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A Sustainable Approach on Tax Audit Inspection: How Tax Aggressive Strategies Can be Detected from Fee of Independent Auditor

Rachmad Miftachul Arifuddin
Pusat Pembinaan Profesi Keuangan, Jakarta, Indonesia. Email: rachmad.miftachul@kemenkeu.go.id

Corresponding author: rachmad.miftachul@kemenkeu.go.id

ABSTRACT

The problem with self-reporting data is that taxpayers can be mindful in declaring their tax returns. In some cases, they may intentionally select information on the financial statement for taxation purposes. Tax audits are an essential tool for this problem, but the coverage ratio for corporate enterprises needs to be higher. Increasing the coverage might be one solution to enforce compliance since tax audits require lots of resources. Directorate General of Taxation (DGT) should consider that some variables may influence a taxpayer's behavior and then use them in the tax audit program. This paper will discuss how the fee of an independent auditor might affect the tendency to perform tax-aggressive strategies. The analysis looks at 22,519 audited financial reports from Indonesian businesses. The paper will employ Instrument Variables to address the endogeneity issue in the dataset. The finding indicates that audit fees harm tax-aggressive strategies. Thus, audit fee data could predict an audited enterprise's behavior. The result from this IV estimator can be used as an insight by DGT in determining their tax audit strategy.

Keywords: tax audits, tax avoidance, tax compliance, tax enforcement, tax risk

1. INTRODUCTION

1.1 Tax Collection

Improvement in tax collection has become an interesting topic of discussion on the taxation issue in Indonesia. The self-assessment system allows taxpayers to calculate and report their tax obligations independently. Although there has been a penalty for an undeclared tax return, the ratio of compliance in submitting 2020 tax return is about 77.63% (Direktorat Jenderal Pajak, 2021). Meanwhile, the ratio of compliance among enterprise entities was just over 60%. Regarding tax revenue to GDP ratio, Indonesia's score is relatively low within the Asian region. Figure 1 shows the ratio of tax revenue to GDP per capita, according to World Bank (2022). In 2020, Indonesia's score was around 8.3%, lower than the average score among Asia-Pacific nations.

As a response, DGT (Directorate General of Taxation) has tried to do tax audits despite the relatively low coverage. DGT said the audit coverage ratio is around 1.99% for the corporate enterprise and about 0.36% for the individual (Direktorat Jenderal Pajak, 2021). Although there has been an increase in audit coverage percentage since 2017, the increases were insignificant. Therefore, instead of increasing the coverage, the

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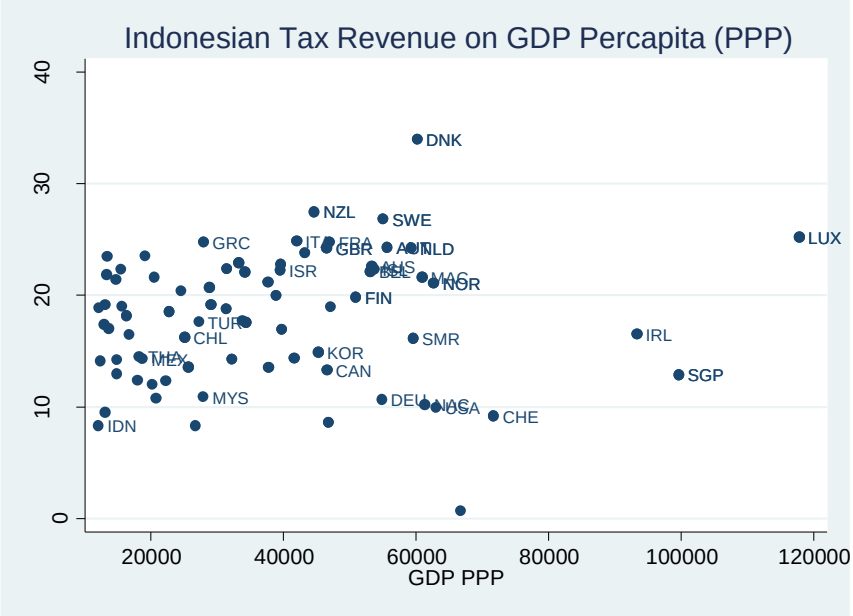

Figure 1 Indonesian Tax Revenue on GDP Per capita (PPP) in 2020
Source: The World Bank data (2022)

audit program can also be strengthened to increase its impact on tax compliance.

