Services purchase from the informal economy using digital platforms

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Abstract

This paper evaluates the extent to which digital platforms are used to purchase services from the informal economy and how this can be tackled. Reporting data from a 2021 survey involving 1,209 consumers in Romania, 33% had purchased services from the informal economy and 36% of these purchases had been bought via digital platforms. To explain and tackle this, a logistic regression analysis reveals that informal purchases decrease significantly when both the level of horizontal trust as well as the level of sanctions and risk of detection increase. These results support the use of the holistic approach for tackling informal economy, advocated by the European Platform Tackling Undeclared Work of the European Commission, to achieve progress on the United Nations Sustainable Development Goal (SDG) Indicator 8.3.1 (Proportion of informal employment in non-agriculture employment, by sex).

Keywords: purchases of undeclared services; informal economy; collaborative economy; digital platforms

Introduction

Digitalisation has led to changes in labour markets, many of which are beneficial. Alongside the advent of new types of job (ILO, 2018) and exchanges between buyers and sellers becoming easier (ILO, 2021) is the emergence of digital labour platforms (ILO, 2021). These intermediate 'the supply of and demand for paid labour' (Eurofound, 2018, p. 3) by creating a marketplace where service providers (workers) and the ones in need of these services (whether they are a company or individual clients) are brought together (Fabo et al., 2017;

ILO, 2021). Digital platforms facilitate the completion of one-off tasks or projects (García & Hospido, 2020) online (e.g., data entry, website development, translation, graphic or web design, copywriting), but also offline (e.g., car rides, food delivery, cleaning, gardening, baby- and dog sitting) (ILO, 2021; OECD, 2016; OECD, 2019). This 'platform work' can be either a worker's main occupation or simply an additional source of income (OECD, 2019). Such transactions between clients and service providers through online platforms, here termed the platform economy, is also variously known as the collaborative economy (De Groen & Maselli, 2016; Heyes and Newsome, 2017; Vaughan and Daverio, 2016; Williams & Puts, 2019; Williams et al., 2020), collaborative consumption (Hamari et al., 2016; Małecka et al., 2022), sharing economy (Daglis, 2022; De Groen & Maselli, 2016; Heinrichs, 2013; Heyes and Newsome, 2017; Konhäusner et al., 2021; Schor & Attwood-Charles, 2017; Williams & Horodnic, 2017b) or gig economy (Montgomery & Baglioni, 2020; Wood et al., 2019). Other terms more rarely used include peer-to-peer economy or peer-to-peer based sharing or the on-demand economy. Kovács et al. (2021) and Eurofound (2018) discuss the similarities and differences in how these terms have been used, not least because the definition of platform economy is often imprecise (Baltova & Vutsova, 2021; Eurofound, 2018). Here, therefore, the definition adopted is that of the European Commission, namely 'business models where activities are facilitated by online platforms that create an open marketplace for the temporary use of goods or services often provided by private individuals' (European Commission, 2016a, p. 3).

In recent years, the platform economy has grown considerably, not least because service providers have been treated as self-employed rather than dependent employees, enabling clients and platforms to escape the costs associated with employees, and because service providers have availed themselves of the advantages of platform work, namely: the possibility of gaining additional money, more flexible working hours and the easy access to

work opportunities (Fabo et al., 2017; Hoang et al., 2020; Joyce et al., 2019; Migai et al., 2019). In 2013-2014, this form of employment was present in less than half of European countries, but nowadays, is common in almost all (Eurofound, 2021), especially since the COVID-19 pandemic accelerated even more the growth of e-commerce, e-services and online work (ILO, 2021). Indeed, in Europe, 1-2% of the workforce undertake platform work as their main activity and 10% occasionally (Eurofound, 2021). Over 500 active digital labour platforms exist in the European Union (European Commission, 2021; European Parliamentary Research Service, 2022) with some 28 million people working on such platforms, and the number is expected to reach 43 million by 2025 (European Parliamentary Research Service, 2022). However, it is difficult to know accurately the scale of platform economy (García and Hospido, 2020) for multiple reasons, including: its newness and accelerating growth; the lack of a widely accepted definition of this phenomenon (Baltova & Vutsova, 2021; Eurofound, 2018; OECD, 2019); the differences between countries in measuring platform work (OECD, 2019), and the concern of this paper that engagement in the informal economy often occurs on digital platforms (Heyes & Newsome, 2017; Nováková et al., 2020; Williams, 2020; Williams & Horodnic, 2017b; Williams & Puts, 2019; Williams et al., 2020).

Reflecting the dominant view in the scientific literature and practitioner community, the informal economy here refers to transactions which are lawful in all respects, except that they are undeclared or under-declared to the government for the purposes of not paying taxes or fulfilling other obligations related to social insurance and/or labour laws (European Commission, 2007; Horodnic et al., 2021b). Considering that the main job of more than half of workers globally is in the informal economy (Chikweche, 2021; Deganis et al., 2021; Kedir et al., 2018; Horodnic et al., 2021b), it seems plausible to consider that at least some work on platforms is in the informal economy and also that platforms may be facilitating the

informal economy by acting as a means of bringing together buyers and service providers.

While no empirical evidence supports the argument that employers using digital platforms are more likely to hire informal employees or under-reported employees than employers not using digital platforms, these platforms could well help the non-compliant self-employed find clients for their services (Williams et al., 2020). Moreover, the 2018 Flash Eurobarometer 467 shows that on collaborative platforms, self-employed workers could be unintentionally non-compliant by treating their activities as non-commercial despite being paid and being unaware that they must declare their income from such platforms due to the unclear and often complicated regulations regarding platform work (Williams et al., 2020). In addition, digital platforms could also have an impact on bogus self-employment. Platform workers might consider themselves as self-employed or be falsely catalogued as such by platforms when they are de facto employees of the platform (Williams et al., 2020).

