Finance & Economics Review 4(2), 2022 **ISSN: 2690-4063**

Tax Compliance in Indonesia: A Meta-Analysis

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Citation: Titaailla, V. A, & Fidiana F. (2022). Tax Compliance in Indonesia: A Meta-Analysis. *Finance & Economics Review 4(2),* 61-79. https://doi.org/10.38157/fer.v4i2.508.

Research Article

Purpose: *This study aims to summarize existing research findings regarding the determinants of tax compliance in Indonesia by using Meta-analysis.*
Methods *International databases (Scopus) and Indonesian-accredited journals (Sinta 2) are employed to collect data. A targeted search is conducted using the keyword "compliance" in connection with tax compliance, tax avoidance, tax evasion, and related terms. We used Harzing's Publish application in searching for related papers. We begin with an initial sample of 71 meta-analyses and finally have 39 studies as the final sample of our literature review.*
Results: *We found that a penalty is not the best way to solve compliance issues. In contrast to the traditional (enforcement) paradigm, our investigation revealed that sanctions could not fully explain compliance. Taxpayers should not feel heavily penalized when there is a delay in reporting. Sanctions that are low and less tangible make taxpayers underestimate existing sanctions. Furthermore, tax reform policies such as the Sunset policy (SP), are not regular provisions that are used consistently. SP is a particular tax policy that eliminates tax penalties for individual taxpayers who have recently registered and amended their tax returns.*
Implications: *This study has substantial implications for the Directorate General of Taxes (GDT) concerning the policy approaches in dealing with tax non-compliance. The Indonesian tax authority needs to shift from sanction to voluntary compliance by framing a friendly approach in dealings with taxpayers.*
Originality: *To our knowledge, this is the first study to review the determinants that influence tax compliance specifically in Indonesia using a meta-analysis lens.*
Limitations: *Some important studies are not accessed because of budget limitations.*

Keywords: Tax compliance, Penalty, Sunset Policy, Meta-analysis, Indonesia

1. Introduction

Tax compliance is a problem faced by almost all countries (Andreoni et al., 1998), including Indonesia (Fidiana, 2015; Palil & Rusyidi, 2013). Characterizing by lower tax compliance in Indonesia almost all the time is evidenced by the realization of the annual tax return reporting. This encourages the Indonesian government to implement "Indonesia Moving Forward" programs. The government has issued various policies to improve tax compliance, including the sunset policy, tax amnesty, and tax omnibus law. In addition, the tax authorities have also implemented several ways that are considered to increase compliance, such as tax sanctions, and socialization to increase tax awareness and knowledge. The tax authorities have also collaborated with the Ministry of Education to insert tax material into general subjects and courses to improve tax compliance.

Tax compliance studies have been widely researched since 1968 (Becker, 1968). Several tax compliance studies use socialization variables (Garcia et al., 2018; Mei Tan & Chin-Fatt, 2000; Razak & Bidin,

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2019), tax services (Sari & Fidiana, 2017; Torgler & Schneider, 2007), tax knowledge (Bornman & Wassermann, 2020; Eriksen & Fallan, 1996; Mei Tan & Chin-Fatt, 2000; M. R. Palil & Rusyidi, 2013), sanctions (Alm, Jackson, et al., 2009; Devos, 2013), awareness (Kamaluddin & Madi, 2005; Pattinaja & Silooy, 2018), tax amnesty (Alm & Beck, 1993; Borgne & Baer, 2008; Sari & Fidiana, 2017), and sunset policy (Kasim et al., 2018; Ngadiman & Huslin, 2017). Many tax compliance studies were tested by survey and questionnaire methods but with inconsistent results, namely that some have an effect on tax compliance and some have no effect.

Quantitative research is still carried out to this day with the same methods and variables and as has been done by previous researchers has yielded less clear results. These inclusions make it difficult to generalize about the determinants of tax compliance. This means tax compliance studies are still a serious problem that has not been resolved to this day. The apparent conflict between different studies has been accompanied by continued calls for further research.

The inconsistency of research results with a statistical approach motivated the emergence of tax compliance research with a literature review approach (Horodnic, 2018; Kraus et al., 2020). However, literature studies with a narrative approach still focus on the narrative conclusions of various kinds of studies so they are less accurate. The results of previous quantitative studies with inconsistent results can be combined and generalized through meta-analysis studies. The meta-analysis approach can overcome the weaknesses of the narrative approach. This study accumulates quantitative data from previous studies so that the synthesis results can be accounted for statistically. This study can make quantitative generalizations and reduce the weaknesses of studies with small sample sizes (Ahmed et al., 2013).

Meta-analysis studies are quite popular in medical research, but they are still little or even not used sustainably in the accounting field (Pomeroy & Thornton, 2008). In fact, with a meta-analysis study, which involves a large number of research results, it is easier to conclude more accurately (Anwar, 2005). Data synthesized starting with meta-analyses are generally additional advantageous over the results of the narrative approach.

Currently, no comprehensive study on tax compliance in Indonesia has been published. As a result, this study is an attempt to fill the gap. The current study aims to apply meta-analysis, a quantitative review method, to merge findings in existing research on tax compliance specifically in Indonesia, and estimate the impact on compliance. As tax compliance has been found to differ across nations (Hofmann et al., 2017; Wu & Teng, 2005), so further studies are crucial to understanding what affects tax compliance in a developing country. The prior study shows that cultural and regional differences have an impact on tax morale (Torgler & Schneider, 2007). In short, compliance with taxes is a national experience that binds citizens. Despite the significance of tax compliance being revealed by numerous studies, investigations on these developing countries are lacking in this context.

This study offers a new direction in tax compliance literature by applying meta-analysis will allow researchers to investigate beyond the narrative systematic literature review approach into different stages. The Indonesian tax authority will get a better understanding of which aspects of tax compliance are weighted more.

2. Literature Review and Hypothesis Development

This section briefly reviews the empirical studies dealing with the determinants of tax compliance. These determinants are classified into six categories, namely sunset policy, tax amnesty, tax socialization, tax services, tax socialization, awareness, knowledge, and sanctions. Several types of research have been identified that discussed factors that may influence tax payer's behavior toward tax compliance. These potential determinants of tax compliance vary from country to country due to cultural, political, and other socio-economics as well as behavioral factors (Hofmann et al., 2008; Okpeyo et al., 2019). The desire to avoid tax is common in every country and this phenomenon has attracted numerous scholars to examine the factors behind it (Marandu et al., 2015).