By using data from independent public accountants (PA), this paper aims to contribute to the discussion on effective tax audits. DGT should consider performing a risk profile analysis for the taxpayers. Then, DGT may design audit strategies for each group based on those risk profiles. This strategy can be implemented more effectively if the program has considered some variable that can be used to detect taxpayer compliance risk.

The results of this paper might be used by authorities to add a variable to enhance their risk profiling model. This paper tries to provide evidence that the taxpayer's decision to choose a PA firm could be used as an indicator to detect a tendency to perform tax eviction.

1.2 Problem with self-reporting data

Some economic literature looks at tax compliance from the taxpayer's perspective to determine the optimum combination of cost and benefit from tax compliance. Under the classical assumption, Andreoni, et al. (1998) argue that taxpayers will not pay taxes if compliance costs exceed the net benefits of aggressive tax strategies. The discussion on this topic became interesting when Alm, et al. (as cited in Vellutini, 2011) used game theory to describe the interaction between taxpayers and regulators. A significant result of these models is that the probability of a regulator finding tax avoidance practices is not exogenous. In other words, some variables or parameters influence compliance and can be used by regulators to detect taxpayers' compliance.

Interestingly, Vellutini (2011) has found that the probability of detection depends on the taxpayer's information when filing tax returns. Although he does not mention a specific parameter, his study inspires many taxpayers to be more mindful when filling out their tax returns (Surat Pemberitahuan/SPT). It is no doubt that information from SPT remains important for the taxpayer's risk profile. However, DGT may need additional data/resources besides the information declared by taxpayers. By considering more variables, the risk profiling model could become more robust, so it can be used by DGT to optimally allocate their limited resources in performing tax audits.

A risk-scoring model that uses variables other than SPT may reduce taxpayers' ability to underreport their income and avoid audits consistently. Thus, our analysis tries to use independent data from the auditor about their audit fee. This risk-profiling-audit strategy is not likely to consume more resources than other approaches, such as random audits (Alm et al., 2004).

2. LITERATURE AND FORMULATION

Some studies have examined audit quality as a variable in determining tax behavior. The idea is that the presence of an independent auditor could detect the misstatement in the financial report caused by agency problems. The better the audit quality, the more robust the audit process should be. Thus, the presence of a qualified auditor may reduce the taxpayer's tendency to manipulate financial reports for tax purposes.

Jihene and Moez (2019) found evidence that audit quality reduces practices on tax-aggressive strategies. They argue that managers are less motivated to engage in aggressive tax planning when the independent auditor is present. The reasoning is that aggressive tax strategies could have damaging consequences if an auditor detects them. By using a sample of Norwegian firms from 2000 to 2014, Langli and Willekens (2017) have also found a similar result. They conclude that high audit quality improves the credibility of financial information. The company would maintain this credibility for financial purposes. Therefore, performing aggressive tax strategies could damage this reputation, offsetting the economic benefit of performing tax aggressive behavior. Kanagaretnam et al. (2016) also investigated this topic; they found that this negative correlation would be more prevalent in countries with stronger investor protection, higher litigation risk, and a better audit environment.

Dong et al. (2022) have also found the role of auditing in constraining corporate tax avoidance among private firms in Sweden. Their research investigated the behavior of SMEs in Sweden during the regulation shift in 2010, which removed mandatory audit requirements for small private companies. They found that SMEs that remained voluntary about auditing their financial reports exhibited a 19% decrease in total income tax burden relative to SMEs that did not audit their financial reports.

On the other hand, Pratiwi et al. (2019) found that audit quality has no impact on tax aggressiveness. She suspects that all practitioners in the assurance industry have passed a competency test made by their association. Although each firm's audit quality may differ, they have met a qualification standard. Some researchers argue that audit quality is significantly impacted by skill, knowledge, integrity, and ethics (Alsughayer, 2021; Harris & Williams, 2020). In Indonesia, those factors are closely regulated by Ikatan Akuntan Publik Indonesia (IAPI), which has a development program and surveillance system to maintain Public Accountant competency to remain relevant in the financial industry that is always dynamic. Those programs ensure that all independent auditors have maintained competency standards and implemented a code of ethics.