So far as is known, no research has so far been conducted on whether consumers purchase informal services via platforms (i.e., the demand-side). On the one hand, in general, studies on the informal economy focus on the supply-side (i.e., providers and/or workers), with a few exceptions (Horodnic et al., 2021a; Horodnic et al., 2021b; Horodnic et al., 2022a; Horodnic et al., 2022b; Littlewood et al. 2018; Williams, 2006; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Kosta, 2021; Williams & Matinez-Perez, 2014). On the other hand, studies of platform work focus on definitions and taxonomies for this new type of employment (Kovács et al., 2021), estimations of the scale of these activities (Eurofound, 2018; Eurofound, 2021; European Parliamentary Research Service, 2022; Fabo et al., 2017; OECD, 2019; Piasna et al., 2022; Technopolis et al., 2018; Vaughan & Daveiro, 2016), challenges for measuring it (Garcia & Hospido, 2020), the job quality (Graham et al., 2020; Wood et al., 2019), legislation of platform work (Gillis et al., 2022) and control algorithms for platform workers (Wood et al., 2019). To the best of our knowledge, the few

existing studies that investigate the topic of the informal economy on digital platforms have investigated the supply-side (Baltova & Vutsova, 2021; Baum & Giddy, 2021; Cieslik et al., 2021; Deganis et al., 2021; Hauben, 2021; Heyes & Newsome, 2017; Hiriyur, 2022; Johnson et al., 2021; Marrone & Peterlongo, 2020; Nováková et al., 2020; Parkinson et al., 2021; Pisani, 2021; Prasetyo, 2021; Vaclavik et al., 2022; Weber et al., 2021; Williams, 2020; Williams & Horodnic, 2017b; Williams & Puts, 2019; Williams et al., 2020; Zhang et al., 2021). However, there is no supply without demand. It is therefore important to explore consumer behaviour in relation to making informal purchases through digital platforms. No previous study has explored this issue.

To fill this major gap in the literature, this paper therefore investigates: (1) what proportion of informal services are purchased using platforms, (2) who purchases informal services through platforms and (3) what policy approaches could prevent these purchases. Considering that most respondents to the latest Eurobarometer survey on undeclared work (European Commission, 2021) who declared that they purchased from the informal economy bought services, we here confine our analysis to services.

To accomplish this, the first section reviews the existing literature on the link between the informal economy and platform economy and following this, consumer behaviour in the informal economy. Rationales are presented of why consumers engage in informal transactions and the socio-demographic characteristics of such consumers, identified in previous studies of the informal economy more generally. Policy measures for tackling consumers' intentions to engage in informal economy transactions are discussed. Revealing that despite empirical studies on consumers purchasing in the informal economy, nothing is known about consumers engaging in informal transactions via digital platforms, the second section starts to fill this gap by introducing the methods used and the third section reports the

findings. The fourth and final section then summarises the findings and discusses the theoretical and policy implications of the findings.

Theoretical background

The link between the informal economy and platform economy

Despite large separate literatures existing on both the informal economy and platform economy, the link between them is rarely discussed. Those that do so approach this subject from a supply-side perspective (Baltova & Vutsova, 2021; Baum & Giddy, 2021; Cieslik et al., 2021; Deganis et al., 2021; Hauben, 2021; Heyes & Newsome, 2017; Hiriyur, 2022; Johnson et al., 2021; Marrone & Peterlongo, 2020; Nováková et al., 2020; Parkinson et al., 2021; Pisani, 2021; Prasetyo, 2021; Vaclavik et al., 2022; Weber et al., 2021; Williams, 2020; Williams & Horodnic, 2017b; Williams & Puts, 2019; Williams et al., 2020; Zhang et al., 2021). These investigate the consequences of platform work for the informal economy (Heyes & Newsome, 2017), the prevalence of informal work in the platform economy (Williams et al., 2020), the social and economic impact of this phenomenon (Nováková et al., 2020; Williams & Horodnic, 2017b) and extant/potential policies and/or initiatives for tackling informal work in the platform economy (Williams, 2020; Williams & Horodnic, 2017b; Williams & Puts, 2019; Williams et al., 2020).

However, a demand-side perspective focusing upon consumers who purchase informal services via digital platforms has been neglected. Considering that many informal transactions are initiated by consumers (Horodnic et al., 2021b), knowing who makes these purchases is essential for understanding how the informal economy operates through digital platforms. In addition, besides a lack of social security and other rights for platform workers (Nováková et al., 2020), compliant businesses witnessing unfair competition, and a loss of

tax revenue for governments (Horodnic et al., 2021b), the informal economy has negative implications for consumers too because it implies no consumer rights (Nováková et al., 2020) and no insurance or guaranteed health and safety regulations for the goods and/or services bought (Horodnic et al., 2021b; Williams & Matinez-Perez, 2014).

Analysing digital platforms' service users (i.e., consumers), they are more frequently aged 25-39 years old, better educated (i.e., finishing their studies after the age of 16) and to live in urban areas (European Commission, 2016b). Meanwhile, consumers in the informal economy in general have been found to be more frequently men (Littlewood et al., 2018), unemployed and/or have financial difficulties (Horodnic et al., 2021b; Littlewood et al., 2018), have children and live-in one-person households (Horodnic et al., 2021b). Whilst Littlewood et al. (2018) find it more likely that informal economy consumers live in rural areas (because in cities there are better-developed formal markets), Horodnic et al. (2021b) find that those from large towns are more prone to make purchases from the informal sector, thus showing that the practice varies in different contexts. These previous studies analysing the profiles of the informal economy consumer and digital economy consumer are entirely separate. To advance the literature, this study will analyse who purchases informal services via digital platforms.

Policies for tackling the purchases from the informal economy

Regardless of whether bought offline or through digital platforms, purchases from the informal economy have a negative impact on society as a whole and hence, tackling informal transactions is a focus for national governments and multinational bodies (Horodnic & Williams, 2019; Ohnsorge & Yu, 2022). Until now, a limited number of studies have analysed potential initiatives to prevent the participation of consumers in the informal economy in general (Horodnic et al. 2021b; Littlewood et al. 2018; Williams & Horodnic,

2016; Williams & Horodnic, 2017a; Williams & Martinez-Perez, 2014). However, none have investigated how informal purchases via digital platforms can be tackled.