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In Indonesia for example, to widen the tax base, the Sunset Policy (SP) of 2007 was conducted. SP is a scheme to eliminate administrative sanctions in the form of interest so that taxpayers can meet tax obligations more cheaply (Ngadiman & Huslin, 2017). Efforts by governments to generate tax revenues are hampered by widespread tax non-compliance among taxpayers in a country. Thus the SP scheme can improve taxpayer compliance. This is evidenced by the results of research which found an increase in the number of taxpayers, the number of tax deposits, a reduction in tax assessments, and an increase in the tax ratio (Inasius et al., 2020; Kasim et al., 2018; Lederman, 2003) after the application of SP. We expect that the SP impact will increase compliant behavior, resulting in a positive coefficient on SP.

***H1**. There is a positive relationship between SP and tax compliance.*

Indonesian tax amnesty (TA) was implemented in 2016 through Law No. 11 of 2016. This scheme is a tax incentive launched by the tax authorities to attract taxpayers' assets which are allegedly deposited in free tax countries. Under TA law, people who owed taxes were pardoned and not subjected to tax sanctions by paying a fixed amount of taxes rather than the entire amount of unpaid taxes. The proportion of unpaid tax was 0.5 percent of undeclared assets; 2 percent of the undeclared assets for non-small and medium-sized firms (non-SMEs), and 3 percent of unpaid foreign assets for repatriation. Indonesian TA policy can facilitate asset reporting by redeeming a certain amount of taxes. TA facilities and incentives keep taxpayers away from facing criminal charges (Ngadiman & Huslin, 2017).

The majority of previous research on the relationship between tax amnesty and revenue was conducted in the United States (Alm & Beck, 1993; Torgler et al., 2003). Torgler et al (2003) conducted research in two different countries with different cultures to analyze the implementation of a tax amnesty and suggest that tax amnesty increased tax compliance. TA is a series of government measures to forgive all or part of the penalties that exist on taxpayers if they voluntarily declare the value of undeclared income and invested in the shadow economy (Borgne & Baer, 2008). Thus, TA is a determinant and stimulus for tax compliance that protects taxpayers from criminal sanctions (Francis, 2019; Inasius et al., 2020; Ngadiman & Huslin, 2017; Torgler et al., 2003). Similarly, the effect of TA on tax compliance seems likely to be positive.

***H2**. There is a positive relationship between TA and tax compliance.*

Awareness is an important determinant of tax compliance (Kamaluddin & Madi, 2005; M. R. Palil & Rusyidi, 2013). Awareness is a condition that taxpayers understand their obligations to fulfill tax provisions correctly and voluntarily. To comply with current tax laws, taxpayers require additional information and assistance.

It is frequently asserted that a tax gap is caused by a lack of taxpayer awareness (Propheter, 2012). While financing a commercial to raise tax awareness is certainly cheaper than battling tax evasion. The tax authorities have taken several steps to raise taxpayer awareness. In addition to publishing pamphlets, strategies have included providing booklets related to income tax and updating tax instructions on social media. Producing a humorous social media commercial that characterizes tax liability is also an option. Previous studies demonstrated the importance of awareness in increasing compliant behavior (Kamaluddin & Madi, 2005; Pattinaja & Silooy, 2018; Propheter, 2012). It can be concluded that awareness has a positive effect on tax compliance. Thus, the third hypothesis is proposed as follows:

***H3**. There is a positive relationship between tax awareness and tax compliance*

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One of the success factors of the Self Assessment System (SAS) lies in the knowledge of taxpayers and an understanding of tax affairs and is responsible for calculating and reporting their tax payable (M. R. Palil, 2010). Taxpayers are expected to present accurate tax returns and to be functionally literate in calculating their taxes owed (Bornman & Wassermann, 2020). To deal effectively with using the SAS, taxpayers should have some basic tax knowledge regarding taxation concepts as well as some tax literate information.

Tax knowledge includes mastery of tax regulations, procedures, and sanctions which can increase the ability to fulfill tax obligations completely, properly, and correctly in terms of registration, calculation, payment, and report. Tax knowledge is fundamental to planning and managing taxes by applicable tax provisions. Furthermore, knowledge enables taxpayers to manage tax strategies based on applicable tax facilities or incentives. Taxpayers must therefore be tax-savvy to account for these transactions on their tax returns.

Some researchers have shown the importance of tax knowledge for compliant behavior. An early study conducted by Eriksen & Fallan (1996) proved that better tax knowledge can improve attitudes toward tax compliance. Other empirical studies have found that tax knowledge has a significant positive effect on tax compliance (Bornman & Wassermann, 2020; Eriksen & Fallan, 1996; M. R. Palil & Rusyidi, 2013; Saad, 2014). Tax knowledge will increase tax compliance, otherwise, a lack of such knowledge may result in tax evasion, suggesting hypothesis 4 as follows:

H4*. There is a positive relationship between tax knowledge and tax compliance.*

Tax socialization is providing information to the public about taxes and new tax regulations (Garcia et al., 2018; Mei Tan & Chin-Fatt, 2000). Socialization is informally educating taxpayers so it is expected to raise knowledge as well as increase compliance.

The Directorate General of Taxes (GDT) has attempted to conduct socialization to improve understanding, information, and guidance to taxpayers. Socialization can add insight, the latest knowledge, and awareness of taxpayers as well as a medium for reminding tax obligations and their sanctions. Effective socialization can prevent people from having difficulties in fulfilling the tax owed.

Dissemination of information is a critical component of ensuring compliance (Alm, Jackson, et al., 2009) due to public announcements related to enforcement activities must be communicated. A previous study by Alm et al (2009) of information dissemination has revealed the networks that allow information dissemination and communication to take place, especially information dissemination of audit probability. According to their findings, announcing the audit rate increases compliance.