In addition, Subagiastra et al. (2017), studied Indonesian manufacturing companies listed on the stock exchange between 2011 and 2014. Their statistical evidence shows no significant correlation between audit quality and tax compliance. A similar result has also been found in Indonesian companies listed on the Indonesian SRI index.

There is an ongoing discussion about the link between tax compliance and audit quality. Some argue that the audited financial statement by an independent auditor could decrease taxpayer's tendency to perform tax-aggressive strategies (Jihene & Moez, 2019; Langli & Willekens, 2017). On the other hand, others argue that measuring audit quality in the assurance industry is irrelevant because all practitioners have met a qualification standard (Pratiwi et al., 2019). Therefore, some research argues that audit quality does not significantly impact tax compliance behavior.

This paper aims to contribute evidence to this ongoing academic discussion by presenting a factor influencing management's behavior in tax-aggressive strategies. This paper uses the fee of an independent audit to represent the audit quality performed by an independent auditor. I expect that the better audit quality, the fewer opportunities to perform accounting engineering for tax purposes. This paper shows statistical evidence from audited financial reports in Indonesia. The DGT may also use audit fee data to increase the company's risk profile model.

Although Pratiwi et al. (2019) found that audit quality does not impact tax aggressiveness, we should understand the variable used in proximate audit quality. Their models define audit quality as a dummy variable in financial reports audited by the four largest Indonesian auditor offices and others. It means public accounting firms affiliated with the Big 4 have better audit quality than the other group. The usage of a dummy technique to proximate audit quality could be problematic. El-Dyasty and Elamer (2020) argue that audit firms, affiliates with foreign firms, tend to have higher quality. However, Big 4 auditors must provide higher audit quality than their counterparts.

In addition, their paper also mentioned that all Indonesian auditor offices have met a qualification standard. Qualification is not the only factor in determining audit quality. Infrastructure has also determined audit quality. For example, international banks usually use an automatic system to operate most transactions. The auditor will use IT to perform an independent audit for this client. When advanced technology is used, the audit fee will be more expensive. In other words, the more expensive the audit fee, the better its audit quality, and the lower the opportunity to manipulate the financial report. Although all independent auditors have a standardized competency, the fee influences their audit quality. Therefore, this paper uses independent audit fees to proximate audit quality because good audit quality needs investment in auditor competency and IT.

3. DATA SOURCE AND MODEL CONSTRUCTION

This paper uses information reported by audit firms to the Ministry of Finance. Under Ministry of Act No. 5, 2011, PA firms must submit their finances to the Ministry. Using this database, we could analyze the financial performance of each auditor's office and how much the audit fee was obtained from each client. This paper uses the PA firm's reports for the financial year 2021. Our analysis observes 22,519 data points of audited financial statements from enterprises in Indonesia. A company may use more than one audit service in one financial year due to the necessity of an interim audit report, restatement, or other purpose.

By using that information, this paper uses the IV technique (2SLS) and defines a model for the structural equation and the reduced form.

$$ETR_i = \alpha + \beta\tau_i + \gamma C_i + \varepsilon_i; E(\tau_i, C_i|\varepsilon_i) = 0 \quad (1)$$

$$\tau_i = \delta + \gamma Z_i + v_i; E(Z_i|v_i) = 0 \quad (2)$$

The 2SLS estimator implemented in this model is referred to by Gujarati (2003, p. 679) and Greene (2012, p. 271).

a. Effective earning rate (ETR_i)

This paper analyses whether audit quality has an impact on tax compliance behavior. Following Hanlon and Heitzman (2009), this analysis uses parameters and metrics to represent tax compliance behavior. The effective tax rate (ETR) is measured by dividing tax liability by earnings before tax. The rate will capture how much the average tax is payable per dollar of income. The rate would be lower If the company used more aggressive tax strategies.

Meanwhile, they also argue that the effective interest rate (ETR) would not capture aggressive behavior, especially when companies do not have a financial disclosure constraint. For example, a small family enterprise must not declare its financial performance to a third party. In this case, they could lower the taxable income without worrying about "outside" factors. In this paper, we use an audited financial report. A company should not simply lower its income, as that might

negatively impact the performance of its stakeholders.