In the existent literature on the informal economy, policy approaches to tackle the demand-side of the informal economy differ according to the varying consumer rationales for engaging in such purchases (Littlewood et al. 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Martinez-Perez, 2014). A first rationale, with its origins in Allingham and Sandmo (1972), is that consumers engaged in the informal economy are rational economic actors seeking for example a cheaper price (Horodnic et al., 2021b). A second rationale is that consumers engaged in informal transactions are social actors, seeking to improve their social relationships (Horodnic et al., 2022a) by doing others a favour (i.e., people pay informally friends, neighbours, or unemployed people they want to help) (Horodnic et al., 2021b; Williams, 2006; Williams & Martinez-Perez, 2014). A third and final rationale is that those purchasing from the informal economy do so due to the failings of the formal economy that result in a lack in the availability and/or quality of certain products and services on the formal market (Littlewood et al., 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a), although this could also be seen as a part of the first theoretical explanation considering that people make a rational choice to purchase from informal markets (Horodnic et al., 2021b).

Based on these rationales for making purchases in the informal economy, policy measures to prevent this behaviour have been discussed. One of the main findings is that governments heavily rely on the view that consumers are rational economic actors (Horodnic & Williams, 2019). Most policy measures seek to increase the costs of engaging in informal transactions by improving the perceived or the actual penalty and risk of detection (Horodnic & Williams, 2019), to change the cost-benefit ratio confronting consumers as supposedly rational economic actors. However, Williams & Martinez-Perez (2014), Williams &

Horodnic (2017), Littlewood et al. (2018), and Horodnic et al. (2021b) find that policies based on changing the costs for consumers of engaging in informal transactions are insufficient.

Instead, there is widespread recognition that such deterrence policies and measures need to be supplemented by policy measures that address these consumers as "social actors" by aiming to encourage their voluntary compliance (Horodnic & Williams, 2022). This is because informal purchases are not always 'profit-driven' and made for rational financial reasons (i.e., paying a lower price for the product/service), or for obtaining a good or service that cannot be found on the formal market (Horodnic et al., 2022a). As recognised above, people also make informal purchases for social reasons aimed to strengthen their social relationships and build their 'social capital' (Horodnic et al., 2022a) by helping unemployed people (as an act of charity – Horodnic et al., 2021b) or friends/relatives who informally sell goods or provide services (Horodnic et al., 2021b; Littlewood et al., 2018).

For this reason, policies seeking to strengthen the relationship between the government and citizens to stimulate greater voluntary compliance are required, rather than simply forcing them to comply using threats and/or sanctions (Horodnic & Williams, 2022). Voluntary compliance has been found to improve when there is an enhanced trust between citizens, and between the state and its citizens (Horodnic & Williams, 2022). To tackle informal purchases, therefore, improvements can be sought in these two types of trust, namely horizontal trust (the trust people have in other social actors, like other consumers) and vertical trust (the trust people have in formal state institutions, such as the government and fiscal authorities) (Horodnic & Williams, 2018). When there is a high vertical trust, people tend to follow the rules imposed by formal institutions, but when this trust is low, they tend to use their own shared rules, which they find better or more acceptable than the official formal

rules. Thus, people with a lower vertical trust are more prone to engage in informal economy (Horodnic et al., 2021a; Horodnic & Williams, 2018).

Meanwhile, improvements are also required in horizontal trust, namely the degree to which people trust others to comply with the formal rules, and in this case purchase from the formal economy (Horodnic & Williams, 2018). When people believe that a vast majority of citizens participate in informal economy and/or personally know people who participate in informal economy (i.e., they have low horizontal trust), there is a higher likelihood that they themselves will engage, not least because they are less fearful of being caught (Horodnic and Williams, 2022; Williams, 2019). Previous studies have confirmed that non-participation in the informal economy is heavily conditional upon the compliance of others (Bicchieri & Xiao, 2009; Chang & Lai 2004; Lefebvre et al. 2015).

Consumers of informal goods and/or services are not only guided by horizontal and vertical trust, but also by their personal values and beliefs (such as their tax morale) (Horodnic, 2018). Tax morale is a proxy indicator of this alignment between individual's personal values and state regulations, and measures people's intrinsic non-pecuniary motivation to comply (Andriani et al., 2021; Horodnic, 2018; Horodnic & Williams, 2022; Williams, 2019). As Horodnic (2018) notes, a lower tax morale is associated with higher levels of involvement in informal economy. Tax morale is shaped by multiple factors from personal traits (with some people simply being more predisposed not to evade taxes, while others are "tax evaders") to gender, age, marital status, social class, financial status, employment status, cultural background, religion, education and many others, along with vertical trust and horizontal trust (Horodnic, 2018).

Although there have been these studies of consumers' rationales for purchasing from the informal economy, and the need for policy measures that address these rationales, until now, no attention has been paid to how the informal economy purchases made via digital

platforms can be explained and tackled. Therefore, to evaluate the policies required, the aim in this paper is to evaluate both the rational and social rationales used in previous studies to explain purchasing from the informal economy in general. To test the rational economic actor explanation, two variables are used from previous studies (Littlewood et al., 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Martinez-Perez, 2014), namely the perceived risk of detection and the perceived level sanctions. Thus, the following hypotheses are proposed:

H1. Consumers perceiving the risk of detection as lower are more likely to purchase services from the informal economy using digital platforms.

H2. Consumers perceiving lower sanctions are more likely to purchase services from the informal economy using digital platforms.

To evaluate participation in informal transactions from a social actor theoretical approach, based on the theoretical background synthesised above, three variables are used namely, horizontal trust, vertical trust and tax morale (Littlewood et al., 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Martinez-Perez, 2014). As such, we propose to test the following:

H3. Consumers with lower horizontal trust are more likely to purchase services from the informal economy using digital platforms.

H4. Consumers with lower vertical trust are more likely to purchase services from the informal economy using digital platforms.

H5. Consumers with lower tax morale are more likely to purchase services from the informal economy using digital platforms.

Finally, the current consensus among both policymakers and academics is that to effectively tackle the informal economy requires a holistic approach (Horodnic & Williams, 2022).

