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THE IMPACT EVALUATION OF THE DETAILED SPATIAL PLANNING (DSP) ON ECONOMIC DEVELOPMENT OF THE DISTRICTS IN INDONESIA

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Abstract: This study explores the impact of the spatial planning policy reforms, which is the promulgation of Detailed Spatial Planning (DSP) by local government on the economic performance of the districts in Indonesia. It is assumed that districts with the DSP enaction may have better opportunities to achieve higher GDP per capita as the policy reform may give the assurance for the permitted use of space for investors, and thus can contribute to the ease of doing business and investment. The study employs the Fix Effect Difference in Difference (FE DID) Method to explore the impacts of the DSP promulgation. The result suggests that the DSP promulgation may have positive impacts on the economic outcomes of districts in Indonesia, but not significant. A plausible argument is that it is a transition period, thus Indonesia still may face challenges in the implementation of the policy reform. However, heterogeneity analysis shows that in the Kabupaten districts, the DSP promulgation has significant positive impacts on economic development, while the impact is insignificant in the Kota subgroups. This may indicate that the Kabupaten districts may have higher marginal impacts than the Kota districts due to some factors such as land availability.

Keywords: *Economic Growth, Institutional Reform, the Spatial Planning*

1. Introduction

Institutions play an essential role in enhancing economic performance by shaping human behavior. Institutions are rules and norms which shape and constrain human behavior consisting of formal and informal institutions (North, 1994). There are two kinds of institutions, which are inclusive and exclusive. An inclusive institution is a good institution characterized by encouraging property rights and competition and thus may contribute to higher economic performance. On the other hand, the extractive institutions may prevent property rights and impede the competitive environment and thus may hamper economic performances (Acemoglu et al., 2005).

Business regulation, which is one of the formal institutional forms, may affect economic performance by determining the competitive environment in a country. When the business rules are characterized by complicated procedures, such institutions may hamper the competition since there are barriers to entry for the companies, which may affect the productivity of economic activities which in turn influences economic growth (Armstrong & Westland, 2016). In contrast, when the business rules can support the lower barriers for firms to enter, the competitive environment may appear, and thus may encourage the productivity

level required to boost economic growth. Therefore, it is important to set business regulations that can prevent high barriers for firms to enter.

Based on some empirical research, the reforms in business rules may contribute to enhancing economic development. According to Haidar (2012), the changes in the business regulation setting can enhance the GDP of countries as a proxy of economic growth. This research covered 172 countries utilizes 2006 to 2010 using the World Bank data. Another study also has the same finding. Djankov et al. (2002) find that business regulation with high quality may have positive impacts on the economic growth of the economies. The data covered in this study is 135 countries from the World Bank.

Business regulation in Indonesia is still relatively poor so reforms are required. Based on the OECD (2018), Indonesia is in 144th rank for starting a business indicator. Historically, when Indonesia had a financial crisis in the 1990s, the regulatory setting was poor and thus contribute to low economic performance. After the crisis, the economy grew slowly and has a stagnant trend. Furthermore, according to Steer (2006), during the decentralization era since 2001, the local government of Indonesia imposed complex business licenses as they perceive the license to start the business as the fund resources. Thus, since 2002 there was a significantly increasing number of license rules. This may reflect a high transaction cost, as the firms should spend a lot of time managing the license since there was limited access for firms to gain information about the procedures of starting a business.

Indonesia has made efforts to enhance the quality of business regulation by implementing the one-stop-shop (OSS) Program. according to Steer (2006), the OSS program applied since 2006 aims to simplify the license procedures and thus can boost efficiency. Indonesia has promulgated the Regulation of the President of the Republic of Indonesia Number 97 of 2014 (Regulation 9/2014) which enforces local governments to have the OSS Program to simplify the license procedures.

Furthermore, to enhance the effectiveness of the OSS Program, Indonesia has also enacted Government Regulation of the Republic of Indonesia Number 15 in the year 2010, which obliges the district government to enact the region regulation for Detailed Spatial Planning (DSP). The DSP may further simplify the license procedures since the investor does not have to visit the local government office to gain permission to use space.