The ETR data is transformed into a natural logarithmic function in the model. The data caused this transformation, as it has many small and substantial scores.

b. Audit Fee (τ_i)

In the structural equation model, τ_i represent the audit fee. As an economic agent, we assume that PA's main purpose is to provide economic incentives. PA will always optimize its resources, subject to budget constraints. Their procedures will be determined by their fee. If the fee is acceptable, their service will comply with the standards. When the fee is satisfied, they may provide service beyond standards. Due to data availability, this paper will use audit fees in 2021. Similar to (ETR_i), we also transform the fee into a natural logarithmic function.

c. Variable $\mathbf{C_i}$

Variabel $\mathbf{C_i}$ in the structural model represents a matrix of covariate variables. The covariate reduces the standard errors associated with the treatment effects. This paper's covariates are return on asset, asset-to-equity ratio, and revenue-to-asset ratio. Information about the firm's efficiency is collected from audited financial reports. The $\boldsymbol{\varepsilon_i}$ and $\mathbf{v_i}$, represent error in the main model and reduced form, respectively.

The 2SLS technique requires an instrumental variable ($\mathbf{z_i}$) to influence the tax compliance metric ($\mathbf{ETR_i}$), only via the audit quality variable $\boldsymbol{\tau_i}$. Then, the instrument model (reduced from) will be:

$$\tau_i = \delta + \gamma Z_i + v_i; E(Z_i|v_i) = 0 \qquad (3)$$

This paper uses the PA firm's Income as an instrument variable ($\mathbf{z_i}$). The reasoning is that audit quality is determined by the PA's competency and their resources in performing auditing. For instance, some big audit firms have IT and economic divisions to help the auditor with IT or statistics. Auditors themselves may not be familiar with IT. Thus, help from experts would be essential to ensure high-quality service.

Hiring this audit expert is a costly undertaking. Only a PA Firm with a high capital can perform it. High capital also means high maintenance. Thus, big PA firms need a higher income to maintain this service. Therefore, this paper will examine PA's resources (income) as a proxy for the instrument. The more resources an auditor uses, the higher the fee they will ask. The section on Exclusion restriction below provides a more detailed explanation of the instrument.

Instrumental Variables (IV) relaxes the un-confoundedness assumption caused by heterogeneity problems such as selection bias, omission, and unobservable (latent) variables. Let us assume that the original model is

$$ETR_i = \alpha + \beta\tau_i + \gamma C_i + \varepsilon_i \; ; E(\tau_i, C_i|\varepsilon_i) = 0 \qquad (4)$$

We have a variable $\boldsymbol{\mu_i}$ $\mathbf{(E(\mu_i|\tau_i) \neq 0)}$ that does not include the original model. As $\boldsymbol{(\mu_i)}$ is not included in the original model, the error $\boldsymbol{\varepsilon_i}$ in the equation will contain $\boldsymbol{(\mu_i)}$, thus $\boldsymbol{\varepsilon_i = \mu_i + u_i}$, where $\mathbf{u_i}$ is the error term without $\boldsymbol{\mu_i}$. Therefore, the original model would be

$$ETR_i = \alpha + \beta\tau_i + \gamma C_i + \mu_i + u_i \qquad (5)$$

In this elaborated model, the required condition that $\mathbf{E(\tau_i, C_i|\varepsilon_i)}$ = 0, can no longer be held because of the presence of this latent variable, make $\mathbf{E(\mu_i|\tau_i)}$≠0. In other words, the correlation between the latent variable and the variable of interest (in error terms) violates the condition requiring no correlation between the error and the variable of interest. Therefore, ordinary linear regression would produce not un-biased estimator.

This paper also shows the evidence that the OLS estimator differs from the literature review. To anticipate it, we use IV instead of ordinary linear regression. Greene (2012, p. 265) provides a mathematical explanation of how the IV technique (2SLS) could provide an unbiased estimation, even if heterogeneity is present.

```
F test of excluded instruments:
  F(  1, 11680) =  5942.05
  Prob > F      =   0.0000
Sanderson-Windmeijer multivariate F test of excluded instruments:
  F(  1, 11680) =  5942.05
  Prob > F      =   0.0000
```

Figure 2 Ftest of Excluded Instrument

4. ROBUSTNESS

However, the Instrument Variable technique requires two main conditions: strong instrument and exclusion restriction. Although statistical tools can test the former, the latter might be fundamentally untestable. Therefore, for the condition of exclusion restriction, this paper will try to explain it narratively.

a. Instrument validity

This condition requires that our instrument be correlated with the variable of interest, where $E(\tau_i|z_i) \neq 0$. To test whether the instrument is strong or weak, we use (1) an F-test of an excluded instrument on the first stage regression and (2) an Endogeneity test of endogenous regressors. Figure 2 shows the F statistic resulting from our model.

