Perceptions of corruption and tax non-compliance behaviour: Policy implications for developing countries

Arifin Rosid*, Chris Evans** and Binh Tran-Nam***

Perceptions of corruption and tax non-compliance behaviour are key challenges to state-building in developing countries. This paper develops a theoretical model in which different forms of perceived corruption can adversely influence the way individual taxpayers behave using a social psychology approach. This paper then applies the model to Indonesia and places the empirical findings obtained in the context of compliance risk management to identify strategies designed to improve tax compliance and to explore the necessary steps to implement them effectively. It sheds light on the applicability of the traditional responsive regulatory approach, which adopts various combinations of measures to achieve either voluntary or enforced compliance, utilised by revenue authorities in specifically dealing with intentionally non-compliant taxpayers. While the empirical evidence is based on Indonesian experience, it is suggested that the model is sufficiently general and robust to be applicable to other developing countries in the Asia-Pacific region.

Keywords: *corruption, tax compliance, compliance risk management, norm-based intervention, focused enforcement*

JEL classification: D03, H2, H24, H26

* PhD Candidate at School of Taxation and Business Law, UNSW Business School, UNSW Australia. He owes great debts of gratitude to his supervisors, Professors Chris Evans and Binh Tran-Nam, for their constant support and invaluable assistance. He would also like to thank the Ministry of Finance of the Republic of Indonesia and the World Bank for providing funding through the *Scholarship Program for Strengthening Reforming Institutions* (SPIRIT). This paper is part of his PhD research project. The authors thank participants of the 13th Indonesian Regional Science Association (IRSA) International Conference (25–26 July 2016) for their constructive comments on an earlier version of this paper.

** Professor at School of Taxation and Business Law (incorporating Atax), UNSW Business School, UNSW Australia; Extraordinary Professor at Department of Taxation, University of Pretoria, South Africa; and International Fellow at Centre for Business Taxation, Oxford University.

*** Professor at School of Taxation and Business Law (incorporating Atax), UNSW Business School, UNSW Australia; Professor at RMIT Asia Graduate Centre, RMIT University Vietnam; and Adjunct Research Fellow at Tax Law and Policy Research Group, Monash University.

INTRODUCTION

Revenue collections in developing countries are generally afflicted by widespread evasion, coercion, and corruption (McKerchar and Evans 2009, Bird 2015). Corruption creates inefficient tax systems, erodes tax collection legitimacy, reduces corporate and personal citizens' willingness to pay their fair shares of taxes and, as a result, lowers levels of tax collection (Imam and Jacobs 2007, Alm, Martinez-Vazquez and McClellan 2016).[1] To circumvent this problem, many authors recommend that developing countries should prioritise reducing the extent of corruption to improve tax compliance (McKerchar and Evans 2009, OECD 2012).

Due to its secretive nature, most of the indicators used to identify and assess corruption are based on subjective measurements, typically known as 'perceptions of corruption' (Campbell 2013). Perceptions of corruption also have a negative impact upon the way taxpayers behave. That is, perceived corruption may erode taxpayers' willingness to contribute their fair share of tax (Jahnke 2015), cultivate a culture of distrust among stakeholders towards related institutions (Melgar, Rossi, and Smith 2010), strengthen a damaging public perception that causes taxpayers to disengage from any reciprocal relationship with the government (Fjeldstad and Tungodden 2003), reduce the moral cost of evading tax and further encourage taxpayers to behave opportunistically (Torgler, Demir, Macintyre, and Schaffner 2008). Perceptions of corruption also undermine compliance as taxpayers may perceive that, due to corruption, the presence (or benefit) of government expenditures they receive will be reduced (Alm, McClelland, and Schulze 1992) as well as induce more taxpayers to underreport taxes, as more underreported taxes create more opportunities for bribery of tax officials (Çule and Fulton 2009). Consequently, perceptions of corruption may have a worse effect than the corruption itself (Melgar, Rossi, and Smith 2010).

Yet despite being a serious problem for developing countries, research into perceptions of corruption in the taxation context has received relatively little attention, and empirical evidence on its impact on intentional tax (non)compliance is minimal. In particular, to what extent (and precisely how) does perceived corruption affect tax compliance? Are there policy implications that a revenue authority (such as the Indonesian tax authority, the DGT) can undertake (or have in place) to improve compliance? These are the major questions we address in this paper.

We choose Indonesia for two major reasons. First, Indonesia appears to be among the more corrupt of the major countries in the Asia–Pacific region (Transparency International 2015). Further, a study by Kuncoro (2004)

[1] In the literature on corruption in general, there are two competing views regarding the impact of corruption on economic efficiency, namely, the 'sand-the-wheels' and 'grease-the-wheels' hypotheses. For a summary of those hypotheses, refer to Nguyen et al. (2016). In the context of tax corruption, the authors are inclined to support the 'sand-the-wheels' hypothesis, i.e., tax corruption is harmful.

found that a typical bribe rate paid by Indonesian firms is between 10-15% of annual production costs, and survey results from the Global Competitiveness Report 2016–2017 also suggest that corruption is the most problematic factor for doing business in Indonesia (World Economic Forum 2016). Second, Indonesia has been classified as a major developing country with continual compliance issues (OECD 2014a, Directorate General of Taxation (DGT) 2015a). The Indonesian tax ratio is classified as lower than those of other low-income countries (IMF 2011), and the percentage of individual income tax revenue to GDP in Indonesia, partly due to corruption and poor governance, is the lowest among neighbouring countries (i.e. 1.3% compared to 1.9% in Thailand, 2.1% in Philippines, and 2.7% in Malaysia) (Bird and Zolt 2005).

Recently, Indonesia has introduced and offered a tax amnesty program for nine months, from July 2016 to March 2017, to generate more revenue and broaden the tax base. However, in the first phase of the program (July–September 2016, involving a 2% redemption rate), 82% (284,679 out of 347,033) of amnesty participants were taxpayers who had already lodged their annual tax returns, and 89% ($6.64 billion out of $7.46 billion) of the tax declared was paid by individual taxpayers.[2] This is a very strong indication of the extent of non-compliance by personal taxpayers in Indonesia.

Before proceeding further, the following point needs to be made. While the empirical findings of this paper are confined to Indonesia, it is important to note that the theoretical model (to be developed in the next section) is of sufficient generality and robustness to be applicable to other developing countries, especially those in the Asia-Pacific region. This is so because, although different model setting may lead to different result, the development of the theoretical model does not depend on any country-specific characteristics or assumptions.

There is no consensus on the definition of corruption. In fact, corruption can be defined in several ways (see, for example, Blackburn, Bose, and Haque 2010). Most of the definitions, however, appear to emphasise governmental aspects of corruption by highlighting the abuse of public authority for personal gains—accordingly, commonly termed as 'government corruption' (Shleifer and Vishny 1993: 599).

One popular way of classifying corruption is by using its scale (UNDP 2008). In this sense, corruption is categorised in the sector where it occurs or the amounts of money involved. For example, like the subsequent UNDP definition (2008), Doig and Theobald (1999) distinguish two types of corruption: grand corruption and petty corruption. Grand corruption, on the one hand, represents the misuse of public power by high-level public officials such as ministers or senior staff, for personal pecuniary gain. On the other hand, petty corruption refers to the extortion of small payments by low-level public officials in daily interactions designed to

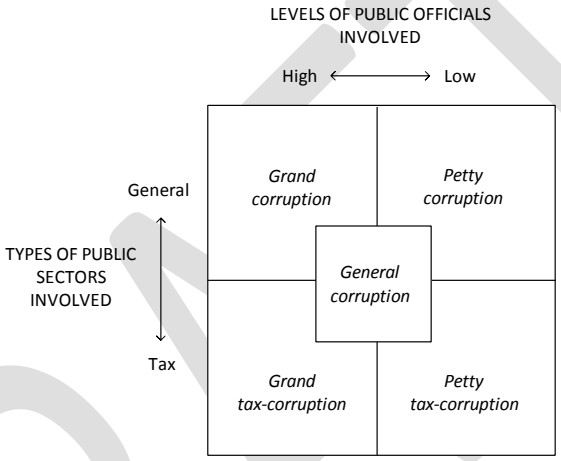
[2] Source: <http://pajak.go.id/statistik-amnesti>, accessed 27 October 2016.

'smooth' transactions, and accordingly it is often called 'grease' money. We adopt this classification in this paper.

Because to our knowledge no previous study has distinguished between grand and petty tax corruption, and Indonesian tax authorities remained far from immune to corruption (McLeod 2011), we then also distinguish corruption in the tax department (the DGT) from corrupt activities in all other government sectors.

Accordingly, five different types of perceptions of corruption are identified: grand corruption; grand tax-corruption; petty corruption; petty-tax corruption; and a fifth category that embraces all four of these categories—general corruption (figure 1).

FIGURE 1 *Types of Perceived Corruption under Study*



To maintain the specificity of the study, we then review the definition of tax compliance behaviour. While there is no consensus of what precisely is meant by compliant behaviour, we identify that the definitions of tax compliance can be broadly categorised into two approaches: conceptual and operational. The conceptual approach tends to emphasise the taxpayers' willingness to comply without the application of enforcement activity (see, for example, James and Alley 1999: 32), whereas the operational approach appears to focus on the administrative fulfilment of particular tax obligations (see, for example, OECD 2014b). For practical purposes, the operational approach seems to offer an advantage by evaluating whether taxpayers register in the system, file timely tax returns, make accurate and complete reports, and pay their tax liabilities on time.

We also observe that two critical aspects need to be considered in examining tax compliance behaviour: intention and outcome (see, for example, Bird 2015, World Bank 2015). While the outcomes of compliance behaviour vary (Tran-Nam 2003, Langham, Paulsen, and Hartel 2012), intention can be reasonably considered as an accurate proxy for performed behaviour (Lewis 1982, OECD 2010). For this reason, to obtain a greater clarity on the definitional issues and to maintain the specificity of the results, our study sets out two conceptual boundaries. First, tax

compliance is specifically defined as 'taxpayers' willingness to accurately report income in accordance with the prevailing tax law' (OECD 2014b).[3] Second, our research focuses on both intentional compliance and intentional non-compliance behaviour so far as tax reporting is concerned. Accordingly, tax compliance behaviour in this paper refers to the self-reported behaviour of the taxpayers' intended reporting behaviour.

By identifying the impact perceptions of corruption have on intentional non-compliance behaviour, this study expands the increasingly popular theory of tax morale (e.g. Brink and Porcano 2016; Cummings, Martinez-Vazquez, McKee, and Torgler 2009; Halla 2012; Jahnke 2015).[4] This study provides deep insight on a hitherto unexplored cultural factor that may affect the tax morale of individuals. This is important because traditional economic model is not capable of explaining the level of tax compliance in society. That is, the evidence suggests that the level of tax evasion should be higher than it is in many countries given the low probability of getting audited and the size of the penalty if caught (Walsh 2012). Accordingly, because deterrence theory often does not work well in practice (Osofsky 2014), to provide adequate explanation of the dynamic of tax compliance behavior, an extension to the standard model is needed (Ritsatos 2014).

In response, this paper provides a deeper understanding as to what extent, and how, perceptions of corruption influence intentional underreporting behaviour of personal income taxpayers (PITs) in Indonesia. Understanding public perceptions is important because this is one of the external factors that is capable of shaping tax compliance outcomes (OECD 2014b).

This paper then places these empirical findings into a risk-based compliance management context to identify strategies designed to improve tax compliance and to explore the necessary steps to implement them effectively. The policy implications resulting from this study are crucial and relevant for developing economies such as Indonesia, particularly in relation to the 2030 United Nations' Agenda for Sustainable Development goals where strengthening domestic revenue mobilisation and improving domestic capacity for tax revenue collection are considered as key drivers of these goals (United Nations 2015). Finally, it is worth noting that in many cases decisions in tax administration need to be made under uncertainty (Wenzel and Taylor 2003). This study provides evidence-based results that may be beneficial, particularly to the DGT, to reduce this *ex ante* uncertainty.

METHODOLOGY

The primary concern in the study of perceptions of corruption and tax compliance behaviour is how to obtain reliable data. For this purpose, field

---

3 It is worth noting that this definition deliberately excludes the 'registration', 'filing', and 'payment' criteria.

4 Tax morale is frequently described as 'intrinsic motivation to pay tax' (Frey & Torgler 2007).

research was undertaken in the period from January 2015 through to July 2015. This study sought to measure perceived levels of corruption and tax compliance behaviour at the individual level by asking Indonesian PITs the extent of perceived corruption and underreporting behaviour of income tax. Inevitably, questions on corruption and underreporting behaviour are highly context-dependent and also very susceptible to social desirability bias. That is, there is always a possibility that taxpayers will answer such questions in a less than wholly truthful fashion. In order to address these concerns and minimise respondent bias, a number of strategies were adopted.