This study investigates the effects of spatial policy reforms, which is a form of institutional reforms, on the economic development of the districts in Indonesia. The analysis result suggests that the promulgation of the DSP does not affect the economic performance of the Indonesian districts. This may occur as the period of the analysis is 2014-2018 and thus it is probably the transition period for Indonesia. However, in the longer period, different results may occur. According to Siourounis (cited in Zhao et al., 2021), differences in the effects of institutional reforms may exist in the short run and long run period. However, according to heterogeneity analysis between the Kabupaten dan Kota districts, there are differences in the effects of the DSP promulgation between the Kabupaten and Kota districts, where in the Kabupaten districts the impact is positive and significant, while in the Kota districts, the effects of the DSP Promulgation on the economic outcomes is not significant.

The paper will be divided into some sections. First, it presents the role of institutions and business regulation as one of the formal institutions form on economic development, the business regulation and the reforms in Indonesia, and the promulgation of the DSP in districts in Indonesia, Second, it will describe the data and methods utilized in the paper. Third, it will discuss the analysis of the results, and the final section will show the conclusion of the study.

2. Research Method

This study covers district samples that consist of 500 districts in Indonesia. It utilizes the data of the district number which enacted the regional regulation for the DSP in 2015-2018 (Table 1), which are seven local governments in 2015, nine local governments in 2016, seven local governments in 2017, and seven local governments in 2018. For remaining 470 districts, have not stipulated the DSP.

Table 1.
The districts Detailed Spatial Planning, 2014-2018

Districts with DSP Promulgation	**30**
2015	7
2016	9
2017	7
2018	7
Districts with no DSP Promulgation	**470**
Total	**500**

Source: The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, 2019

There are some data resources utilized in this study (Table 2). The data resources consist of the data of The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, The Indonesia Statistics (BPS), The Finance Ministry, and the World Bank data, i.e. the Indonesia Database for Policy and Economic Research (INDO-DAPOER). The data period covered in this study is from 2014 until 2018.

Table 2.
The data sources

Variables	Data Sources
GDP per capita by Districts	Indonesia Statistics
The Regional Regulation for the DSP	The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency
Transfer Payment per capita by Districts	The Finance Ministry
Average years of schooling by Districts	Indonesia Statistics
Electricity Access by Districts	The World Bank

The study uses the GDP per capita as the outcome variable. In general, there are positive trends in economic development in the districts of Indonesia during the 2014-2018 period. There was a minor number of districts that have a downturn trend in economic outcomes, which is 5 of 500 districts. Also, the study utilizes two kinds of interest variables. First, the treatment variable, which is districts that have spatial planning reform, i.e. the promulgation of the Detailed Spatial Districts (DSP). Second, the control variable, i.e. the local government before they promulgate the DSP.

Additionally, there are three covariates included in the study, which are Transfer Payment from the national to local government (Per per-capita), Average years of schooling,

and Electricity Access. According to Dorodjatoen (2018), in general, the studies investigating the districts' economic performance in Indonesia find that determinant factors affecting economic growth may include transfer payments to the district's government from the national government, education, and infrastructure. Therefore, this study uses three covariates, which are Transfer Payment from the national to local government (Per-capita), Average Years of Schooling, and Electricity Access. The summary statistics for the variables utilized in the study are presented in Table 3, and Table 4 shows the coefficient of correlation between all variables covered in this study.

Table 3.
Summary Statistics

Variables	Number of Observation	Mean	Standard Deviation	Minimum	Maximum
GDP per Capita by Districts	2534	17.05	0.65	15.16	19.78
Transfer Payment per Capita by Districts	2534	15.01	0.78	12.95	19.63
Average Years of Schooling by Districts	2540	12.55	1.43	2.16	17.26
Electricity Access by Districts	2516	92.77	15.71	0.00	100.00

Table 4.
Correlation between variables

	GDP per capita	DSP	Payment transfer per capita	Average year of schooling	Electricity Access
GDP per Capita of Districts	1.000				
DSP	0.040	1.000			
Transfer Payment per Capita	0.058	-0.054	1.0000		
Average years of schooling	0.287	0.092	-0.261	1.0000	
Electricity Access	0.357	0.050	-0.421	0.633	1.0000

