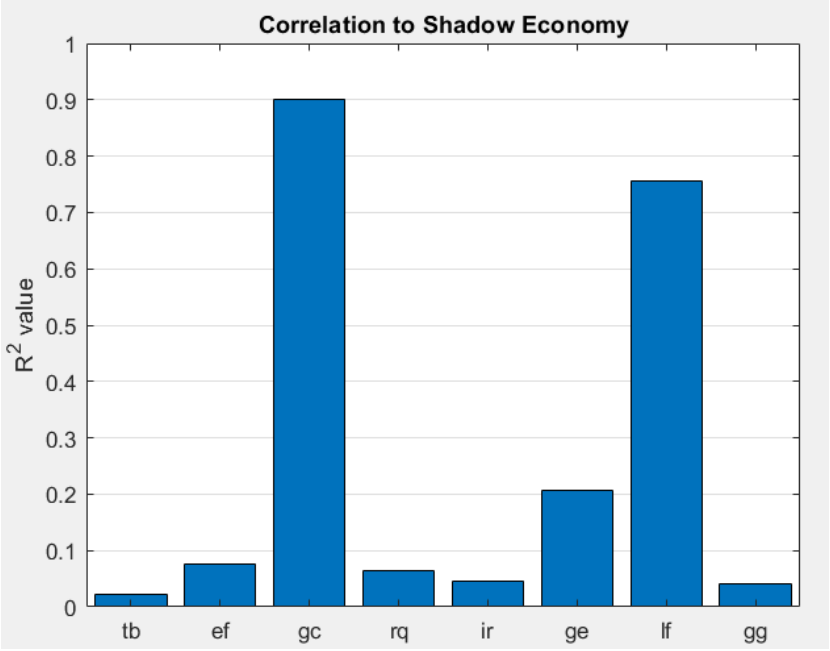


Figure 5: R^2 correlation coefficients of Russian indicators, after a linear regression.

Our results showed that the GDP per capita and total labor force models have the strongest correlation to the Russian shadow economy. In general, an R^2 correlation coefficient $0.7 < |r| \leq 1.0$ indicates a strong correlation, $0.4 < |r| < 0.7$ a moderate correlation, $0.2 < |r| < 0.4$ a

weak correlation, and finally $0.0 \leq |r| < 0.2$ no correlation. All of the R^2 values for each polynomial fit of both countries can be found in Table 3 below.

Table 3: R^2 values for each shadow economy indicator, by polynomial order and country.

Variable	Russia					Germany				
	1st Order	2nd Order	3rd Order	4th Order	5th Order	1st Order	2nd Order	3rd Order	4th Order	5th Order
Tax Burden	0.022	0.028	0.030	0.033	0.111	0.622	0.637	0.705	0.785	0.798
Economic Freedom	0.077	0.267	0.272	0.307	0.332	0.736	0.738	0.787	0.815	0.824
GDP per Capita	0.901	0.947	0.947	0.965	0.965	0.687	0.752	0.778	0.782	0.788
Regulatory Quality	0.063	0.429	0.712	0.728	0.741	0.388	0.402	0.403	0.403	0.410
Inflation Rate	0.046	0.103	0.439	0.471	0.473	0.173	0.238	0.362	0.395	0.421
Government Effectiveness	0.207	0.217	0.341	0.341	0.358	0.000	0.244	0.279	0.287	0.304
Total Labor Force	0.756	0.775	0.845	0.847	0.848	0.717	0.782	0.789	0.794	0.797
GDP Growth Rate	0.042	0.199	0.265	0.435	0.447	0.078	0.081	0.204	0.224	0.234

In terms of the German shadow economy, the indicator with the strongest correlation was economic freedom, followed by total labor force. Both Germany and Russia had a strong correlation ($0.7 < |r|$) between the total labor force and the shadow economy size. As expected, larger orders had closer R^2 values to 1.0, meaning the indicator was more correlated to the shadow economy. This also showed that higher-order models may be more accurate predictors of the shadow economy, based on the indicator chosen.

4.1.2. Predictive MATLAB Script

The equation fitting and correlation MATLAB script discussed in section 4.1.1. and found in Appendix 8.8.1. saves all of the polynomial coefficients and R^2 values found from the indicators in an .xlsx file. This information is then utilized by a second MATLAB script, found in Appendix 8.8.2, that can take a user input and make a prediction of the size of the Russian or German shadow economies based on some other selections.

Once the program is run, it imports the .xlsx data files of both Russia and Germany from the earlier script and asks the user to indicate (1) the country: Russia or Germany, (2) the abbreviation for which of the 8 indicators they would like to input, (3) what order polynomial fit they would like to be used, and finally (4) the value of their selected indicator. These inputs can be seen in Fig. 6 below, in the case of the Russian GDP per capita indicator, and a 4th order fit.

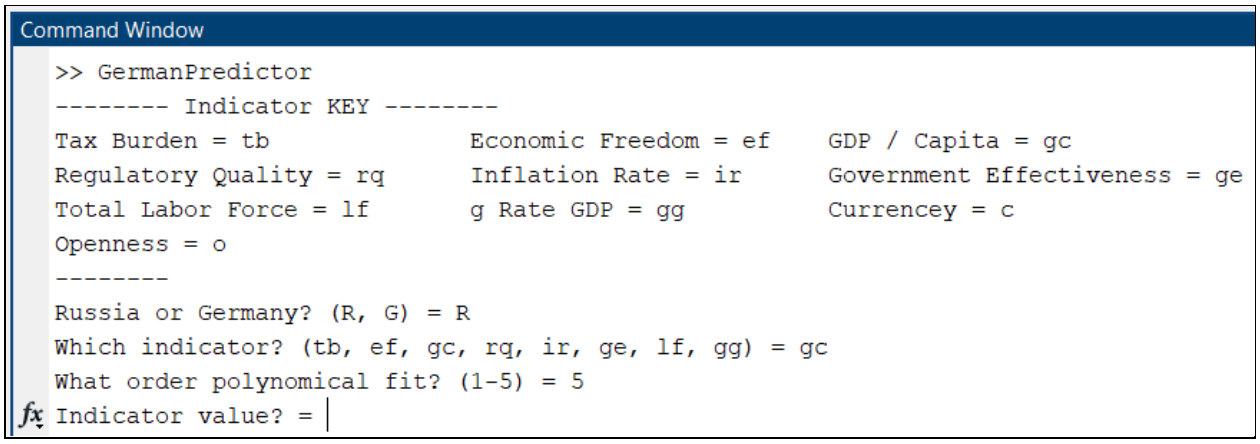


Figure 6: Predictive MATLAB script user input.

Once all of the information is entered, the program uses the equation of the indicated order polynomial fit to solve for the estimated size of the shadow economy. The resulting size estimate is then displayed along with a recap of the user's input, and the accompanying R^2 value. The results from the same example in Fig. 6 above, with a GDP per capita of 10,000 USD/ person, can be seen in Fig. 7 below.

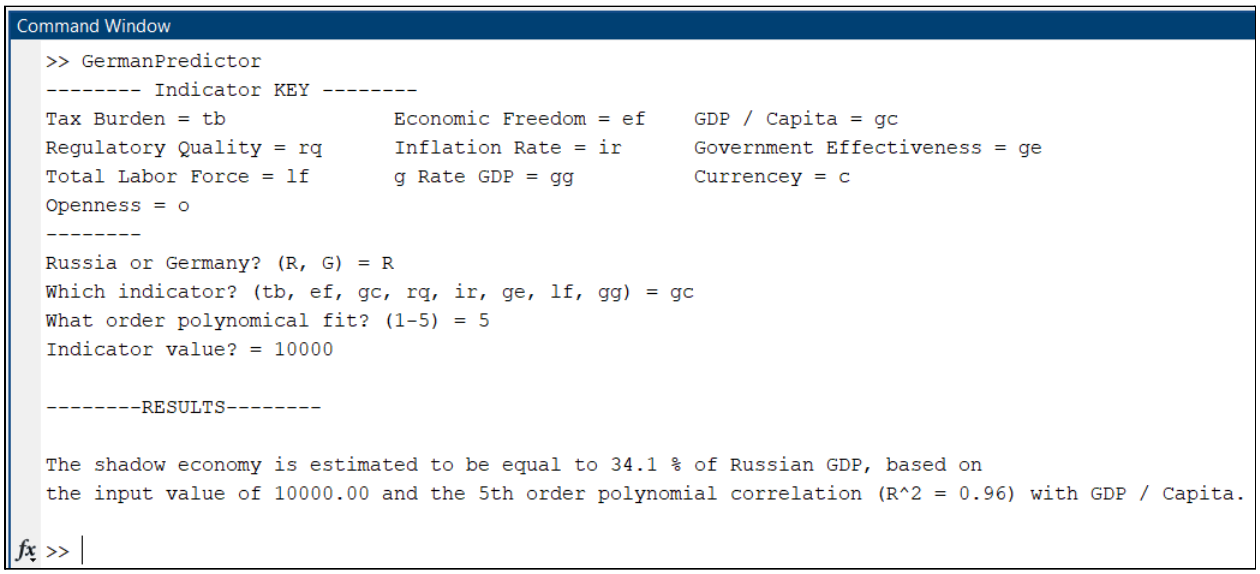


Figure 7: Predictive MATLAB script results output for a 4th order model of 0.80 GDP per capita.

As seen above, with a Russian GDP per capita of 10,000 USD/ person, the shadow economy is estimated to be equal to 34.1% of Russian GDP. This estimate has a 0.96 R^2 correlation coefficient, which is considered a strong correlation.

In order to verify the accuracy of this script, the known case of Germany in 2019 was tested. The GDP per capita of Germany during this year was reported as 46794.9 USD/person by World Development Indicators, The World Bank. When this information was entered into the predictive MATLAB script, it estimated the size of the shadow economy as: 9.1% (R^2=0.69),

8.6% (R^2=0.75), 8.8% (R^2=0.78), 8.8% (R^2=0.78), and 8.9% (R^2=0.79) using orders 1-5 respectively. These estimations by our predictive MATLAB Script are consistent with literature values that estimate the size of the German shadow economy, such as that by Fyodorov (2020) which estimated it equal to 9.1% of GDP. This is the exact estimation outputted by the 1st order MATLAB prediction. This same process of using the predictive model can be employed for any of the eight indicators, for 1st through 5th order polynomials, for either Russia or Germany.

4.2. Objective 2. Comparative Case Study Analysis

Our second objective was to perform a comparative case study between the Russian and German freelance taxation environments. Two specific areas of freelance taxation were analyzed: (1) the taxation policy which the Russian and German governments implement on freelancers, and (2) the platforms freelancers must use to pay their taxes. We were able to combine both the public and private, government and 3rd party perspectives to form comprehensive conclusions about where Russia and Germany can improve. Specifically, we showed which aspects were beneficial to the freelancer, and which helped to limit underreporting and promoted official registration. The full case study analysis that we performed can be found at the end of this report in Appendix 8.7.

4.2.1. Taxation Policy Results and Recommendations

Taxation policy in Russia and Germany was analyzed in two different ways. First, freelancer accommodations were considered to see what benefits the self-employed can enjoy when officially registering. These accommodations included any special tax bracket structure for freelancers and any deductions freelancers can claim for their business. Second, the logistics involved with submitting taxes were researched, including how the taxation structure is divided, the payment schedule, and what paperwork and forms must be filled. We found that Russian freelancers enjoy a more favorable tax bracket structure, but Germans have a much more simple and streamlined way to pay taxes.

Freelancers in Russia can choose between two separate taxation systems: the Tax on Professional Income (TPI), which is 4% if transacting with an individual or 6% transacting with a legal entity, or Professional Income Tax (PIT), which is a traditional income tax of 13% if your enterprise makes below 5 million rubles and 15% if over that threshold. Germans, on the other hand, only have the option to pay an income tax of 15-42%. Germans can claim many deductions on business expenses, while Russians who opt into the TPI waive their ability to claim deductions. Despite this, Russian freelancers enjoy a much lower tax burden overall than German freelancers, and the binary system of TPI is much simpler than the spectrum of the German income tax. Overall, the lower tax burden makes Russian policy more accommodating to freelancers, and thus more likely to deter underreporting activities.

The logistics of paying taxes in Germany and Russia also highlight important differences. Both Germany and Russia have three levels of taxation: federal, regional, and local. However, Germans only pay taxes to their local tax office, whereas Russians have to make payments to all

three. This makes the German tax system simpler and allows German workers to make a more trusting, intimate relationship with their tax office than Russians and streamlines the tax payment process overall. Additionally, German freelancers pay taxes every three months while Russians pay taxes monthly; this extra time alleviates stress and increases any potential returns for Germans, thus making their relationship with the tax office more favorable. Taxation forms in Germany are also much simpler than in Russia, especially when considering their length. The longest tax form German freelancers must fill out is 6 pages, whereas Russians must fill out a 15 page form. Examples of these tax forms can be seen in Fig. 8 and 9 below.