First, to enhance the research method capabilities and to improve the quality of the research outcomes, this study adopted both the qualitative and quantitative paradigms in a sequential priority model. Initially, in-depth interviews with nine participants (three taxpayers, three tax agents and three tax officers) were used to clarify, modify, and develop more robust observed variables in the design of the survey questionnaire from theoretical perspectives. This was then followed by an extensive survey conducted with PITs who were submitting personal tax returns (Surat Pemberitahuan Tahunan—SPT) in randomly selected twelve tax offices across four Indonesian regions (Denpasar, Malang, Surabaya and Yogyakarta). Due to confidentiality issues, the options for collecting tax compliance data is very limited. For this reason, we considered combined random sampling and convenience sampling as the most feasible option for this research.

Second, to minimise taxpayers' suspicion of the data collection in the quantitative phase, a team of research intermediaries—trained research assistants recruited from the local universities—was involved in the survey. The research intermediaries played a crucial role in assuring the taxpayers that the study was an academic project as well as indicating that the study had no link with the Indonesian tax authority.

The survey was conducted by using mixed-modes: a combination of face-to-face interviews and self-completion survey. Employed and self-employed PITs who attended the observed tax office were randomly selected and treated as an accessible population. Face-to-face interviews were initially used by the research intermediaries to recruit respondents because this method has a good reputation for gaining the cooperation of respondents. Meanwhile, self-completion surveys were employed to capture respondents' sensitive answers because this method was considered as the most suitable mode to collect particularly confidential responses (de Vaus 2014).

Third, and prior to the survey conduct, two-stage pilot tests were undertaken to ensure that the questionnaire was accurate and reliable for data collection. Further, to reduce potential social desirability bias, an 'everybody does it' technique (de Vaus 2014) was adopted by adding a preamble phrase that 'not everyone necessarily reports all of his or her actual income to the tax office' in the questionnaire. Also, to

psychologically emphasise the 'anonymous nature' of the survey, we deliberately placed the 'background information' section of the respondents on to the last page of the questionnaire.

Fourth, most of the tax offices (75%) where the surveys took place were located on the Java Island. The choice of survey locations was dictated by the fact that in terms of economic activity, and despite its small size, Java Island accounts for almost 58% of Indonesian GDP (BPS, 2013). As a result, the majority of income taxpayers (60%) are administered by 189 tax offices (57% of the total number of tax offices in Indonesia) in this area. Nevertheless, our research budget allowed us to survey 397 taxpayers only in 12 tax offices.[5]

Finally, because intentional (non)compliance behaviour is the focus of our study, we adopt the Theory of Planned Behaviour (TPB) as a primary theoretical lens. The main reason for adopting the TPB is because, by definition, perception is closely related to belief.[6] The TPB deals with three beliefs: behavioural beliefs, normative beliefs, and control beliefs (Fishbein and Ajzen 2010). Once beliefs associated with a certain behaviour have been developed, these beliefs then provide the basis for the attitudes, subjective norms, and perceived control which in turn lead to the formation of intention and a given behaviour (Fishbein and Ajzen 2010). In this sense, a propensity to evade taxes can be linked with taxpayers' belief that the government system is ineffective (Wearing and Headey 1997). High levels of perceived corruption may weaken taxpayers' willingness to contribute their fair share of tax (Torgler, Demir, Macintyre, and Schaffner 2008) and taxpayers may conceive that the presence (or benefit) of government expenditure would be reduced (Alm, McClelland, and Schulze 1992). As a result, taxpayers may underreport their tax as an attempt to disengage with any reciprocal relationship with the government (Fjeldstad and Tungodden 2003).

Accordingly, the theory conceptualises that attitudes toward behaviour, subjective norms and perceived behavioural control lead to the formation of behavioural intention, in which behavioural intention enables the

---

5 Based on a careful estimation, it was concluded that the accessible population of this study was around 360,000 respondents. This is an indicative number of the accessible population, estimated by multiplying the number of registered PITs who were obliged to lodge annual tax returns as of December 2012 with the rate of filing ratio of each tax office under study. Moreover, as this study adopted structural equation modelling (SEM), it was observed that the minimum samples for this study would be 384.

6 Perception can be defined as 'a belief or opinion, often held by many people and based on how things seem'. See, <http://dictionary.cambridge.org/dictionary/british/perception>, retrieved 18 April 2014. As is true for the definition of corruption, the definition of perception of corruption also depends on social and cultural factors (Melgar, Rosi, and Smith 2010). However, in this context, perception does not necessarily represent belief in the TPB model. Belief in this model refers to 'subjective probabilities' (Fishbein and Ajzen 2010, p. 221) instead of 'the feeling of being certain that something exists or is true.' See, <http://dictionary.cambridge.org/dictionary/english/belief>. A fuller discussion on the relationship between perception and belief can be found in Smith (2001).

prediction of actual behaviour (Fishbein and Ajzen 2010).[7] By adopting this framework, we were particularly interested to know whether different forms of perceived corruption have differing impacts upon the way Indonesian individual taxpayers behave so far as tax reporting is concerned.[8]

QUALITATIVE RESULTS

The interviews were open-ended and interviewees were encouraged to provide their own thoughts and opinions on the questions. The interview data were subsequently transcribed into a verbatim format. CDC EZ-Text 4.0 software was then used for analysis by using a deductive and theoretical thematic analysis procedure described by Braun and Clarke (2006).

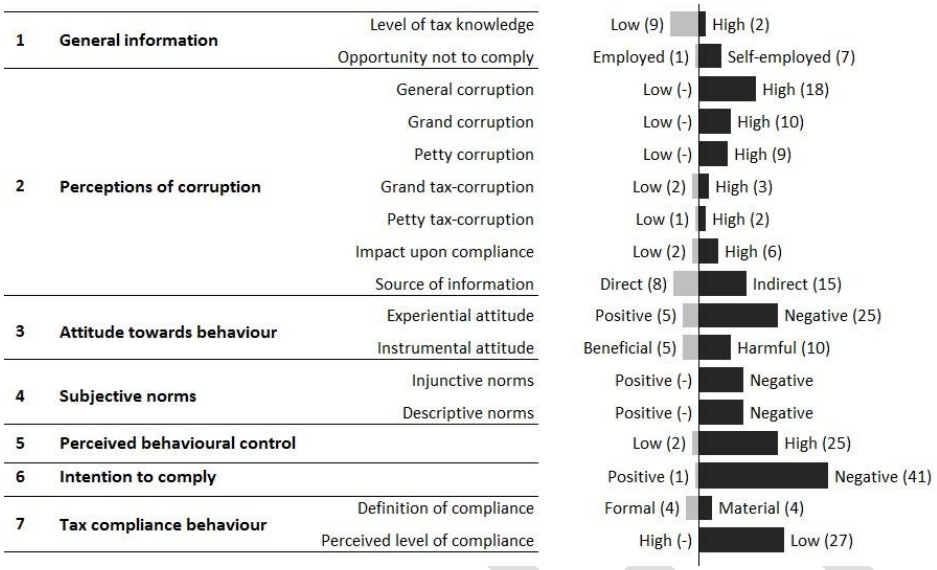
Based on a review of the literature on perceptions of corruption and the TPB, seven themes were established and coded (figure 2): taxpayers' general information (TGI); perceptions of corruption (PoC); attitude towards behaviour (ATB); subjective norms (SNO); perceived behavioural control (PBC); intention to comply (ITC); and tax compliance behaviour (TCB). Each of the themes, except PBC and ITC, was then categorised into relevant sub-themes, resulting in 15 sub-themes. Each of the sub-themes was coded as a 'child' of its original code in the software and each had a bipolar scale (e.g. low–high, negative–positive, harmful–beneficial). As a result, a total of 34 pre-existing codes were established. The transcribed data was read carefully to identify meaningful patterns of texts relevant to the sub-themes and the pre-existing codes. The deductive thematic analysis resulted in 28 categories which covered 82% of available pre-existing codes, leaving six pre-existing codes unused. A total of 272 assigned codes were identified from the interview data. To provide an easier description of the findings, a representation of the assigned codes was converted into clustered bar charts and depicted in figure 2.

---

[7] This in in stark contrast to what the classical economic model predicts: most rational taxpayers to become evaders, since it is unlikely to be caught and penalised (Ritsatos 2014).

[8] The causal relationships between elements in the TPB have been adopted to explain a variety of psychological and social factors in several studies of tax compliance behaviour. These include, for instance: the impact of moral obligation (Bobek and Hatfield 2003); the influence of ethics as a representation of moral reasoning (Trivedi, Shehata, and Mestelman 2005); and the impact of intention to comply on predicting compliance behaviour (Langham, Paulsen, and Hartel 2012).

FIGURE 2 *Diagrammatic Interpretation of Interview Data*



Note: This figure shows the number of identified pre-existing codes for each category in a double-sided bar. The length of the bar proportionally indicates the number of identified codes. For instance, as shown at the bottom of the chart, there was no code found indicating compliance level in Indonesia was 'high'. In contrast, 27 codes were found indicating that the level of tax compliance was 'low'.

Source: Identified from the interview data.

Three main findings emerged from the analysis of the interviews. First, Indonesian PITs were mostly perceived by the participants as having a high likelihood of not complying with their tax obligations, indicated by the extent of negative intention to comply. The participants were of the opinion that complying with the tax law was associated with 'bad' feelings and 'disadvantages' which represent the prevalence of negative attitudes toward compliance behaviour. An overall negative value on the subjective norms theme also indicated that the perceived level of social pressures to comply with the tax law was completely absent, which in turn might implicitly encourage PITs to become non-compliant. The analysis of the interview data also revealed that PITs were generally assumed to have a considerable control over whether or not they want to intentionally engage in tax evasion.

Second, the interview data also demonstrated an inverse relation between high levels of perceived corruption and low levels of compliance behaviour. However, little was known from the data about how this correlation was linked. What the data may suggest is that high levels of perceived corruption might be related to both situational and motivational factors. There are two reasons for this. First, the situational factor was indicated by the extent of negative psychological evaluation towards a

high level of perceived corruption and complying with tax obligations.[9] Thus, corruption, either perceived or real, might led to a negative psychological evaluation towards the completeness and the accuracy of information declared in the annual income tax return of PITs. Second, the motivational factor could be related to a lack of perceived social pressure among PITs to fully comply with the tax law, particularly in providing complete and accurate information declared in the annual income tax returns. Overall negative values on both injunctive (what others believe is right) and descriptive norms (what others do) among the participants indicated that the beliefs of certain groups of referents discourage PITs from complying with the tax law and beliefs that PITs' important referents are not fully reporting their income were evident.

Finally, as suggested by many scholars (e.g. Alm, McClelland, and Schulze 1992; Bird, Martinez-Vazquez, and Torgler 2008; Fjeldstad and Tungodden 2003; Gangl, Kirchler, Lorenz, and Torgler 2015; Litina and Palivos 2016), it was possible to propose a hypothetical model of relationships between high levels of perceived corruption with low levels of compliance behaviour. In this sense, this hypothetical model conceptualises that perceived levels of corruption influence both attitudes and subjective norms of Indonesian PIT. Then, the affected attitudes and subjective norms, combined with high level of perceived behavioural control for non-compliance, lead to the formation of a negative intention to fully comply with the tax law. Subsequently, this negative behavioural intention can be reasonably used to predict the low levels of compliance behaviour. In other words, the relationship between high levels of perceived corruption and low levels of tax compliance is indirect.

These key findings and hypothetical relationships were then used and further investigated in the quantitative phase.

SURVEY RESULTS

Demographic data

The survey questionnaire employed 72 questions in total. The respondents were specifically asked to indicate their beliefs, values, attitudes, intentions and behaviour regarding ten constructs using a 7-point rating scale of interval measurement by using 56 reflective indicators, concluded with 11 questions relating to their demographic background. The employed constructs and the number of its indicators were as follows: (i) perceptions of general corruption (PGC) = 5; (ii) perceptions of grand corruption (GCO) = 5; (iii) perceptions of petty corruption (PCO) = 5; (iv) perceptions

[9] For instance, '*why should I pay tax if it is just being corrupted*?' was a frequently expressed view heard from the participants—this sentiment was uttered 18 times in total during the interviews. Also, as several participants have precisely described, to compensate for such a 'non-deductible payment' (i.e. bribe) for tax calculation purposes, certain types of taxpayers might have no choice but to underreport their actual income. Otherwise, taxpayers may have to pay 'double-taxes' which obviously reduces their financial circumstances.

of grand tax-corruption (GTC) = 5; (v) perceptions of petty tax-corruption (PTC) = 5; (vi) attitude towards tax underreporting (ATB) = 9; (vii) subjective norm towards tax underreporting (SNO) = 8; (viii) perceived behavioural control over tax underreporting (PBC) = 8; (ix) intention to correctly report actual income (ITC) = 4; and (x) level of reported income (TCB) = 2 indicators (see appendix 1 for detailed survey items).

The respondents consisted of two groups: 196 self-employed PITs and 201 employed PITs. The surveyed self-employed PITs are categorised as small and medium enterprises (SME) with annual sales turnover of operating business less than IDR 4.8 billion (roughly $360,000), but there is no income threshold applied for the employed PITs.

