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Overconfidence, Gender and Tax Compliance: the Indonesian Evidence

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ABSTRACT

Tax compliance is a psychological contract between taxpayers and the government, so understanding the internal factors of taxpayers is important, including overconfidence and gender. Previous studies have separately analyzed the effect of overconfidence and gender affect tax compliance. Thus, this study relates overconfidence and gender with tax compliance decisions. We generate the data by using the embedded vignette method to survey selected Indonesian taxpayers by the accidental sampling method. By using one-way anova and two-way anova (for robustness tests), the results demonstrate the different tax compliance levels between overconfident taxpayers, confident taxpayers, and underconfident taxpayers. Next, this study also shows gender difference, namely masculine and feminine, results in significantly different tax compliance. Other findings also indicate that the interaction between feminine taxpayers and underconfident taxpayers exhibits the highest tax compliance. The results of this study can be used as a reference for the government to improve tax compliance by adjusting tax programs in accordance with the taxpayer's behaviour.

INTRODUCTION

Tax is one of the countries' revenue sources to finance their activities. Consequently, taxpayers' compliance is crucial. However, the Organization for Economic Cooperation and Development or OECD (2019) indicates that the ASEAN countries only exhibit tax revenue levels that are below the average tax ratio, thus implying low tax compliance. In a similar vein, Kim et al. (2008) find that tax compliance is a serious problem for some countries. According to Kirchler (2007), tax compliance is the result of the psychological contract between taxpayers and the government. Thus, the role of taxpayers' internal factors

in improving tax compliance is an interesting empirical issue. Previous studies have analyzed the relationships between taxpayers' internal factors and tax compliance, such as sympathy and empathy (Calvet and Alm, 2014); love of money (Dewanta and Machmuddah, 2019); patriotism level (MacGregor and Wilkinson, 2012) and religiosity (Benk et al., 2016). Besides, Michailova (2010) reveals that individuals' self-confidence, including overconfidence (Pietarinen, 2017), affects their decisions, including tax compliance. Overconfident taxpayers tend to make extreme decisions that will eventually lead to tax noncompliance (Chyz et al., 2019; Hsieh et al., 2018; Kubick and Lockhart, 2017).

Previous studies also observe that sex affects tax compliance. In particular, women are more tax compliant than men (Hofmann, 2017; Kastlunger et al., 2010). However, classifying taxpayers based on their sexes to investigate tax compliance likely produces biased results because of the shifting traits of men and women. Donnelly and Twenge (2016) indicate that between 1974 and 2012, women have exhibited an increasing masculinity level or in other words, a decreasing femininity level. Therefore, this study classifies individuals into masculine and feminine as suggested by Kastlunger et al. (2010). Previous studies have analyzed how overconfidence affects tax compliance (Chyz et al., 2019; Hsieh et al., 2018; Kubick and Lockhart, 2017) and the impact of gender on tax compliance (Hofmann et al., 2017; Kastlunger et al., 2010; Walsh, 2012) separately. This study aims to relate overconfidence and gender with individuals' tax-compliance decision because both overconfidence and gender are closely related to tax compliance. Barber and Odean (2001) find that masculine individuals tend to be more overconfident but Chen and Cheng (2016); Johansson-stenman and Nordblom (2014) show no overconfidence difference between genders. Recent studies demonstrate different results. On the one hand, masculine individuals tend to be overconfident but on the other hand, feminine individuals tend to be overconfident. The inconsistent results suggest that both masculine and feminine individuals may exhibit overconfidence, confidence, and underconfidence as the dominant trait.

This study seeks to test and analyze the different effects of a) taxpayers' overconfidence on tax compliance, b) taxpayers' gender on tax compliance, and c) the interaction between overconfidence and gender on tax compliance. This study contributes by extending the economic psychology literature, especially on taxpayers' behaviors and compliance, and by informing the governments to develop appropriate programs to improve tax compliance that will ensure government financing.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Individuals experience learning processes through their daily activities that affect their capabilities. In each learning process, individuals are confronted with differences between what they need to know and what they are supposed to know (Ehrlinger et al., 2016). After participating in a learning process, individuals will personally assess their abilities. These assessments often do not match their actual abilities that create gaps between their actual abilities and their beliefs. The intelligence theory proposes that: a) individuals who face negative information or information that contradicts their thoughts in their learning processes tend to neglect the information; b) individuals are less attentive in difficult situations; c) individuals who are in difficult situations will consider themselves to have low abilities (Ibid., 2016).