Garcia et al (2018) examine the effects of disseminating information on individual tax compliance. They found that the unofficial information is associated with a significant increase in evasion intensity; depending on residents' characteristics. In countries where tax evasion is naturally low, official information can have a positive impact by consolidating the behavior of compliant individuals. Otherwise, official information can hurt countries with high levels of tax evasion.

Razak & Bidin (2019) also looks into the effects of information dissemination to other taxpayers and how it affects willingness to comply. In other words, this research will determine whether the dissemination of information improves voluntary compliance. The findings indicate that disclosing tax audit information improves compliance; therefore, tax authorities should prioritize disseminating audit activity news as one method of preventing tax noncompliance. Another study empirically proved the impact of socialization on tax compliance in positive association (Garcia et al., 2018; Mei Tan & Chin-Fatt, 2000). Thus, the fifth hypothesis is proposed as follows:

H5*. There is a positive relationship between tax socialization and tax compliance*

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Tax sanctions are likely to be one aspect of a tax compliance approach. Under the enforcement paradigm, individuals who are caught cheating on their taxes face penalties (Alm, 2012). The threat of punishment such as tax audits, penalties, and tax rates, is intended to deter taxpayers. Otherwise, the threat of punishment does not affect taxpayers who comply with the tax rules. Essentially, it is considered that the taxpayer makes a compliant decision in ambiguous conditions, just to avoid being caught and penalized. The authorities establish sanctions to increase discipline and compliance. This is in line with the tax compliance theory which states that compliance with tax regulations is actually in the framework of avoiding sanctions or penalties. This means that tax sanctions increase tax compliance. In numerous jurisdictions, the role of sanctions in combating tax fraud and non-compliance has been empirically proven (Devos, 2013; Mohdali et al., 2014; Ngadiman & Huslin, 2017). Thus, hypothesis 6 is:

H6*. Tax compliance will be higher with higher tax sanction*

3. The Process of Meta-Analysis Research

This study intends to quantitatively examine the determinants of tax compliance with a meta-analysis study framework. The basis of meta-analysis is to generalize on previous empirical studies (Greenberg, 1992) quantitatively. In principle, a meta-analysis study is to summarize various research results by accumulating the difference in estimates for each sample. This quantitative data summary is a procedure that can provide more accurate results because it does not reduce or data manipulate. Meta-analysis is also more objective because it focuses on data. The more statistical data collected from previous research, the more accurate the statistical conclusions will be.

First, we identify a relevant research journal about tax compliance. This is a very difficult task to identify published and unpublished studies. We used qualified international databases (Scopus) and Indonesian-accredited journals (Sinta 2) for the period of 2011 to 2020. A targeted search was conducted using the keyword "meta-analysis" in connection with tax compliance, tax avoidance, tax evasion, and related terms. We used Harzing's Publish application in searching for related papers. We begin with an initial sample of 71 meta-analyses.

Second, we conducted data collection based on some criteria. As exclusion criteria, we only recognize quantitative and focus on tax compliance as our goal is to explore the determinants of tax compliance in Indonesia. Thus, 11 studies were dropped. In line with other literature reviews, we only include meta-analyses published in Scopus and Sinta 2. Working papers were excluded. This step leads to a reduction of 13 studies. In the meta-analyses test procedure, we need comparative statistical information, namely effect size, correlation/r value ($\hat{r}$), Cohen's D (d), t-values, chi-square, or p-values. Thus, 8 studies were dropped due to not giving these comparative statistical data. Thus, a total of 39 (thirty-nine) articles meet these criteria and are used as the final sample of our literature review as presented in Table 1. In short, these studies summarize six indicators have significant in explaining tax compliance in Indonesia, including sunset policy (3 studies), tax amnesty (3 studies), tax socialization (9 studies), awareness (13 studies), tax knowledge (22 studies) and tax sanction (22 studies). A summary of studies included in the meta-analysis is presented in an appendix.

Table 1: Sample Selection Procedure

Exclusion Criteria	Sum
Paper published in Scopus and Indonesian-accredited journals (Sinta 2)	71
Less working paper	(13)
Less paper not include tax compliance in Indonesia	(11)
Less paper not giving comparative statistical information completely	(8)
Total samples	39
Notes: The selection procedure result in 39 samples.	

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Third, we prepared a dataset that requires the calculation of effect size for the studies. The typical types of effect sizes are standardized mean difference, correlation, and odds ratio (Khlif & Chalmers, 2015). The meta-analysis procedure (transferred of statistical studies to r) starts from the accumulated correlation (r), the difference between the t-value and mean-value (d), z-value, and p-value. If only p-values are available, t-statistics or Z-statistics are determined based on the sample size, degrees of freedom, and students' or normal tables (Velte, 2019). If Pearson coefficients are given in a study, the correlation metrics between the dependent variable(s) and the independent variable(s) must be classified as the relevant effect size. If we cannot identify Pearson coefficients in a study's results, t-statistics (e.g. Z-statistics) must be converted into effect size measures when multiple regressions are available in the paper. Then, these statistics are transferred to an effect size measure. The procedure of statistical transfer is shown in Table 2.

Table 2: Steps of Statistics Transformation

Value available	Transformation formula to r	Note
t-statistic	$r = \sqrt{\frac{t^2}{t^2 + df}}$	*t* = statistic value *df = degree of freedom*
Z-test	$r = \sqrt{\frac{z^2}{N}}$	0.06
p-value	Convert two-tailed one-tailed. Look at the z value under normal probability conditions	

Note: The transferred statistical value into r values refers to the formulas and procedures developed by Lyons (Lyons, 1998). After conversion, the original sign (+/-) of the t-statistic, z-test, and p-value must be entered in r and processed in the square root. R-statistics in this study is the correlation coefficient of tax compliance with sunset policy, tax amnesty, awareness, knowledge, socialization, and sanctions

After the r statistical value is obtained for each study sample, there are three further steps as presented in Table 3 (Hunter et al., 1982). Assessing the heterogeneity in meta-analysis is an important issue due to the presence or absence of real heterogeneity (between-studies variability) might have an impact on the statistical model. We assessed the heterogeneity by using Cochran's Q test (Cochran, 1954). Further, we employ chi-square calculations to determine the validity of the statistical model. Estimating the sampling error variance is also carried out to ensure an unbiased estimate of the population variance by reducing the variance observed by the sampling error variance estimation. Researchers must adhere to a number of procedures when performing a meta-analytic review. A meta-analytic study typically includes five stages, as used by Hunter et al., (1982), Lyons (1998), and Khlif & Chalmers (2015).