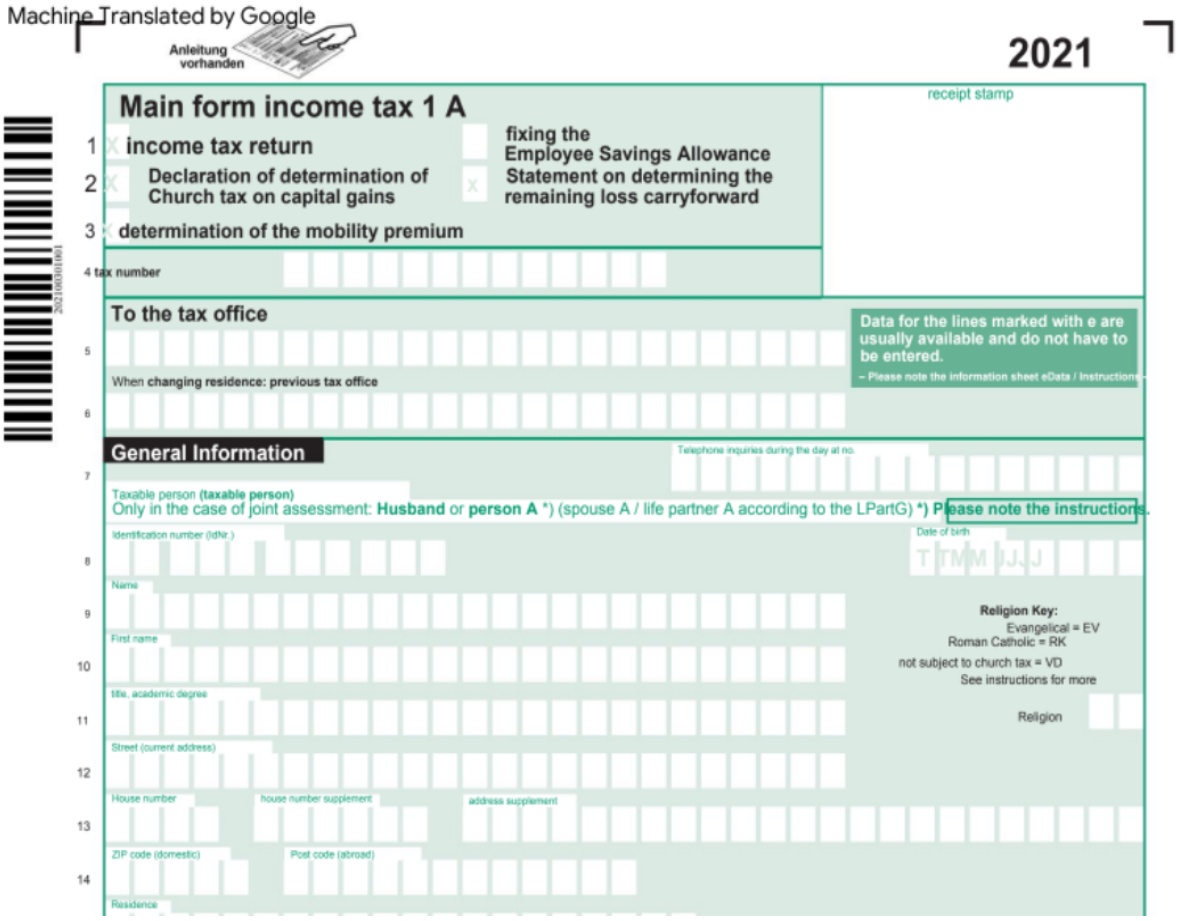
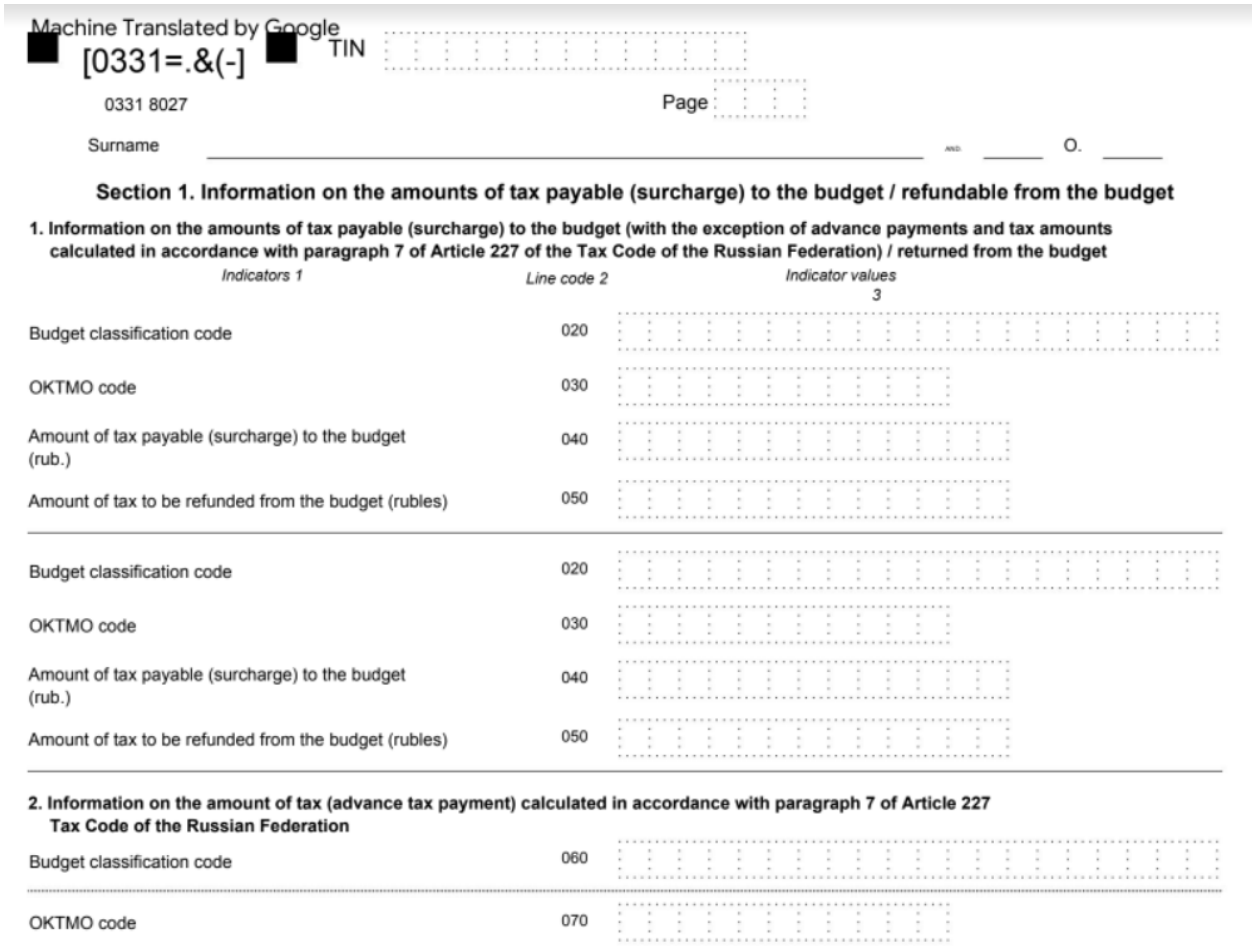


Figure 8: German EST 1A tax form, First page.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Section 1. Information on the amounts of tax payable (surcharge) to the budget / refundable from the budget
1. Information on the amounts of tax payable (surcharge) to the budget (with the exception of advance payments and tax amounts calculated in accordance with paragraph 7 of Article 227 of the Tax Code of the Russian Federation) / returned from the budget
Indicators 1
Line code 2
Indicator values 3
Budget classification code 020
OKTMO code 030
Amount of tax payable (surcharge) to the budget (rub.) 040
Amount of tax to be refunded from the budget (rubles) 050
Budget classification code 020
OKTMO code 030
Amount of tax payable (surcharge) to the budget (rub.) 040
Amount of tax to be refunded from the budget (rubles) 050
2. Information on the amount of tax (advance tax payment) calculated in accordance with paragraph 7 of Article 227 Tax Code of the Russian Federation
Budget classification code 060
OKTMO code 070

Figure 9: Russian Tax on Professional Income tax form, 3-NDFL, First page.

Information on the forms in Fig. 8 and 9 above are much more accessible for Germany than Russia, due to Russia's attempt to keep all tax-related activities limited to online avenues such as My Tax. Due to the brevity of the tax forms, and their availability online, , German freelancers have a much easier time paying their taxes than their Russian equivalents.

4.2.2. Payment Platforms Results and Recommendations

A key to evaluating how well a tax payment platform serves its users is by investigating customer satisfaction. A total of 296 sentences and reviews from 9 different websites were reviewed. The most striking of these reviews were those of Germany's state-backed tax platform, ELSTER, who underperformed all other platforms in terms of accessibility by a large margin. This is in part due to the large scope of its origin: a law whose primary purpose was to digitize tax filing across many different categories. Freelancers, alongside 90% of all businesses, must use ELSTER. The other five German platforms reviewed were well liked in comparison, and varied from good to exceptional accessibility. The same applies to Russia's only tax platform, My Tax. My Tax is another well-liked platform with good accessibility, in part due to its simpler construction, as indicated by several user reviews, and purpose, exclusively serving

self-employed taxpayers. An overview of four codes for each payment platform review is seen below in Table 4.

Table 4: Percentage of positive and negative opinions for each review site.

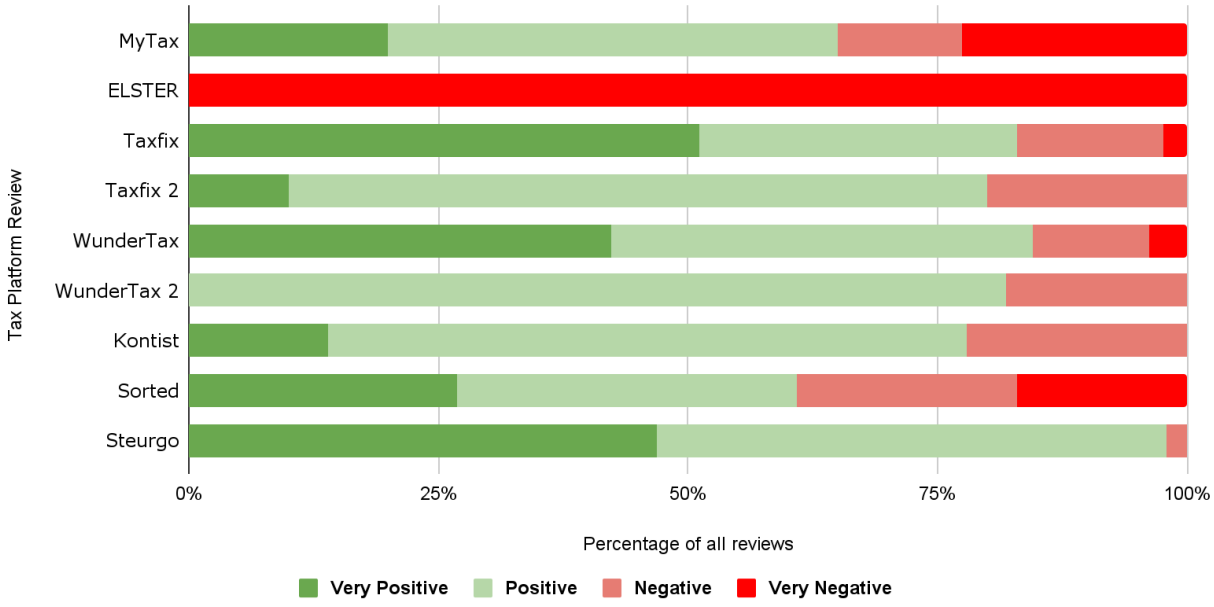

Table 5: Coding data as a percent of the total number of reviews for each website.

Review/Coding Category	generally positive	generally negative	very positive	very negative	bad customer service	good customer service	would recommend	would not recommend
play store-mytax	45.0%	12.5%	20.0%	22.5%	7.5%	5.0%	0.0%	0.0%
trustpilot-elster	0.0%	0.0%	0.0%	100.0%	17.9%	0.0%	0.0%	3.6%
trustpilot-taxfix	31.7%	14.6%	51.2%	2.4%	4.9%	14.6%	14.6%	0.0%
nomadenberlin-taxfix	70.0%	20.0%	10.0%	0.0%	10.0%	20.0%	0.0%	0.0%
trustpilot-wundertax	42.3%	11.5%	42.3%	3.8%	19.2%	34.6%	15.4%	0.0%
ichberlin-wundertax	81.8%	18.2%	0.0%	0.0%	0.0%	9.1%	18.2%	0.0%
settleinberlin-kontist	64.0%	22.0%	14.0%	0.0%	12.0%	38.0%	8.0%	4.0%
trustpilot-sorted	34.1%	22.0%	26.8%	17.1%	39.0%	31.7%	29.3%	4.9%
trustpilot-steuergo	51.0%	2.0%	46.9%	0.0%	0.0%	8.2%	26.5%	0.0%

Review/Coding Category	happy	angry	"simple…" (pos)	"fast…"	"cheap"	"expensive..."	"complex…"	"unhelpful…"
play store-mytax	52.5%	17.5%	27.5%	10.0%	0.0%	0.0%	7.5%	40.0%
trustpilot-elster	0.0%	100.0%	0.0%	0.0%	0.0%	3.6%	0.0%	100.0%
trustpilot-taxfix	80.5%	0.0%	48.8%	7.3%	2.4%	2.4%	0.0%	9.8%
nomadenberlin-taxfix	30.0%	0.0%	30.0%	10.0%	20.0%	0.0%	0.0%	20.0%
trustpilot-wundertax	76.9%	3.8%	61.5%	26.9%	3.8%	3.8%	11.5%	23.1%
ichberlin-wundertax	36.4%	0.0%	36.4%	9.1%	18.2%	0.0%	0.0%	18.2%
settleinberlin-kontist	10.0%	0.0%	20.0%	20.0%	10.0%	14.0%	4.0%	10.0%
trustpilot-sorted	46.3%	29.3%	41.5%	9.8%	9.8%	4.9%	14.6%	36.6%
trustpilot-steuergo	65.3%	0.0%	46.9%	10.2%	12.2%	0.0%	2.0%	0.0%

In Table 5 above, the coding data is presented as a percent of the total number of reviews for each website. For example, 51% of all reviews of SteuerGo are coded as ‘generally positive’. All percentages are color coded: positive attributes are green and negative attributes are red.