Individuals who neglect negative information and do not pay more attention to difficult situations will not improve their skills but, at the same increase their confidence, leading to overconfidence. Conversely, individuals who reanalyze negative information will improve their abilities and acknowledge that their previous beliefs are not necessarily true. Consequently, they will have reduced confidence that will lead to underconfidence. In this study, overconfident taxpayers who exhibit beliefs that exceed their actual abilities will neglect possible risks (Nofsinger, 2005). In this respect, overconfident, confident, and underconfident taxpayers will likely make different decisions, such as tax compliance (Supramono et al., 2018). Michailova (2010); Russo and Schoemaker (2016) and Supramono et al. (2018) define overconfidence as individuals' belief that they have ability or knowledge greater than their actual ability or knowledge. Overconfident taxpayers tend to ignore potential risks and consider themselves capable of solving everything correctly that will potentially result in incorrect decisions (Supramono et al., 2018). Further, overconfident individuals tend to expect greater income through various cost reduction, including by reducing taxes (Chyz et al., 2019; Kubick and Lockhart, 2017; Pietarinen, 2017). However, these

individuals often reduce taxes illegally (Schrand and Zechman, 2012). Previous studies have shown that overconfident taxpayers tend to engage in tax avoidance or exhibit lower tax compliance (Chyz et al., 2019; Hsieh et al., 2018; Kubick and Lockhart, 2017).

Tax compliance is also affected by individuals' inherent traits that are classified by psychology into masculine and feminine or commonly known as gender (Broverman et al., 1972). Gender is the product of social environments that motivate individuals to exhibit characteristics that tend to be masculine or feminine. Meanwhile, sex is a biological classification that indicates whether an individual is a man or a woman. Gender differences will affect individuals in making various decisions, including tax compliance (Kastlunger et al., 2010). Croson and Gneezy (2009) establish that masculine taxpayers are more willing to take risks, while feminine taxpayers tend to avoid risks. Croson and Gneezy (2009) argue that feminine taxpayers are more responsible for their obligations and more afraid of potential punishments. Besides, feminine taxpayers tend to consider themselves not as superior as others and to avoid risks that will cause them to be more careful when making decisions. Consequently, they will have greater tax compliance by safely complying with their tax obligations according to existing regulations to avoid tax inspections (Hai and See, 2011). Thus, masculine and feminine taxpayers will likely make different tax-compliance decisions.

H₁: Underconfident taxpayers will exhibit greater tax compliance than confident and overconfident taxpayers.

H₂: Feminine taxpayers will exhibit greater tax compliance than masculine taxpayers.

H₃: Underconfident and feminine taxpayers will exhibit the greatest tax compliance.

2. METHODS

This study uses the embedded vignette method to survey respondents to test the different effects of overconfidence and gender and the interaction of both variables on tax compliance. Our respondents are 100 Indonesian taxpayers who are selected through the accidental sampling method. The respondents are dominated by the female (53%) and married respondents (68%). Further, most respondents (40%) are 18-31 years old and have a bachelor degree. In terms of the length of becoming a taxpayer, 55% of the total respondents have been a taxpayer for 1-5 years and followed by those who have been a taxpayer for more than five years.

We measure the overconfidence variable with the calibration technique that compares an individual's tax knowledge with the confidence that her knowledge is correct. The measurement of respondents' tax knowledge refers to the indicators of Mukhlis et al. (2015), and respondents are required to choose one answer from four available answer options. Specifically, we ask them to indicate how confident they are about the correctness of their answers by selecting a confidence level. If a respondent's total score of correct answers about tax knowledge is lower than her confidence, she will be classified as an overconfident taxpayer. If her score of correct answers about tax knowledge is greater than her confidence, then she will be classified as an underconfident taxpayer. Lastly, if a respondent's total score of correct answers about tax knowledge equals her confidence, then she will be categorized as a confident taxpayer (Michailova, 2010; Russo and Schoemaker, 2016 and Supramono et al., 2018).