Table 3: Data Analysis Stages

Stages	Formula	Note
Determine the mean of the correlation and the estimated variance population ($\bar{r}$)	$\bar{r} = \frac{\Sigma(N_i r_i)}{\Sigma N_i}$	N_i = sample size r_i = correlation coefficient
Determine the odds of estimating the population variance	$s_p^2 = s_r^2 - s_e^2$	s_r^2 = variance observed ($\frac{\Sigma[N_i (r_i - \bar{r})^2]}{\Sigma N_i}$) s_e^2= Varian sampling error estimation ($\frac{\Sigma(1-\bar{r}^2)^2 K}{\Sigma N_i}$) k= number of studies in the meta-analysis
Determine the level of confidence	$[\bar{r} - s_p z\ 0.975\ , \bar{r} + s_p z\ 0.975] \approx [\bar{r} - s_p(1.96)\ , \bar{r} + s_p(1.96)]$	
Determine the validity of the model (chi-square)	$x_{K-1}^2 = \frac{N_{s_r^2}}{(1-\bar{r}^2)^2} = K\frac{S_r^2}{S_e^2}$	
The meta subgroup test	If chi-square (x_{K-1}^2) > table chi-square ($x_{0.01}^2$ atau $x_{0.05}^2$)	

Notes: The data analysis stages start from the accumulated correlation (r), the difference between the t-value and mean-value (d), z-value, and p-value

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4. Empirical Results and Discussion

In this section, overall, 3 study samples were applied for the calculation of the average correlation value (effect size) of the relation SP on TC. Contrary to expectations, a significant negative relation between SP and TC was found (mean correlation value ($\bar{r}$) = -0.188 with a 95% confidence interval between -0.2419 and -0.1341). The three values are negative and the average correlation value ($\bar{r}$) is in between. As for SP treatments, it appears that SP reduces TC, counter H1.

Table 4: Sunset Policy

Ind. Variable	∑ Ni	K studies	$\bar{r}$	S_r^2	S_e^2	S_p^2	% S_e^2/S_r^2	Confidence Interval	x_{K-1}^2
General meta-analysis	306	3	-0.188	0.0366	0.0091	0.0275	24,916	-0.2419; -0.1341	12,04*
Notes: meta-analysis result test for sunset policy (*Significant on 0.01)									

Contrary to the hypothesis that SP has a positive effect on TC, the results of the meta-analysis in this study indicate that the relationship between sunset policy and taxpayer compliance is significant with a negative direction, which means that the more often the SP level is applied, the lower the TC. Sunset policy (SP) was launched in 2007 through Article 37A of Law Number 28 of 2007. SP is a scheme to eliminate administrative sanctions in the form of interest so that taxpayers can meet taxes more cheaply (Ngadiman & Huslin, 2017).

Similar to Kasim et al., (2018), we found a negative relationship on SP and TC. But, the negative results do not mean that the SP is meaningless but suggest that the penalty is not the best solution to compliance problems. Contrary to the economic theory that generally emphasizes increased penalties as the best way in defining tax compliance. The possible reason behind these results is the tax reform policy in the form of SP is not a regular facility that is applied every time. SP is a special tax policy; a tax penalty abolishment policy for individual taxpayers who newly registered and amended their tax return. After the passing of the SP facility, the government did not issue any other policies to increase supervision (Kasim et al., 2018). The inherent nature of special facilities is that if it is applied continuously, it will reduce the authority of the government (tax authority), which will lead to reluctance in tax compliance.

It is generally explained by the theory of tax evasion that people pay taxes only because they are forced to. But, too frequent penalties lead to, among other things, a tendency to distrust the tax system. As highlighted by Slippery Slope Framework that trust in the government can explain new ways to tax compliance (Kirchler et al., 2008). While, Indonesian tax reform has been applied for more than one decade (Eka, 2019). In the long run tax policy (SP) undermine tax morale especially when SP is frequently implemented. Frequently SP could signalize a weak and distrust in the government which is unable to enforce a good tax system (Torgler et al., 2003). From the taxpayer's side, they could anticipate further tax policies, which may have an impact on tax morale.

Furthermore, SP is a contentious revenue-raising tool. Scholars emphasize the SP's immediate and short-term revenue impact, arguing that future tax revenues could increase if the SP is accompanied by more extensive taxpayer services, better knowledge of taxpayer responsibilities, stricter post-SP penalties for evaders, and increased expenditures for the government (Alm, Jackson, et al., 2009). Observers argue that many countries' real experiences show that the immediate impact on revenues is almost a little bit. They also doubt the long-time SP revenue implications, particularly if taxpayers believe the SP isn't just a one-time opportunity. Previous studies have confirmed that SP policy still has a significant effect on TC only in the year of the issuance of SP, but has no longer valid after the SP program was completed (Eka, 2019; Kasim et al., 2018).

Overall meta-analysis findings based on sunset policy resulted in a chi-square (x_{K-1}^2 = 12.04) at a significance level of 0.01 is greater than the critical value of chi-square ($x_{0.01}^2$ = 9.210). This indicates the

possibility of the existence of a moderating variable that affects the findings of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable: namely taxpayer compliance and the explanatory. Therefore, no meta-analysis sub-group test can be applied to the sunset policy.
Calculating the average correlation value (effect size) of the relation between TA and TC, 3 samples were applied. As expected a significant positive relation between TA and TC was found (mean correlation value ($\bar{r}$) = 0.6177 with a 95% confidence interval between 0.5317 and 0.7036).