We looked at several demographic characteristics of the respondents to obtain initial insight that might guide the discussion of policy implications (table 1). In terms of age group, the respondents were concentrated in two age ranges, 24-34 and 35-44 years old (35% and 33% of respondents respectively). A larger proportion was male (64%). Most respondents were married (90%), and the share of married self-employed PITs was higher than those of employed PITs (93% and 86% respectively).

As the survey commenced in mid-March 2015 and ended in late June 2015, we performed timing-bias test to check whether those who answered the questionnaire in June 2015 were not significantly different from those who responded to the questionnaire in March 2015 by using a wave analysis as suggested by Armstrong and Overton (1977). We then carried out basic comparisons to ensure the representativeness of the sample at four levels: national (331 tax offices), regional level (39 tax offices), tax office level (12 tax offices), and surveyed respondents (201 employed PITs).[10] We found no timing-response bias in the survey data and concluded that the respondents, particularly the employed PITs, were reasonably representative of the sample frame in terms of annual tax return type and income group.[11] In addition, our survey data provided in table 1 suggests that the share of male taxpayers is 63.5%. This is comparable to that of SAKERNAS data which during 2007-2014 indicates a similar figure 62.8% (ILO 2015).

TABLE 1 *Respondents' Demographic Characteristics (as % of sample)*

Demographic characteristics	Self-employed taxpayers (n = 196)	Employed taxpayers (n = 201)	Total (n = 397)

[10] Taking into consideration that the survey collected almost the same portion of self-employed and employed PITs in each of the surveyed tax offices, the variability of these portions should not be evident. For this reason, the variability of types of annual return lodged by employed PITs—who may use either 1770 S or 1770 SS tax returns—was utilised.

[11] The representativeness test of the sample frame should be ideally performed upon various demographic variables, such as age, gender, level of education, race, etc. Unfortunately, based on the nature and availability of data provided by the DGT, only these two variables could be utilised for the test.

Age group	< 25 years	6.6	6.0	6.3
	25 - 34 years	36.7	33.3	35.0
	35 - 44 years	35.2	31.3	33.2
	45 - 54 years	17.3	20.9	19.1
	55 - 64 years	2.6	6.5	4.5
	> 65 years	1.5	2.0	1.8
Sex	Male	68.4	58.7	63.5
	Female	31.6	41.3	36.5
Marital status	Single	6.1	9.5	7.8
	Married	93.4	86.1	89.7
	Separated/divorced	0.5	4.5	2.5
Race	Javanese	67.3	65.7	66.5
	Balinese	18.1	17.8	17.9
	Others	6.6	4.5	5.5
	Sumatranese	2.6	6.5	4.5
	Sundanese	2.6	3.0	2.8
	Sulawesinese	1.5	2.0	1.8
	Kalimantanese	1.5	0.5	1.0
Education level	High school	20.9	24.9	22.9
	Diploma	11.2	9.5	10.3
	Undergraduate	60.2	58.7	59.4
	Postgraduate	7.7	7.0	7.3
Annual income level	< 60 million	62.8	76.1	69.5
	60 - 99 million	20.9	13.4	17.1
	100 - 149 million	8.2	5.5	6.8
	150 - 199 million	5.6	3.5	4.5
	> 200 million	2.6	1.5	2.0
Tax handling	Self-prepared	62.2	40.8	51.4
	Tax office's assistance	17.9	45.8	32.0
	Friends' assistance	16.3	12.4	14.4
	Tax agent	3.6	1.0	2.3
Previous interaction with the DGT	No contact	63.8	83.6	73.8
	Contact, no audit	32.1	16.4	24.2
	Audit, no penalty	1.5	-	0.8
	Audit with penalty	2.6	-	1.3

Source: Calculated from the survey data

As nine out of twelve of the surveyed tax offices were on the Java Island, the study sample was dominated by Javanese respondents (almost 67%). Balinese respondents were in the second position with nearly 18%. Both types of taxpayer shared almost similar portions of these two-dominant races. Various other races comprised minor ethnic groups including 'Others' (e.g. Tionghoa), Sumatranese, Sundanese, Sulawesinese and Kalimantanese.

The study sample was dominated by respondents who had an annual income less than IDR 60 million ($4,500) (70%), followed by those who had IDR 60-99 million (17%). In the third and fourth position were those

who had income group IDR 100-149 million and 150-199 million (7% and 5% respectively). The smallest income-group level was those who had more than IDR 200 million annual income (2% of the total respondents).

The vast majority of the respondents had college degrees, with the largest group (60%) having undergraduate level education, followed by diploma and postgraduate levels (10% and 7% respectively). Respondents who had high school qualifications comprised 23% of respondents. More than half of the respondents were 'self-preparers' in completing their annual tax return (51%), followed by those who received assistance from tax offices (32%). In contrast, only a miniscule portion of the respondents had used tax agents to fully deal with their annual income tax return (2%). While most self-employed PITs were self-preparers (62%), the majority of employed PITs had received assistance from tax offices in completing their annual tax returns (46%).

With respect to previous interactions with the DGT, by far the largest proportion of respondents had never been contacted by tax offices (74%), followed by those who had been contacted but never been audited by tax offices (24%). Those who had been audited and penalised by tax offices constituted about the same small proportion as those who had been audited but never been penalised (roughly 1% of respondents). Those who had been audited by the tax authority were all self-employed PIT, and the proportion of those who had been penalised was slightly higher than those who had never been sanctioned (roughly 3% and 2% respectively).

In addition, we found that press media, television and the internet were the respondents' primary sources of information about corruption (65%, 63%, and 40% respectively).

Perceptions, attitudes, norms, perceived control and intentions

Table 2 summarises key survey outcomes relating to perceived levels of corruption and attitudes, norms, perceived control and intentions, based upon responses to a seven-point rating scale. The variable perception of corruption measures different forms of perceived corruption using the conventional definition and classification of corruption derived from Doig and Theobald (1999), Kaufmann, Kraay, and Mastruzzi (2007), Mishler and Rose (2008), and UNDP (2008). The elements of TPB are adapted from Fishbein and Ajzen's (2010) constructs, based on a specific target, action, context and timeframe (TACT)—i.e. reporting of correct information of actual income on an annual income tax return for fiscal year 2014.

TABLE 2 *Survey Responses*

(based on a 7-point rating scale of interval measurement)

Construct	General description	Self-employed (n = 196)		Employed (n = 201)		All respondents (n = 397)	
		Mean[a]	SD	Mean	SD	Mean	SD

Perception of general corruption (PGC)	Taxpayer's perceived level of abuse of entrusted power by public official for private gain	6.21	0.84	6.10	0.93	6.15	0.89
Perception of grand corruption (GCO)	Taxpayer's perceived level of misuse of public power by high-level public official for private gain which often involves large sums of money	6.49	0.64	6.48	0.70	6.48	0.67
Perception of petty corruption (PCO)	Taxpayer's perceived level of extortion of small payments by low-level public officials in daily interactions with the public as 'grease money'	6.41	0.66	6.27	0.75	6.34	0.71
Perception of grand tax-corruption (GTC)	Taxpayer's perceived level of misuse of public power by high-level tax official for personal pecuniary gains which often involves large illegal payment in dealing with certain tax cases.	5.57	1.14	5.49	1.07	5.52	1.11
Perception of petty tax-corruption (PTC)	Taxpayer's perceived level of misuse of public power by low-level tax official for personal pecuniary gains or the extortion of small payments by operational staff in daily interaction with taxpayers as 'grease money'	5.01	1.03	5.02	1.08	5.01	1.06
Attitudes towards tax under-reporting (ATB)	Taxpayer's psychological evaluation (i.e. some degree of favourableness) towards underreporting income in the annual tax return	4.51	1.25	4.30	1.28	4.40	1.27
Subjective norms towards tax under-	Taxpayer's perceived social pressure with respect to report	3.89	1.22	3.72	1.30	3.80	1.26

reporting (SNO)	incomplete income in the annual tax return						
Perceived behavioural control over tax under-reporting (PBC)	Taxpayer's perceived ability and opportunity to report incomplete income in the annual tax return	4.56	1.23	3.12	1.23	3.83	1.42
Intention to report actual income (ITC)	Taxpayer's willingness to fully report actual income in the annual tax return	3.57	1.68	4.02	1.69	3.80	1.70

[a]The mean and standard deviation for each construct are calculated from the corresponding reflective indicators. The number of indicators are as follows: PGC = 5; GCO = 5; PCO = 5; GTC = 5; PTC = 5; ATB = 9; SNO = 8; PBC = 8; ITC = 4; and TCB = 2. Thus, for instance, the PGC mean score of 6.15 for all respondents was calculated from 1,985 observations (i.e. five multiplied by 397).

Source: Calculated from the survey data

Perceived Levels of Corruption

The respondents were generally of the opinion that the levels of corruption in Indonesia were very high. Specifically, the highest perceived level of corruption was in relation to grand corruption, with the mean score for its indicators 6.49 out of 7 for self-employed individuals, and 6.48 for all respondents. In contrast, perceptions of petty tax-corruption appeared to have the lowest mean score, with an indicator of 5.01.

Attitudes towards Tax Underreporting

In support of the qualitative results, fully reporting actual income in the annual tax returns seems to be associated by the respondents with lack of positive experiential attitudes and unpleasant instrumental attitudes. The survey data show the respondents tend to be favourably disposed to underreporting income (M = 4.40).

Subjective Norm towards Tax Underreporting

The respondents generally perceived that their significant referents (persons likely to influence their intentions and behaviours) think they should not fully report their actual income. As a result, they appear to have somewhat positive subjective norms towards underreporting their actual income. The survey data suggest that the perceived level of social pressures not to fully report actual income was slightly below the scale mean (M = 3.80).

Perceived Behavioural Control over Tax Underreporting

The data indicate that the respondents have a perception that they have the ability and the opportunity to underreport income. This is particularly the case with the self-employed respondents. The data reveal that self-employed PITs appear to have a considerable control over whether or not they want to intentionally engage in tax evasion (M = 4.56). In contrast,

employed PITs scored much lower (M = 3.12) than self-employed PITs. This significant divergence may clearly reflect the different nature of opportunity for non-compliance between employed and self-employed PITs, as employed PITs typically have their income subject to withholding tax.

Intention to Report Actual Income

The data suggest that the respondents generally do not appear to have a high level of willingness to fully report their actual income (M = 3.80). Self-employed PITs have a lower score of willingness to fully report actual income (M = 3.57) than employed PITs (M = 4.02).

Levels of (Under)Reported Income

The survey data indicates that only 18% (36 out of 196) of self-employed PITs agreed or strongly agreed that they had fully reported their actual income in the 2014 annual tax return (table 3). In contrast, 63% (125 out of 201) of employed PITs agreed or strongly agreed that they had reported their income other than salary, wage, or other tax withheld income in their annual income tax return. It is important to note however that a large portion of the surveyed employed PITs had no additional income other than from employment (83%), implying that the rest (17%, or 34 employed PITs) received additional income. Further, roughly 4% of employed PITs (seven respondents) have reported that they did not earn income in 2014 (table 3).

TABLE 3 *The Extent to Which Respondents Self-Reported Their (Non)Compliance Behaviour (TCB)*

Type of PIT	*Question (a)*: I have fully reported my actual income in my annual tax return for fiscal year 2014 / I have fully reported my income other than salary, wage, or other tax withheld income on my annual tax return for 2014							
	SD[a]	D	sD	N	sA	A	SA	Total
Self-employed	4	15	42	54	45	27	9	196
Employed	5	18	13	27	13	84	41	201
Total	9	33	55	81	58	111	50	397

Type of PIT	*Question (b)*: As far as I can remember, the amount of income I have reported in my annual tax return was roughly ... of my actual income[b]								
	No income	0%	16%	33%	50%	67%	83%	100%	Total
Self-employed	7	2	7	34	42	53	37	14	196
Employed	167	34	n.a.[c]	n.a.	n.a.	n.a.	n.a.	n.a.	201
Total	174	36	7	34	42	53	37	14	397

[a] SD = strongly disagree; D = disagree; sD = somewhat disagree; N = Neutral; sA = somewhat agree; A = agree; SA = strongly agree.

[b] For employed PIT this refers to any income other than salary, wage, or other tax withheld income.

[c] Not applicable.

Source: Summarised from the survey data

In terms of the amount of income being underreported in the annual tax returns, the data indicate that 44% of self-employed PITs had underreported between 50% and 100% of their actual income. Surprisingly, no respondent from the group of employed PITs who received additional income other than from employment reported their additional income in the annual tax return—all of them (34 employed PITs) answered 0%.

QUANTITATIVE APPROACH AND RESULTS

We used the survey data to examine the hypothetical relationships of variables under study derived from the qualitative phase. Based on the type of perceived corruption being considered, three basic models were used to analyse the impact of the five types of perceived corruption under consideration (figure 2).