Indeed, the first policy paper of the European Commissions' European Platform Tackling Undeclared Work underlined the need for a holistic approach that uses both deterrents to tackle rational economic actors and policy reforms to deal with social actor rationales (Williams, 2017). This reinforced previous studies which argued that increasing only deterrents does not always produce the expected outcome and that when there is a high tax morale (i.e., low acceptance of undeclared work or undeclared transactions in general), raising deterrents can lead to higher non-compliance because of a 'broken' trust between citizens and the state (Chang & Lai, 2004; Murphy & Harris, 2007; Tyler et al., 2007).

Various studies show that the two types of policy are complementary and, according to the "slippery slope" approach, the best results in preventing participation to informal economy is to combine enforced compliance (i.e., deterrents) with improving voluntary compliance (i.e., tax morale and trust). Indeed, experiments show that respondents are more compliant when both powerful deterrents are in place and the respondents display a high level of trust in authorities (Kirchler et al., 2008; Kogler et al., 2015, Wahl et al., 2010). Thus, tax morale and trust may moderate the effect of deterrent measures (Horodnic and Williams, 2019; 2022). As such, to enable a variegated understanding about the interaction effects between the policy measures associated with the rational economic actor view (i.e., risk of detection and penalties) and those associated with the social actor view (i.e., vertical trust, horizontal trust and tax morale), these interaction effects will be tested for the first time for consumers in the informal economy.

Until now, a few studies have tested these interaction effects, but only from a supply-side perspective focusing on those undertaking undeclared work (Williams & Öz-Yalaman, 2021; Windebank & Horodnic, 2017; Williams & Horodnic, 2017c). Williams & Öz-Yalaman (2021) find that both types of trust (vertical and horizontal) moderate the effects of

perceived risk of detection on the probability of undertaking undeclared work, but do not moderate the effects of penalties. At a European level, they find that an increased risk of detection is more efficient in preventing undeclared work for those with a low level of vertical and horizontal trust. However, a regional analysis shows that vertical trust influenced the effect of the risk of detection in decreasing participation in undeclared work only in South-East Europe, whilst horizontal trust has a moderating effect in Southern Europe, South-East Europe, and the Nordic countries (Williams & Öz-Yalaman, 2021). In addition, tax morale was found to moderate the relationship between the level of the perceived penalty and the likelihood of engaging in informal work, with these effects being different at various levels of tax morale (Williams & Horodnic's study, 2017c). Taking all these findings of previous studies into consideration, it seems that indeed policies to tackle informal economy (from a supply-side perspective) should rely on both deterrence and social actor approach measures.

To test if this finding is applicable also on the demand-side when developing policies to tackle consumers participation in the informal economy on digital platforms, the following hypothesis is proposed.

> *H6: The effect of the risk of detection and penalties (i.e., policies related to the rational economic actor theoretical explanation) differs at varying levels of vertical trust (H6a), horizontal trust (H6b) and tax morale (H6c) (i.e., policies related to the social actor theoretical explanation).*

Below, the data and methodology to test these hypotheses are reported, followed by the findings.

Data and methods

To explore the extensiveness of service purchases from the informal economy, and the

effectiveness of policy measures grounded in both the rational economic actor and social actor perspectives, a survey has been conducted in Romania. The informal economy is highly prevalent in Romania, with this country having the second highest size of the informal economy among European Union member states (Williams et al., 2017). A questionnaire was circulated on-line between October and December 2021, gathering 1209 responses from consumers covering all eight regions of the country. The ethical approval for this study was obtained from the XX (anonymised). Considering that the topic is rather sensitive (i.e., participation in illegal activities), a snowball method was used as it is considered suitable when investigating the informal economy (Williams, 2015). Thus, as first contact points, the network of the researchers conducting the survey has been used (e.g., friends, relative, acquaintances, colleagues, students), who then disseminated the survey amongst their network, focusing on a high geographical spread.

Following the recommendation for survey design on the topic of the informal economy (Williams, 2015), a gradual approach was adopted. The questionnaire started with general questions asking the respondents to estimate the share of consumers and providers that make transactions in informal economy, what are the perceived sanctions and risks of detection when engaging in such transactions, and then moving to questions on whether they had made any informal purchases in the past 12 months before the survey and if so, their reasons for doing so. At the beginning of the survey full information about the project (e.g., the scope of the project, what purchases from the informal economy represent, the definition of digital platforms) was provided and the respondents reminded that participation is voluntary, and that they can withdraw from the study at any time or can refuse to answer to any question that might create discomfort. The survey continued only after they gave their consent to participate.

As an analytical approach, logistic regression was used and for ensuring the robustness of the findings, the results are provided on both the weighted and unweighted data. Indeed, to obtain a representative picture of the consumer in the informal economy from Romania, the data were weighted by country regional area (i.e., the eight regions), gender and age. Based on previous studies analysing purchases from the informal economy (Horodnic et al., 2021b; Littlewood et al., 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Matinez-Perez, 2014), data was collected on the following socio-demographic characteristics: age, gender, education, financial situation, whether the respondents have children and the residence (including the country region).

To test the association between consumers' engagement in informal transactions and policies based on the rational economic actor and social actor perspectives (Littlewood et al., 2018; Williams & Horodnic, 2016; Williams & Horodnic, 2017a; Williams & Martinez-Perez, 2014), the following variables were measured: perceived sanctions, perceived level of detection, consumers` vertical trust, consumers` horizontal trust and consumers` tax morale. Information on how the variables related to these policies are measured and some descriptive statistics are provided in Table A1 in the appendix. To enable comparison between these variables and test the interaction effects, and to obtain the overall index for each of these main variables, the min-max normalization method was employed proposed by OECD (2008) for obtaining composite indicators. This method involves allocating values between 0 (laggard) and 1 (leader) to each question/item and then, where there are multiple items, aggregating the scores of the multiple items using equal weighting. Below, the findings are reported.

Results

Table 1 reports the prevalence of service purchases from the informal economy. The finding

is that 33% of respondents had purchased informal services in the past 12 months prior to survey. Of those buying informal services, 36% did so using digital platforms. Of these consumers using digital platforms, 77% used digital platforms for informal purchases of services once or a few times during the last 12 months prior to survey and 17% did so on a regular basis. As such, the use of digital platforms for the purchase of services from the informal economy is not a minor practice.