The study will test the hypothesis that the DSP promulgation may contribute to higher economic growth proxied by the GDP per capita by districts. The method employed a fixed effect generalized difference-in-differences (FE DID) model with two specifications. First, the FE DID model with no covariates, which include the treatment variable, the time, and cluster factors. Second, the FE DID model with covariates which include the treatment variable, covariates, and the time and cluster factors. The two model specifications are as follows.

$$Y_{it} = \alpha + \tau T_{it} + \eta_i + t_t + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha + \tau T_{it} + \beta X_{it} + \eta_i + t_t + \varepsilon_{it} \quad (2)$$

Where Y denotes the independent variable, which is economic growth proxied by GDP per capita (in the log); T indicates a dummy variable, which is the DSP promulgation (1 for all years in which districts have promulgated the DSP, and 0 otherwise) as a treatment

variable in the study; ε is the error term, and α, τ, and β denotes the vector of unknown parameters.

In the FE DID Model, there is a crucial assumption to satisfy, which is the parallel trend assumption. This assumption requires that the trends in the pre-treatment outcomes of the treatment group should be the same even if the outcome levels are different from control groups. Wing et al. (2018) suggest three ways of testing the parallel trend assumption. First, the granger-type causality tests a bias of the current outcomes to determine the next alternative treatment. In this method, the model includes lead treatment variables (the first and second lag). If the estimated results for both variables are jointly significant, a parallel trend may then exist. Next, the group-specific linear trends are applied to explore the general trend of some periods and the linear trends of group-specific. If all the estimated results of this group-specific linear trend are jointly zero, the assumption may hold. Lastly, the covariate balance test develops a model for each covariate, i.e. the national to local government (Per per-capita), Expected years of schooling, and Electricity Access with the treatment variable, i.e. the DSP promulgation by the local government. When the covariates are balanced, a parallel trend may hold.

To select the best model, there are some steps applied in the research. First, the FE DID model which does not include covariates is run and the parallel trend assumption is tested. When the model can satisfy the assumption, the FE DID with covariates is then run and the standard error of the model is identified. If the standard error of the second model is lower, the parallel trend assumption testing should be tested. The second model should be chosen if the parallel trend holds, otherwise, the first model should be selected. But, when the FE DID without the covariates model as well as the FE DID with the covariates model cannot hold the parallel trend assumption, the alternative specification model should be determined.

The paper exercises the naïve method employed by the Ordinal Least Square (OLS) to compare both FE DID models i.e. with and without covariates, in terms of the coefficient estimation for the impacts of DSP Promulgation on economic performance. The model specification is as follows:

$$Y_{it} = \alpha + \tau T_{it} + \varepsilon_{it} \qquad (3)$$

Where Y indicates the independent variable, which is the economic performance used per-capita GDP indicator, α and τ denote the parameter coefficient estimation, and ε is the disturbance term. This naive model may have selection and heterogeneity biases as the treatment variable, i.e. the DSP enaction may correlate with the error terms (the factors exist in the disturbance terms). besides, there is no external validity for this naive model.

3. Results and Discussion

3.1. Results

The study exercises 3 models to estimate the impacts of the DSP promulgation, which may contribute to simplifying the business license, on the economic outcomes. These models are naïve models, the FE DID Model which does not have covariates and the FE DID Model which has covariates, with estimated data results as presented in Table 5. To prevent the possible correlation within clusters, the models use cluster standard errors. In the naïve model, there is just one variable i.e. treatment variable. On the other hand, the effects of fixed time and districts are included in the FE DID Models.

The naïve model suggests that the DSP promulgation may contribute to an increase in economic development, by about 0.153. This implies that the districts can have higher

economic growth by about 0.153 percent after the DSP is promulgated by regional regulation compared to before they enacted the DSP by regional regulation. However, this model may impose selection and heterogeneity bias problems since the DSP promulgation, as a treatment variable, may relate to factors that exist in the disturbance terms. therefore, the validity of the model is somewhat limited.