In doing so, a structural equation modeling (SEM) approach was performed by using IBM® SPSS® Statistics and IBM® SPSS® Amos. Commonly used to assess dependence relationships among latent variables simultaneously (Hair et al. 2010), SEM is 'a technique to specify, estimate, and evaluate models of linear relationships among a set of observed variables in terms of a generally smaller number of unobserved variables' (Shah and Goldstein 2006: 149). We consider this technique to be the most appropriate method to analyse the survey data in this study.

In analysing the survey data, we further specified two categories: full and partial models. The reason is because self-employed PITs who did not earn income (seven respondents) and employed PITs who did not receive additional income other than from employment (167 respondents) could not be included in the full model analysis.[12] Accordingly, while the whole sample (397 respondents) are used in the analysis of partial models, only 223 respondents can be used in the analysis of full models.

We initially performed discriminant validity tests to examine whether a construct differs from other latent constructs by examining correlation coefficients among latent variables and the square root of average variance extracted (AVE). The results presented in table 4 suggest that the correlation coefficients among constructs were all lower than the square root of AVE values. We concluded that all constructs under study have acceptable discriminant validity.

TABLE 4 Correlations between Constructs and Square Root of AVE

Model A-full*

	PGC	ATB	SNO	PBC	ITC	TCB
PGC	0.66					
ATB	0.12	0.61				

Model A-partial**

	PGC	ATB	SNO	PBC	ITC
PGC	0.72				
ATB	0.27	0.63			

[12] By the term 'full' model we mean the inclusion of 'level of reported income (TCB)' variable in the model (figure 2). Analogously, the term 'partial' means the exclusion of the TCB variable.

SNO	0.01	0.09	0.62			
PBC	0.11	0.06	-0.02	0.61		
ITC	-0.23	-0.46	-0.17	-0.21	0.71	
TCB	-0.24	0.08	-0.07	-0.02	0.59	0.81

SNO	0.06	0.09	0.64		
PBC	0.23	0.18	0.14	0.75	
ITC	-0.39	-0.51	-0.24	-0.34	0.76

Model B-full

	GCO	PCO	ATB	SNO	PBC	ITC	TCB
GCO	0.60						
PCO	0.38	0.56					
ATB	0.29	0.06	0.61				
SNO	0.16	0.33	0.09	0.62			
PBC	0.09	0.02	0.06	-0.02	0.61		
ITC	-0.30	-0.26	-0.46	-0.17	-0.21	0.71	
TCB	-0.18	-0.12	0.07	-0.07	-0.01	0.60	0.81

Model B-partial

	GCO	PCO	ATB	SNO	PBC	ITC
GCO	0.67					
PCO	0.39	0.65				
ATB	0.35	0.13	0.63			
SNO	0.16	0.33	0.09	0.64		
PBC	0.11	0.06	0.18	0.14	0.75	
ITC	-0.31	-0.30	-0.50	-0.24	-0.34	0.76

Model C-full

	GTC	PTC	ATB	SNO	PBC	ITC	TCB
GTC	0.74						
PTC	0.13	0.68					
ATB	0.28	0.11	0.61				
SNO	0.07	-0.04	0.09	0.62			
PBC	0.05	0.04	0.07	-0.02	0.61		
ITC	-0.34	-0.17	-0.46	-0.17	-0.21	0.71	
TCB	-0.11	-0.10	0.07	-0.07	-0.02	0.60	0.81

Model C-partial

	GTC	PTC	ATB	SNO	PBC	ITC
GTC	0.72					
PTC	0.21	0.70				
ATB	0.25	0.23	0.63			
SNO	0.12	0.10	0.09	0.64		
PBC	0.10	0.06	0.18	0.14	0.75	
ITC	-0.37	-0.30	-0.50	-0.24	-0.34	0.76

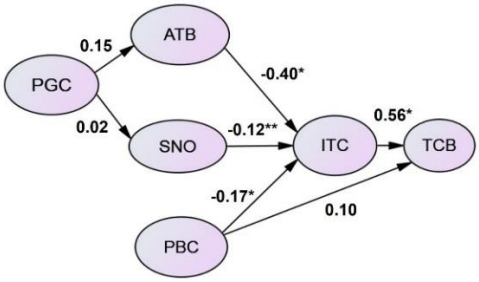
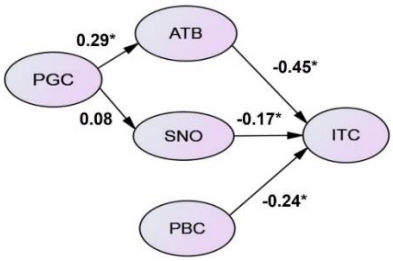
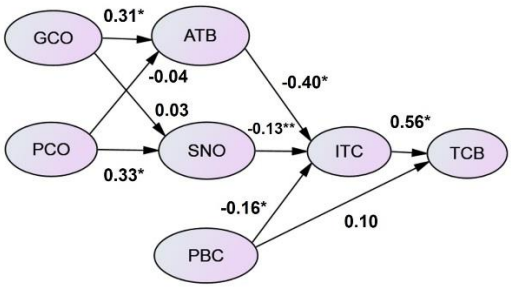
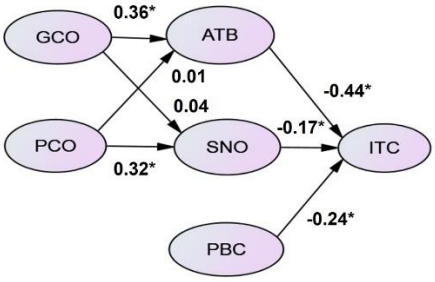
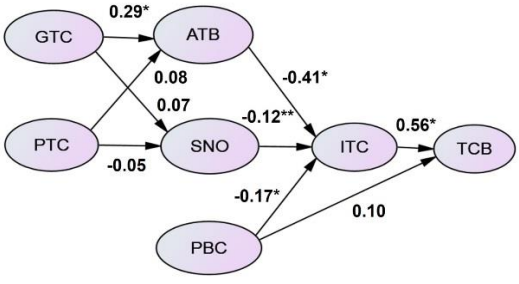
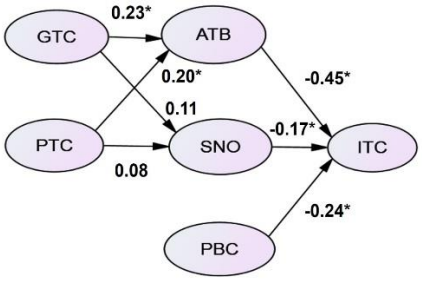
Note: * for full model n = 223; ** for partial model n = 397

Source: Calculated from survey data.

As a result, six models were examined. Because the initial models did not fit the data, we modified the original models by adding several covariance of error terms. The outcomes after re-estimation process are summarised in figure 3. As the models in figure 3 show, the effect of perceptions of corruption upon *intention to report actual income* (ITC) and the *level of reported income* (TCB) is indirect. The details of these indirect effects are presented in appendix 2.

With reference to the fit model indices, we found that Model B (both full and partial models) appeared fits the best to the data. Partially supported by the outcomes of Model C, Model B revealed a tendency for perceptions of grand corruption to influence taxpayers' attitudes towards tax underreporting more strongly than their subjective norms towards tax underreporting. That is, perceptions of grand corruption and grand tax corruption made taxpayers' attitudes towards tax underreporting more negative, while perceptions of petty corruption tended to affect taxpayers' subjective norms related to tax underreporting.

FIGURE 3 *Hypothesised Channels of Causality Between Perceptions of Corruption and Tax (Non)Compliance Behaviour: Path Coefficients and Model Fit Indices*

Modified full model (n = 223)	Modified partial model (n = 397)
	
MODEL A-full Chi-square: 550.580 *p*-value: 0.128 χ^2/df: 1.071 TLI: 0.981 CFI: 0.982 RMSEA: 0.018	MODEL A-partial Chi-square: 568.805 *p*-value: 0.064 χ^2/df: 1.096 TLI: 0.990 CFI: 0.991 RMSEA: 0.016
	
MODEL B-full Chi-square: 723.682 *p*-value: 0.168 χ^2/df: 1.052 TLI: 0.982 CFI: 0.983 RMSEA: 0.015	MODEL B-partial Chi-square: 713.259 *p*-value: 0.262 χ^2/df: 1.034 TLI: 0.996 CFI: 0.996 RMSEA: 0.009
	
MODEL C-full Chi-square: 731.874 *p*-value: 0.120 χ^2/df: 1.064 TLI: 0.981 CFI: 0.983	MODEL C-partial Chi-square: 722.505 *p*-value: 0.190 χ^2/df: 1.025 TLI: 0.994 CFI: 0.995

	RMSEA: 0.017	RMSEA: 0.011

Note: * = significant at $p < 0.05$; ** = significant at $p \leq 0.1$; PGC = perceptions of general corruption; GCO = perceptions of grand corruption; PCO = perceptions of petty corruption; GTC = perceptions of grand tax-corruption; PTC = perceptions of petty tax-corruption; ATB = attitude towards tax underreporting; SNO = subjective norm towards tax underreporting; PBC = perceived behavioural control over tax underreporting; ITC = intention to report actual income; TCB = level of reported income

Source: Calculated from survey data.

The quantitative findings demonstrate the underlying mechanisms by which the different forms of perceived corruption negatively influence the way individual taxpayers behave by way of three principal findings.[13] First, perceptions of corruption appear to have stronger influences on taxpayers' attitudes towards tax underreporting than their subjective norms towards tax underreporting. In this regard, perceptions of grand corruption and grand tax-corruption were found to be influential in affecting taxpayers' attitudes towards tax underreporting (with path coefficients ranging from 0.317 to 0.363, and 0.225 to 0.290 respectively), while perceptions of petty corruption tend to affect taxpayers' subjective norms towards tax underreporting (with path coefficients ranging from 0.326 to 0.331).

Second, taxpayers' attitudes towards tax underreporting and their subjective norms towards tax underreporting, coupled with the perceived behavioural control over tax underreporting, appear to undermine taxpayers' intention to report actual income. Attitudes towards tax underreporting seem to have the strongest direct effect upon taxpayers' intention to report actual income (with path coefficients ranging from -0.400 to -0.445), followed by perceived behavioural control over tax underreporting in the second place with path coefficients ranging from -0.165 to -0.244. Subjective norms towards tax underreporting appear to have the weakest direct effect upon taxpayers' intention to report actual income with path coefficients ranging from -0.122 to -0.175. The findings also suggest that intention to report actual income is a good predictor of tax reporting behaviour, with path coefficients greater than 0.550.

Third, it was demonstrated that perceptions of corruption have an impact upon taxpayers intentionally underreporting their income tax. It was found that when perceived levels of grand corruption, grand tax-corruption and general corruption increase by one standard deviation, intentional tax underreporting behaviour increases by 0.073, 0.071 and 0.034 standard deviations respectively.

Further, using multi-variate analysis of variance (MANOVA), it was found that the perceived levels of corruption, as outcomes, were not related to age groups, gender or income levels; but were associated with education levels and employment status (table 5). In particular, perceptions of general corruption were found to be related to education levels, with

[13] These three findings draw heavily from Rosid, Evans, and Tran-Nam (2016). Mainly due to space considerations, the detailed process of empirical investigation is not discussed further in this paper. We refer interested readers to Rosid, Evans, and Tran-Nam (2016).

respondents who have higher education levels expressing lower levels of perceived corruption (M for high school = 6.27, diploma = 6.21, undergraduate = 6.14, and postgraduate = 5.83). Similarly, perceptions of petty tax-corruption were found to be only related to education levels, with respondents who have higher education levels expressing lower levels of perceived corruption (M for high school = 5.18, diploma = 5.16, undergraduate = 4.98, and postgraduate = 4.48). Furthermore, a statistically significant difference between employment status was evident when considered jointly on the dependent variables of petty corruption, with self-employed PITs (M = 6.41) scoring higher than employed PITs (M = 6.26). Nevertheless, considering the small effect sizes, these might be rather negligible.

TABLE 5 *Statistically Significant Differences Among Perceptions of Corruption by Demographic Variables*

Outcomes	Predictors (demographic variables)				
Perceived level of	Age	Gender	Education	Income level	Employment status
General corruption (PGC)	-	-	Y^{a**}	-	-
Grand corruption (GCO)	-	-	-	-	-
Petty corruption (PCO)	-	-	-	-	Y^{c*}
Grand tax-corruption (GTC)	-	-	-	-	-
Petty tax-corruption (PTC)	-	-	Y^{b*}	-	-

- = statistically significant difference not evident; * = significant at $p < 0.05$; ** = Significant at $p < 0.10$.

Y^a = statistically significant difference evident, with the higher the level of education, the lower the score of PGC (Wilk's $\Lambda = 0.942$, $F(15, 1074) = 1.57$, $p = 0.07$, partial $\eta^2 = 0.02$).

Y^b = statistically significant difference evident, with the higher the level of education, the lower the score of PTC (Wilk's $\Lambda = 0.929$, $F(15, 1074) = 1.94$, $p = 0.02$, partial $\eta^2 = 0.02$).