5. Recommendations for Russia and Germany

Our project team analyzed the freelance environments of Germany and Russia using both quantitative and qualitative methods. Our team created a statistical model to determine which economic indicators are most closely correlated with the shadow economy. This gave the project group essential context to compare and contrast elements of the Russian and German shadow economies. Not only is the shadow economy difficult to quantify, but a poor understanding of it can lead to uninformed policy decisions and loss of revenue. This gave our report context for the challenging and persistent element of freelancer taxation in the shadow economy.

The project team also performed a case study analysis on many aspects of Russian and German freelance work. This study focused on two key areas of freelancer taxation: each government's taxation policy on freelancers and the payment platforms available to taxpayers in both countries. A list of recommendations were compiled based on the results of this case study. To provide useful recommendations, our team identified two areas of both 'taxation policy' and 'freelancer taxation' to investigate. For taxation policy, we made recommendations based on evaluations of each country's freelance accommodations, as well as the logistics, or structure of each country's tax system. For payment platforms, we made recommendations based on evaluations of each platform's accessibility and transparency. Data on these platforms was collected from their own websites or from online reviews.

The resulting recommendations fell into five broad categories identified by our team: (1) new policy programs, (2) policy amendments, (3) public relations, (4) procedural changes, and (5) priorities. New policy programs are the largest endeavors that the Russian and German governments could take on. They would require political motivation as well as public support. The policy amendments category of recommendations could be implemented slightly easier, by modifying existing policies in effect in the respective countries. The public relations aspect of these recommendations involve changes to how a payment platform interacts with customers, or how a government interacts with their constituents– in the case of state-backed programs like My Tax. Procedural changes are recommendations for how taxes are actually paid, and finally priorities are recommendations for what amenities freelancer taxation should place more importance on. The following recommendations, sorted by these categories, aim to improve the quality of the freelance tax filing experience in Russia and Germany:

- New policy programs:
    - Guarantee data security through government guidelines in Russia
    - Include a government sponsored health insurance option for the German self-employed,
    - Lower German freelance taxes
- Policy amendments:
    - Increase Russian due date flexibility
    - Lower the frequency at which Russians pay taxes
    - Mandate Russian freelancers file and pay tax returns

    - Allow Russian freelancers using TPI to claim deductions
- Public relations:
    - Create a public feedback forum
    - Explain the encryption process of My Tax to users
    - Publish more information online regarding Russian taxation
- Procedural Changes:
    - Decrease the length of Russian tax forms
    - Offer on paper options for all forms
    - Streamline areas to which Russians pay taxes
- Priorities:
    - Simplify the tax process
    - Prioritize customer satisfaction over price
    - Focus on ELSTER user experience
    - Integrate a function in MyTax which calculates whether PIT or TPI is more beneficial

These recommendations are elaborated upon in the remainder of this section. The rationale for these recommendations is further discussed in the case study report *Taxation Policy and Payment Platforms of Russia and Germany: A Comparative Case Study* in Appendix of this 8.7 report.

5.1. Freelance Accommodations

It is important for a nation's taxation policies to be fair and in the best interest of its citizens. In order to determine where the governments of Russia and Germany can improve in ensuring the fairness of freelancer taxation, our team investigated the taxation brackets, deductions, and benefits freelancers enjoy in Germany and Russia.

5.1.1. Lower German Freelance Taxes

Russian freelancers pay lower taxes than German freelancers. Under the TPI, Russians pay 4% of income if transacting with an individual and 6% if transacting with a legal entity, whereas Germans pay taxes in brackets ranging from 15-42%. Lower taxes tend to increase the incentive for freelancers to officially register with the government and pay taxes, which we believe would be the case if Germany were to lower its tax on freelance work.

5.1.2. Include a MyTax Analysis Which Calculates Whether PIT or TPI is More Beneficial

Russians must choose which freelance system to opt into. They can register for TPI or PIT. The TPI (tax on professional income) is a freelancer-specific 4% tax when transacting with individuals and 6% when transacting with companies, while the PIT (professional income tax) is an non-freelancer-specific income tax of 13% (or 15% if one's income is greater than 5 million rubles). The responsibility of deciding which method to register for is up to the freelancers, and

therefore freelancers may not necessarily choose the most advantageous option. This recommendation, to include a My Tax analysis which calculates whether PIT or TPI is more beneficial, could be implemented to ensure freelancers choose the most advantageous option.

5.1.3. Allow Russian Freelancers Using TPI To Claim Deductions

Germans can claim deductions on business expenses, while Russians who opt into the TPI cannot. Allowing Russian freelancers additional savings through the option to claim deductions when filing through the TPI would decrease the barrier to entry of official registration, therefore benefiting the freelancer and limiting any potential illicit activity.

5.1.4. Include a Government-Sponsored Health Insurance Option for the German Self Employed

All German citizens are required to have health insurance, but German freelancers must pay the entire fee while German employees usually receive 50% from their employer. Russia has free healthcare nationwide for all Russian citizens, meaning Russian freelancers do not have this difference in insurance and are thus less likely to be deterred from freelance work. Although Germany currently allows freelancers up to 2,800 Euros of untaxed income to put towards healthcare, this does not compare to the amount of savings employees receive from companies. Having a government option to cover a portion of health insurance for the self-employed would greatly support the freelance community.

5.2 Logistics

It is in the government's best interest to construct a tax system that is capable, simple, and organized, to encourage and facilitate the payment of taxes by constituents. To better understand the organization and management of both the Russian and German tax systems, our team investigated the following taxation elements of both countries: the systematic division of labor, the yearly payment timeline, and the paperwork and forms required of freelancers. After researching these similarities and differences between Russia and Germany, we formed the following recommendations aimed at facilitating the correct taxation practices.

5.2.1. Streamline the way Russians Pay Taxes

In Germany, federal, state, and local taxes are all paid to the local tax offices, or Finanzämter, as opposed to each taxation level respectively. Citizens can walk into these local offices during several open hours a week, and get any questions they may have answered. A more streamlined system like this would allow Russian taxpayers to build a relationship and trust with their local tax office, and increase their faith in the government.

5.2.2. Lower the Frequency at which Russian Taxes are Due

German freelancers only file their taxes quarterly, or every three months, as opposed to Russian freelancers who file every month using the My Tax app. Reducing the frequency with which Russian freelancers have to pay their taxes would alleviate the stress associated with this paperwork, and allow them more time, energy, and freedom to dedicate to their craft.

5.2.3. Increase Russian Due Date Flexibility

German freelancers have more flexibility for submitting their tax returns. They get more time by default, and are offered generous extensions without question when they need. Offering Russian freelancers more time and flexibility to submit their tax returns would incentivise people to pay their taxes and file their returns, and enjoy the prospect of potential refunds.

5.2.4. Mandate Russian Freelancers File Tax Returns

German freelancers are required by the government to file their tax returns. Even though the Russian FTS monitors and controls transactions and cash flows through My Tax, making filing tax returns mandatory for freelancers would add a layer of redundancy to the entire system and deter illicit activity.

5.2.5. Publish More Information Online Regarding Russian Taxation

Germany has a great deal of information available online regarding the forms and paperwork that concerns freelance and self-employed individuals, but much of this information is not as accessible for the Russian equivalent. Russia could publicize more of what the process is for registering and submitting returns as a freelancer. This would encourage people to pursue freelance work and ease their minds on the taxation process.

5.2.6. Decrease the Length of Russian Tax Forms

The length of German tax forms required from freelancers range from 2 to 6 pages. On the other hand, the longest Russian form was 15 pages. It may be useful for the Russian government to explore how to make the payment, filing, and return process for freelancers more direct, in an effort to reduce the paperwork burden on taxpayers.

5.2.7. Offer on Paper Options for all Forms

To make the taxation payment, filing, and declaration process more accessible to freelancers of all demographics, Russia and Germany might both consider having an on-paper option for each form, in addition to the electronic version. This could help increase transparency of the Russian freelancer taxation process, by making these forms viewable on the internet.

5.3. Accessibility

To learn about how well tax services serve their users, our team investigated customer satisfaction. After paying a tax platform for a service, any problems that a taxpayer runs into actively deteriorates their perception of the product. Problems that involve official documents and deadlines increase the time required to correct any issues and further decrease user satisfaction. Our team thematically analyzed Russian and German tax payment platform reviews, from nine websites, using both inductive and deductive coding to explore 18 separate opinions and sentiments. After coding 296 reviews, we formed the following recommendations.

5.3.1. Simplify the Tax Process

Having explored customer reviews, it is clear that a majority of users care about how simple the platforms' processes are. The 'process' of a platform, as understood from the reviews coded, involves the specific steps that a program takes to guide its users. Unambiguous instructions and a simple interface, especially for inputting information or explaining errors make for a well-made 'process'. We recommend all tax platforms should analyze their specific process and find where users get stuck or encounter errors. Customer service is extremely helpful for this purpose, and should be prioritized.

5.3.2. Prioritize Customer Satisfaction over Price

Of all the coded reviews, one of the least mentioned aspects was platform cost. Price, the cost a user pays for a service provided, is much less important to users than user experience and the simplicity of a platform's process. This applies to all tax platforms. We recommend *not* to prioritize price over customer satisfaction.

5.3.3. Focus on ELSTER User Experience

Of the limited information we gained from reviewing ELSTER, Germany's state-backed payment platform, we strongly recommend that the platform re-evaluates their freelancer taxation process by paying more attention to the freelancer's user experience. Specifically, analyzing the specific steps and problems that users encounter while using it, especially those problems originating from the existing customer service. Users consistently faced issues with their experience, and as a result complained of errors, hiccups, and poor customer service during their filing process.

5.3.4. Create a Public Feedback Forum

Some payment platforms make their own websites to encourage their users to leave a review in hopes of improving their public perception and attracting new users. We recommend that every tax service verify a user review site or create a public feedback forum. Platforms can 'verify' existing third party websites that host user reviews by communicating with these

websites. This confirms the legitimacy of the third party website, user reviews, and the appearance of their company.

5.4. Transparency

To find how tax payment platforms shared information with its users and with potential customers, our team investigated the transparency of different Russian and German tax payment applications. Tax services require a great deal of sensitive information, so it is important that these services share every step of the process with their end users. It is also important that these services have high security measures, such as data encryption, to keep users' private information safe. After reviewing the platforms' privacy policies and explanation of data processing, we formed the following recommendations.

5.4.1. Explain the Encryption Process of My Tax to Users

Information on how German tax platforms are encrypted is readily available and eases any reservations potential users may have about sharing sensitive data. As My Tax is government run, information on how data is handled is less accessible. End users should know exactly what is happening with their sensitive personal information, and should know exactly what measures My Tax is taking to protect it so their mind is at ease with officially filing and reporting taxes.

5.4.2. Guarantee Data Security through Government Guidelines

All German platforms comply with the General Data Protection Regulation (GDPR) guidelines placed upon all countries of the EU, whereas there is no such regulation for My Tax. Creating a set of data protection guidelines to abide by would generate more clarity and trust between My Tax and its users.

6. Conclusion

This project is comprised of two main objectives. These objectives resulted in (1) a quantitative statistical model that correlated the Russian and German shadow economies to various economic indicators, and (2) a qualitative case study report that compared and contrasted the taxation environments of the two countries in order to curate recommendations for each.

The statistical model examined the following eight economic indicators in relation to the shadow economy of both Russia and Germany: tax burden, economic freedom, GDP per capita, regulatory quality, inflation rate, government effectiveness, total labor force, and GDP growth rate. A regression analysis was performed on both countries. GDP per capita and total labor force had the strongest correlation to the Russian shadow economy, while economic freedom and total labor force had the strongest correlation to the German shadow economy.