Table 5: Tax Amnesty

Ind. Variable	∑ Ni	K studies	$\bar{r}$	S_r^2	S_e^2	S_p^2	% S_e^2/S_r^2	Confidence Interval	x_{K-1}^2
General meta-analysis	423	3	0.6177	0.0465	0.0027	0.0438	5,806	0.5317; 0.7036	51,47*
Notes: meta-analysis result test for tax amnesty (*Significant on 0.01)									

The average correlation value ($\bar{r}$) between the confidence interval and which is positive indicates that TA has a positive effect on TC. This means that the statistical data support our hypothesis.
Based on the calculated value chi-square (x_{K-1}^2 = 51.47) is greater than the critical value of chi-square ($x_{0.01}^2$ = 6.635). This value indicates the possibility of the existence of a moderating variable that affects the findings of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable, namely taxpayer compliance and the explanatory. Therefore no meta-analysis sub-group test can be applied to the tax amnesty variable.
TA is a tax incentive scheme implemented in 2016 through Law No. 11 of 2016. As a part of tax reform, the government aims to raise revenues by applying TA. TA allows people who have failed to file all return taxes, failed to report, or who have underpaid taxes for a certain period, and therefore to clean up the tax arrears without penalties (Inasius et al., 2020; Ngadiman & Huslin, 2017).
Tax relaxation with convenience without sanctions greatly encourages taxpayer compliance to immediately report assets that have not been filed. Similar to prior studies, we concluded that TA is a determinant and stimulus for tax compliance (Alm, Vazquez, et al., 2009; Inasius et al., 2020; Ngadiman & Huslin, 2017; Nugrahanto, 2020; Sari & Fidiana, 2017). The TA program successfully increased the revenue collected in penalties. It results could show the trust in the government. Thus, the belief of tax authorities that assumes TA is an efficient instrument in raising revenues as well as compliance is statistically proven. In other word, amnesties are frequently thought of as a strategy to increase short-term revenue while enlarging the tax base over time by bringing concealed wealth and income into the tax net (Dom et al., 2022).
For calculating the average correlation value (effect size) of awareness on TC, 13 samples were incorporated in the meta-analysis. As expected a significant positive relation between awareness and TC was found (mean correlation value ($\bar{r}$) = 0.2616 with a 95% confidence interval between 0.1554 and 0.3687). The average correlation value ($\bar{r}$) between the confidence interval and which is positive indicates that awareness has a positive effect on TC so the hypothesis which states that awareness has a positive effect on taxpayer compliance is statistically accepted.

Table 6: Tax Awareness

Ind. Variable	∑ Ni	K studies	$\bar{r}$	S_r^2	S_e^2	S_p^2	% S_e^2/S_r^2	Confidence Interval	x_{K-1}^2
General meta-analysis	1116	13	0.2616	0.0648	0.0101	0.0547	15.586	0.1554; 0.3687	83.32*
Notes: meta-analysis result test for tax amnesty (*Significant on 0.01)									

The results of the general meta-analysis in this study indicate that awareness has a positive effect on TC. The intricacy of Indonesia's taxation system has been widely discussed in both academic and professional circles. Much research has been conducted to see if the complexity of the system has an impact on

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taxpayer compliance. From the standpoint of financial literacy or socialization, overcoming tax complexity would be solved (Brackin, 2007).

Socialization can improve tax skills and updating tax information was central to overall economic prosperity and that low levels of tax literacy act as a barrier to participation in the tax system. It potentially impacts non-compliant behavior. Otherwise, increasing the likelihood of compliance by making taxpayers aware of their tax obligations (Propheter, 2012). The results of this study are supported by previous research that awareness is a determining factor for tax compliance (Andreas & Savitri, 2015; Brackin, 2007; Kamaluddin & Madi, 2005; Propheter, 2012).

Overall meta-analysis findings based on taxpayer awareness resulted in a chi-square value (x^2_{K-1} = 83.32) greater than the critical value of chi-square ($x^2_{0.01}$ = 9.210). This value indicates the possibility of the existence of a moderating variable that affects the finding of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable: taxpayer compliance and the explanatory. Therefore no meta-analysis sub-group test can be applied to awareness.

The meta-analysis of the influence of knowledge on TC was carried out on 22 samples. The findings show a mean correlation ($\bar{r}$) of 0.2406 with a 95% confidence interval between 0.1634 and 0.3178. The average correlation value ($\bar{r}$) between the confidence interval and which is positive indicates that the hypothesis which states that knowledge has a positive effect on TC is statistically supported (accepted).

Table 7: Tax Knowledge

Ind. Variable	**∑ Ni**	**K studies**	$\bar{r}$	S^2_r	S^2_e	S^2_p	**%** S^2_e/S^2_r	**Confidence Interval**	x^2_{K-1}
General meta-analysis	1815	22	0.2406	0.0502	0.0106	0.0394	21.116	0.1634; 0.3178	102.58*
Notes: meta-analysis result test for tax knowledge (*Significant on 0.01)									

The general meta-analysis in this study has statistically supported the relationship between tax knowledge on tax compliance. Tax knowledge was generally understood as one of the success factors of the Self-Assessment System (SAS); which requires taxpayers' knowledge of tax affairs and their responsibility for calculating and reporting their tax payable.

One of the keys to the success of the Self Assessment System (SAS) lies in the knowledge of taxpayers in understanding tax rules and being responsible for calculating and reporting their tax payable (Bornman & Wassermann, 2020; M. R. Palil, 2010). Moreover, to achieve the SAS goals, a high level of tax knowledge among taxpayers are essential requirements for implementing SAS. To deal with the SAS effectively, taxpayers should have some basic tax knowledge about taxation concepts as well as some tax literate information.

Tax knowledge entails mastery of tax rules, procedures, and sanctions, which can improve one's ability to fulfill their tax payable more completely and correctly in terms of registration, calculation, payment, and reporting. Furthermore, knowledge allows taxpayers to manage tax strategies based on applicable tax provisions or incentives. To account for these transactions on their tax returns, taxpayers must be tax-savvy.