Y^c = statistically significant difference evident, with self-employed PITs scored higher than employed PITs (Wilk's $\Lambda = 0.966$, $F(5, 391) = 1.94$, $p = 0.02$, partial $\eta^2 = 0.03$).

Source: Calculated from the survey data

It was also found that the TPB constructs under consideration, as outcomes, were not related to age groups and education levels. Instead, they were associated with gender, income level, and employment status (table 6).

TABLE 6 *Statistically Significant Differences Among the TPB Constructs by Demographic Variables*

Outcomes	Predictors (demographic variables)				
The TPB constructs	Age	Gender	Education	Income level	Employment status
Attitude towards tax underreporting (ATB)	-	-	-	-	-

Subjective norms towards tax underreporting (SNO)	-	Y^{a*}	-	-	-
Perceived behavioural control over tax underreporting (PBC)	-	-	-	Y^{c*}	Y^{d*}
Intention to report actual income (ITC)	-	Y^{b*}	-	-	Y^{e*}
Level of reported income (TCB)	-	-	-	-	Y^{d*}

- = statistically significant difference not evident; * = significant at $p < 0.05$.

Y^a = statistically significant difference evident, with male PITs scored higher than female PITs (Wilk's $\Lambda = 0.959$, $F(8, 388) = 2.06$, $p = 0.04$, partial $\eta^2 = 0.27$).

Y^b = statistically significant difference evident, with male PITs scored lower than female PITs (Wilk's $\Lambda = 0.972$, $F(4, 392) = 2.84$, $p = 0.02$, partial $\eta^2 = 0.03$).

Y^c = statistically significant difference evident, with the higher the level of income, the higher the score of PBC (Wilk's $\Lambda = 0.887$, $F(32, 1421) = 1.47$, $p = 0.04$, partial $\eta^2 = 0.03$).

Y^d = statistically significant difference evident, with self-employed PITs scored higher than employed PITs (for perceived behavioural control over tax underreporting: Wilk's $\Lambda = 0.584$, $F(8, 388) = 34.49$, $p = 0.00$, partial $\eta^2 = 0.42$; for level of reported income: Wilk's $\Lambda = 0.473$, $F(2, 220) = 122.49$, $p = 0.00$, partial $\eta^2 = 0.27$).

Y^e = statistically significant difference evident, with self-employed PITs scored lower than employed PITs (Wilk's $\Lambda = 0.958$, $F(4, 392) = 4.278$, $p = 0.00$, partial $\eta^2 = 0.04$).

Source: Calculated from the survey data

In terms of gender, a statistically significant difference between male and female was evident when considered jointly on the dependent variables of subjective norms towards tax underreporting, with males (M = 3.88) scoring higher than females (M = 3.65). Similarly, a statistically significant result was also found when considered jointly on the dependent variables of intention to report actual income, with males (M = 3.70) scoring lower than females (M = 3.96). However, considering its small effect size, the effect of gender upon intention to report actual income might be negligible.

The extent of perceived behavioural control over tax underreporting seems to be related to income levels. A statistically significant difference among income levels was evident when considered jointly on the dependent variables of PBC, with respondents who have higher level of income tend to have higher perceived level of behavioural control for tax underreporting (M for those under IDR 60 million = 3.78, those between IDR 60 million and IDR 99 million = 3.94, those between IDR 100 million and IDR 149 million = 4.03, those between IDR 150 million and IDR 199 million = 3.61, and those over IDR 200 million = 4.26). Nevertheless, considering its small effect size, this might be negligible.

By contrast, the extent of perceived behavioural control over tax underreporting appears to be substantially related to employment status. A statistically significant difference between self-employed and employed

PITs was evident when considered jointly on the dependent variables of PBC, with self-employed (M = 4.56) scoring higher than employed PITs (M = 3.12).

Although with a small effect size, a statistically significant difference between self-employed and employed PITs was also found when considered jointly on the dependent variables of intention to report actual income, with self-employed PITs (M = 3.57) scoring lower than employed PITs (M = 4.02). Finally, a statistically significant effect of employment status was evident when considered jointly on the dependent variables of level of reported income, with self-employed PITs (M = 4.37) scoring higher than employed PITs (M = 1.62).[14]

In summary, therefore, high levels of perceived corruption were found to be pervasive regardless of taxpayers' demographic background. The findings also suggest that while self-employed PITs appeared to have higher perceived behavioral control over tax underreporting, employed PITs were found to have a lower level of reported income than self-employed PITs so far as extra income is concerned.

POLICY IMPLICATIONS

Compliance Risk Management

The DGT has identified several issues relating to its low tax ratio, and is particularly concerned with the ongoing low level of tax compliance (DGT 2015b). It aims to increase the tax ratio from 12.2% in 2015 to 15% in 2019 (DGT 2015b). In relation to this aim, the DGT has recently outlined several strategic initiatives to improve tax compliance in Indonesia that are scheduled to take place in the period from 2015 to 2019. Among these is an initiative to implement a Compliance Risk Management (CRM) process. Given its pivotal importance, the CRM is the focal point of our discussion in this paper.

The DGT defines the CRM process as 'a systematic process to select appropriate instruments to improve taxpayer compliance and to deter non-compliance effectively, based on knowledge of taxpayer behaviour and the DGT's resource availability' (DGT 2015b: 36). Currently, the DGT acknowledges the absence of a comprehensive risk-based approach in dealing with compliance issues, and as a result, it is unable to allocate its resources and appropriate treatments for various types of taxpayer based on their risk in an efficient and effective way (DGT 2015b). It further notes that several decision-making processes on crucial issues are based on

[14] This result seems to be counter-intuitive. Nevertheless, recent data on the 2016 tax amnesty program might partly reflect this phenomenon. The internal data provided by the DGT on 12 October 2016 suggest that, surprisingly, more than 53% of the total tax payments collected from phase one of the 2016 tax amnesty program (July–September 2016) was paid by employed PITs. As our findings suggest, one possible explanation for this is that the employed PITs tend to conceal much of their additional income other than income from employment.

subjective judgements and that its understanding of taxpayer compliance behaviour is inadequate (DGT 2015b).[15]

The paper now explores how the findings of our study may have policy implications in relation to the implementation of a CRM process by the DGT designed to improve tax compliance. As a starting point, it is important to understand that the implementation of the CRM process emphasises the importance of recognising the operating context.

That is, in administering and collecting tax revenue a tax authority is often shaped by specific organisational, socio-economic and political contexts in which it operates (OECD 2004). Among many external factors that impact tax administration in developing countries is the extent of corruption (Bird 2015). In this sphere, our empirical findings clearly support the notion that high level of perceived corruption is an important part of the external operating context.

Once the external context is established, the CRM process then involves at least seven further stages. The four phases of CRM that are relevant to our empirical results include: (i) risk identification; (ii) risk assessment and prioritisation; (iii) the analysis of compliance behaviour; and (iv) the formulation of treatment strategies. Thus, the three other steps (planning and implementation of strategies; compliance outcome evaluation; and performance monitoring) are beyond the scope of this paper.

Implementing the Compliance Risk Management process

Tax administrations need to seek an improved understanding of taxpayer behaviour to develop more effective and stronger compliance risk treatments (Walsh 2012). Given the DGT's future implementation of the CRM process and the high level of perceived corruption as a major feature of its operating context, our findings provide several significant inputs.

Risk identification

First, the initial step in the implementation of the CRM process is risk identification. At the strategic level, this phase is needed to assess specific types of non-compliance behaviour that seem to have substantial tax revenue implications if left untreated. In this regard, our study suggests that intentional underreporting risk, particularly by self-employed PITs, is a compliance risk that the DGT must confront.

For an appropriate treatment, this risk needs to be identified at a particular level. Two major indicators can be used to specify risk: macro level and public opinion indicators (OECD 2004). While macro level indicators generally illustrate a relationship between an aspect of compliance and an external statistic or benchmark for tracking a global trend, public opinion indicators describe public awareness, perception,

[15] In this sense, the DGT describes a situation where many of its tax officers are constantly monitoring the same taxpayers without using a compliance prioritisation approach, and terms this business-as-usual phenomenon as '*berburu di kebun binatang*' or 'hunting at the zoo' (DGT, 2015b, p. 36).

attitudes, motivation and incidence of noncompliance based on public opinion surveys or research results (OECD 2004).

In pursuit of a narrower definition, our findings provide evidence of the identified risk from the perspective of the individual taxpayers, with an emphasis on the socio-psychological perspective. In this sense, our results suggest that an underreporting risk is evident, with only 18% of surveyed self-employed PITs agreeing or strongly agreeing that they had reported their actual income, and 44% of them suggesting that they had underreported between 50% and 100% of their actual income. Additionally, our findings also indicate that the surveyed employed PITs tend to conceal much of their additional income other than from their employment. This is particularly important because according to Indonesian Labour Force Survey (SAKERNAS) data, for instance, during 2009-2013 on average 13% of those in employment had additional jobs.[16]

Risk assessment and prioritisation

The second step involves risk assessment and prioritisation. The purpose of this process is to separate major risks from the minor ones based on their consequences[17] and likelihood.[18] The OECD (2004) recommends it should be based on objective evidence. In this sense, our analysis provides two relevant objective pieces of evidence relevant to this stage.

First, in terms of consequences and as noted above, we found that only 7% of self-employed PITs had reported all of their actual income, while 44% of them had underreported between 50% and 100% of the actual income. In terms of level of risk, therefore, we may reasonably consider the consequence is either 'high' or 'very high'.

Second, in terms of likelihood, we use our path coefficient of behavioural intention as an indicator of probability. This is because behavioural intention can be considered as the closest and the most accurate proxy for performed behaviour (Fishbein and Ajzen 2010). In our analysis, we find that the direct effect of intention to report actual income upon the level of reported income is approximately 0.56. In this sense, we have established that Indonesian PITs do not appear to have a high level of intention to report their actual income, with the indicators' mean score of 3.81 out of 7 scale. Worryingly, self-employed PITs tend to have a lower intention than employed PITs with scores of 3.56 and 4.02 respectively. Thus, it seems safe to say that the likelihood of underreporting risk is 'almost certain'.[19]

---

16 Source: <http://www.ilo.org/surveydata/index.php/catalog/history/>, accessed 5 May 2017. As a comparison, our finding suggests that 17% of employed PITs have extra income other than from employment.

17 Consequence is evaluated in the terms of its impact upon organisational objectives. It can be measured either qualitatively or quantitatively or both (OECD 2004).

18 Likelihood is assessed in terms of its probability of the risk of it occurring. Similar to consequence, it can be in either qualitative or quantitative, or both (OECD 2004). In other words, it is somewhat arbitrary.

19 It can be described in both subjective and objective formats. For instance, a subjective definition of 'almost certain' is 'expected to occur in most circumstances', while an

Based on these findings, the risk rating relative to the consequence and the likelihood of intentional underreporting by self-employed PITs can be prioritised as either 'high' or 'severe' risk. This is an arbitrary risk rating when the consequence of the risk is ranging from 'high' to 'very high' and the likelihood of the risk is 'almost certain'. It is critical to understand that tax authorities will not be able to address all risks (OECD 2004). For this reason, because of a balanced approach (see below), some risks being addressed may not deal with instant high revenue exposure (OECD 2010).

Analysis of compliance behaviour

The third step involves compliance behaviour analysis. One benefit of implementing a compliance risk management approach is the ability to focus on the underlying drivers—rather than the symptoms—of noncompliance and the promotion of different methods to address various tax compliance risks—rather than adopting a 'one size fits all' approach (OECD 2004). Understanding the underlying factors that influence specific compliance behaviour is essential to assist the selection of appropriate compliance strategies. That is, on the one hand, by allowing the tax authority to identify the 'causes' of non-compliance, a longer-term sustainable compliance outcome can be achieved. On the other hand, failing to appropriately treat the causes of non-compliance behaviour not only exacerbates the underlying systemic problem but also may cause community outrage. Unfortunately, it has been shown that there is no easy answer in understanding the determinants of either compliance or non-compliance behaviour (OECD 2004).

In response, using the OECD's (2004) process for discovering the drivers of particular behaviour,[20] our findings arguably provide three important insights. First, our study provides evidence that intentional underreporting income is occurring among Indonesian PITs. Second, in terms of the taxpayers' characteristic, our findings suggest that while self-employed and employed PITs seem to have similar values in relation to attitudes towards underreporting behaviour and perceived subjective norms (table 6), they have a significant difference in terms of perceived behavioural control over tax underreporting, with self-employed PITs scoring much higher (M = 4.56 out of 7) than employed PITs (M = 3.12 out of 7).

This notable gap represents, in all probability, the different nature of opportunity for non-compliance between employed and self-employed PITs. The Indonesian PITs not only seem to have a relatively high score for their attitudes towards underreporting behaviour (M = 4.40 out of 7) but

objective definition would be 'likely to occur this year or at frequent intervals' (OECD 2004: 28).