Table 1. Respondents' Characteristics

	<i>Characteristics</i>	<i>Percentage</i>	<i>Tax Compliance</i>
Sex	Male	47%	64.47
	Female	53%	72.45
Taxpayers' Identification Number	Have	100%	68.70
	Do not have	0%	0.00
Marital Status	Married	68%	67.65
	Unmarried	32%	70.94

Age	18 - 30 years	40%	66.75
	31 - 40 years	27%	72.59
	41 - 50 years	23%	72.17
	> 50 years	10%	58.00
Education	Senior High School or Equivalent	40%	65.50
	Academy	7%	72.86
	Bachelor	46%	70.00
	Master	2%	55.00
	Other	5%	82.00
The length of becoming a taxpayer	1 - 5 years	55%	69.64
	6 - 10 years	29%	64.83
	11 - 15 years	7%	70.00
	> 15 years	9%	74.44

Source: Primary data processed (2019)

The gender variable in this study is measured by using a masculine-feminine measurement index with a nominal scale. Respondents are required to select from each available indicator to measure their masculinity or femininity. In particular, we refer to Broverman et al. (1972) in measuring gender because this measure remains valid to measure gender (Basu, 2010). Furthermore, Seem and Clark (2006) find that the use of the gender measurement of Broverman et al. (1972) in the 21st century still produces similar results. Additionally, Basu (2010) observes that various scholars have used the gender measurement developed by Broverman et al. (1972) as a reference in measuring gender, and this measure is very inclusive because it has universally included various traits, behavior, and characteristic aspects of gender. Meanwhile, the tax compliance variable will refer to the tax compliance indicator of Rahman (2017), i.e., taxpayers calculate their tax payables correctly. Specifically, we will provide the respondents with a condition/ vignette and ask them to select a number between 10 and 100 (Likert scale) to determine their tax compliance.

The validity test relies on the Bivariate Pearson test. The test produces the scores of 0.697, 0.856, 0.528, 0.447, and 0.555, respectively. The scores are greater than the significance level of 0.444 (N=20, α 5%), implying that all question items are valid. Meanwhile, the reliability test that uses the Cronbach's Alpha method results in a reliability score of 0.618, which is higher than the significance level of 44.4% (N=20, α 5%), suggesting that the questionnaire is reliable.

Table 2. Research Indicators

<i>Variable</i>	<i>Indicator</i>	
Overconfidence (Michailova, 2010; Russo and Schoemaker, 2016; Supramono et al., 2018)	The comparison between a respondent's tax knowledge and her confidence in the correctness of her knowledge.	
	Taxpayer' tax knowledge is measured with:	
	-	Taxpayer's rights and obligations.
	-	Tax types and tariffs.
	-	Tax mechanism and payment
	-	Tax calculation.
	The modification of (Mukhlis et al., 2015)	
Gender (Broverman et al., 1972)	<i>Feminine</i>	<i>Masculine</i>
	Less aggressive	Very aggressive
	Less self-reliant	Very self-reliant
	Emotional	Less emotional
	Does not hide her feeling	Always hides her feeling
	Subjective	Objective
	Submissive	Dominant
	Does not like mathematics and science	Likes mathematics and science

Interested in small issues	Not interested in small issues
Passive	Active
Does not like to compete	Likes to compete
Illogical	Logical
Indoor life-oriented	Outdoor life-oriented
Not skillful in business	Skillful in business
Less explicit	Explicit
Less knowledgeable of her way of life	Knowledgeable of her way of life
Emotionally sensitive	Not emotionally sensitive
Not adventurous	Adventurous
Cautious in making decisions	Quick in making decisions
Easy to cry	Not easy to cry
Does not lead often	Often leads
Not self-confident	Self-confident
Uncomfortable when in an aggressive situation	Comfortable when in an aggressive situation.
Not always ambitious	Always ambitious
Cannot separate feelings from ideas.	Can separate feeling and ideas.
Always attached to others	Not always attached to others.
Appearance-oriented	Not appearance-oriented
Considers that women always outcompete men	Considers that men always outcompete women
Tax Compliance (Rahman, 2017)	The taxpayer calculates her tax payable correctly.