[INSERT TABLE 1 ABOUT HERE]

Turning to the type of services informally purchased, the finding is that 19% of the Romanian consumers paid for home repairs or renovation services, 17% for hairdressing and beauty services, 15% for car repairs, 13% for transport services (passenger transport) and 10% for tourism services (e.g., accommodation), medical services and cleaning/ ironing services. Babysitting services are purchased from the informal economy to a lesser extent (4% of the consumers). However, the use of digital platforms for making informal purchases varies according to the type of service purchased; 78% of those purchasing undeclared tourism services used digital platforms whereas only 9% of those purchasing informal services for home removal used platforms.

Table 2 evaluates the link between the informal purchase of services using digital platforms and the policy approaches. The finding is that those purchasing services from the informal economy via digital platforms perceive there to be a very low level of sanction and a rather low risk of detection. Furthermore, they display a low trust in public institutions, a low horizontal trust, and a rather high tax morale. As such, except for tax morale, the other policies seem to have the expected association in relation to informal purchases via digital platforms, as the studies in the previous section suggested.

[INSERT TABLE 2 ABOUT HERE]

To test whether these tentative findings hold true when other control variables (i.e., socio-demographic characteristics) are included and kept constant, Table 3 presents the results of a logistic regression, using weighted data (for balancing the regional distribution across the country). Before reporting the results on policy approaches, a short analysis of the findings on the socio-demographic characteristics of consumers making informal purchases on digita platforms is useful. As Model 1 in Table 3 displays, consumers aged 55 or more are less likely to purchase services in the informal economy using digital platforms. Meanwhile, those with a higher education and those living in Macroregion 2 (the less affluent region in terms of gross domestic product at current market prices or per inhabitant by Eurostat) are more prone to do so. No significant association is found in terms of gender, financial status, whether the respondent has children or not, and the type of residential area (i.e., urban or rural). As such, the profile of the consumer who informally makes purchases of services using digital platforms resembles some of the characteristics of the general user of digital platforms, namely young and educated (European Commission, 2016b) as well as some features of the consumer in the informal economy in general, namely having a lower standard of living (Horodnic et al., 2021b; Littlewood et al., 2018).

[INSERT TABLE 3 ABOUT HERE]

Moving to Model 2, the finding is that no policy measure grounded in the rational actor theoretical explanation for participation in the informal economy is significantly correlated with the likelihood of purchasing services from the informal economy via digital platforms.

As such, consumers perceiving a higher risk of detection and those perceiving a higher level of penalty do not make fewer purchases of services from the informal economy using digital platforms (refuting *H1* and *H2*). Turning to the policies grounded in the social actor explanation, the finding is that when consumers perceive others to be more likely to engage in informal transactions, they are more likely to display the same or a similar behaviour, making more purchases of services from the informal economy using digital platforms (confirming *H3*). Meanwhile, the level of trust that consumers have in public institutions and their tax morale are not significantly correlated with the likelihood of purchasing services from the informal economy via digital platforms (refuting *H4* and *H5*).

Finally, analysing the interaction effects between the risk of detection and penalties, and vertical trust, horizontal trust and tax morale, hypothesis *H6* is only partially confirmed. The finding is that the effect of both sanctions and risk of detection varies according to the level of horizontal trust (confirming *H6b*). The findings are robust regardless of whether the weighted or unweighted data is analysed. To better understand the effects, Figure 1A and 1B displays the predicted probability of purchasing services on the informal economy via digital platforms by the level of horizontal trust and sanctions and risk of detection respectively.

[INSERT FIGURE 1 ABOUT HERE]

As Figure 1A displays, when consumers perceive there to be no sanction or a very low sanction, there is a higher likelihood of participation in the informal economy (between about 16% to 26%, depending on the level of horizontal trust) but unexpectedly, the probability of purchasing informal services on digital platforms is higher with a higher horizontal trust. However, when the sanctions increase, participation in informal services via digital platforms markedly decreases and only those displaying a very low degree of horizontal trust continue

to participate with a relatively high predicted probability (about 10%). A similar pattern is observed when analysing the interaction effect between the perceived risk of detection and horizontal trust. When there is a perceived low (or no) risk of detection, participation is higher (for all categories, excepting those displaying a very low horizontal trust). However, when there is an increase in the risk of detection, the predicted probability of purchasing informal services on digital platforms reduces substantially (e.g., below 1% for those with a very high degree of horizontal trust from more than 35% when the perception was that the risk is very low or non-existent). However, this trend does not apply to those with a very low level of horizontal trust. The predicted probability that these consumers make purchases of informal services via digital platforms increases with an increase in the level of perceived risk.

Discussion and conclusions

This paper has evaluated for the first time the use of digital platforms to purchase services in the informal economy and the effectiveness of different policy approaches for preventing this behaviour. Reporting data from a national survey conducted in 2021 in Romania, the finding is that 33% of all respondents purchased services from the informal economy in the past 12 months prior to survey. Of those purchases, 36% were via digital platforms, showing that using these platforms for informal transactions is not a minor practice. Furthermore, the study revealed the sectors where this type of purchase is more prevalent. The use of platforms for obtaining services from the informal economy is used extensively in tourism, with 78% of those purchasing undeclared tourism services using digital platforms to do so. This aligns with previous findings on the informal economy in general; the informal economy is prevalent in the hospitality sector (Williams & Horodnic, 2017b; Williams & Horodnic, 2018; Zhang et al., 2021). Using this information to suggest suitable policy measures to

tackle informal purchases via digital platforms (from a demand-side, but also in general), it is also worth making the link with the suggestions made by Salinas et al. (2021) in their study; to tackle informal economy, the tourism sector should be addressed more by policymakers.

Turning to the profile of the consumer who sources services form the informal economy using digital platforms, the finding is that this consumer resembles some of the characteristics of the common user of digital platforms, namely young and educated (European Commission, 2016b) and some of the characteristics of the common purchaser in the informal economy, namely having a lower standard of living (Horodnic et al., 2021b; Littlewood et al., 2018).