Our case study report, *Taxation Policy and Payment Platforms of Russia and Germany: A Comparative Case Study*, shed light on the similarities and differences between the Russian and German freelancer taxation environments in the vein of taxation policy and payment platforms. This insight was used to formulate recommendations for the Russian and German government, geared to benefit the freelancer. Taxation policy focused on freelancer accommodations: the tax brackets, exemptions, and deductions afforded to a freelancer. It also inquired logistics: the systemic division of labor, payment schedules, and necessary paperwork. The payment platforms section examined the accessibility and transparency of the various public and privately owned options available to freelancers to pay their taxes. In general, our case study analysis found that Germany has a much more organized approach to freelancer taxation, and Russia could benefit from an increasingly publicized and streamlined taxation environment. On the other hand, Russia provides their freelancers with much more consideration; they have specific tax policies that benefit freelancers, such as the TPI with extremely low income tax rates and VAT exemption. The Russian government also created the My Tax platform exclusively for freelancers to file and pay their taxes. Germany could use these considerations as a model for how to better cater policies specifically to freelancers.

The recommendations yielded from our case study analysis will ideally increase the ease with which freelancers can file and pay their taxes in Russia and Germany respectively. Creating an environment where the taxation policy and payment platforms are advantageous, streamlined, user-friendly, transparent, and accessible to a large demographic of people, will facilitate the livelihood of freelance workers and enable the growth of the gig economic sector. These improvements would make progress towards minimizing underreporting activities and inevitably bring gig workers increased legitimacy, transparency, protection, and respect in the eyes of society.

In the future, our work could be expanded upon in order to further progress our goal of legitimizing freelance through incentivising and facilitating the tax filing process. Additional indicators could be examined within the statistical model to further illustrate how the shadow economy impacts the broader international economies of Russia and Germany. Moreover, different statistical modeling tools could be employed, such as a factor analysis like the Multiple

Indicators Multiple Causes (MIMIC) model, or a panel analysis which can support more than one parameter at a time. Additionally, more factors could be compared and contrasted as in the case study analysis, which may include: the freelancer registration process, late fines and penalties, the audit policy, or even the social entitlements awarded to those pursuing freelance work. Different countries in addition to Germany and Russia could also be added to the case study analysis in order to gain a more holistic view of what solutions exist. Throughout the analysis process, more experts could be brought in to give their opinions, speak on some of the inconsistencies, or clarify vague and complicated policy jargon. Experts and government representatives may also be helpful in refining our recommendations and tailoring them to specific countries. An expert may be able to augment our understanding of cultural differences or unique historical contexts that have formed both the Russian and German freelancer taxation systems.

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8. Appendix

8.1. Roles of American and Russian Students

Throughout this project, we had the opportunity to work with several students from the Financial University under the Government of the Russian Federation (Финансовый университет при Правительстве Российской Федерации). The educational focus of these counterparts includes Russian economy and finance, and they range from second to fourth year students.

With the continuous assistance of these students, we were able to augment our own skills, resources, and data-collection abilities. Over the course of the project, we met with the Financial University students 1-2 times a week to exchange updates and questions. Below in Fig. 10, is a diagram illustrating the division of roles and responsibilities for both us American students at Worcester Polytechnic Institute and the Russian students at the Financial University.

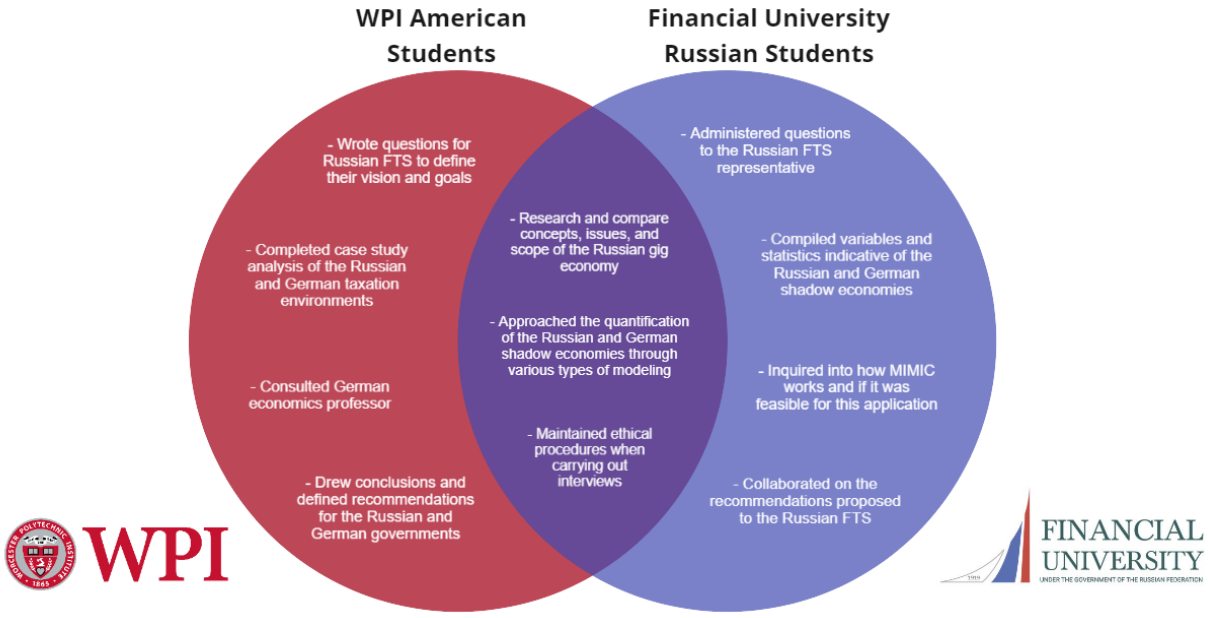


Figure 10: American and Russian Division of Labor (Authors' own work).

8.1.1. Objective 1. Extent and Scope of the Shadow Economy

The results of our first objective were supplemented greatly by the Financial University team. The Russian team collected Russian and German economic data, which was then used to then create a correlation mode via regression analysis. The model correlated the size of the shadow economy as a percentage of the country's annual GDP with various economic indicators, and spanned 15 years, from 2001-2015. Since the Financial University team is composed of students with academic history in economics and finances, they were well suited for both choosing which economic indicators would be most beneficial to examine, and collecting the indicator data.

8.1.2. Objective 2. Case Study Analysis of Russia and Germany

Objective 2 involved the American team carrying out a case study analysis of the freelance environments in both Russia and Germany. We analyzed freelancer taxation from the perspectives of the FTS and the German Tax Office. The Financial University team was tasked with facilitating communication with the FTS, whereas the Worcester Polytechnic Institute students spearheaded communication with German tax sources.

8.2. Data for Economic Indicators

8.2.1. Table 6: Russia

Indicator								
Year	Tax Burden (Tax Revenue/ GDP, %)	Economic Freedom	GDP Per Capita (USD/person)	Regulatory Quality	Inflation Rate, GDP Deflator (%)	Government Effectiveness	Total Labor Force (people)	GDP Growth Rate
2001	15.77870	49.8	2100.353	-0.57938	16.47962	-0.72000	72007910	5.100051
2002	13.63497	48.7	2377.530	-0.24488	15.66191	-0.31023	72965301	4.699992
2003	13.31403	50.8	2975.125	-0.15387	13.65714	-0.40121	72845412	7.299952
2004	13.23403	52.8	4102.365	-0.11786	20.25515	-0.44068	73570472	7.199948
2005	16.62291	51.3	5323.463	-0.13153	19.27943	-0.50049	74140578	6.399965
2006	16.56822	52.4	6920.189	-0.40426	15.12041	-0.43805	74432744	8.200068
2007	16.55131	52.2	9101.255	-0.29623	13.84124	-0.38746	75462934	8.499978
2008	15.81807	49.8	11635.270	-0.39105	18.01352	-0.36228	76004239	5.199969
2009	12.95635	50.8	8562.813	-0.33599	1.970613	-0.41345	76014195	-7.799999
2010	13.04835	50.3	10675.000	-0.35329	14.19111	-0.46885	75880787	4.500000
2011	13.95420	50.5	14311.080	-0.34917	24.46009	-0.47078	76029232	4.300029
2012	13.75467	50.5	15420.870	-0.33814	8.907868	-0.42056	75820112	4.024086
2013	12.93349	51.1	15974.640	-0.35168	5.320139	-0.35509	75450406	1.755422
2014	13.25536	51.9	14095.650	-0.38862	7.490071	-0.10970	75248204	0.736267
2015	10.64209	52.1	9313.014	-0.52078	7.249736	-0.20470	75016902	-1.972720

8.2.2. Table 7: Germany

Indicator								
Year	Tax Burden (Tax Revenue/ GDP, %)	Economic Freedom	GDP Per Capita (USD/person)	Regulatory Quality	Inflation Rate, GDP Deflator (%)	Government Effectiveness	Total Labor Force (people)[1]	GDP Growth Rate (%)
2001	10.96169	69.5	23607.88	1.514805	1.304995	1.885063	40000504	1.681468
2002	10.83530	70.4	25077.73	1.558397	1.378126	1.719772	40045540	-0.197970
2003	10.99852	69.7	30243.58	1.534465	1.321254	1.419070	40245929	-0.700120
2004	10.42629	69.5	34044.05	1.479608	1.115596	1.487871	40052833	1.175088
2005	10.65682	68.1	34507.37	1.516365	0.405207	1.505681	41232898	0.731707
2006	10.85163	70.8	36323.45	1.569094	0.397281	1.650243	41686001	3.816442
2007	11.33404	70.8	41587.21	1.615169	1.770273	1.637844	41856167	2.976455
2008	11.47230	70.6	45427.15	1.488769	0.909330	1.522836	41910272	0.959879
2009	11.61494	70.5	41485.90	1.519109	1.841892	1.578987	41974586	-5.693840
2010	11.19030	71.1	41531.93	1.573053	0.645276	1.520750	41963382	4.179882
2011	11.48139	71.8	46644.78	1.554825	1.069484	1.505779	41720726	3.925193
2012	11.62299	71/0	43858.36	1.536132	1.496489	1.538862	41825064	0.418498
2013	11.61150	72.8	46285.76	1.553044	1.959392	1.517793	42181439	0.437591
2014	11.48256	73.4	47959.99	1.703043	1.877940	1.671297	42438398	2.209543
2015	11.47873	73.8	41086.73	1.723078	1.853679	1.686973	42654597	1.491932

8.3. Table 8: Data for Shadow Economy as a Proportion of GDP

	Shadow Economy as Proportion of GDP	
Year	**Russia**	**Germany**
2001	40.81	12.48
2002	40.78	13.01
2003	40.08	13.18
2004	37.68	12.8
2005	36.41	12.61
2006	35.47	11.41
2007	34.59	10.56
2008	32.60	9.59
2009	36.79	11.69
2010	33.70	10.88
2011	32.03	9.05
2012	31.88	8.85
2013	32.21	9.22
2014	31.04	8.17
2015	33.72	7.75

8.4. Table 9: Inductive and Deductive Codebook

Deductive Codebook	**Inductive & Deductive Codebook**
Generally positive experience	Generally positive experience
Generally negative experience	Generally negative experience
Very positive experience	Very positive experience
Very negative experience	Very negative experience
Good customer service	Good customer service
Bad customer service	Bad customer service
“trust” “trusting”... (positive)	Would recommend
“trust” “trusting”... (negative)	Would not recommend
“simple” “simply”...	User friendly
“fast” “quick” “convenient” …	User unfriendly
“expensive”	Happy
“Complicated” “difficult” “complex” “hard to understand” ...	Angry
“cheap” “inexpensive” “good value” …	“Simple…” (positive)
“unhelpful”	“Fast…”
“poor”	“Cheap…”
“would recommend” or “use again”	“Expensive…”
“would not recommend”	“Complex…”
	“Unhelpful…”