Table 5.
Spatial Planning Reforms (the DSP) and district GDP per capita

	Naive Model		**FE DID does not include covariates**		**FE DID-includes covariates**	
Outcomes Variable	Coef.	SE	Coef.	SE	Coef.	SE
DSP	0.153 *	(0.083)	0.014	(0.009)	0.013	(0.009)
Payment Transfer per Capita					0.051	(0.028)
Average years of schooling					0.005	(0.007)
Electricity Access					-0.0002	(0.0001)
_cons	17.043***	(0.013)	16.969***	(0.003)	16.177***	(0.007)
R^2	0.63		0.63		0.66	
Number of observations	2,534		2,534		2,534	

* p<0.1; ** p<0.05; *** p<0.01

Next, based on the FE DID Models both with and without covariates, there is also a positive impact of the DSP enaction on the economic outcomes, but not significant. Thus, there is a difference in significance estimates among the models. However, the validity of the FE DID Model is relatively higher than the Naïve model since the FE DID models include the time and cluster factors. The difference in results among models may show that there is an upward-biased estimation using the naive model. Thus, the tentative conclusion of the promulgation of the DSP may have no impact on the per-capita GDP.

In terms of the parallel trend assumption, Table 6 shows the test result for the assumption based on two FE DID Models. The FE DID Model which does not include covariates cannot satisfy the parallel trend assumption. For this model, the parallel trend is tested using two methods. First, according to the test results using the granger type causality test, the model can fulfill the parallel trend assumption. On the other hand, the Group-Specific Linear Trends test shows the reverse result, and thus the conclusion is that the parallel trend is not fulfilled.

Table 6.
Parallel trend assumption

FE DID – without covariates		FE DID – with covariates		
Granger-Type Causality Tests	Group-Specific Linear Trends	Granger-Type Causality Tests	Group-Specific Linear Trends	Covariate Balance Tests

Coefficients of lead treatment are jointly insignificant F (2, 507) = 2.29 Prob > F = 0.1025 The Model can satisfy the parallel trend assumption.	• Jointly test of all the group-specific linear trends coefficients are insignificant F (4, 507) = 1.0 10^{12} Prob > F = 0.0000 • The Model cannot satisfy the parallel trend assumption	Coefficients of lead treatment are jointly insignificant F (2, 504) = 0.72 Prob > F = 0.4851 The Model can satisfy the parallel trend assumption.	• Jointly test of all the group-specific linear trends coefficients are insignificant F (5, 507) = 2.0 10^{13} Prob > F = 0.0000 • The Model cannot satisfy the parallel trend assumption.	No covariates are statistically significant (unbalanced) The Model can satisfy the parallel trend assumption

Next, the FE DID Model also presents the same result for assumption satisfaction. The presence of a parallel trend is checked using the 3 methods. Using the granger type causality method, the parallel trend assumption holds as the coefficients of the lead treatment variables are not jointly significant. This suggests that current results have no impact on the DSP enaction by local government in the future. the Covariate Balance Tests also show that the parallel trend assumption holds since None covariates are statistically significant (unbalanced). However, based on the group-specific linear trends, the assumption is not satisfied as the joint test of group-specific linear trends is significant.

However, there is an additional analysis when the estimation results of the FE DID with covariates are compared to the FE DID with covariates and specific linear trends. First, based on the estimates in the FE DID models with covariates (with and without specific linear trends), the magnitude and significance of the coefficient of treatment variables are relatively the same. Therefore, this can indicate that the FE DID with covariates can be used in the study.

Table 7. FE DID without and with covariates and FE DID with covariates and Group Specific Linear Trend

	Without Covariates		With Covariates		With Covariates and Group specific linear trend	
Independent variable	Coef.	SE	Coef.	SE	Coef.	SE
DSP	0.014	(0.009)	0.013	(0.009)	0.013	(0.012)
Transfer Payment per Capita			0.051	(0.028)	0.041	(0.035)
Average year of schooling			0.005	(0.007)	-0.006	(0.013)
Electricity Access			-0.0002	(0.0001)	-0.0001	(0.0001)
Constant	16.969***	(0.003)	16.177***	(0.007)	34.681***	(3.559)
R^2	0.63		0.66		0.83	
N	2,534		2,534		2,513	

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

In this study, the exogenous assumption should also be checked to investigate whether the treatment variable, which is the institutional reforms in spatial planning policy, is endogenous. This is because the DSP enaction may depend on the decision of the local government. However, the utilization of the FE DID can prevent endogenous issues since the model can create a treatment variable as good as a random variable.