3. RESULTS AND DISCUSSION

Respondents' average tax compliance is 68.70, with a standard deviation of 20.67, implying that respondents exhibit sufficiently high tax compliance. Overconfident taxpayers (49% of total respondents) have average tax compliance of 61.84, while confident taxpayers (7% of total respondents) exhibit average tax compliance of 74.29. Lastly, the average tax compliance of underconfident taxpayers (44% of total respondents) is 75.45. Further, masculine taxpayers (62% of total taxpayers) have average tax compliance of 63.87 while the average tax compliance of feminine taxpayers is higher (76.58).

Table 3. Descriptive Statistics

Variable	%	Min	Max	Mean	Std. Dev
Tax Compliance	100	10	100	68.70	20.678
Overconfident	49	10	100	61.84	21.27
Confident	7	40	100	74.29	22.25
Underconfident	44	30	100	75.45	17.44
Masculine	62	10	100	63.87	22.71
Feminine	38	50	100	76.58	13.80

Source: Primary data processed (2019)

Table 4. The Results of the Hypothesis Testing

PANEL A. ONE-WAY ANOVA TEST					
Hypothesis	Variable	Average Tax Compliance Level	Sig	Explanation	
1	Overconfident	61.84	0.004*	Hypothesis supported	
	Confident	74.29			
	Underconfident	75.45			
2	Masculine	63.87	0.004*	Hypothesis supported	
	Feminine	76.58			
3	Masculine- Overconfident	59.17	0.002*	Hypothesis supported	
	Masculine- Confident	78.00			

	Masculine- Underconfident	68.57	
	Feminine-Overconfident	69.23	
	Feminine-Confident	65.00	
	Feminine-Underconfident	81.74	
PANEL B – TWO WAY ANOVA TEST			
<i>Hypothesis</i>	<i>Variable</i>	<i>Sig</i>	<i>Explanation</i>
1	Overconfident	0.004*	Hypothesis supported
	Confident		
	Underconfident		
2	Masculine	0.002*	Hypothesis supported
	Feminine		
3	Masculine- Overconfident	0.002*	Hypothesis supported
	Masculine- Confident		
	Masculine- Underconfident		
	Feminine-Overconfident		
	Feminine-Confident		
	Feminine-Underconfident		

Source: Primary data processed (2019)

Explanation : ***, **, * denote significance at the 10%, 5%, and 1% levels, respectively.

Table 4 displays the results of the hypothesis testing. Panel A shows the average tax compliance level of overconfident taxpayers is 61.84, the lowest among the three taxpayer categories while confident and underconfident taxpayers have the average tax compliance of 74.29 and 75.45, respectively (sig 0,004 < 0,01). Thus, H₁ is empirically supported.

The hypothesis testing in Panel B by using the two-way ANOVA shows similar results to those in Panel A. Consequently, there is a significant difference in tax compliance between overconfident taxpayers and confident and underconfident taxpayers. The findings support our hypothesis that predicts that overconfident taxpayers exhibit the lowest tax compliance level. The results are also in line with Chyz et al. (2019); Hsieh et al. (2018), and Kubick and Lockhart (2017) who demonstrate that overconfident taxpayers tend to avoid taxes. Our findings are supported by the intelligence theory that proposes that overconfident taxpayers tend to neglect issues that contradict their thoughts (Ehrlinger et al., 2016). In other words, overconfident taxpayers consider that not correctly reporting all of their revenues is appropriate. Besides, overconfident taxpayers ignore the probability of being inspected by tax officials that motivates them not to comply with the tax. The findings are also related to their tax knowledge, which is lower than their confidence.

From the gender perspective, the average tax compliance level of feminine taxpayers (76.58) is higher than that of masculine taxpayers (63.87) (sig 0,002 < 0,01). Consequently, H₂ is empirically supported. There is a significant difference in tax compliance between masculine and feminine taxpayers. In particular, feminine taxpayers have a greater tax compliance level than masculine taxpayers. The findings are in line with Hofmann et al. (2017) and Kastlunger et al. (2010) and the suggestion of Kastlunger et al. (2010) to classify taxpayers not based on their sexes but their gender. Feminine taxpayers tend to exhibit certain traits that are inherent in their personalities and will affect their decisions. Also, feminine taxpayers tend to be risk-averse in making decisions and consequently, they will carefully include the cost-benefit consideration into their decisions (Croson and Gneezy, 2009).