We need an F statistic (from the first stage regression) greater than 10 to indicate that our instrument is strong. The regression result shows that the F statistic in our model is 5942, meaning that our instrument is strong.

Another test is the endogeneity test. Endogeneity looks at whether the variable of interest is endogenous to the instrument. The null hypothesis is that the treatment is exogenous, and we must reject it.

The result of this test shows that we can reject this null hypothesis (as indicated by the p-value, which is less than 5%). Therefore, the instrument is not weak regarding the F-statistics and endogeneity test.

b. Exclusion restriction

Exclusion means that $\mathbf{z_i}$ should not be included in the model of interest, and it only appears in the instrument model. $\mathbf{z_i}$ should influence $\mathbf{ETR_i}$ only through $\boldsymbol{\tau_i}$. In other words, our instrument variable should not directly influence the dependent variable; the influence must only be through the variable of interest. Some studies use the Sargan/Hansen test to examine the exclusion restriction if there are more instruments than endogenous variables (Gujarati, 2003, p. 713). However, since this paper only uses one instrument, the Hansen test is not applicable. Thus, our exclusion restriction only relies on a qualitative explanation.

The exclusion restriction means that AP Firm's income does not directly influence tax aggressive strategy (ETR). The audit firm's income influences the quality of the audit service. The high income could indicate that the audit firm has more advanced tools and resources to perform audit services. In addition, higher-income-audit firms