8.5. MATLAB Scripts

8.5.1. Scrip 1: Equation Fitting and Correlation

```
%% Russian Modeling Attempt 4

clear; close all; clc;

% import and label all data

data = readmatrix('Rdata.xlsx');

y = data(:,1); % year (2001-2015)
tb = data(:,2); % tax burden (%)
ef = data(:,3); % economic freedom (index)
gc = data(:,4); % GDP per capita (USD/person)
rq = data(:,5); % regulatory quality (index)
ir = data(:,6); % inflation rate (%)
ge = data(:,7); % government effectiveness (index)
lf = data(:,8); % total labor force (people)
gg = data(:,9); % GDP growth rate (%)
s = data(:,10); % shadow economy (%)

Rval = zeros(8,6); % initalize R^2 values matrix , last column is higest order
coeff = zeros(8,19); % initalize eq values matrix

vari = ["y", "tb", "ef", "gc", "rq", "ir", "ge", "lf", "gg", "s"]; % each
variable
lab = ["Year", "Tax Burden", "Economic Freedom", "GDP / Capita", "Regulatory
Quality", "Inflation Rate", "Government Effectiveness", "Total Labor
Force","GDP Growth Rate", "Shadow Econ."]; % each variable

%% Regression: Determine Correlation (R^2 values)

figure
ytickformat('%.2f')
xtickformat('%.2f')

for i = 1:length(vari)-2

    % Plot independent var vs. Shadow Econ dependent var
    x = eval(vari(i+1));
    y = s;

    subplot(4,2,i)
    hold on
    plot(x,y,'ro');

    for j = 1:5
```

```
% Polynomial fitting
p = polyfit(x,y,j);

if j == 1
    p1 = p(1);
    p2 = p(2);

    coeff(i,1) = p1;
    coeff(i,2) = p2;

elseif j == 2
    p1 = p(1);
    p2 = p(2);
    p3 = p(3);

    coeff(i,3) = p1;
    coeff(i,4) = p2;
    coeff(i,5) = p3;

elseif j == 3
    p1 = p(1);
    p2 = p(2);
    p3 = p(3);
    p4 = p(4);

    coeff(i,6) = p1;
    coeff(i,7) = p2;
    coeff(i,8) = p3;
    coeff(i,9) = p4;

elseif j == 4
    p1 = p(1);
    p2 = p(2);
    p3 = p(3);
    p4 = p(4);
    p5 = p(5);

    coeff(i,10) = p1;
    coeff(i,11) = p2;
    coeff(i,12) = p3;
    coeff(i,13) = p4;
    coeff(i,14) = p5;

elseif j == 5
    p1 = p(1);
    p2 = p(2);
    p3 = p(3);
    p4 = p(4);
    p5 = p(5);
```

```
            p6 = p(6);

            coeff(i,15) = p1;
            coeff(i,16) = p2;
            coeff(i,17) = p3;
            coeff(i,18) = p4;
            coeff(i,19) = p5;
            coeff(i,20) = p6;

        end

        z = linspace(min(x),max(x))';
        F_trend = polyval(p,z);

        plot(z, F_trend, 'k');

        F_predicted = polyval(p,x);
        % Evaluate the goodness of fit R^2 val
        SStot = sum((y - mean(y)).^2); % total sum of squares
        SSres = sum((y - F_predicted).^2); % sum of squares of residuals
        R2 = 1-SSres/SStot;

        % save R^2 values
        Rval(i,j) = R2;

    end % each degree polynomial

    [M, I] = max(Rval(i,:));

    Rval(i,6) = I; % maximum R value polynomial

    % Fitting and legend
    fit = sprintf('R2 = %.2f',R2);
    % xlabel([lab(i+1), fit])
    xlabel(lab(i+1))
    ylabel(lab(10))
    title(join([lab(i+1), 'vs.', lab(10)]))

end % each variable

xlswrite('RRval.xlsx',Rval)
xlswrite('Rcoeff.xlsx',coeff)


%% Bar graph of linear

figure
cat = categorical(vari(2:end-1));
cat = reordercats(cat,vari(2:end-1));
```

```
bar(cat, Rval(:,1))
ax = gca;
ax.XGrid = 'off';
ax.YGrid = 'on';
ylabel('R^2 value')
title('Correlation to Shadow Economy')
```

8.5.2. Scrip 2: Predictive MATLAB Script

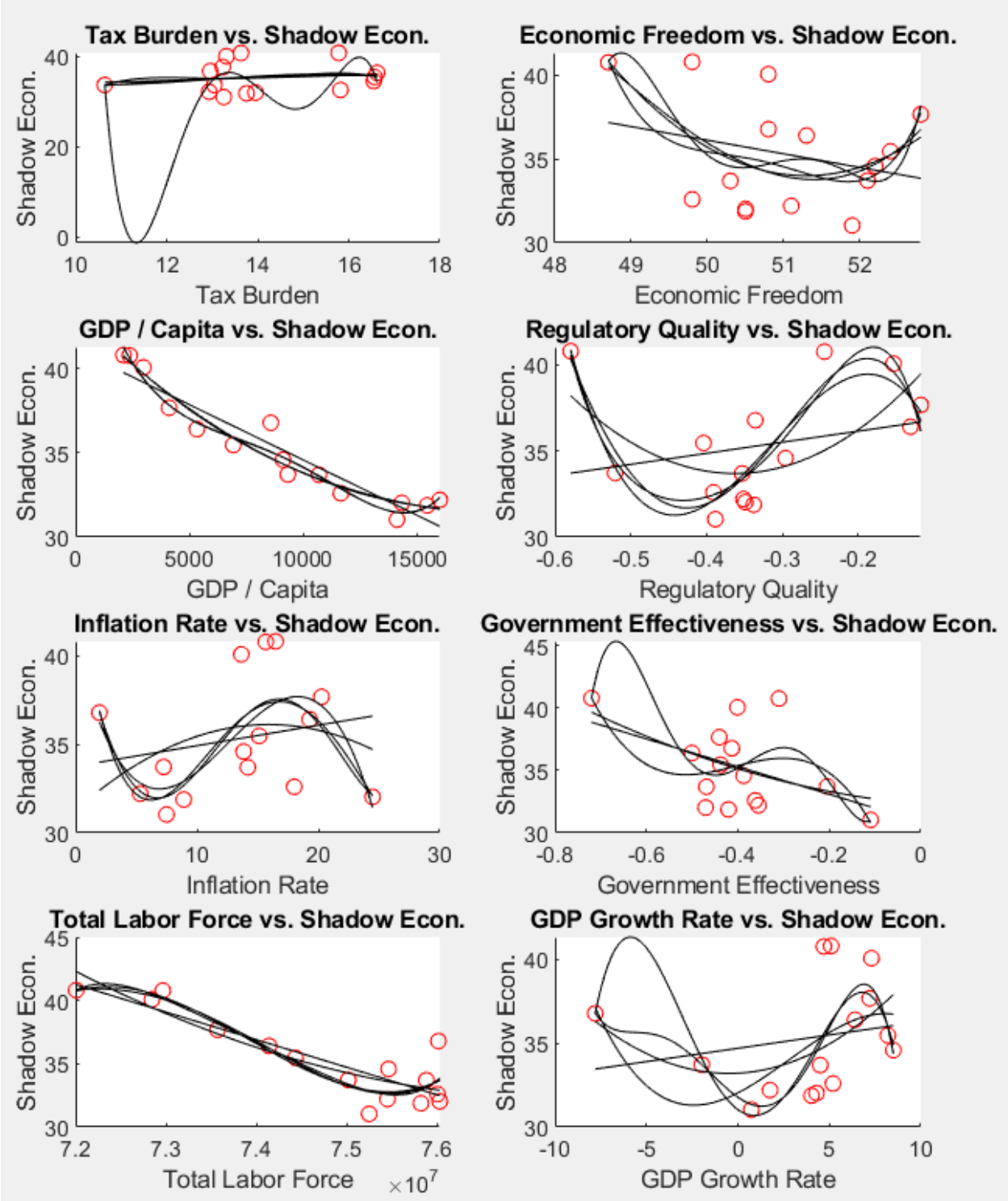
```
%% Printing Equations

clear; close all;

% import and label all data

Rval = readmatrix('RRval.xlsx');
coeff = readmatrix('Rcoeff.xlsx');
Rval2 = readmatrix('GRval.xlsx');
coeff2 = readmatrix('Gcoeff.xlsx');

o1 = coeff(:,1:2);
o2 = coeff(:,3:5);
o3 = coeff(:,6:9);
o4 = coeff(:,10:14);
o5 = coeff(:,15:20);

Go1 = coeff2(:,1:2);
Go2 = coeff2(:,3:5);
Go3 = coeff2(:,6:9);
Go4 = coeff2(:,10:14);
Go5 = coeff2(:,15:20);

lab = ["Tax Burden", "Economic Freedom", "GDP / Capita", "Regulatory Quality",
"Inflation Rate", "Government Effectiveness", "Total Labor Force","g Rate GDP",
"Currencey", "Openness"]; % each variable
oth = ["st", "nd", "rd", "th", "th"];


%%
disp('-------- Indicator KEY --------')
disp('Tax Burden = tb              Economic Freedom = ef    GDP / Capita =
gc');
disp('Regulatory Quality = rq      Inflation Rate = ir      Government
Effectiveness = ge');
disp('Total Labor Force = lf       g Rate GDP = gg          Currencey = c');
disp('Openness = o');
disp('--------')

ctry = input('Russia or Germany? (R, G) = ','s');
ctrylabel = "Russian";
```

```
if ctry == "G"
    o1 = Go1;
    o2 = Go2;
    o3 = Go3;
    o4 = Go4;
    o5 = Go5;
    Rval = Rval2;
    ctrylabel = "German";
elseif ctry ~= "R"
     error('ERROR: Invalid country.')
end

indi = input('Which indicator? (tb, ef, gc, rq, ir, ge, lf, gg) = ','s');
order = input('What order polynomical fit? (1-5) = ');
x = input('Indicator value? = ');

if order == 1
    tp = o1;
elseif order == 2
    tp = o2;
elseif order == 3
    tp = o3;
elseif order == 4
    tp = o4;
elseif order == 5
    tp = o5;
else
    error('ERROR: Invalid order.')
end

if indi == "tb"
    num = 1;
elseif indi == "ef"
    num = 2;
elseif indi == "gc"
    num = 3;
elseif indi == "rq"
    num = 4;
elseif indi == "ir"
    num = 5;
elseif indi == "ge"
    num = 6;
elseif indi == "lf"
    num = 7;
elseif indi == "gg"
    num = 8;
else
    error('ERROR: Invalid indicator type.')
```

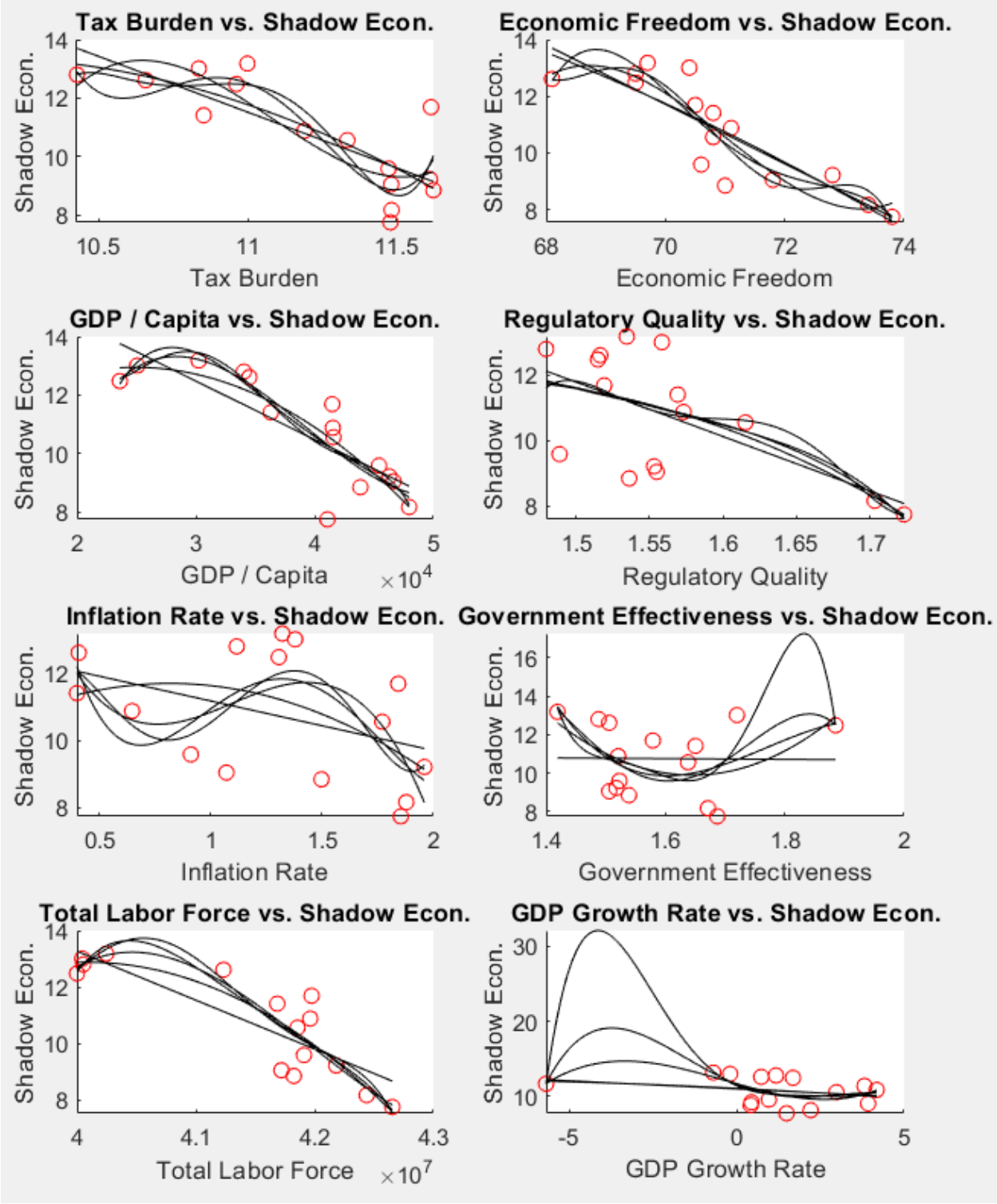
```
end

p = tp(num,:);
l = lab(num);

sp = polyval(p,x);

R2 = Rval(num,order);

disp(' ');
disp('--------RESULTS--------');
disp(' ');

oth = oth(order);
sgn = '%';
fprintf('The shadow economy is estimated to be equal to %.1f %s of %s GDP,
based on \nthe input value of %.2f and the %d%s order polynomial correlation
(R^2 = %.2f) with %s.\n', sp, sgn, ctrylabel, x, order, oth, R2, l)
disp(' ');
```