The greater probability of being inspected by tax officials if not reporting all revenues motivates feminine taxpayers to avoid the tax inspection risk by reporting all of their revenues. Conversely, masculine taxpayers tend to exhibit lower tax compliance because they are more willing to take risks, i.e., the risk of being inspected by tax officials.

We test H₃ by interacting the overconfidence variable with gender. The average tax compliance levels (from the lowest to the highest) are masculine and overconfident taxpayers (59.17), feminine and confident taxpayers (65.00), masculine and underconfident taxpayers (68.57), feminine and underconfident taxpayers (69.23), masculine and confidence taxpayers (78.00), and finally feminine and overconfi-

dent taxpayers (81.74). The two-way ANOVA test results in the significance value of 0.002, implying that feminine and underconfident taxpayers exhibit the highest tax compliance. Thus, H₃ is supported.

We also test the hypothesis by using the test for difference in interactions to analyze the differences in tax compliance coefficient between the interactions as demonstrated by Table 5. The table informs that there is a significant difference in tax compliance level between masculine and overconfident taxpayers and feminine and underconfident taxpayers (sig 0,000 < 0,01). Besides, the results also show no significant tax compliance difference between other taxpayer groups. The findings support our hypothesis that predicts that feminine and underconfident taxpayers exhibit the highest tax compliance level among various taxpayer groups.

Table 5. The Results of the Test for Difference in Tax Compliance between Groups

	<i>Group</i>	<i>Sig</i>
Masculine-Overconfident	Masculine-Confident	0.320
	Masculine-Underconfident	0.482
	Feminine-Overconfident	0.588
	Feminine-Confident	0.998
	Feminine-Underconfident	0.000*
Masculine-Confident	Masculine-Overconfident	0.320
	Masculine-Underconfident	0.921
	Feminine-Overconfident	0.953
	Feminine-Confident	0.965
	Feminine-Underconfident	0.999
Masculine- Overconfident	Masculine- Confident	0.482
	Masculine- Underconfident	0.921
	Feminine-Overconfident	1.000
	Feminine-Confident	1.000
	Feminine-Underconfident	0.216
Feminine-Overconfident	Masculine- Overconfident	0.588
	Masculine-Confident	0.953
	Masculine-Underconfident	1.000
	Feminine-Confident	1.000
	Feminine-Underconfident	0.423
Feminine-Confident	Masculine- Overconfident	0.998
	Masculine-Confident	0.965
	Masculine-Underconfident	1.000
	Feminine-Overconfident	1.000
	Feminine-Underconfident	0.844
Feminine-Underconfident	Masculine- Overconfident	0.000*
	Masculine-Confident	0.999
	Masculine-Underconfident	0.216
	Feminine-Overconfident	0.423
	Feminine-Confident	0.844

Source: Primary data processed (2019)

Explanation : ***, **, * denote significance at the 10%, 5%, and 1% levels, respectively.

CONCLUSION

This study demonstrates the difference in tax compliance levels between overconfident, confident, and underconfident taxpayers. Underconfident taxpayers tend to exhibit the greatest tax compliance. Higher tax compliance for underconfident taxpayers occurs because they have higher knowledge than their beliefs. In addition, underconfident taxpayers tend not to be aggressive with higher income expectations than overconfident taxpayers. Next, we also show the difference in taxpayers' gender, i.e., masculine vs. feminine, significantly affects tax compliance level. Feminine taxpayers are likely more tax compliant than masculine taxpayers. Feminine taxpayers tend to avoid risk, be more responsible and obedient, which will make them more careful in making decisions including tax compliance. The results also

indicate that the interaction between feminine taxpayers and underconfident taxpayers results in the highest tax compliance level.

This study informs the governments to evaluate taxpayers' behaviors to improve tax compliance by adjusting tax programs with taxpayers' behaviors. Specifically, tax officials can focus their tax inspections to masculine and overconfident taxpayers to ensure that they have reported their revenues correctly. There are obstacles from respondents who feel uncomfortable with questions about tax compliance, therefore further studies should provide a better understanding to convince respondents that studies that are not related to the tax office.

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