Evaluating how this practice could be prevented, the finding is that none of the policies measures grounded in the rational economic actor theory (i.e., increasing the risk of detection and sanction) is significantly correlated with the probability of sourcing services from the informal economy via digital platforms. Meanwhile, a significant association was found between the likelihood of doing so and horizontal trust.

Furthermore, examining the interaction effects of the policy measures, the findings of this study support the holistic approach advocated by the European Platform Tackling Undeclared Work of the European Commission (Williams, 2017). Although increasing the level of sanction or risk of detection do not have a significant association with the likelihood of such purchases, their interaction effects with the level of horizontal trust is statistically significant. When sanctions increase, participation heavily decreases and only those displaying a very low degree of horizontal trust have a high predicted probability of continuing to source services from the informal economy via digital platforms. Similarly, when the risk of detection increases, the predicted probability of participation reduces substantially, again except for those displaying a very low horizontal trust in their peers to behave in a compliant manner.

As such, to be effective, these results show that both types of policy measure need to be implemented, namely deterrents (i.e., increasing the risk of detection and sanctions) and measures based on increasing the level of trust between the consumers (e.g., normative letters about the high compliance of other citizens). However, the fact that the trend is different for those with a very low level of horizontal trust also signals that caution is required on the effectiveness of deterrence measures, because for those with higher horizontal trust, it obtains the opposite outcome than expected. This mirrors the results of previous studies which show that high deterrents break the trust between the state and its citizens, and result in higher non-compliance (Chang & Lai, 2004; Murphy & Harris, 2007; Tyler et al., 2007).

Nevertheless, this study has limitations. The snowball sampling technique, although recommended for sensitive topics, could not ensure the representativeness of the sample, and this is a reason for a weighting procedure being employed with respect to age, gender and region. The survey has been also conducted on-line and therefore has excluded those not able to access the internet from their devices (or not having such devices). Moreover, the dependent variable (i.e., buying from the informal economy) was measured only as a dichotomous variable (yes/no) and there was no measurement of the frequency of such purchases, which would have enabled the use of other types of regression model. Future research could thus address these issues and seek to evaluate why the perception of the severity of deterrent measures (i.e., the rational economic actor approach) is not valid when purchasing using the digital platforms. It might be the case that the virtual nature of the transaction makes the purchaser feel more hidden from the authorities than in the "real non-digital" world.

To conclude, investigating the link between the informal economy and digital platforms (in terms of whether those purchasing services from the informal economy use digital platforms to do so) in other regional spaces and sectors could be useful from a

theoretical point of view. Besides stimulating other researchers to investigate this topic, if our paper also stimulates policy makers to employ a holistic approach for tackling the demand-side of the informal economy, then the paper will have achieved its wider purpose.

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Table 1. Buying services from the informal economy in Romania (n = 1,209)

	Informal economy services purchased[1)]		Frequency of buying informal economy services via digital platforms[1)]	
	Total	Out of: via digital platforms[2)]	Once, a few times	On a regular basis
	(%)	(%)	(%)	(%)
TOTAL services	33	36	77	17
Tourism services (e.g., accommodation services)	10	78	74	21
Catering services	9	39	71	21
Transport services (e.g., passenger transport)	13	35	76	20
Babysitting services	4	33	66	12
IT assistance services	8	29	84	15
Medical services[3)]	10	24	56	44
Hairdressing and beauty services	17	18	62	23
Home repairs/ renovations	19	18	79	20
Cleaning/Ironing services	10	15	66	34
Gardening	7	15	88	11
Car repair	15	14	52	28
Healthcare assistance (dependent/elderly person)	5	14	57	42
Tutoring	6	14	45	54
Home moving services	5	9	96	2

Notes: weighted data (raking procedures were used to weight the sample, by gender, age and region (macroregion)); [1)] Don`t know / Refusal included but not listed; [2)] i.e., mobile app, online tool, specialized website; [3)] e.g., professional healthcare services in the private sector.

Table 2. Policy approaches – index score when buying services from the informal economy via digital platforms (i.e., mobile app, online tool, specialized website) in Romania (n = 180)

	Sanctions Index[1)]	Detection Risk Index[2)]	Vertical Trust Index[3)]	Horizontal Trust Index[4)]	Tax Morale Index[5)]
	(score)	(score)	(score)	(score)	(score)
TOTAL services	0.10	0.72	0.26	0.66	0.75
Tourism services (e.g., accommodation services)	0.06	0.71	0.26	0.68	0.74
Catering services	0.12	0.72	0.29	0.60	0.80
Transport services (e.g., passenger transport)	0.11	0.73	0.27	0.65	0.77
Babysitting services	0.21	0.60	0.35	0.74	0.77
IT assistance services	0.16	0.74	0.27	0.66	0.79
Medical services[6)]	0.08	0.68	0.32	0.75	0.80
Hairdressing and beauty services	0.08	0.63	0.35	0.60	0.76
Home repairs/ renovations	0.16	0.58	0.42	0.75	0.73
Cleaning/Ironing services	0.07	0.71	0.31	0.71	0.67
Gardening	0.19	0.55	0.42	0.82	0.71
Car repair	0.16	0.69	0.34	0.70	0.76
Healthcare assistance (dependent/elderly person)	0.21	0.67	0.42	0.61	0.81
Tutoring	0.23	0.70	0.43	0.74	0.80
Home moving services	0.32	0.63	0.29	0.84	0.72

Notes: weighted data (raking procedures were used to weight the sample, by gender, age and region (macroregion)); [1)] Index scale: 0 (no sanction for purchasers) to 1 (highest sanction – prison – for purchasers); [2)] Index scale: 0 (very high risk of being detected) to 1 (very low risk of being detected); [3)] Index scale: 0 (low trust in public institutions) to 1 (high trust in public institutions); public institutions considered: civil servants, tax authorities and social security authorities, police, justice, labor inspection, President, Parliament, Government; [4)] Index scale: 0 (very high degree of horizontal trust – i.e., perceived share of businesses selling undeclared, under 1%) to 1 (very low degree of horizontal trust – i.e., perceived share of businesses selling undeclared, 50% or more); [5)] Index scale: 0 (acceptable non-compliant behavior) to 1 (unacceptable non-compliant behavior); calculated across eight non-compliant behaviors; [6)] e.g., professional healthcare services in the private sector.