8.6. Shadow Economic Indicator Graphs

8.6.1. Russian Shadow Economy Correlation Graphs



8.6.2. German Shadow Economy Correlation Graphs



8.7. "Taxation Policy and Payment Platforms of Russia and Germany: A Comparative Case Study" Report

Taxation Policy and Payment Platforms of Russia and Germany: A Comparative Case Study

Myah Caplan, Emily Donovan,
Peter Murray, Kyle Staubi
April 20, 2022

As part of an International Qualifying Project
in partial fulfillment of the requirements for the
Degree in Bachelor of Science

***1. Introduction*— In Russia and in Germany, it is important for freelancers to feel represented in their tax system so that they register with the government. Aside from the increased revenue the governments enjoy, this arrangement allows freelancers to receive necessary protections and benefits. Freelancers' propensity to pay their taxes can be analyzed through two important aspects: (1) the taxation policy which freelancers must grapple with and (2) the payment platforms freelancers must use for their taxes. By comparing and contrasting these features between Germany and Russia, conclusions can be made as to which system better accommodates and supports freelancers. These conclusions can be used to further infer recommendations for either Germany or Russia to make their freelancer taxation systems more efficient. Overall, Russian policies and its state-run tax payment platform, My Tax, support freelancers much more than German policies and their multiple third party payment platforms. Nevertheless, Russia could improve the clarity of their freelancer taxation process by making more resources available for viewing online.**

2. Background

Both Russia and Germany have undergone extreme systemic changes over the last century, including the emergence and dissolution of entire governments. This, in combination with the rise of the internet and the increased globalization of the twentieth century, has made for a unique socioeconomic context in which the countries can be examined. Despite these commonalities, the extent and prevalence of the shadow economy in Russia and Germany is very different, with Russia having an extremely large estimated shadow economy, while Germany's is very small: equal to 44.7% and 9.1% of GDP respectively (Putnins & Sauka, 2020; Fyodorov, 2020). There are several potential causes of this disparity, one of which being the increased difficulty faced by the Russian government, specifically the Federal Tax Service of Russia (FTS, Федеральная Налоговая Служба– ФНС), of accommodating and legitimizing the expanding freelance economic sector.

In Russia, the FTS is overseen by the Ministry of Finance, in the same way that the American IRS is a subsection of the Department of the Treasury (Fernandez, 2022). Similarly, Germany collects taxes through the Federal Central Tax Office (Bundeszentralamt für Steuern– BZSt) and local tax offices (Finanzämter) that administer federal and regional taxes respectively. German taxation is supervised by the Federal Ministry of Finance as a parent agency (IamExpat, n.d.).

2.1. Russian Taxation System

Similar to the United States, Russia employs a progressive tax system, meaning that the percent you pay towards income taxes increases with your income. In Russia the brackets are such that one must pay 13% personal income tax (PIT) if they make less than 5 million rubles a year, and 15% if they earn above that threshold (as of April 6, 2022, 1.00 Russian Ruble ₽ is equivalent to 0.012 United States Dollar $, is equivalent to 0.011 Euro €). In terms of other federal-level taxation, the VAT tax has been a flat 20% on goods and services since 2019. The tax is reduced to 10%, or fully eliminated, such as when purchasing medical supplies, food, or children's clothing (Fernandez, 2022).

When it comes to freelance workers in Russia, tax policies specifically for them have only been enacted

since 2019. The "Tax on Professional Income," or the TPI, was enacted as an experimental policy meant to give freelancers a chance to legalize themselves, (The Moscow Times, 2018). This experimental policy taxes the income of freelance workers depending on their customers; income from individuals is taxed at a rate of 4%, whereas income from entrepreneurs, companies, and legal entities are taxed at a rate of 6%. Transitioning to the new TPI rates is currently optional for freelance workers, meaning that they can choose if the TPI rates or personal income tax (PIT) rates are more advantageous for them. Electing the TPI method also gives freelancers perks, such as being exempt from VAT (Federal Tax Service of Russia, n.d.).

2.2. German Taxation System

In Germany, the income tax brackets progress, after the €9,984 threshold, from 14% to 45%. Germany also maintains a 19% VAT (Mehrwertsteuer, MwSt. or Umsatzsteuer, Ust.) rate on most goods and services. Nevertheless, "deliveries within the European Union (EU), medical services, financial services, insurance, and real estate are exempt from USt," (Maunder, 2022, Taxes on goods and services (VAT) in Germany section, para. 3). There is also a reduced VAT rate of 9% on certain items like newspapers, books, and food (Maunder, 2022).

In addition to the €9,984 untaxed threshold, as stipulated by the income tax brackets, German freelancers are also eligible for €2,800 untaxed to put towards mandatory health insurance. German freelancer's income exceeding the taxable threshold abides the same progressive brackets as any other income would. Incidental expenses associated with self-employment such as the use of an accountant, office supplies, business trips, or even telephone and internet access can qualify one for tax deductions (Richardson, 2022).

2.3. Research Gap

Advancements in streamlining taxation policies and improving tax rates, since the turn of the century, have drastically improved the collection rate of Russia. A lower overall burden to taxpayers has just about doubled collection rate since 2011 (Fernandez, 2022). Taxes collected amounted to about 10.9% of the country's GDP in 2019, which is significantly less than the United States' 25.0% and Germany's 38.6% the same year, and the Organisation for Economic Co-operation and Development (OECD) average of 33.4% (Organisation for Economic Co-operation and Development, 2021).

With freelance work becoming an increasingly attractive endeavor for people in modern society, the taxation of this economic sector is of growing importance. The stark contrast between the size of the Russian and German shadow economies may indicate differences in the taxation environment. This case study examines various elements of freelancer taxation of both countries in an effort to determine how each may be improved, with the goal of encouraging and facilitating freelancer taxation filing.

3. Methodology and Discussion

Our analysis considered two different aspects of freelancer taxation: the taxation policy which freelancers must grapple with and the payment platforms they must use to submit their taxes. We aimed to combine the perspectives of the government, third party platforms, and freelancers to analyze and compare the Russian and German environments. Specifically, we hope to extrapolate which policies and practices are most beneficial to the freelancer, and what changes Russia and Germany can make to their respective taxation environments after examining each other. These improvements seek to help limit underreporting activities and eventually bring freelancers increased legitimacy and protections in the eyes of society.

3.1. Taxation Policy

Taxation policy, in this case study, refers to examining the freelancer accommodations and logistics of the taxation environment in both Russia and Germany. Freelancer accommodations, in terms of taxation policy, include tax brackets, and tax exemptions and deductions. Moreover, the logistics of freelancer taxation speaks to the systemic division of labor of the governments, the payment schedule, and the paperwork and forms involved.

3.1.1. Freelancer Accommodations

When examining how taxation policy can be used to combat informal activity in the freelancer environment, it is important to consider what accommodations are built into the taxation systems for freelancers. Specifically, analyzing how tax brackets are

structured and deductions are set up, can provide insight into what policies deter underreporting by benefiting those who register. Numerous online resources, journals, and periodicals were analyzed to determine: (1) what differences there are, if any, between paying taxes as a self-employed or freelance worker versus an employee, and (2) what deductions or benefits are offered to freelancers when reporting their taxes. These factors were analyzed in both the Russian and German environments to understand how both countries handle freelancer taxation, and where both countries' policies can improve.

3.1.1.1. Tax Brackets

Differences in freelancer and employee taxation in both Russia and Germany can provide important context for understanding each country's attempts to incentivise official registration. In Russia, a new experimental tax system on freelancers called Tax on Professional Income (TPI) was introduced in 2019, applying in only four different regions: Moscow, the Republic of Tatarstan, Moscow Region, and Kaluga Region (Korobkova & Patturi, 2020). This new regime stipulates that freelancers pay a 4% tax on business with individuals and a 6% tax on business with legal entities, which is vastly lower than Russia's previous Personal Income Tax (PIT) policy of 13% to 15% depending on income implemented in 2001 (Gorodnichenko et. al., 2008). In contrast, German freelancers do not enjoy any sort of special accommodation via tax brackets. They pay taxes in brackets of 15-42% depending on their level of income (Taxes for freelancers, 2022).

There are two important differences in these tax regimes which affect the freelance registration rate: first Russian freelancers enjoy a much lower tax rate than German freelancers, and second the Russian tax system is much simpler than the German tax system in that it is at two discrete rates rather than on a continuous interval. However, Russian freelancers must understand whether TPI or PIT is more beneficial and act accordingly, while German freelancers have only one system which decreases confusion. A study by Delecat and Medina (2020) found that these factors lead to decreased informality in the freelance sector: "It is generally recognized that simpler value-added and corporate tax systems (with no or minimal exemptions and loopholes) with lower rates, as well as low payroll taxes, help reduce informality," (para. 8 bullet 2).

3.1.1.2. Exemptions and Deductions

In the area of deductions, German freelancers have the opportunity to claim many write-offs: their rent or workplace lease, their internet and phone costs, travel costs, costs from purchasing equipment and tools for their business, and other purchases made solely for the business (Taxes for freelancers, 2022). Russian freelancers do not enjoy such deductions; anyone in Russia who does not pay the flat 13% tax rate, including freelancers under the experimental TPI, cannot claim deductions on their taxes. However, consultants at KPMG (Klynveld Peat Marwick Goerdeler), an international tax advisory company, point out that deductions in Russia do not amount to much anyway: "Claiming a tax deduction [in Russia] is usually associated with substantial paperwork and most deductions lead to relatively low tax savings," (Podnyek, 2017, p. 6).

While German freelancers can claim deductions, there are numerous other circumstances which point to Russia as having a better taxation policy in the perspective of benefiting the freelancer and minimizing underreporting. The freelance taxation rate in Russia is much lower than in Germany, and in addition, German freelancers must pay additional social costs such as healthcare when they are not employed by a company. The Russian monetary tax burden on freelancers is also much lower, and their policy is much simpler than the German equivalent. However, Russian freelancers must choose for themselves whether the TPI or PIT taxation systems are more beneficial, whereas Germans only have one system to contend with. All of these factors help contribute to a more advantageous freelancer taxation policy, which more effectively limits underreporting activities.

3.1.2. Logistics

Our team is particularly interested in the logistics of Russian and German taxation environments. These include payment schedule, the paperwork and forms involved, and the division of labor amongst tax-collection systems. These aspects of each country are important to explore because their differences may highlight areas in which either country has the potential to improve. From the perspective of the constituents, the success of a taxation system is not limited to the strictly the amount of money that they are paying or saving; the

organization and logistics of the system can be just as much of an advantage or detriment.

3.1.2.1. Systemic Division of Labor

The division of labor of the taxation systems in both Russia and Germany speaks to their overall organization and translates to how well equipped they are to collaboratively carry out taxing their constituents.

Russia has three levels of taxation stipulated by the Tax Code (Налоговый кодекс Российской Федерации, enacted 1998): federal, regional, and local. Each level has different domains that it is responsible for taxing. Federal taxes include value-added tax (VAT), "mineral extraction tax, individual income tax, unified social tax, corporate profits tax, excise taxes, special tax regimes, and several other taxes," (Fernandez, 2022, Federal, regional, and local taxes in Russia section, para. 1). Regional taxes include gambling, vehicles, and assets like corporate property. Finally, local taxes cover individual property and land (Fernandez, 2022).

Similarly, German taxation, outlined in the The Fiscal Code of Germany (Abgabenordnung, enacted 2002), has three institutions that impose taxes: the federal government (Bundesregierung), the states (Bundesländer), and local municipalities (Gemeinden). While taxes on German citizens originate from these three levels, they are administered by two different institutions: the Federal Central Tax Office (Bundeszentralamt für Steuern– BZSt) and local tax offices (Finanzämter). Federal taxes include income tax, VAT, and import/export tariffs. Real estate transfer tax (RETT), as well as alcohol and gambling related taxes are overseen by the state level. Additionally, local municipalities govern hotel and inn stay taxes, as well as homeownership taxes (Maunder, 2022). Tax revenue is collected primarily by local tax offices, and then redistributed among the federal, state and local governments (IamExpat, n.d.).

Russia and Germany have a similar division of what taxes are levied by who: both countries have three levels, resembling federal regional and local taxes. These two countries differ in how these taxes are paid by citizens. In Russia, taxes are paid to each level directly, for example federal taxes are paid to the FTS. In Germany, federal, state, and local taxes are all paid to the local tax offices. The German Federal Central Tax Office is mainly responsible for issuing tax ID numbers, conducting audits, and assisting foreign investors. The local tax offices are responsible for registering freelance businesses, and collecting income tax, vehicle tax, business tax, and property tax (IamExpat n.d.).