[20] Three basic questions need to be addressed in understanding taxpayer compliance behaviour: (i) *what is occuring?*—e.g. underreporting income; (ii) *who is doing it?*—i.e. characteristic of the taxpayer; (iii) *why are they doing it?*—e.g. perceived inequity (OECD 2004: 42).

also appear to have lack of strong social pressures or normative norms in terms of reporting full actual income (M = 3.80 out of 7) (table 2).

Third, and most importantly, our study provides an objective answer for the critical question 'why are they doing it?'. We find that in the Indonesian context high levels of perceived corruption, among other factors, appear to negatively influence taxpayers to intentionally underreport their income. Our study empirically demonstrates that perceptions of grand corruption, grand tax-corruption and general corruption appear to be responsible for intentional underreporting behaviour with standardised total negative effects of 0.073, 0.071 and 0.034 respectively (see appendix 2).

Determining appropriate treatment strategies

The last stage in our discussion is determining appropriate treatment strategies. It has been recognised that while influencing taxpayer behaviour is not yet a science, it is also not simply guesswork (OECD 2010). For this reason, treatment strategies can only be done after risk has been appropriately addressed and the possible causes of non-compliant behaviour have been clearly established (OECD 2004). It has also been argued that it is impossible to apply a single specific tax administration strategy (OECD 2010). This is because tax authorities not only have to deal with different motivational postures of taxpayers but also generally have finite resources (Osofsky 2014). In this sense, with respect to the applications of responsive regulatory framework,[21] our findings suggest five practical implications for the treatment strategies.

First, a norms-based intervention approach using extensive publicity campaigns or customised letter sent to the targeted taxpayers may represent a sensible strategy for adoption by the Indonesian DGT (Onu and Oats 2015).

The goal of an intervention is generally to alleviate an identified social problem in a given segment of the taxpaying population. In this sense, the most widely used intervention strategy is using a persuasive message to disseminate relevant information to the target. It can be used to reach a wide population at relatively low cost (Fishbein and Ajzen 2010). For instance, using a randomised controlled trial (RCT) approach to promote tax compliance in Guatemala, Kettle, Hernandez, Ruda, and Sanders (2015) found that increasing the moral cost by referring to a social norms condition has a positive impact on tax payment. Similar to a study by Hallsworth, List, Metcalfe, and Vlaev (2017) which concluded that messages referring to fiscal exchange significantly increased payment rates, a recent study in Indonesia by Bursztyn, Fiorin, Gottlieb, and Kanz (2015) which also found that moral messages increased credit card repayments indicates that norm-based intervention could also improve tax reporting behaviour.

[21] The fundamental principle of this approach is that policy makers should be responsive to the culture, conduct, and context of those they seek to regulate. Thus, it requires a diversity of regulatory strategies to be context appropriate (Wood *et al.* 2010).

However, while this strategy seems easy and inexpensive, it should be cautiously undertaken. This is because in our findings we provide evidence that most taxpayers appear to perceive that their peers do not pay their fair share of taxes. In particular, with regard to reporting actual income we found both low descriptive (what others do) and low injunctive (what others believe is right) norms co-occur.[22] Thus, to improve the level of compliance, it may be ineffective to target low-compliant taxpayers using normative descriptive norms (such as stating 'most taxpayers fully report their income' or 'only few people evade tax' in letters sent to taxpayers) because the messages would feel counterintuitive or contrast to their own existing beliefs. On the other hand, while injunctive norms appeared to be less effective than descriptive norms (Hallsworth, List, Metcalfe, and Vlaev 2017), it also seems to be problematic to campaign using the actual descriptive norm arising from our findings because it may be utilised by the targeted taxpayers as a 'golden standard'. That is, there is a risk that the campaigns that communicate the actual descriptive norm encourage those above average to adjust their behaviour downwards and therefore would reinforce the existing low compliance. In addition, moral messages appear to be less effective for promoting tax compliance by rich people compared to poor people (Duch and Solaz 2016).

In response, we propose that it may be appropriate only to disseminate the normative injunctive message (such as 'underreporting tax is wrong' or 'paying tax is the right thing to do') among the targeted low-compliant taxpayers.

The second implication relates to the implementation of a focused enforcement approach. In a non-compliant group, taxpayer behaviour can be influenced by increasing the frequency of audit (OECD 2004, 2010). Although it often has significant cost, enforced compliance is required where non-compliance exists (OECD 2014b). However, because the DGT's enforcement resources are very limited (DGT 2015a), the audit rate is extremely low. For example, in 2014, the target for audit coverage ratio (ACR) for individual taxpayers was only 0.1%.[23] This highlight two points. First, without specific treatment, it seems unattainable to make taxpayers believe that their risk of getting audited has increased. Second, enforcement resources need to be efficiently used to specifically deal with targeted taxpayers. This is so because the response of compliant taxpayers to audits is ambiguous and might have undesired outcomes (Beer, Kasper, Kirchler, and Erard 2016).

---

[22] In this sense, while descriptive norm tends to guide people to deal with uncertain situations, injunctive norms are likely to assist people in avoiding social disapproval (Onu and Oats 2015).

[23] See, the DGT's official letter SE- 15/PJ/2014 on 21 March 2014 regarding Audit Plan and Strategies for 2014. The ACR for PIT represent the number of audited PITs towards the number of PITs' annual tax returns received by the DGT. The actual ACR is probably much lower. For example in 2011, our calculation suggests that the random-based audit rate for PITs was less than 0.021%.

To make an enforcement approach among low-compliant taxpayers work, as suggested by Osofsky (2014), we propose segmentation and rotation of special audits among the targeted taxpayers.[24] By way of illustration, there were approximately 640,000 self-employed PITs who lodged their 2014 annual tax return, and there are roughly 4,600 tax auditors (DGT 2015a). Assume that in a given year, one tax auditor is able to perform one special audit (i.e. an audit which is related to a noncompliance indicator) for one PIT. If these 4,600 auditors were spread equally across all the self-employed PITs, then the audit rate for each self-employed PIT would be 0.7%. Under a focused enforcement approach, the 640,000 self-employed PITs are split into different sectors or segments. In this case, for example, the focus of a 'special audit project' could be the trading sector (categorised as 'G' in 2012 Business Sector Classification—KLU).[25] Assume that this sector accounts for about 30% of the entire sector. Within this sector, 10% are those in car and motorcycle sales, repair and maintenance (coded as '45' in KLU). These 19,200 self-employed PITs would be the targeted 'subsector'. If, for example, 2,300 tax auditors (50%) are allocated to this subsector, this allocation means that the taxpayers in this subsector now face a 12% chance of being audited. Consequently, other subsectors would face a corresponding lower audit rates. But, because previously they already had a very small chance of getting audited, this variation would not be evident for them possibly due to a phenomenon termed as 'probability neglect' (Sunstein 2002). Thus, taxpayers outside the enforcement project may be unresponsive to a very small reduction in the likelihood of them getting audited (i.e. from 0.7% to 0.36%). On the other hand, we argue that a significant increase of probability of audit in the targeted subsector would increase their intention to report actual income because they now have a lower level of perceived behavioural control over tax underreporting, particularly due to 'uncertainty aversion'[26] (Reeson and Dunstall 2009) and 'availability bias'[27] (Sunstein 2002). Accordingly, we suggest that their levels of reported income would increase.

To make this focused enforcement approach work effectively in raising the levels of reported income, two further activities need to be undertaken. First, because our findings indicate that the respondents relied on mass media (i.e. press, television and the internet) as their primary source of

[24] Note that although audits are crucial to enforce compliance among non-compliant taxpayers, coercive audits might have undesired outcomes (Lisi 2014). This is because tax compliance results from a combination of effective enforcement and mutual trust between taxpayers and the authorities. Once the levels of both trust and power are at moderate levels, destructive multiplier effects will occur, resulting in a downward spiral of decreasing compliance (Kirchler, Hoelzl, Wahl 2008).

[25] Alternatively, this categorisation could be based on types of profession such as lawyers, accountants, architects, artist and other prominent jobs.

[26] Focused enforcement creates perceived greater uncertainty among the population (Osofsky 2014). Taxpayers may know there is some chances of getting audited but not know the increased probability. Research suggest that people tend to avoid uncertainty.

[27] It is a cognitive bias that suggests individuals tend to rely more heavily on information that is more readily accessible in order to evaluate the likelihood, or frequency, of an event.

information, wide-reaching announcements of a particular enforcement project must be made by the DGT prior to the start of tax lodgement season. By doing so, those targeted in the focused enforcement project recognise that they are subject to the project and able to change their underreporting behaviour accordingly. Second, there should be no official announcement regarding the withdrawal or completion of the enforcement project. This quiet withdrawal may allow the DGT to 'free ride' for some time off the taxpayers' perceived increased chance of getting audited and may extend the compliance benefits of the projects.

The third practical implication that derives from our findings is that the norm-based intervention and the focused enforcement approaches must be combined on a proportionate basis. This is because a relatively high level of compliance would appear to be necessary in order to create norms of compliance and to foster future compliance.

Some scholars suggest that norms appear to be subject to so-called 'tipping points' (Besley and Persson 2014). This means the intended norms become more widespread once some threshold is achieved. Unfortunately, in the Indonesian context, our findings suggest that this is not the case. This implies that, as an initial step, the focused enforcement approach would appear to be very crucial to increase the level of compliance. It has been argued that taxpayers knowing that a tax authority has the power and uses it to punish tax evaders provides the greatest leverage (Kirchler 2007). This approach then must be complemented by a norm-based intervention approach simultaneously. This is because if the norms that regulate the taxpayers' behaviour are not changed, non-compliance behaviour will probably increase once the probability of audit is lowered.

The fourth practical implication is that the integrity of the DGT must be established and maintained to create trust (OECD 2010). A lack of integrity destroys trust; trust and corruption cannot coexist (OECD 2004). While the DGT has to some extent shown its efforts to build integrity and tackle corruption (DGT 2013), our findings imply that perceptions of tax corruption among taxpayers still persist. Our results also provide evidence that media coverage is very influential upon the perceived levels of corruption. Thus, an effective way to disseminate any effort of building integrity and tackling corruption must be sought, either through taxpayers' personal experiences or extensive media coverage. Also, credible anti-corruption measures currently undertaken by the DGT should be made more visible to taxpayers. Regarding this, a study by Kasper, Kogler, and Kirchler (2015) suggests that, when exposed to media, content that emphasises the trustworthy nature of tax authorities or its capability to deter tax evasion may increase taxpayers' trust of the tax authorities.

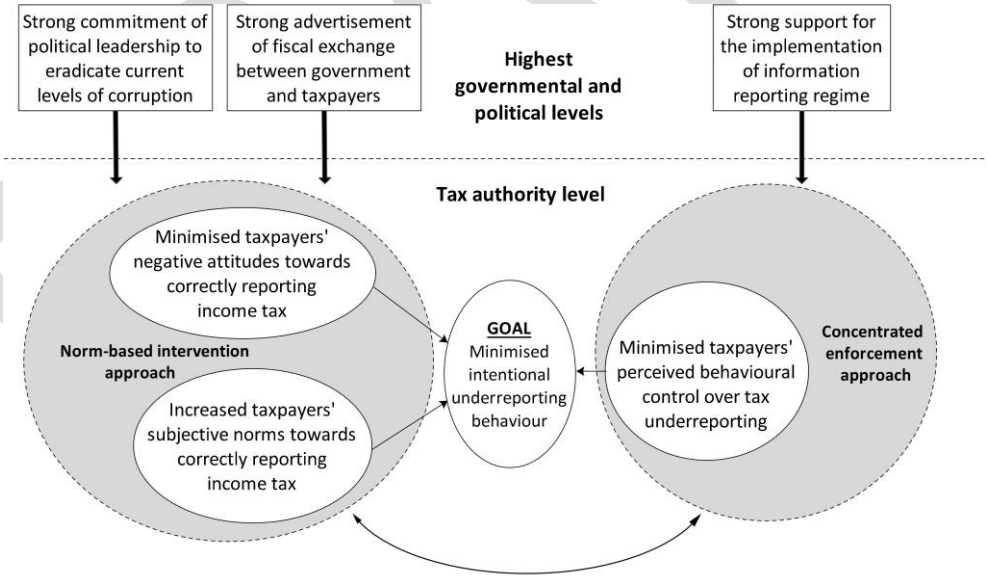
Finally, the DGT needs to establish strategic alliances and partnerships with other relevant government representatives. The objectives of this treatment strategy are twofold. First, it should be evident that the pervasiveness of general corruption issues in Indonesia, while significantly influential in terms of the operating context, is beyond the control and the responsibility of the DGT. The DGT needs to advise the relevant

institutions, both at the highest governmental and political levels, of the adverse impact of perceived corruption upon its revenue collection processes. Indeed, a conducive political reality of a country is one of the crucial ingredients required to make major changes in taxation take place (Bird, 2013). It implies that strong commitment of political leadership to eradicate the current levels of corruption is a crucial element for an optimal tax collection process.