Table 3. Logistic regressions of the likelihood of buying informal economy services from digital platforms (i.e., mobile app, online tool, specialized website) in Romania (weighted data)

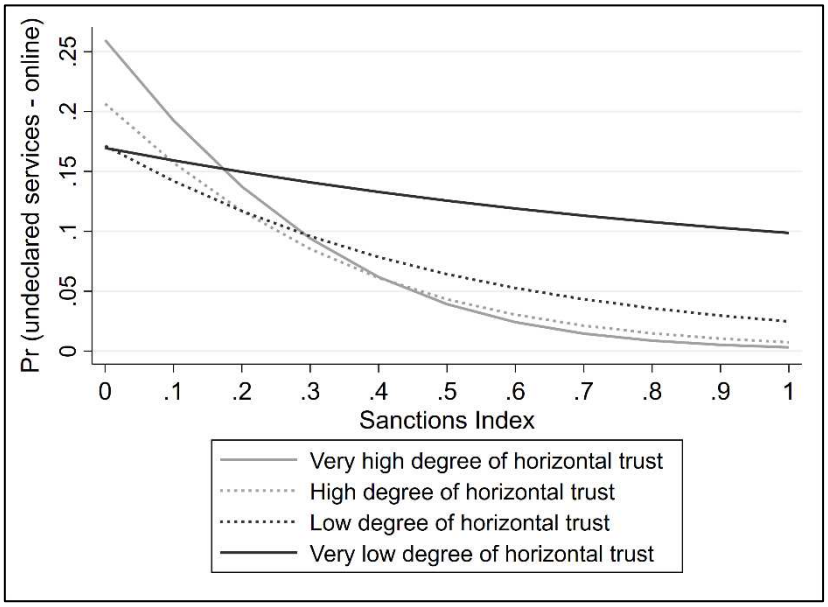
	Model 1			Model 2		
	β		se(β)	β		se(β)
Control variables						
Gender (CG: Female)						
Male	0.376		0.298	0.509		0.356
Age group (CG: 18-24 years)						
25-34 years	0.040		0.294	-0.250		0.384
35-54 years	0.352		0.340	-0.031		0.438
55+ years	-1.176	*	0.611	-1.035	*	0.616
Having children (CG: No)						
Yes	-0.432		0.305	-0.372		0.367
Education (CG: Primary and secondary education)						
Higher education	1.137	***	0.339	1.349	***	0.466
Financial Situation Index[1)]	0.120		0.080	0.034		0.095
Residence (CG: Rural)						
Urban	0.283		0.407	-0.114		0.411
Region[2)] (CG: Macroregion 1)						
Macroregion 2	1.194	***	0.367	1.244	***	0.404
Macroregion 3	0.631		0.395	0.619		0.456
Macroregion 4	-0.166		0.637	-0.585		0.717
Policy related variables						
Sanctions Index[3)]				-2.895		2.307
Detection Risk Index[4)]				4.115		2.888
Vertical Trust Index[5)]				1.175		1.399
Horizontal Trust Index[6)]				5.926	***	1.813
Tax Morale Index[7)]				-2.655		2.202
Sanctions Index[3)] # Vertical Trust Index[5)]				1.235		1.793
Sanctions Index[3)] # Horizontal Trust Index[6)]				4.792	**	2.351
Sanctions Index[3)] # Tax Morale Index[7)]				-4.076		3.022
Detection Risk Index[4)] # Vertical Trust Index[5)]				-3.123		1.916
Detection Risk Index[4)] # Horizontal Trust Index[6)]				-9.228	***	2.565
Detection Risk Index[4)] # Tax Morale Index[7)]				3.602		3.174
Constant	-4.462	***	0.698	-5.331	**	2.290
Observations			1,160			953
F			9.10			5.31
Prob. > F			0.000			0.000

Notes: Significant at *** p<0.01, ** p<0.05, * p<0.1; weighted data (raking procedures were used to weight the sample, by gender, age and region (macroregion)); [1)] Scale: 0 (respondent dealing with financial difficulties) to 1 (respondent not dealing with financial difficulties); [2)] NUTS classification - Macroregion 1: Centre, North-West; Macroregion 2: South-East, North-East; Macroregion 3: Bucharest-Ilfov, South; Macroregion 4: West, South-West; [3)] Index scale: 0 (no sanction for purchasers) to 1 (highest sanction – prison – for purchasers); [4)] Index scale: 0 (very high risk of being detected) to 1 (very low risk of being detected); [5)] Index scale: 0 (low trust in public institutions) to 1 (high trust in public institutions); public institutions considered: civil servants, tax authorities and social security authorities, police, justice, labor inspection, President, Parliament, Government; [6)] Index scale: 0 (very high degree of horizontal trust – i.e., perceived share of businesses selling undeclared, under 1%) to 1 (very low degree of horizontal trust – i.e., perceived share of businesses selling undeclared, 50% or more); [7)] Index scale: 0 (acceptable non-compliant behavior) to 1 (unacceptable non-compliant behavior); calculated across eight non-compliant behaviors.