Due to the large responsibility of the local tax offices, they are the ones who citizens most often interact with. Individual taxpayers in Germany interact almost exclusively with their local tax office. This system is incredibly streamlined and allows for a simpler payment system. Moreover, it allows taxpayers to form a relationship and build trust in their local tax office, which likely has walk-in hours several times a week. Taxpayers can rely on their local office if they have any questions or issues.

3.1.2.2. Payment Schedule

Russian freelance taxes are paid monthly, using the mobile application made by the FTS called My Tax. The My Tax payment amount is released on the 12th of the following month, and is due on the 25th of that month (Awara, 2019). German freelance taxes, on the other hand, are estimated by one's local tax office, and paid quarterly. They can be paid using a paper form, or through various online services such as the government-created My Tax equivalent: ELSTER, or third party services like Taxfix, or Wundertax (Richardson, 2022).

The timeline for filing taxes in Russia is based on the calendar year, the tax year begins January 1st and ends December 31st. Income tax returns must arrive by April 30th the following year, and July 15th is the deadline for all other taxes. While these forms have a somewhat rigid schedule, taxpayers can file for deductions at any time in the calendar year. In Germany, the tax year also runs from January 1st to December 31st, and tax returns can be submitted any time before July 31st the following year. One may also apply for an extension to submit tax returns, which is often automatically granted (IamExpat, n.d.). An extension is granted to either late December 31st or February 28th, when a tax advisor provides their service (How To Germany, 2021).

Russia and Germany have more distinct differences when it comes to their taxation payment and return submittal schedules. German taxpayers have more time between their tax payments, with installments being paid every three months, as opposed to Russian freelancers' monthly system. Reducing the amount of

times Russian freelancers have to pay their taxes may alleviate the stress associated with this paperwork.

Moreover, German freelancers have way more flexibility for submitting their tax returns. They get more time by default, and do not have to submit until July 31st as opposed to April 30th. They are also offered generous extensions essentially automatically. German tax returns are mandatory for freelancers, and can be filed through ELSTER, whereas Russian freelancer tax returns are optional for self-employed but heavily recommended for professionals and businessmen (Awara, 2019). Offering Russian freelancers more time and flexibility to submit their tax returns would incentivise people to pay their taxes and file their returns and enjoy the prospect of potential refunds. Additionally, even though the FTS monitors and controls transactions and cash flows through My Tax, making filing tax returns mandatory would add a layer of redundancy to the entire system and deter illicit activity. This feature could potentially be integrated into My Tax, as Germany has done with ELSTER.

3.1.2.3. Paperwork and Forms

The final logistical consideration between the Russian and German freelance tax environments is the paperwork and forms involved. While the aforementioned logistical aspects speak to the organization of the taxation institutions, the paperwork required indicates the burden of tax filing placed on freelancers themselves.

Registering and paying for taxes in Russia is very integrated into the My Tax application: one can register and pay entirely online with a passport or a ‘public services account’. Registering as a freelancer is optional, but brings with it significant tax breaks for freelancers (Fernandez, 2022). Personal income tax (PIT) returns are submitted using a Tax Declaration, or “Налоговая Декларация” form, known as the 3-NDFL. This 15-page form is for both residents and nonresidents, and requires information about all income received, its source, payments in advance, as well as any amounts withheld (Dorokhov, 2021).

Other documentation may be required if a freelancer is going to be employing others. This might include proof of being an “общества с ограниченной ответственностью” (OOO), or limited liability company (LLC). Besides the 3-NDFL form, many Russian freelancer taxation forms are not available as PDFs online. This may be attributed to our limited resources and access, or it may be due to the fact that the process is confined to the My Tax application (Rhijn, 2019).

On the other hand, most German tax forms are organized in the “Form Management System (FMS) of the Federal Finance Administration” that can be found at https://www.formulare-bfinv.de/. Every step of the filing process can be done online, with some specialty forms being only available electronically (IamExpat, n.d.). German freelancer tax forms begin with an intro questionnaire to let the local tax office know you are going to be doing freelance business. This form is called the “Fragebogen zur steuerliche Erfassung” which translates to “Questionnaire for tax registration”. This is an 8-page form that asks for general information such as your address, marital status, banking details, and the nature of your freelance business. After sending this form to your local tax office, or Finanzamt, you will receive a German tax ID number, a VAT number if applicable, and more information regarding your expected payment schedule (Bastien, 2022).

The VAT, or “Umsatzsteuer”/ “Mehrwertsteuer”, is levied at 7-19% and you “can deduct the amount of VAT you paid on goods or services you bought from the amount of V.A.T you added to your own bills. If you paid more than you received, the Finanzamt will refund the difference. This is paid monthly to the Finanzamt during the first 2 years and quarterly after this if you don’t collect so much V.A.T through your activity,” (Bastien, 2022, 4 Everything around taxes, 4.1 Umsatzsteuer or Mehrwertsteuer (V.A.T), para. 1). There is also an option to opt out of this, where a small business does not get a VAT refund, but also does not need to add a VAT to their sales; this is known as the “Kleinunternehmerregelung” or “small business rule.” A worker can change their classification in regard to this rule at any time, and acquire a VAT number using the electronic “Vergabe einer USt-ID”, or “Assignment of a VAT ID”, form on the FMS website (Bastien, 2022).

A freelancer’s “Steuererklärung”, or “tax declaration” takes care of a freelancer's “Einkommensteuer”, or “income tax.” This is filed by submitting the “Est 1 A” tax return form, which is 2 pages and asks basic information about the filer. The VAT return, for those who do not opt out, is submitted using the “Ust-VA” form, which is 6 pages and asks for more specific information on the sales one makes

(Bastien, 2022). Additionally, self-employed workers must fill out a "Anlage S", or "Form S", which is 2 pages that accounts for profits and income (Straub, 2021). There are additional forms if you make an extreme surplus income, are considered a tradesman, are not a resident, and if some other extenuating circumstances apply (Wundertax, 2022).

Germany has a great deal of information available online regarding the forms and paperwork that concerns freelance and self-employed individuals. In contrast, much of this information is not as accessible for the Russian experience. While this may be in an effort to contain all tax-related activities to the My Tax application, Russia could potentially increase transparency of what the process is for registering as a freelancer, submitting tax returns, opting into the freelancer registry, as well as applying for any possible deductions. Even if the forms are only accepted through My Tax by the FTS, making this information more available could encourage people to pursue freelance work and ease their minds on the taxation process.

Moreover, the longest German tax form was 6 pages whereas the Russian one was 15 pages. It may be useful for the Russian government to explore how to make this process more direct, in an effort to reduce the paperwork burden on taxpayers. Finally, to make the taxation payment, filing, and declaration process more accessible to freelancers of all demographics, Russia and Germany might also consider having an on-paper option for each form, as well as an electronic version. This could also speak to increasing transparency of the Russian freelancer taxation process, if these forms were made viewable on the internet.

3.2. Payment Platforms

While Russia only has one state-backed tax payment platform, Germany has options of both a state-backed tax platform and many different private payment platforms that taxpayers may choose from. We will first focus on the two state-backed tax platforms in these two countries. Germany's platform is called ELSTER, or ELektronische STeuerERklärung (electronic tax declaration). Russia's platform is called My Tax (Мой налог).

My Tax is a digital platform that exclusively serves taxpayers that qualify for a 'Tax on Professional Income' (TPI), introduced by the FTS in January 2019. This legislation was preceded by Russia declaring freelancer activities as a "strategic development [objective]" in 2018, following a Russian Presidential Council that had identified the need to determine the legal status of self-employed in 2016 (Awara, 2019, para. 12). This Tax on Professional Income is aimed at those who are 'self-employed,' requiring:

1. their business is conducted anywhere on Russian territory
2. they do not work for an employer
3. they do not employ others
4. they receive income from properties located on Russian territory
5. their annual income is not larger than 2.4 million rubles (~29,600 USD as of the date of this writing) (Federal Tax Service of Russia, n.d.)

My Tax allows those who are self-employed to register for the TPI, exempting them from domestic VAT and insurance premiums as well as reducing their annual income tax from 13% to 4-6%. My Tax was implemented with the goal of reducing the complexity of paying taxes for Russian freelancers. It does this by eliminating the need to fill and transport physical paperwork and simplifying certain necessary processes. For instance, registration can be completed entirely online and only requires a user's passport. The My Tax users can also report income and file tax returns all from within the application (Federal Tax Service of Russia, n.d.). Russian taxpayers who are not self-employed pay their taxes through the FTS's website, through their bank, or on physical paper (Federal Tax Service of Russia, n.d.).

Like My Tax, ELSTER is built to accommodate those who are self-employed, but was not built with freelancers exclusively in mind. ELSTER is the product of a law enacted in December of 2008 titled "Gesetz zur Modernisierung und Entbürokratisierung des Steuerverfahrens (Steuerbürokratieabbaugesetz)" or "Law to modernize and reduce bureaucracy in the tax process (Tax Bureaucracy Reduction Act)". As the name suggests, this law was enacted as a part of a larger movement in Germany over the past two decades to reduce bureaucracy and 'red tape' throughout laws aimed at regulating businesses (Federal Ministry for Economic Affairs and Climate Action, n.d.). Those who are self-employed are required to file their taxes through ELSTER, alongside 90% of German businesses. In

addition to regular tax returns, ELSTER manages monthly VAT returns and employee tax statements (Weida, n.d.).

ELSTER is an order of magnitude larger than My Tax. My Tax is built solely for Russian freelancers filing under the TPI, while ELSTER is kick-starting the transition to digital taxation across all of Germany. Germany requires freelancers and businesses to use ELSTER, while My Tax is an optional platform made exclusively for freelancers. ELSTER facilitates the processing of electronic tax documents for many business and freelancers, while My Tax offers lucrative tax benefits to freelancers alone to encourage its use.

My Tax and ELSTER were created to solve two separate problems. My Tax was created to bring in revenue from freelancers to the government and offer protection and societal legitimacy in return. These benefits can be reaped by freelancers that might otherwise remain 'off the record' as indicated by Russia's announcements in 2016 and 2019. ELSTER is a much more expansive program, having been materialized from law with a more ambitious goal: requiring a shift from physical to digital paperwork to simplify the tax process.

These differences could be described as having been formed by fundamental differences between the Russian and German economy. Germany has the fourth largest economy in the world by GDP (The World Bank, 2020). Germany has a highly developed market economy that provides a high degree of social protection to its citizens, and mostly is changed in response to EU's tax recommendations. In contrast, the Russian tax system has a smaller base to extract wealth from and is focused on reducing the budget deficit (Reshetov et. al. 2020).

3.2.1. Accessibility

Payment platforms must unite the gap between customers' needs and various requirements of governing tax law. The most straightforward way to quantify how well a payment platform can do this is by investigating customer satisfaction. Customers quickly become irritated when they hit a snag in the payment process; a platform has not done its job well when there are discrepancies between an advertised promised return, or when a customer runs into trouble with the tax office. These problems also often require more action on the behalf of the user, which increases the time required to correct any issues and further decreases user satisfaction. Problems like this actively deteriorate user perception of a payment platform. This allows our team to take advantage of customer satisfaction (in the form of user and independent reviews) to investigate the accessibility of seven different tax platforms: My Tax, ELSTER, TaxFix, WunderTax, Kontist, Sorted, and SteuerGo. We investigated nine websites in total, which includes IchBerlin, NomadenBerlin and Trustpilot. These websites either wrote or hosted reviews for these platforms, giving us the opportunity to thematically analyze user reviews with both inductive and deductive coding.

Our process involved categorizing each review by positivity and sentiment. The former is the review's evaluation of the platform (positive, very positive, negative and very negative), the latter being how emotionally intense the review is written, judged by the level of passionate language and opinions (happy, angry, neutral). To aid with a portion of the coding process, a simple python script was utilized to iterate through each review, reducing the chances of an error. The source code for this can be found in Appendix 1.

We first looked at Russia's state-backed tax platform My Tax. According to a sample of forty reviews on the Google Play Store, over half (65%) had either a generally positive or very positive opinion(s) of the service, with half of all the reviews (53%) using 'happy' language. For every angry review there were three happy reviews, and around two-thirds of the reviews were passionate, meaning they used either happy or angry language. This may indicate that two thirds of people reviewed My Tax after a positive experience they wanted to share, or after experiencing a problem to vent their anger. Our process also investigated common problems and compliments that these reviews would often mention. According to these reviews, 45% mentioned the program was user friendly and 20% mentioned it was user unfriendly. It seems user friendliness is closely associated with a reviewer's individual experience and expectations of the application. Several reviews mentioned the simplicity of the interface delivering a positive experience, while a few others thought it delivered a bad experience, especially when paired with a snag in the process that required more nuanced action on the customer's side, e.g. an error message with unclear instructions.