Second, our findings suggest that perceived behavioural control over underreporting tax among self-employed PITs is relatively high. It implies that there is a need to extend the nature and scope of the information reporting regime by third parties (such as banks or other related financial institutions).[28] This is particularly important in an environment where a large portion of self-employed PITs in Indonesia are presumably involved in cash businesses and 60% of non-agricultural employment in Indonesia is informal (OECD 2015). Thus, the DGT needs strong support from other entities to implement a more extensive third party information reporting regime to increase the compliance level by particularly identifying, controlling and catching those who evade.

In summary, these practical implications are illustrated in figure 4.

FIGURE 4 *A Combined Approach to Address the Malign Impact of Perceptions of Corruption upon Intentional Underreporting Behaviour: A Tax Authority Perspective*



[28] Note that Indonesian government has recently issued a Government Regulation in Lieu of Law (PERPPU) Number 1/2017 on Financial Information Access for Taxation Purposes that provides the DGT a wide access to scrutinise banking data on 16 May 2017.

CONCLUSION

This paper has described the empirical relationship between perceptions of corruption and intentional underreporting behaviour, in the context of PITs in Indonesia. The paper shows that high levels of perceived corruption appear to have an adverse impact on taxpayers' attitudes and norms toward reporting actual income. These circumstances, coupled with relatively high levels of perceived behavioural control over tax underreporting, appear to undermine taxpayers' intention to report actual income.

Thus, prevalent underreported tax, not only among self-employed PITs but also employed PITs, appears to be evident. From a CRM perspective, this suggests that the underreporting risk is an identified risk that the DGT should prioritise. We elaborate several strategies to address this risk by establishing high levels of perceived corruption as an important external operating context. We then discuss how our findings can be related to risk assessment and prioritisation, compliance behaviour analysis, and the formulation of treatment strategies within the CRM framework.

To the extent that currently the DGT has limited resources, we mainly propose a balanced combination of customised norm-based intervention and focused enforcement as two primary treatment strategies to address intentional underreporting behaviour among Indonesian PITs. Our discussion also suggests that to deter, detect and address intentional underreporting by Indonesian PITs, strategic alliances and partnerships with other relevant government representatives are crucial for the DGT.

Corruption and tax (non)compliance are distinct and separate problems. But, as Alm, Martinez-Vazquez and McClellan (2016) emphasise, they can easily become intertwined and reinforcing. This paper has clearly shown that corruption, or more strictly perceptions of certain forms of corruption, can have a malign impact upon tax compliance through a variety of forces and relationships. This is particularly problematic in countries like Indonesia where corruption is perceived to be endemic and tax compliance outcomes are typically sub-optimal. The paper has then established that within the broader context of compliance risk management processes, and in the specific instance of Indonesia, much can still be done to mitigate that malign impact.

Finally, it must be acknowledged that the greater insights into the impact of corruption on tax compliance behaviour derived from this study will never be more than a small—albeit important—part of our overall understanding of tax compliance behaviour. The question of why taxpayers comply with their tax obligations is clearly not easy to answer. Accordingly, from a tax authority perspective, a range of other options should also be considered to influence taxpayers' behaviour. These include, *inter alia*, improving identification and registration of taxpayers (including detection of false and non-registration), verification of the correctness of received information (including audit and enforcement

activities), and provision of service excellence and assistance to taxpayers. By doing so, it is hoped that the effectiveness and efficiency of such strategies discussed in this paper can be optimised in terms of achieving improvements in compliance.

REFERENCES

Alm, J., McClelland, G. H., and Schulze, W. D. (1992), 'Why do people pay taxes?', *Journal of Public Economics* 48 (1): 21–38.

Alm, J., Martinez-Vazquez, J., and McClellan, C. (2016), 'Corruption and firm tax evasion', *Journal of Economic Behavior & Organization* 124 (C): 146–163.

Armstrong, J. S., and Overton, T. S. (1977), 'Estimating nonresponse bias in mail surveys, *Journal of Marketing* Research 14: 396–402.

Beer, S., Kasper, M., Kirchler, E., and Erard, B. (2016), Do audits deter future noncompliance? Evidence on self-employed taxpayers, the Internal Revenue Service (IRS)-Tax Policy Center (TPC) Research Conference, Urban Institute, Washington, D.C.

Besley, T., and Persson, T. (2014), 'Why do developing countries tax so little?', *The Journal of Economic Perspectives* 28 (4): 99–120.

Bird, R. M. (2013), 'Taxation and development: What have we learned from fifty years of research?', *Public Finance and Management* 13 (4): 266–288.

Bird, R. M. (2015), 'Improving tax administration in developing countries', *Journal of Tax Administration* 1 (1): 23–45.

Bird, R. M., Martinez-Vazquez, J., and Torgler, B. (2008), 'Tax effort in developing countries and high income countries: The impact of corruption, voice and accountability', *Economic Analysis & Policy*, 38: 55–71.

Bird, R. M., and Zolt, E. M. (2005), 'The limited role of the personal income tax in developing countries', *Journal of Asian Economics* 16 (6): 928–946.

Blackburn, K., Bose, N., and Haque, M. E. (2010), 'Endogenous corruption in economic development', *Journal of Economic Studies* 37 (1): 4–25.

Bobek, D. D. and Hatfield, R. C. (2003), 'An investigation of the theory of planned behavior and the role of moral obligation in tax compliance', *Behavioral Research in Accounting* 15: 13–38.

Braun, V., and Clarke, V. 2006, 'Using thematic analysis in psychology', *Qualitative Research in Psychology* 3: 77–101.

Brink, W. D., and Porcano, T. M. (2016), 'The impact of culture and economic structure on tax morale and tax evasion: A country-level analysis using SEM', *Advances in Taxation* 23: 87–123.

Bursztyn, L. Fiorin, S., Gottlieb, D., and Kanz, M. (2015), 'Moral incentives: Experimental evidence from repayments of an Islamic credit card', *NBER Working Paper No. 21611*, October 2015.

Campbell, S. V. (2013), 'Perception is not reality: The FPCA, Brazil and the mismeasurement of corruption', *Minnesota Journal of International Law* 22 (1): 247–281.

Çule, M., and Fulton, M. (2009), 'Business culture and tax evasion: Why corruption and the unofficial economy can persist', *Journal of Economic Behavior & Organization* 72(3): 811–822.

Cummings, R. G., Martinez-Vazquez, J., McKee, M., and Torgler, B. (2009), 'Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment', *Journal of Economic Behavior & Organization* 70: 447–457.

de Vaus, D. (2014), *Surveys in social research (6th edition),* Allen & Unwin, New South Wales.

DGT (2013), *Annual report 2012: Harmonization in building the nation*, Directorate General of Taxation, Jakarta.

DGT (2015a), *Annual report 2014: Upholding the spirit of revitalization for intergrated transformation*, Directorate General of Taxation, Jakarta.

DGT (2015b), Strategic plan of the Directorate General of Taxation years 2015-2019, Decree of Director General of Taxation Number 95/PJ/2015, Directorate General of Taxation, Jakarta.

Doig, A., and Theobald, R. (1999), 'Introduction: Why corruption?', *Commonwealth & Comparative Politics* 37 (3): 1–12.

Duch, R. M., and Solaz, H. (2016), 'Why we cheat: Evidence from tax compliance experiments', *Working Paper*, Centre for Experimental Social Sciences, Nuffield College, University of Oxford, Oxford.

Fishbein, M., and Ajzen, I. (2010), *Predicting and changing behavior: The reasoned action approach,* Psychology Press, New York.

Fjeldstad, O.-H., and Tungodden, B. (2003), 'Fiscal corruption: A vice or a virtue?', *World Development* 31 (8): 1459–1467.

Frey, B. S., and Torgler, B. (2007), 'Tax morale and conditional cooperation', *Journal of Comparative Economics* 35: 136–159.

Gangl, K., Kirchler, E., Lorenz, C., and Torgler, B. (2015), 'Wealthy tax non-filers in a developing nation: The roles of taxpayer knowledge', perceived corruption and service orientation in Pakistan', *CREMA Working Paper No. 2015-08***:** 1–25.

Halla, M. (2012), 'Tax morale and compliance behavior: First evidence on a causal link', *The BE Journal of Economic Analysis & Policy* 12: 1935–1682.

Hallsworth, M., List, J. A., Metcalfe, R. D., and Vlaev, I. (2017), 'The behavioralist as tax collector: Using natural field experiments to enhance tax compliance', *Journal of Public Economics* 148: 14–31.

ILO (2015), *Labour and social trends in Indonesia 2014–2015: Strengthening competitiveness and productivity through decent work*, International Labour Office, Jakarta.

Imam, P. A., and Jacobs, D. F. (2007), Effect of corruption on tax revenues in the Middle East, IMF Working Paper No WP/07/270, IMF, Washington D.C.

IMF (2011), Revenue mobilization in developing countries, IMF, Washington D.C., accessed 10 June 2014, <http://www.imf.org/external/np/pp/eng/2011/030811.pdf>.

Jahnke, B. (2015), How does petty corruption affect tax morale in Sub-Saharan Africa? An empirical analysis, Hannover Economic Papers (HEP) No.564, Leibniz Universität, Hannover.

James, S., and Alley, C. (1999), 'Tax compliance, self assessment, and tax administration', *Journal of Finance and Management in Public Services* 2 (1): 27–42.

Kasper, M., Kogler, C., and Kirchler, E. (2015), 'Tax policy and the news: An empirical analysis of taxpayers' perceptions of tax-related media coverage and its impact on tax compliance', *Journal of Behavioral and Experimental Economics* 54: 58–63.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2007), *Measuring corruption: Myths and realities*, World Bank, Washington, DC.

Kettle, S., Hernandez, M., Ruda, S., and Sanders, M. (2015), '*Behavioural interventions in tax compliance: Evidence from Guatemala*, Internal Revenue Service (IRS) Research Bulletin, https://www.irs.gov/pub/irs-soi/15resconhemandez.pdf.

Kirchler, E. (2007), *The economic psychology of tax behaviour*, Cambridge University Press, Cambridge.

Kirchler, E., Hoelzl, E., and Wahl, I. (2008), 'Enforced versus voluntary tax compliance: The "slippery slope" framework', *Journal of Economic Psychology* 29: 210–225.

Kuncoro, A. (2004), 'Bribery in Indonesia: Some evidence from micro-level data', *Bulletin of Indonesian Economic Studies* 40 (3): 329-354.

Langham, J. A., Paulsen, N., and Hartel, C. E. J. (2012), 'Improving tax compliance strategies: Can the theory of planned behavior predict business compliance?', *eJournal of Tax Research* 10 (2): 364–402.

Lewis, A. (1982), *The psychology of taxation,* Robertson, Oxford.

Lisi, G. (2014), 'The interaction between trust and power: Effects on tax compliance and macroeconomic implications', *Journal of Behavioral and Experimental Economics* 53: 24–33.

Litina, A., and Palivos, T. (2016), 'Corruption, tax evasion and social values', *Journal of Economic Behavior & Organization* 124: 164–177.

McKerchar, M., and Evans, C. (2009), 'Sustaining growth in developing economies through improved taxpayer compliance: Challenges for policy makers and revenue authorities', *eJournal of Tax Research* 7 (2): 171–201.

McLeod, R. H., (2011), 'Survey of recent developments', *Bulletin of Indonesian Economic Studies* 47(1): 7-34.

Melgar, N., Rossi, M., and Smith, T. W. (2010), 'The perception of corruption', *International Journal of Public Opinion Research*, 22 (1): 120–131.

Mishler, W. and Rose, R. (2008), 'Seeing is not always believing: Measuring corruption perceptions and experiences', *The Elections, Public Opinion and Parties 2008 Annual Conference*, University of Manchester, UK, 12-14 September.

Nguyen, N. A., Doan, Q. H., Nguyen, N. M. and Tran-Nam, B. (2016). 'The impact of petty corruption on firm innovation in Vietnam', *Crime, Law and Social Change*, 65(4): 377–394.

OECD (2004), *Compliance risk management: Managing and improving tax compliance*, OECD, Paris, accessed 12 September 2013, <http://www.oecd.org/tax/administration/33818656.pdf>.

OECD (2010). *Understanding and influencing taxpayers' compliance behaviour*, OECD, Paris, accessed 10 September 2013, <http://www.oecd.org/tax/administration/46274793.pdf>.

OECD (2012), *Economic policy reforms: Going for growth*, OECD, Paris, accessed 10 September 2013, <http://dx.doi.org/10.1787/growth-2012-en.>.

OECD (2014a), *Revenue statistics in Asian countries 2014: Trends in Indonesia and Malaysia*, OECD Publising, Paris, accessed 21 January 2016, <http://dx.doi.org/10.1787/9789264210691-en>.

OECD (2014b), *Measures of tax compliance outcomes: A practical guide*, OECD Publising, Paris, accessed 8 December 2015, <http://dx.doi.org/10.1787/9789264223233-en>.

OECD (2015), *OECD economic survey: Indonesia 2015*, OECD Publishing, Paris, accessed 3 July 2015, <http://dx.doi. org/10.1787/eco_surveys-idn-2015-en>.