According to the tax literature, knowledge can influence taxpayers' perceptions of fairness and compliance attitudes (Mei Tan & Chin-Fatt, 2000). Thus, enhanced tax knowledge will significantly change taxpayers both ethical behavior and attitude towards the tax system, i.e. they perceived the tax system to be more equitable and fair (Eriksen & Fallan, 1996). It concludes that tax knowledge is one of the most effective tools for reducing tax avoidance. Knowing the tax rules and the ramifications of engaging in declaring failed income will deter taxpayers from avoiding tax. In line with prior research, the

result indicated that tax knowledge is important in reducing non-compliant behavior (Bornman & Wassermann, 2020; Eriksen & Fallan, 1996; M. R. Palil & Rusyidi, 2013; Saad, 2014).
Overall meta-analysis findings based on tax knowledge resulted in a chi-square (x^2_{K-1} = 102.58) at a significance level of 0.01 is greater than the critical value of chi-square ($x^2_{0.01}$ = 9.210). This indicates the possibility of the existence of a moderating variable that affects the findings of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable: taxpayer compliance and the explanatory. Therefore no meta-analysis sub-group test can be applied to tax knowledge.
Analysis of the 9 selected study samples examining the effect of socialization on TC resulted in an average correlation ($\bar{r}$) of -0.0674.

Table 8. Tax Socialization

Ind. Variable	**∑ Ni**	**K studies**	$\bar{r}$	S_r^2	S_e^2	S_p^2	**%** S_e^2/S_r^2	**Confidence Interval**	x^2_{K-1}
General meta-analysis	733	9	0.2152	0.1158	0.0112	0.1047	9,672	0.0100; 0.4203	93,35*

Notes: meta-analysis result test for tax socialization (*Significant on 0.01)

Based on a 95% confidence interval, the mean correlation ($\bar{r}$) was in the confidence interval range, namely between 0.0100 and 0.4203. These results indicate the influence of socialization on TC so the hypothesis is statistically supported (accepted).
The results of the general meta-analysis showed a positive relationship between socialization and TC. The results of this study found a positive direction, which means that the more frequent socialization, the better TC. According to the tax literature, not only knowledge but also socialization of new rules of the tax system can influence taxpayers' perceptions of fairness and compliance attitudes (Mei Tan & Chin-Fatt, 2000). Tax socialization provides information to the public about new tax regulations. Specific tax knowledge combines information on tax rules and allows a taxpayer to calculate tax liabilities.
Dissemination of information is a critical component of ensuring compliance (Alm, Jackson, et al., 2009) due to public announcements in related enforcement activities must be communicated. Information dissemination has revealed the networks that allow information dissemination and communication to take place, especially information dissemination of audit probability (Alm, Jackson, et al., 2009).
Socialization is informally educating taxpayers so it is expected to raise knowledge as well as increase compliance. The Directorate General of Taxes (GDT) has attempted to conduct socialization to improve understanding, information, and guidance to taxpayers. Both official and informal information disseminated by GDT or tax authorities have been proven in promoting tax compliance (Alm, Jackson, et al., 2009). Socialization can add insight, the latest knowledge, and awareness of taxpayers as well as a medium for reminding tax obligations and their sanctions. Effective socialization can prevent people from having difficulties in fulfilling taxes owed.
To put it another way, we know how information is disseminated and communicated; in other words, how do taxpayers learn that the tax regulation is changing and adjust their behavior? There are several ways that tax rules can reach taxpayers and potentially influence their compliance behavior; especially in countries where tax evasion is naturally low, official information can have a positive impact by consolidating the behavior of compliant individuals. Thus, disclosing tax information improves compliance; therefore, tax authorities should prioritize disseminating tax news as one method of preventing tax noncompliance (Garcia et al., 2018; Razak & Bidin, 2019).
The calculation of the chi-square value (x^2_{K-1}) of 93.35 is greater than the critical value of chi-square ($x^2_{0.01}$ = 6.635). This indicates the possibility of the existence of a moderating variable that affects the findings of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable: taxpayer compliance and the explanatory. Therefore no meta-analysis sub-group test can be applied to tax socialization.

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The results of the general meta-analysis with a sample of 22 selected studies were unable to prove the role of sanctions against TC. This is based on the calculation of the average correlation value ($\bar{r}$ = 0.6165) with a 95% confidence interval, namely in areas -2.1943 and 3.4237 so the proposed hypothesis is rejected.

Table 9: Tax Sanctions

Ind. Variable	**∑ Ni**	**K studies**	$\bar{r}$	S_r^2	S_e^2	S_p^2	**%** S_e^2/S_r^2	**Confidence Interval**	x_{K-1}^2
General meta-analysis	2031	22	0.6165	1, 4382	0.0041	1,4341	0.285	-2.1943; 3.4237	7600.96*
Notes: meta-analysis result test for tax amnesty (*Significant on 0.01)									

The results of the general meta-analysis show that sanctions do not affect TC. This result is not in line with the theory that sanctions increase TC. Sanctions are failed and proven as a determinant of TC. Contrary to the prior study, as for the sanction treatments, it appears that imposing sanctions does not relate to compliance, counter H6. Thus, the expectation of tax sanction in enhancing tax compliance is unsuccessful.

It is not enough to impose harsher fines and/or increase the penalty to reduce tax evasion. Extreme punishments may backfire by fostering an environment conducive to bribery and corruption, with the final effect being lesser tax compliance and a general loss of faith in government institutions (Cummings et al., 2005).Under the traditional (enforcement) paradigm, the individual pays taxes only because they fear audit and penalty. New scholars, however, believe that such paradigms, particularly those based on enforcement levels, cannot fully explain compliance. In most nations, the percentage of tax returns that are subject to a full tax sanction is rather low, usually less than 1% of all returns (Alm, 2012). The substitution effect disappears when the penalty is imposed at a proportional rate on evaded taxes, as is usual in most nations, and a higher tax rate will increase reported income via the income effect (Yitzhaki, 1974).

Sanctions are a tool to discipline taxpayers in fulfilling their taxes. Heavy sanctions are expected to have a deterrent effect on taxpayers. But, some administrative sanctions are imposed at low rates such as late fees. This causes taxpayers not to feel heavily penalized when there is a delay in reporting. This condition causes a deterrent effect that cannot be realized.

A self-assessment system requires strict sanctions so that it can provide a sense of fairness to obedient taxpayers. Sanctions that are low and less tangible make taxpayers underestimate existing sanctions. Furthermore, the authorities also often issue sanctions bleaching facilities with various tax policies so that taxpayers ignore taxes and sanctions because they perceive that one day there will be forgiveness and other similar facilities. In line with previous research has found that tax non-compliance is mostly unrelated to the severity of penalties or the likelihood of detection (Black, 2016; Devos, 2013; Mohdali et al., 2014; Williams, 2020). Little evidence exists to support the idea that harsher punishments will generally discourage potential offenders (Devos, 2013).