The difference in customer satisfaction between My Tax and ELSTER is striking. Alongside the seven other reviews coded, My Tax has a generally good perception. In stark contrast, the reviews of ELSTER are overwhelmingly negative. Of the 28 available reviews found on Trustpilot's website, 100% were very negative and had an angry sentiment. Reviewers consistently and passionately shared their negative opinions:

"Catastrophic is the word of choice here… [the platform is a] incarnate bourgeois confusion game"

"This is crazy… you really despair. First no mistakes, then suddenly 5…"

"...My head was redder than that of Uli Hoeneß during nerve-wracking Bayern games…"

"A call to the hotline causes total confusion. Clear menu navigation is absolutely non-existent…" (Trustpilot, 2022)

Users voiced their frustration over ELSTER's unintuitive interface and the poor customer service. Others simply vented their anger in humorous ways, indicating the level of irritation is beyond 'typical' cases of a poor user experience. These are all our team could find in terms of user reviews. Trustpilot even indicates that ELSTER's profile has not been claimed– effectively verified or endorsed– by anyone, which also implies that the German government might not be aware of its existence or has not invited any customers to review its services. This also implies those who do review ELSTER do so of their own volition, not having been prompted by ELSTER, which might filter out some of the potential reviewers who have a more positive experience. Even then, 28 reviews may not be representative of the whole service; most other platforms have around 100-200 reviews on Trustpilot. Taxfix alone has 15,000 reviews.

Naturally, ELSTER is a larger and more complicated program as it serves multiple levels of both taxpayer (individual and business) and tax types (VAT returns, income tax, etc.). But more importantly, its use is mandated. Freelancers and businesses must file their taxes using ELSTER's services. It is important to note that while ELSTER is free of charge, individuals can pay other tax payment platforms to interface with ELSTER directly, so the user does not have to. This may explain why these select reviews our team found are so negative, because if a freelancer does not know about the other payment platforms, or is unwilling to pay for their services, they must file with ELSTER. Any problems they run into with ELSTER gets magnified, because they become 'locked in' to the service.

Those who are self employed in Germany must send separate, freelancer-specific returns, and only certain payment platforms cover these types of returns. While our team's focus is on freelancer taxation, we took a more expansive look at multiple different German payment platforms to both understand a broader perspective of the accessibility of these services and to avoid the trouble of distinguishing reviews between freelancer and non-freelancer services. Only one of the seven services considered, Taxfix, does not have support for German self-employed tax returns.

Of all the services reviewed, SteuerGo had the most positive responses by far. There was only a single 'generally negative' review of the 49 reviews coded. Responses seemed genuine, with reviews describing the user friendliness (of which 59% reviewers mentioned), simplicity (of which 47% reviewers mentioned), with positive evaluations of the price (12%) and the speed (10%) of the process. All other reviews varied from 83% to 61% positive responses. Wundertax achieved the highest user friendliness score of all the websites– 65% of reviewers mentioned it. WunderTax was also reviewed by IchBerlin in the form of an article; 54% of the lines in the review mentioned the user friendliness. For comparison, other reviews only mentioned the platform being user friendly around 40-50% of the time. Overall, the websites that hosted a single, long review (as opposed to many short reviews from many different users) used much more neutral language. This makes sense, those who write short reviews are compelled to summarize their experience in a much smaller format for people to read among many other reviews.

With the exception of ELSTER, every tax service investigated does an adequate job at serving their customers. Only two tax services had less than two thirds of their reviews be positive, indicating these services do their job with good customer satisfaction. Of course, ELSTER is the odd one out. Not only is there little information that users share about the service, what information we have is completely negative. Across all platforms, the pricing of their services did not present

itself as a problem often. Around 10% of all reviews mentioned the price in a positive or negative manner. ELSTER should re-evaluate the freelancer taxation process they employ, and spend more attention to their user experience. On the other hand, all other paid platforms from Germany as well as My Tax from Russia are generally well liked, indicating an adequate amount of accessibility and effectiveness. The main differences between the rest of the platforms comes down to how well each platform provides customer service. Users really care about how simple the process is or how smooth the customer experience proves to be. Going forward, identifying platform's specific problems and shortcomings should be a top priority for improving accessibility overall.

3.2.2. Transparency

Third party tax payment platforms require sensitive data from their users in order to function. For a user to share this data with a tax payment platform, there must be an established sense of trust. "Transparency" in this regard typically references how clearly the actions taken by an application are conveyed to the end users. Alongside this typical definition of transparency, we also analyzed what measures different tax payment platforms in Russia and Germany take to protect their users' data.

To assess the transparency and security of different tax payment platforms in Germany, we first looked at the platforms' main web pages. We also reviewed each platform's privacy policy to analyze their compliance with the General Data Protection Regulation (GDPR) guidelines, a set of guidelines for the entire European Union to follow (General Data Protection Regulation, Regulation 2016/279).

Two of the researched German platforms, "Kontist" and "Sorted," featured a chat box with customer support on their main pages. We took advantage of this opportunity to inquire more about the platform's privacy policy - we asked "How does [platform name] work to protect user's private data?" Unfortunately, neither of these platforms responded to the inquiry after five full days despite the estimated one day response time.

A key difference between Russian and German forms of tax payment is that there are multiple options to choose from for freelancers in Germany, but in Russia there is only one. Мой налог, or "My Tax" is owned and operated by the Russian Federal Tax Service. Because the platform is government run, there is no "middle man" platform for sensitive data to be passed through. Meanwhile in Germany, freelancers have multiple tax payment platforms to choose from, but these platforms require them to trust sensitive information with third party platforms.

"My Tax" is difficult to find information on, as one must be registered as a Russian taxpayer to do so. Consequently, registering with My Tax as a non-Russian citizen for research purposes is near impossible.

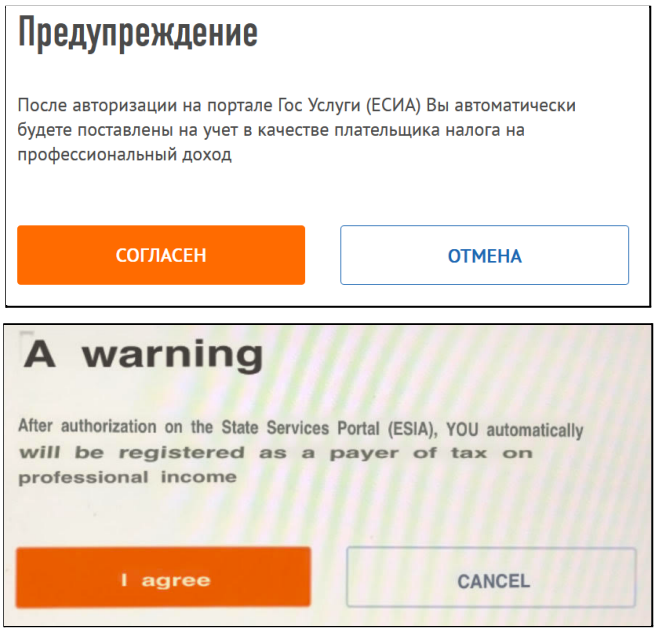


Figure 1: Two screen shots of the My Tax website when trying to create an account, first in Russian and then translated into English.

Per Google Play Store user reviews of the application, the Russian freelancers seem generally pleased with My Tax in terms of both its accessibility and transparency.

"ELSTER," the German state-backed tax payment platform, has received a great deal of criticism in the past. In fact, the main appeal of third party tax payment platforms in Germany is that users do not have to deal with ELSTER's frustrating user interface, or unhelpful customer service. However, ELSTER is one of the most secure options. Not only is it state-backed, but to register as a freelancer through this system, a user must request a login and password, which ELSTER then sends by post in separate letters.

The researched German tax paying platforms were much easier to find information on. From their

desktop homepage, it is simple to find either frequently asked questions or each platform's privacy policy. Each of the applications we looked at guaranteed that they complied with the GDPR guidelines. They also all used some form of data encryption. "Sorted" and "Wundertax" used Transport Layer Security (TLS) encryption to protect users' data, "Kontist" and "Taxfix" used Secure Sockets Layer (SSL) encryption, and "ELSTER" used a "hybrid" form of encryption. TLS is the successor to SSL encryption, and is generally considered the more modern version of it. No matter what platform a freelancer uses to pay taxes, their data will be passed through ELSTER along with any preliminary platform they choose.

While these two countries have differently structured tax payment platforms, neither can objectively be called "better" than the other. Germany offers more options for freelancers to choose from, while there's no "middle man" to worry about on the sole Russian platform. German applications use different encryption techniques, some better than others, but all are technically regarded as "secure." Whichever country is better when it comes to the transparency of applications is all dependent on what any individual freelance worker wants from their tax payment application.

4. Conclusions and Recommendations

Taking a detailed look between Russia and Germany's taxation policy and payment platforms allows us to methodically analyze the complicated topic of freelancer taxation, giving us insight into providing certain recommendations on the topic. Here, we will give a summary of our insights and recommendations. Starting with taxation policy: freelance accommodations and logistics. Next, payment platforms: accessibility and transparency.

4.1. Freelance Accommodations

- Russian freelancers pay lower taxes than German freelancers. Under the TPI, Russians pay 4% of income if transacting with an individual and 6% if transacting with a legal entity, whereas Germans pay taxes in brackets ranging from 15-42%. Lower taxes tend to increase the incentive for freelancers to officially register with the government and pay taxes.
- Russians must choose for themselves which freelance system to opt into. They can register for TPI (above) or PIT, which is an income tax of 13% or 15% if a freelancer's income is greater than 5 million rubles. Therefore they may not necessarily choose the most advantageous option, whereas all German freelancers pay the 15-42% income tax.
- Germans can claim deductions on business expenses, while Russians who opt into the TPI cannot. However, even if a Russian freelancer were to claim deductions, they require an extensive amount of paperwork and usually do not amount to much savings.
- All German citizens are required to have health insurance, but German freelancers must pay the entire fee while German employees usually receive 50% from their employer. Russian freelancers do not have this difference in insurance and are thus less likely to be deterred from freelance work.

4.2 Logistics

- In Germany, federal, state, and local taxes are all paid to the local tax offices, as opposed to each taxation level respectively. A more streamlined system like this would allow Russian taxpayers to build a relationship and trust with their local tax office.
- German freelancers file their taxes quarterly, or every three months, as opposed to the Russian freelancers every month. Reducing the amount of times Russian freelancers have to pay their taxes may alleviate the stress associated with this paperwork.
- Moreover, German freelancers have way more flexibility for submitting their tax returns. They get more time by default, and are offered generous extensions essentially automatically. Offering Russian freelancers more time and flexibility to submit their tax returns would incentivise people to pay their taxes and file their returns and enjoy the prospect of potential refunds.
- Even though the FTS monitors and controls transactions and cash flows through My Tax, making filing tax returns mandatory for freelancers, as in Germany, would add a layer of redundancy to the entire system and deter illicit activity.

- Germany has a great deal of information available online regarding the forms and paperwork that concerns freelance and self-employed individuals; much of this information is not as accessible for the Russian equivalent. Russia could increase transparency of what the process is for registering and submitting returns as a freelancer, to encourage people to pursue this work and ease their minds on the taxation process.
- The longest German tax form was 6 pages whereas the Russian one was 15 pages. It may be useful for the Russian government to explore how to make this process more direct, in an effort to reduce the paperwork burden on taxpayers.
- Russia and Germany might both consider having an on-paper option for each form, as well as an electronic version.

4.3. Accessibility

- Overall, users mostly care about how simple the platforms' processes are. All tax platforms can benefit from analyzing their specific process and finding where users get stuck or encounter errors. Customer service is extremely helpful for this purpose, and should be prioritized.
- Price, the cost a user pays for a service provided, is much less important to users than user experience and the simplicity of a platform's process. This applies to all tax platforms. We recommend not to prioritize price to improve customer satisfaction.
    - We strongly recommend that ELSTER re-evaluates their freelancer taxation process by paying more attention to the freelancer's user experience (the specific steps one takes when using ELSTER).
    - We also recommend every tax service, especially ELSTER, to verify a user review site or create some public feedback forum to allow customers to share their experience and allow for transparent discourse.

4.4. Transparency

- Because MyTax is a government run platform, there is no middleman freelancers must trust any sensitive data with. In Germany, many choose to file taxes with third party platforms to avoid dealing with ELSTER, and so their sensitive information must be trusted to more institutions.
- Information on how German tax platforms are encrypted is readily available and eases any reservations freelancers may have. As MyTax is government run, information on how data is handled is less accessible.
- All German platforms complied with the General Data Protection Regulation (GDPR) guidelines, whereas there is no such regulation for MyTax.

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6. Appendix

1. Source Code for Coding Help

```
codebook = ["generally positive", "generally negative", "very positive", "very negative", "bad customer
service","good customer service","would recommend","would not recommend","user friendly","user
unfriendly","happy","angry","'simple... '(positive)","'fast...'","'cheap'","'expensive'","'complex...'",
"'unhelpful...'"]
print("trustpilot-elster.txt
done\nichberlin-wundertax.txt\nnomadenberlin-taxfix.txt\nsettleinberlin-kontist.txt\ntrustpilot-taxfix.tx
t      done\ntrustpilot-wundertax.txt")
choosefile = input("")

f = open(choosefile, 'r', errors="ignore")

reviews = [line.split('\n') for line in f.readlines()]
codecounter = [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0]
for review in reviews:
    for code in range(len(codebook)):
        print(review,"of",len(reviews))
        print(review, "\n")
        print("Is this review", codebook[code],"?")
        yesno = input("y/n:")
        if yesno is "y":
            codecounter[code] = codecounter[code] + 1
        print(codecounter)
```