Next, Table 8 shows the heterogeneity analysis of the economic outcomes. The results suggest that there is a heterogeneous impact between the Kabupaten and Kota subgroups in terms of the impacts of the DSP promulgation on economic growth proxied by GDP per capita. In the Kabupaten districts, the DSP enaction may have a positive and significant contribution to the regional economic performance. In contrast, the impacts of the reform in the Kota subgroup are negative and insignificant. Therefore, there are differences in the impacts of the DSP promulgation on the economic development in the Kabupaten dan Kota districts.

Table 8.
Test of Heterogeneity on Independent Variable (GDP per capita of Districts in Indonesia)

	Kota		**Kabupaten**	
Independent Variable	Coef.	SE	Coef.	SE
DSP	-0.009	(0.024)	0.022***	(0.009)
_cons	17.329***	(0.004)	16.885***	(0.004)
R^2	0.83		0.60	
Number of observations	468		2,066	

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

3.2. Discussion

The study employs the FE DID Model which includes Covariates considering the results of the robustness checking. The analysis suggests that the DSP promulgation may have no impact on economic performance indicated by the GDP per capita of districts in Indonesia since the estimates of the treatment variable is positive but insignificant. This unexpected result may indicate that since the period covered in the analysis is relatively short, thus Indonesia may still be in the transition period. Therefore, the impacts of the DSP Promulgation should be explored in the longer term for the next study.

However, based on the heterogeneity analysis, there is a different impact between the Kota dan Kabupaten subgroups. The positive and significant impacts of the DSP on the economic development in the Kabupaten subgroup may show that there is a higher marginal impact when the DSP is promulgated in the Kabupaten than Kota districts. There are some possible reasons explaining the result, for example, the Kabupaten districts may have more potential land compared to Kota Subgroup. Thus, when the DSP is promulgated by the local government, it may give more opportunities and more assurance for investors to have an investment in the Kabupaten district, which in turn may contribute to better economic development. Meanwhile, in the Kota subgroups, land availability is already limited, and thus there is no significant effect on economic development for Kota Subgroup. Thus, investors are more interested to invest in Kabupaten compared to Kota subgroups as the Kabupaten subgroups may have more potential factors such as land availability.

4. Conclusion

The study has explored the contribution of the DSP promulgation on the economic development proxied by GDP per capita of districts in Indonesia utilizing the FE DID Model. The spatial planning reforms in the DSP enaction form may simplify the license procedures which can then enhance a favorable business setting, and thus contribute to a rise in regional economic development.

The study discovers that the DSP enaction may have insignificant impacts on per-capita GDP. This may occur due to the period covered in the analysis being somewhat short and thus indicating the transition period in Indonesia. Therefore, the analysis of impacts over a longer period should be conducted to assure the impact's magnitude and significance of the DSP Promulgation.

However, according to the heterogeneity analysis, there is a different impact between the Kota dan Kabupaten subgroups. The impacts of the DSP on economic performance are positive and significant for the Kabupaten districts, while in the Kota districts, the impacts are positive but not significant. These different results may be caused by the differences in potential factors between both districts, i.e. the Kabupaten dan Kota subgroups, such as land availability. The Kabupaten districts may still have more potential land compared to the Kota districts. Therefore, the DSP enaction which may give more assurance for investors to have more investment in the Kabupaten districts that have promulgated the DSP. This may then contribute to higher economic development in such districts.

However, the study still imposes some caveats. First, using the Group-specific linear trend test, the model cannot fulfill the parallel trend assumption. However, based on the comparison between FE DID which includes covariates, with and without unique code, in terms of the magnitude and significance of the estimates, which are relatively the same, it can be concluded that the model is still can be employed. Next, the estimated impacts of the DSP promulgation on economic performance are not significant when using both the Kabupaten dan Kota districts, and thus this unexpected result may require more arguments to explain why the result is unexpected.

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