Most studies have suggested that non-compliance is a result of a lack of trust in the government. This research, on the other hand, demonstrates the need for a change away from deterrence and toward a focus on promoting voluntary compliance by shaping a friendly approach in dealings with the taxpayer.

Overall meta-analysis findings based on sanction resulted in a chi-square (x_{K-1}^2 = 7600.96) at a significance level of 0.01 is greater than the critical value of chi-square ($x_{0.01}^2$ = 13.277). This indicates the possibility of the existence of a moderating variable that affects the findings of the general meta-analysis. However, the moderator effect cannot be determined because there is no measurement of the variable that can be compared, both the dependent variable: taxpayer compliance and the explanatory. Therefore no meta-analysis sub-group test can be applied to sanction.

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5. Conclusion

This study tested a literature study based on meta-analysis to synthesize the determinants of tax compliance. The analysis was developed in the scope of 71 published articles in Scopus-indexed international journals and Sinta 2 Indonesian national journals published in the 2011-2020 period (ten years). Based on several stages in the meta-analysis test in the published sample for 2011-2020, five variables can be considered as factors that influence taxpayer compliance, namely sunset policy, tax amnesty, taxpayer awareness, tax socialization, and tax knowledge. Meanwhile, tax sanctions do not affect TC.

This study offers two contributions. Firstly, it finds scant evidence to support the traditional (enforcement) paradigm based on rational economic behavior. When the penalty is used as one instrument to reduce tax non-compliance attitudes, the empirical evidence reveals that it is less likely to deter people who already have strong intentions to comply with tax rules, but more likely to raise their negative intentions to comply. Their willingness to comply is likely to fade because they are being threatened for something they have no intention of doing. Secondly, theoretically, like most prior tax penalties, the punishment is unlikely to have had significant and demonstrable positive – or negative – effects on Indonesian revenues, casting doubt on its use as a compliance tool. The severity of penalties is mostly unrelated to tax non-compliance, according to prior research. The effectiveness of penalties and punishments as a deterrent depends on the magnitude of the belief of the tax payers that they have a chance of being caught and punished.

Moreover, it is argued that the research presented in this paper has consequences for the framing of tax policy and offers useful information to the Indonesia's tax authorities. The conclusions of this study have substantial implications for the Directorate General of Taxes' (GDT) policy approaches in dealing with tax non-compliance. The Indonesian tax authority needs to shift from sanction toward a focus on promoting voluntary compliance by shaping a friendly approach in dealings with the taxpayer.

Acknowledgement: The authors like to express their gratitude to the Authority of STIESIA Surabaya, for their valuable support for conducting the study.

Authors' Contribution: Verta Arbaath Titaailla analyzed and collected data; Fidiana Fidiana conceived the idea and wrote the paper.

Conflicts of Interest: The author declares no conflict of interest.

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Appendix 1
Research sample

No	Author	Publisher
1	Damayanti & Amah (2018)	ASSETS: Jurnal Akuntansi dan Pendidikan
2	Primasari (2016)	Jurnal Akuntansi dan Keuangan
3	Ngadiman & Huslin (2015)	Jurnal Akuntansi
4	Muliari & Setiawan (2011)	Jurnal Ilmiah Akuntansi dan Bisnis
5	Tahar & Rachman (2014)	Jurnal Akuntansi dan Investasi
6	Handayani & Damayanti (2018)	The Indonesian Journal Of Accounting Research
7	Nguyen (2020)	Journal of Asian Finance, Economics and Business
8	Kasim *et al*. (2018)	International Journal of Engineering & Technology (UAE)
9	Supriyati (2011)	The Indonesian Accounting Review
10	Asih & Salman (2011)	The Indonesian Accounting Review
11	Cahyonowati *et al*. (2012)	Jurnal Akuntansi dan Keuangan Indonesia
12	Suherman *et al.* (2015)	Media Riset Akuntansi, Auditing & Informasi
13	Setiawan *et al*. (2018)	Jurnal Akuntansi dan Auditing Indonesia
14	Arini & Isharijadi (2015)	ASSETS: Jurnal Akuntansi dan Pendidikan
15	Gunawan *et al.* (2017)	Jurnal Reviu Akuntansi dan Keuangan
16	Alfiyah & Latifah (2017)	Jurnal Reviu Akuntansi dan Keuangan
17	Nawangsasi *et al.* (2018)	Jurnal Aset (Akuntansi Riset)
18	Nahumury *et al.* (2018)	Journal of Accounting and Strategic Finance
19	Yunianti *et al.* (2019)	Journal of Accounting and Strategic Finance
20	Salman & Sarjono (2013)	Journal of Economics, Business, and Accountancy Ventura
21	Mangoting & Sadjiarto (2013)	Jurnal Akuntansi dan Keuangan
22	Yuliana & Isharijadi (2014)	ASSETS: Jurnal Akuntansi dan Pendidikan
23	Mahadianto & Astuti (2017)	Jurnal Kajian Akuntansi
24	Tahar & Sandy (2012)	Jurnal Akuntansi dan Investasi
25	Abdullah (2019)	International Journal of Financial Research
26	Kubick (2016)	Accounting Review
27	Putra & Suryono (2020)	The Ethics of Tax Evasion: Perspectives in Theory and Practice
28	Khlif (2015)	International Journal of Law and Management
29	Savić (2015)	Economic Research-Ekonomska Istrazivanja
30	Yee (2017)	International Journal of Law and Management
31	Alabede (2011)	International Research Journal of Finance and Economics
32	Rizaldy & Fidiana (2019)	Jurnal Ilmu dan Riset Akuntansi
33	Sapiei (2014)	eJournal of Tax Research
34	Fochmann (2016)	Journal of Economic Psychology
35	Hamid (2020)	Journal of Advanced Research in Dynamical and Control Systems
36	Garcia (2020)	Journal of Economic Psychology
37	Durham (2014)	Journal of Economic Psychology
38	Palil (2011)	European Journal of Social Sciences
39	Alasfour (2016)	Advances in Taxation