Onu, D., and Oats, L. (2015), 'The role of social norms in tax compliance: Theoretical overview and practical implications', *Journal of Tax Administration* 1 (1): 113–137.

Osofsky, L. (2014), 'Concentrated enforcement', *Florida Tax Review* 16 (6): 325–391.

Reeson, A., and Dunstall, S. (2009), Behavioural economics and complex decision-making: Implication for the Australian tax and transfer system, *CMIS Report No. 09/110*, Commonwealth Scientific and Industrial Research Organisation, Canberra.

Ritsatos, T. (2014),'Tax evasion and compliance; from the neo classical paradigm to behavioural economics, a review', Journal of Accounting & Organizational Change, 10 (2): 244–262.

Rosid, A., Evans, C., and Tran-Nam, B. (2016), 'Do perceptions of corruption influence personal income taxpayer reporting behaviour? Evidence from Indonesia', *eJournal of Tax Research* 14 (2): 387–425.

Shah, R., and Goldstein, S. M. (2006), 'Use of structural equation modeling in operations management research: Looking back and forward', *Journal of Operations Management* 24: 148–169.

Shleifer, A., and Vishny, R. W. (1993), 'Corruption', *The Quarterly Journal of Economics, 108*(3), 599–617.

Smith, A. D. (2001), 'Perception and belief', *Philosophy and Phenomenological Research 62*(2): 283–309.

Sunstein, C. R. (2002), 'Probability neglect: Emotions, worst cases, and law', *The Yale Law Journal* 112 (1): 61–107.

Torgler, B., Demir, I. C., Macintyre, A., and Schaffner, M. (2008), 'Causes and consequences of tax morale: An empirical investigation', *Economic Analysis and Policy* 38 (2): 313–339.

Tran-Nam, B. (2003), 'Tax compliance research: An economic perspective', *New Zealand Journal of Taxation Law and Policy* 9: 455–468.

Trivedi, V. U., Shehata, M., and Mestelman, S. (2005), 'Attitudes, incentives, and tax compliance', *Canadian Tax Journal* 53: 29–61.

Transparency International (2015), Corruption Perceptions Index 2015, accessed 21 January 2016, <http://www.transparency.org/cpi2015>.

UNDP (2008), *A users' guide to measuring corruption*, UNDP Oslo Governance Centre, Oslo.

United Nations (2015), *Transforming our world: The 2030 agenda for sustainable development*, A/RES/70/1, United Nations, New York.

Walsh, K. (2012), 'Understanding taxpayer behaviour – new opportunities for tax administration', *Economic and Social Review* 43: 451–475.

Wearing, A., and Headey, B. (1997), 'The would-be tax evader: A profile', *Australian Tax Forum* 13: 3–17.

Wenzel, M., and Taylor, N. (2003), 'Towards evidence-based tax administration', *Australian Journal of Social Issues* 38**:** 409–430.

Wood, C., Ivec, M., Job, J. and Braithwaite, V. (2010), *Applications of responsive regulatory theory in Australia and overseas*, Ocassional Paper 15, Regulatory Institutional Network, the Australian National University, Canberra.

World Bank (2015), *World development report 2015: Mind, society, and behavior,* World Bank, Washington, D.C., accessed 29 December 2014, <https://openknowledge.worldbank.org/handle/10986/20597>.

World Economic Forum (2016), *The Global Competitiveness Report 2016–2017*, World Economic Forum, Geneva, accessed 16 September 2016, <http://www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf>.

Appendix 1: Survey questions

	Constructs	Questions	Code	Rating scale
A	*Perception of general corruption (PGC)*	1. The current level of corruption is high.	PGC1	Unipolar *disagree–agree* scale, scored 1—7
		2. Most people think that the level of corruption is high.	PGC2	
		3. The frequency of corruption is rare.	PGC3R	
		4. The current level of corruption is a serious problem.	PGC4	
		5. When I think about the level of corruption, I am unhappy.	PGC5	
B.	*Perception of grand corruption (GCO)*	6. The current level of corruption involving high-level public officials is high.	GCO1	Unipolar *disagree–agree* scale, scored 1 to 7
		7. Most people think that the level of corruption involving high-level public officials is high.	GCO2	
		8. The frequency of corruption involving high-level public officials is rare.	GCO3R	
		9. The current level of corruption involving high-level public officials is a serious problem.	GCO4	
		10. When I think about the level of corruption involving high-level public officials, I am unhappy.	GCO5	
C.	*Perception of petty corruption (PCO)*	11. The current level of corruption involving low-level public officials is high.	PCO1	Unipolar *disagree–agree* scale, scored 1 to 7
		12. Most people think that the level of corruption involving low-level public officials is high.	PCO2	
		13. The frequency of corruption involving low-level public officials is rare.	PCO3R	
		14. The current level of corruption involving low-level public officials is a serious problem.	PCO4	
		15. When I think about the levels of corruption involving low-level public officials, I am unhappy.	PCO5	
D.	*Perception of grand tax-corruption (GTC)*	16. The current level of corruption involving high-level tax officials is high.	GTC1	Unipolar *disagree–agree* scale, scored 1 to 7
		17. Most people think that the level of corruption involving high-level tax officials is high.	GTC2	
		18. The frequency of corruption involving high-level tax officials is rare.	GTC3R	
		19. The current level of corruption involving high-level tax officials is a serious problem.	GTC4	
		20. When I think about the levels of corruption involving high-level tax officials, I am unhappy.	GTC5	
E.	*Perception of petty tax-corruption (PTC)*	21. The current level of corruption involving low-level tax officials is high.	PTC1	Unipolar *disagree–agree* scale, scored 1 to 7
		22. Most people think that the level of corruption involving low-level tax officials is high.	PTC2	
		23. The frequency of corruption involving low-level tax officials is rare.	PTC3R	
		24. The current level of corruption involving low-level tax officials is a serious problem.	PTC4	
		25. When I think about the levels of corruption involving low-level tax officials, I am unhappy.	PTC5	
F.	*Attitude towards (under)*	26. I would feel guilty if I underreported my actual income in my annual tax return.	ATB1	Unipolar *disagree–agree* scale, scored 1
		27. To feel guilty for underreporting income tax is	ATB2	

	reporting tax (ATB)	good.		to 7
		28. Underreporting my income tax makes me better off.	ATB3	
		29. There are a number of government services, infrastructures, facilities for which I am very thankful.	ATB4R	
		30. Underreporting income is acceptable if any portion of the money collected is wasted by government.	ATB5	
		31. Paying as little tax as possible is important.	ATB6	
		32. Government has spent the money collected from tax efficiently.	ATB7R	
		33. Underreporting my income will not hurt the society as a whole.	ATB8	
		34. I feel that I have made a positive contribution to my country by fully reporting all my income.	ATB9R	
G.	*Subjective norms towards (under) reporting tax (SNO)*	35. Most taxpayers expect me to report all my income on the annual tax return.	SNO1R	Unipolar *disagree–agree* scale, scored 1 to 7
		36. Generally, I would do what most taxpayers expect me to do.	SNO2	
		37. Most people who are important to me (e.g. family, friends, and business partners) expect me to report all my income on the annual tax return.	SNO3R	
		38. Generally, I would do what people who are important to me would expect me to do.	SNO4	
		39. Most taxpayers underreport their actual income on their annual tax returns.	SNO5	
		40. Generally, I would do what most other taxpayers do.	SNO6	
		41. The people who are important to me (e.g. family, friends, and business partners) underreport their actual income on their annual tax returns.	SNO7	
		42. Generally, I would do what people who are important to me would do.	SNO8	
H.	*Perceived behavioural control over (under) reporting tax (PBC)*	43. I could underreport my actual income if I wanted to.	PBC1	Unipolar *disagree–agree* scale, scored 1 to 7
		44. I have many opportunities to underreport my income in the annual tax return.	PBC2	
		45. People I know do not fully report their income and they have never been detected.	PBC3	
		46. It is easy to exclude some of my income in completing my tax return.	PBC4	
		47. With my knowledge and experience, it is easy for me to underreport my actual income without worrying about getting caught.	PBC5	
		48. People I know do not fully report their income and they have never been penalised.	PBC6	
		49. All my income is subject to tax withholding tax by others.	PBC7R	
		50. The DGT is unlikely to detect whether I underreport my income.	PBC8	
I.	*Intention to report actual income (ITC)*	<u>Scenario A:</u> Agus is a full-time employee. His monthly income is subject to withholding tax by his employer. In 2014, he received a casual commission for his effort to sell a second-hand house. The commission was about IDR 7 million and was paid in cash by his friend. He understood that as the commission was paid in cash, it would be difficult		

		for the DGT officials to detect this irregular income.		
		51. If I were Agus, the probability I would fully report my commission in my annual tax return is	ITC1	Unipolar *unlikely–likely* scale, scored 1 to 7
		52. If I were Agus, the most likely percentage of the commission I would intend to report on the annual tax return is	ITC2	Unipolar scale nothing–all, scored 0%, 16%, 33%, 50%, 67%, 83%, 100%
		Scenario B: Ani is a self-employed taxpayer. Categorised as small and medium enterprise (SME), she should pay 1% final income tax based on her gross sales turnover. As her average monthly turnover is between IDR 100 to 200 million, her monthly tax payment should range between IDR 1 to 2 million. She knows that as her annual gross sales turnover is less than IDR 4.8 billion, she is required to only do simple document recording instead of standard bookkeeping. Reflecting on the nature of her business activities and the extent of simple recording, she understands that it would be difficult for the DGT officials to trace her actual sales turnover.		
		53. If I were Ani, the probability I would fully report my actual sales turnover in my annual tax return is	ITC3	Unipolar *unlikely–likely* scale, scored 1 to 7
		54. If I were Ani, the most likely percentage of sales turnover I would intend to report in my annual tax return is	ITC4	Unipolar scale *nothing–all*, scored 0%, 16%, 33%, 50%, 67%, 83%, 100%
J.	*Income reporting behaviour (TCB)**	55. I have fully reported my actual income in my annual tax return for fiscal year 2014.	TCB1	Unipolar *disagree-agree* scale, scored 1 to 7
		56. As far as I can remember, the amount of income I have reported in my annual tax return was roughly ... of my actual income.**	TCB2	Unipolar scale *nothing-all*, scored 0%, 16%, 33%, 50%, 67%, 83%, 100%

Note: * = an '*everybody does it*' technique (de Vaus 2014) was used to reduce potential social desirability bias in responding to questions in this section. To do so, a phrase "*not everyone necessarily reports all of his or her actual income to the tax office*" was added as a preamble in the actual questionnaire.

** = Q55 and Q56 were questions for self-employed PITs. In the actual survey form, this section was specified into two groups of respondents: those whose main income was from employment (i.e. employed PITs) and those whose was not (i.e. self-employed PITs). Also, in the measurement scale, optional answers such as "*I did not receive any income other than from employment"* or *"I did not receive any income*" were included.

Appendix 2: Effects decomposition of perceptions of corruption upon *intention to report actual income* (ITC) and the *level of reported income* (TCB)

Model category	Exogenous variables & effects	Endogenous variables: Intention to report actual income (ITC)	Endogenous variables: Level of reported income (TCB)
Full models (n = 223)	i. Perception of general corruption (PGC):		
	Direct effect	-	-
	Total indirect effects	-0.061**	-0.034**
	Total effects	-0.061**	-0.034**
	ii. Perception of grand corruption (GCO):		
	Direct effect	-	-
	Total indirect effects	-0.131*	-0.073*
	Total effects	-0.131*	-0.073*
	iii. Perception of petty corruption (PCO):		
	Direct effect	-	-
	Total indirect effects	-0.027	-0.015
	Total effects	-0.027	-0.015
	iv. Perception of grand tax corruption (GTC):		
	Direct effect	-	-
	Total indirect effects	-0.127*	-0.071*
	Total effects	-0.127*	-0.071*
	v. Perception of petty tax corruption (PTC):		
	Direct effect	-	-
	Total indirect effects	-0.025	-0.014
	Total effects	-0.025	-0.014
Partial models (n = 397)	i. Perception of general corruption (PGC):		
	Direct effect	-	n.a.
	Total indirect effects	-0.142*	n.a.
	Total effects	-0.142*	n.a.
	ii. Perception of grand corruption (GCO):		
	Direct effect	-	n.a.
	Total indirect effects	-0.167*	n.a.
	Total effects	-0.167*	n.a.
	iii. Perception of petty corruption (PCO):		
	Direct effect	-	n.a.
	Total indirect effects	-0.061*	n.a.
	Total effects	-0.061*	n.a.
	iv. Perception of grand tax corruption (GTC):		
	Direct effect	-	n.a.
	Total indirect effects	-0.121*	n.a.
	Total effects	-0.121*	n.a.
	v. Perception of petty tax corruption (PTC):		
	Direct effect	-	n.a.
	Total indirect effects	-0.107*	n.a.
	Total effects	-0.107*	n.a.

Note: * = significant at $p < 0.05$; ** = significant at $p \leq 0.10$; n.a. = not applicable

Source: Calculated from the survey data