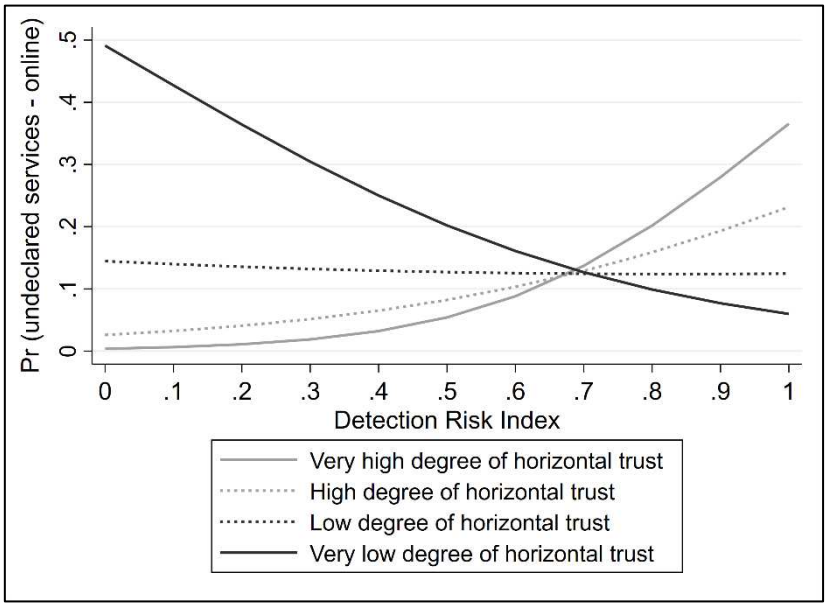
Table 4. Robustness checks – regressions with unweighted data

	Model 2a *Logistic regression*			Model 2b *Probit regression*		
	β		se(β)	β		se(β)
Policy related variables[1)]						
Horizontal Trust Index[2)]	1.453	***	0.452	0.652	***	0.218
Sanctions Index[3)] # Horizontal Trust Index[2)]	1.903	***	0.482	0.741	**	0.288
Detection Risk Index[4)] # Horizontal Trust Index[2)]	-1.976	***	0.579	-0.803	***	0.296
Control variables			Yes			Yes
Observations			953			953
Weighted data (raking procedures)			No			No
Clustered by microregion			Yes			Yes

Notes: Significant at *** p<0.01, ** p<0.05, * p<0.1; robust standards errors; [1)] only statistically significant variables listed; [2)] Index scale: 0 (very high degree of horizontal trust – i.e., perceived share of businesses selling undeclared, under 1%) to 1 (very low degree of horizontal trust – i.e., perceived share of businesses selling undeclared, 50% or more); [3)] Index scale: 0 (no sanction for purchasers) to 1 (highest sanction – prison – for purchasers); [4)] Index scale: 0 (very high risk of being detected) to 1 (very low risk of being detected).



1A. Horizontal Trust Index and Sanctions Index



1B. Horizontal Trust Index and Detection Risk Index

Figure 1. Predicted probability of purchase informal services via digital platforms (i.e., mobile app, online tool, specialized website) in Romania: by Sanctions Index, Detection Risk Index and Horizontal Trust Index

Notes: *Horizontal Trust Index*: 0 (very high degree of horizontal trust – i.e., perceived share of businesses selling undeclared, under 1%) to 1 (very low degree of horizontal trust – i.e., perceived share of businesses selling undeclared, 50% or more)
Sanctions Index: 0 (no sanction for purchasers) to 1 (highest sanction – prison – for purchasers)
Detection Risk Index: 0 (very high risk of being detected) to 1 (very low risk of being detected).

Source: author's own work

Appendix

Table A1. Policy related computed indexes

Index	Definition	Mean
Sanctions Index	A computed index measuring the expected sanctions for those buying undeclared goods/services on a scale from 0 (no sanction for purchasers) to 1 (highest sanction – prison – for purchasers). *Question in the survey*: In your opinion, what is the sanction applied by the authorities when they identify a person who buys goods and services that are not declared to the authorities? a. no sanction, b. confiscation of the purchases; c. normal tax due; d. tax due plus a dine; e. prison; f. don't know; g. refusal.	0.23
Detection Risk Index	A computed index measuring the perceived risk of being caught if selling undeclared goods/services on a scale from 0 (very high risk of being detected) to 1 (very low risk of being detected) *Question in the survey*: Those who sell goods and services without declaring their income face the risk of being caught by the state authorities. How do you assess the risk of being caught in Romania? a. very high; b. fairly high; c. fairly low; d. very low; e. don't know; f. refusal.	0.70
Vertical Trust Index	A computed index measuring trust in public institutions on a scale from 0 (low trust in public institutions) to 1 (high trust in public institutions). *Question in the survey*: We would like to ask you a question related to the degree of trust in certain institutions. For each of the following institutions, please tell us if you trust them or not. Note: Public institutions considered in this analysis: civil servants, tax authorities and social security authorities, police, justice, labor inspection, President, Parliament, Government. The index was obtained as an averaged score of trust for these institutions.	0.33
Horizontal Trust Index	A computed index measuring the perceived prevalence of undeclared transactions on a scale from 0 (very high degree of horizontal trust – i.e., perceived share of businesses selling undeclared, under 1%) to 1 (very low degree of horizontal trust – i.e., perceived share of businesses selling undeclared, 50% or more). *Question in the survey*: What is, according to your opinion, the percentage of sellers (traders and producers) who sell goods and services without declaring their income (total or partial) to the state authorities? a. less than 1%; b. more than 1% and up to 5%; c. more than 5% and up to 10%; d. more than 10% and up to 20%; e. more than 20% and up to 30%; f. more than 30% and up to 40%; g. more than 40% and up to 50%; h. more than 50%; i. don't know; j. refusal.	0.62
Tax Morale Index	A computed index measuring the tax morale of the respondents in respect with eight non-compliant behaviors on a scale from 0 (acceptable non-compliant behavior) to 1 (unacceptable non-compliant behavior).	0.78

	Question in the survey: Please express how acceptable you find each of the statements below:1. Someone receive social assistance without actually having this right (e.g. unemployment, sick pension, etc.); 2. A person is employed by a household to perform a job and he/she does not report the payment received to the fiscal or social protection institutions, although he/she should do so; 3. A company is hired by a household to perform an activity and does not report the payment received to the fiscal or social protection institutions; 4. A company is hired by another company to perform an activity and it does not report the activity to the fiscal or social protection institutions; 5. A company employs a person and the salary paid to them or a part of it is not officially registered. 6. A person avoids paying taxes by not declaring or partially declaring their income. 7. Someone does not declare a certain income when it is unclear whether that income should or should not be declared. 8. The interpretation to one's own advantage of the ambiguous provisions of the tax code or the labor code.

Note: don't know and refusal excluded when calculating the indexes.