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Appendix 2
Meta-analytic of tax compliance

No	Author	Ind. Variable	N	K	*df*	*t-statistic*	*p-value*	$\bar{r}$
1	Damayanti & Amah (2018)	Amnesty	235	2	233	21.068	0.000	0.8098
2	Primasari (2016)	SP	74	5	68	0.575	0567	0.0696
		Awareness	74	5	68	0.039	0.969	0.0047
		Socialization	74	5	68	0.961	0.961	0.1158
3	Ngadiman & Huslin (2015)	SP	100	3	96	-1.045	0.299	-0.1061
		Amnesty	100	3	96	3.654	0.000	0.3494
		Sanction	100	3	96	0.322	0.002	0.0329
4	Muliari & Setiawan (2011)	Sanction	100	2	97	6.171	0.000	0.5310
		Awareness	100	2	97	5.912	0.000	0.5147
5	Tahar & Rachman (2014)	Awareness	57	5	51	2.026	0.048	0.2729
6	Handayani & Damayanti (2018)	Sanction	1486	16	1469	-	-	0.2869
		Socialization	960	7	952	-	-	0.2927
		Knowledge	1136	9	1126	-	-	0.3070
7	Nguyen (2020)	SP	200	7	194		0.001	4.1940
8	Kasim *et al*. (2018)	SP	132	1	130	-4.894	0.050	-0.3944
9	Supriyati (2011)	Knowledge	78	2	75	2.51	0.160	0.0775
10	Asih & Salman (2011)	Knowledge	45	3	41	2.815	0.007	0.4028
11	Cahyonowati *et al*. (2012)	Awareness	84	3	81	2.830	0.006	0.3000
		Knowledge	84	3	81	3.074	0.003	0.3232
12	Suherman *et al.* (2015)	Amnesty	88	3	85	4.137	0.000	0.4094
		Knowledge	88	3	85	2.032	0.045	0.2152
13	Setiawan *et al*. (2018)	Sanction	100	4	96	3.220	0.002	0.3122
		Awareness	100	4	96	2.530	0.013	0.2500
14	Arini & Isharijadi (2015)	Socialization	75	3	72	4.275	0.000	0.4499
		Awareness	75	3	72	2.441	0.017	0.2765
		Sanction	75	3	72	0.994	0.323	0.1163
15	Gunawan *et al.* (2017)	Sanction	64	3	61	16.701	0.000	0.9058
		Awareness	64	3	61	15.153	0.000	0.8889
16	Alfiyah & Latifah (2017)	Sanction	100	3	97	5.423	0.000	0.4823
		Awareness	100	3	97	4.632	0.000	0.4256
17	Nawangsasi *et al.* (2018)	Awareness	100	4	96	3.390	0.001	0.3270
		Sanction	100	4	96	3.982	0.000	0.3765
18	Nahumury *et al.* (2018)	Awareness	80	4	76	4.050	0.000	0.4213
		Sanction	80	4	76	1.243	0.218	0.1412
19	Yunianti *et al.* (2019)	Awareness	120	4	116	3.306	0.001	0.2934
		Knowledge	120	4	116	6.038	0.000	0.4890
		Sanction	120	4	116	2.494	0.014	0.2256
20	Salman & Sarjono (2013)	Awareness	62	3	59	1.311	0.195	0.1682
		Sanction	62	3	59	2.241	0.029	0.2801
		Knowledge	62	3	59	3.438	0.001	0.4085
21	Mangoting & Sadjiarto (2013)	Socialization	100	4	96	3.787	0.000	0.3605
		Sanction	100	4	96	2.385	0.019	0.2365
22	Yuliana & Isharijadi (2014)	Sanction	100	3	97	2.310	0.000	0.2283
		Knowledge	100	3	97	3.842	0.000	0.3634
		Socialization	100	3	97	6.779	0.023	0.5670
23	Mahadianto & Astuti (2017)	Sanction	100	4	96	-2.157	0.034	-0.2150
		Knowledge	100	4	96	3.933	0.000	0.3725
		Socialization	100	4	96	2.166	0.033	0.2159
24	Tahar & Sandy (2012)	Sanction	83	3	79	0.417	0.678	0.0469

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No	Author	Ind. Variable	N	K	*df*	*t-statistic*	*p-value*	$\bar{r}$
25	Abdullah (2019)	Knowledge	93	3	90	3.470	0.001	0.3435
		Socialization	93	3	90	1.221	0.225	0.1277
26	Kubick (2016)	Sanction	100	3	97	0.922	0.359	0.0932
		Socialization	100	3	97	-1.676	0.097	-0.1678
27	Putra & Suryono (2020)	Sanction	60	3	57	0.991	0.326	0.1301
		Socialization	60	3	57	2.916	0.050	0.3603
28	Khlif (2015)	Knowledge	95	2	92	4.657	0.000	0.4368
29	Savić (2015)	Knowledge	78	3	75	2.240	0.028	0.2504
		Socialization	78	3	75	2.945	0.004	0.3220
30	Yee (2017)	Knowledge	100	3	97	2.894	0.005	0.2819
		Sanction	100	3	97	2.486	0.015	0.2447
31	Alabede (2011)	Knowledge	50	2	48	3.706	0.001	0.4717
32	Rizaldy & Fidiana (2019)	Knowledge	100	4	96	3.288	0.001	0.3181
		Sanction	100	4	96	-0.045	0.964	-0.0046
33	Sapiei (2014)	Knowledge	78	4	74	2.511	0.014	0.2802
		Sanction	78	4	74	2.387	0.020	02674
34	Fochmann (2016)	Reward	100	3	97	4.192	0.000	0.3916
35	Hamid (2020)	Knowledge	100	3	97	-3.774	0.000	-0.3578
36	Garcia (2020)	Socialization	70	3	67	2.090	0.041	0.2474
37	Durham (2014)	Knowledge	43	2	41	0.556	0.009	0.0865
38	Palil (2011)	Knowledge	100	4	96	2.530	0.002	0.2500
		Socialization	100	4	96	3.220	0.013	0.3122
39	Alasfour (2016)	Sanction	100	3	97	0.892	0.374	0.0902

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