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Hansen J statistic (overidentification test of all instruments):         0.000
                                                 (equation exactly identified)
-endog- option:
Endogeneity test of endogenous regressors:                              94.761
                                               Chi-sq(1) P-val =        0.0000
Regressors tested:   lnfee
------------------------------------------------------------------------------
Instrumented:        lnfee
Included instruments: revenuetasset roa lntaset assettoequityratio
Excluded instruments: lnfinc
------------------------------------------------------------------------------
```

Figure 3 Endogeneity Test

also maintain their reputation; when they find material misstatements, they hesitate to give an "unmodified opinion".

If taxpayers decide to acquire an independent audit from a higher-income-audit firm, they know that the firm will perform a "high-quality audit". In this case, the taxpayers would be less likely to perform an aggressive tax strategy (by lowering their income) because the "high-quality audit" would expose or find any material misstatement on their financial report. In this case, modifying the financial report is risky, as the AP would give a "bad" opinion on their audited financial statement.

To sum up, the audit firm's characteristic influences the taxpayer's tendency only through the quality of the audit services taxpayers give. The tendency of taxpayers to adopt an aggressive tax strategy is influenced by the quality of the audit, which is influenced by the PA firm's resources (income).

5. RESULT AND DISCUSSION

This paper has explained how ordinary linear regression may not provide unbiased estimation when the endogeneity problem is present.

The estimation, derived from OLS, shows a positive (and significant) correlation between the audit fee and the taxpayer's tendency to perform aggressive strategy. If the audit fee increases by 1%, the taxpayer's tendency will also increase by 0.097%. However, most literature on this topic does not support this result. The literature argues that the correlation between them should be significantly negative (Jihene & Moiz, 2019; Langli & Willekens, 2017; Kanagaretnam et al., 2016) or non-significantly correlated (Pratiwi et al., 2019; Subagiastra et al., 2017). Therefore, we suspect this difference is caused by unconfoundedness in the model.

Meanwhile, the impact turns negative when we apply the instrument variable technique, although it derives a larger standard error. The more qualified the audit service chosen by taxpayers, the less likely they are to engage in aggressive tax behavior. This statistical result is in line with the literature in the discussion.

Regarding interpreting the result, the IV estimator has a slightly different narrative. Unlike the OLS estimator, which can be interpreted as average treatment effect (ATE)/Average Treatment Effect on the Treated (ATT), the IV estimator can only be interpreted as local average treatment effect (LATE).

	lnetr	lnetr
lnfee	0.097**	-0.079**
	(0.012)	(0.023)
revenuetasset	0.000	0.001
	(0.000)	(0.001)
roa	0.000**	-0.006
	(0.000)	(0.004)
lntaset	-0.005	0.052**
	(0.007)	(0.012)
assettoequityratio	0.000**	0.000**
	(0.000)	(0.000)
_cons	-3.417**	-1.747**
	(0.159)	(0.218)
R2	0.01	-0.01
N	15,955	11,686

* p<0.05; ** p<0.01

Figure 4 Result from OLS (left) and 2SLS (right)

Here is the explanation of ATT from OLS estimation. Let us assume that there are two perfectly identical companies, PT A and PT B. PT A decides to acquire the qualified audit service $\mathbf{E(Y_a|\tau_i = 1)}$ while PT B is not $\mathbf{E(Y_b|\tau_i = 0)}$. By applying OLS, the estimator would be calculated as follows:

$$\begin{aligned}\beta &= E(Y_a|\tau_i = 1) - E(Y_b|\tau_i = 0)\\ &= E(Y_a|\tau_i = 1) - E(Y_b|\tau_i = 1) + E(Y_b|\tau_i = 1) - E(Y_b|\tau_i = 0)\\ &= E(Y_a - Y_b|\tau_i = 1) + E(Y_b|\tau_i = 1) - E(Y_b|\tau_i = 0)\end{aligned} \quad (6)$$

From the calculation above, the $\mathbf{E(Y_a - Y_b|\tau_i = 1)}$, can be interpreted as Average Treatment Effect on the Treated (ATT). Meanwhile, $\mathbf{E(Y_b|\tau_i = 1) - E(Y_b|\tau_i = 0)}$ reflects type 1 selection bias, which can be assumed to be 0 as our data used the whole population in 2021. Thus, the OLS estimator in our model can be interpreted

as if the audit fee increases by 1%, the taxpayer's tendency would also increase by 0.097%. This impact is exclusively present in taxpayers randomly selected from the population audited in 2021.

As we explained above, the OLS estimator might contain an unobservable variable affecting the estimation result. The unobservable makes OLS estimation not be unbiased. Therefore, this paper will use IV to anticipate this heterogeneity problem. The presence of unobservable makes IV estimation not produce ATT, but at least it remains representative of a localized/specific type of taxpayers. Thus, the interpretation from the IV estimation would be that if the audit fee increased by 1% percentage point, the taxpayer's tendency would also decrease by 0.079% percentage point. This impact is exclusively on taxpayers, who determine an audit firm's size as a factor in selecting an independent auditor. Since the IV only represents localized/specific types of taxpayers, the IV technique normally uses fewer observations than OLS.

The result from this IV estimator can be used as an insight by the DGT in determining which taxpayers may be more likely to perform an aggressive tax strategy. If ETR is determined to be a taxpayer's risk factor, then the impact of the audit fee on the risk factor (for taxpayers with an audited financial report) would be ETR*0.079AuditFee. Using risk profiling, DGT could determine the best approach to the tax investigation program. As a result, the investigation can be more efficient while benefiting DGT's interests.

6. LIMITATIONS AND FUTURE RESEARCH

Data availability is one of the major concerns in this paper. The paper uses 22,519 data from audited financial reports, which the public accountant submitted to the PPPK Ministry of Finance. This data is also combined with information about public accountant firm's financial reports. From Figure 4, we see that OLS regression only uses 15,955 data from 22,519 audited financial reports that we have. Perhaps it is caused by missing data presence during merging and regression.

Although the IV estimator solves the endogeneity problem, it has a higher error standard. Some treatments can be used to minimize it. Research may combine IV with matching estimators. A matching approach such as psmatch (propensity-score matching) can help balance the covariates ($\mathbf{C_i}$). Combining an instrument variable and a matching estimator can help the researcher decrease the standard error.

The IV technique applies to ex-post data, covering both participants and non-participants. This technique suits this paper because it only needs one year of data/information about an audited financial report. In this research, a time constraint makes collecting and preparing the multi-year dataset inapplicable. Future research could also use the multi-year dataset and perform fixed effects to produce a more robust estimator. Both matching and fixed effects can also be combined with IV to increase robustness.

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