RESEARCH ARTICLE

THE EFFECT OF GOVERNMENT FRAGMENTATION AND FISCAL DECENTRALIZATION ON ECONOMIC GROWTH IN INDONESIA

Aan Zulyanto[1], SutyastieSumitroRemi [2] , Bagdja Muljarijadi[3] , Rd. Muhamad Purnagunawan[4]

[1] University of Prof. Dr.Hazarin, SH Bengkulu
Jl.Jenderal A. Yani No.1 Kota Bengkulu, Indonesia
Email : aanzulyanto@unihaz.ac.id
[2] University of Padjadjaran
Jl. Dipati Ukur 35 Bandung, Indonesia
Email : tatiremi@gmail.com
[3] University of Padjadjaran
Jl. Dipati Ukur 35 Bandung, Indonesia
Email : tatiremi@gmail.com
[4] University of Padjadjaran
Jl. Dipati Ukur 35 Bandung, Indonesia
Email : tatiremi@gmail.com

Abstract : As with implementation of decentralization in Indonesia, the level of government fragmentation has increased rapidly. From 1999 to 2013, 220 new local goverments were formed, making territorial splits in Indonesia become one of the fastest and the largest in the world. However, the proliferation is driven more by political interests and thus inefficient. A number of evaluations showed the failures of the territorial splits policy in Indonesia. This study analyzed the effect of government fragmentation and fiscal decentralization on economic growth in Indonesia. The study uses panel data of 32 provinces in Indonesia from the period of 2001-2013. Using a fiscal decentralization model, this study does not find significant negative effect of fragmentation on economic growth. We still have a positive effect of fragmentation, as the previous literatures suggest that fragmentation brings about benefits for economic growth because it can promote competition and encourage government efficiency.The study also finds that fiscal decentralization has a significant positive effect on economic growth in Indonesia.

Keywords: Government Fragmentation· Fiscal Decentralization · Economic Growth

***JEL Classification*: H11. H72. H77**

1. Introduction

Decentralization has become a critical aspect of government reform and modernization in many countries because it promotes economic growth and democracy (Faust et all, 2008). Furthermore, countries of the world take enhancement of local government capacity as their top priority in their development policy and strengthening regional financial system (Veljanovski & Stojkov, 2013). The urge for decentralization is getting stronger with the emergence of the view that considers fiscal decentralization as “superior good”, where the needs for decentralization increase with rising revenue level (Tanzi, 2001; Laleona, Madrazo, dan Jano, 2010).

From the normative perspective, decentralization is believed to foster economic growth through efficiency and public sector allocation improvement (Tiebout, 1956; Oates, 1972; 2007). This notion is supported by the following arguments. Firstly, local governments are perceived to have a better position in public goods provisionbased on people'spreferences as local govermentsare more aware of what local communities want and needs than central governmentswhich implement uniform public goods(*one size fits all*) (Hayek, 1945; Tiebout, 1956; Oates 1972, 2007; Prud'Homme, 1995, Litvack, Junaidi dan Bird, 1998). Second, decentralization raises competition among local governments which can lead to efficient and innovative governance (Brennan and Buchanan, 1980). The government has always to find ways to produce and deliver better public services under limited resources, leading to productive efficiency (Thiessen, 2003; Sow and Razafimahef, 2015). Thirdly, decentralization promotes accountability and improves the quality of public services (Sow and Razafimahef, 2015).

Nevertheless, empirical findings on fiscal decentralization studies varied greatly. Some studies indicate that fiscal decentralization promotes economic growth (Malik dkk, 2006; Iimi, 2005; Lin dan Liu, 2000). However, the opposite results are found by Zhang dan Zou (1998) and Xie dll (1999), where in fact fiscal decentralization prevents economic growth. In their study, Woller and Phillips (1998) as well as Baskaran and Feld (2009) do not find relationships between both and conclude that decentralization has no effect on economic growth.

Contradictory empirical findings create a view about ambiguous effect in the relatinonship between fiscal decentralization and economic growth(Sonia, Pablo dan Jose, 2008; Laleona, Madrazoz, dan Janos, 2010).Lack of clarity or automatic relationship between fiscal decentralization and economic growth can make it difficult to come up with appropriate recommendations on how optimal decentralization is (Breuss dan Eller, 2004). Differences in empirical findings have encouraged decentralization enthusiasts to investigate more deeply the relationship between both. For instance, Thiessen (2003) and Akai et.al, (2007)use a quadratic model and confirm non-linear (*hump-shaped*) effect of fiscal decentralization on economic growth. Gemmell, Kneller and Sanz (2010) view congruity between expenditure and revenue decentralization and find that fiscal decentralization will stimulate economic growth in case congruity between both side of decentralization can be found. Meanwhile, Vazquez and Mcnab (2006) conclude that fiscal decentralization has an indirect effect on economic growth through inflation channel.Furthermore, Buser (2011) emphasize the role of institutions and find that fiscal decentralization can produce a higher per capita income and this effect is even greater if supported by the institutional quality.

The present study involves fragmented government structures to analyze such fiscal decentralization benefits. By definition, fragmentation refers to a conditionsindicated by the existence of numerous local government units either in absolute or relative term in a geographical area,standardized with population or area size. In contrast, a condition with the small number of local goverments, even in theextreme with only a single local government controlling the whole area, is identified as consolidated structures (Boyne, 1992).

The Tiebout'smodel (1956) and Leviathan's hypothesis (Brennan dan Buchannan, 1980) serve as basic argumentations for the benefit of fragmentation in creatingefficiency in governance and economic performance. Combination of competition among government units and fiscal mobility potentials are primary contributing factors for efficient and responsive governance. Leviathan's hypothesis suggests that fragmentation prevents revenue maximization or fiscal exploitation by local officials which can impede household and business (Grassmueckdan Shields, 2010). Competition among jurisdictions can be a driving force to ensure appropriate amount, quality, and costsof the community service demand. The structure of fragmentation, whereby there are more local governments, will provide greater oppurtunitiesto find the right services at the right prices (Oates 1999, Nelson and Poster, 1999; Hendrick, Jimenez and Lal, 2011). Moreover, fragmentation improves public access to more precise pricing information on a public service and a variety of service models (Schneider, 1986). Thus, fragmentation will create fiscal balance or fiscal equivalance and reduce fiscal illusion (Bish, 2001).

In Indonesia, decentralization is at the core of political and economic reform, and intended to attain overall economic and social growth.A new era of regional autonomy and effective fiscal decentralization commenced on 1 January 2001 after the government passed Law on Regional Autonomy No. 22 and 25 of 1999 which was subsequently revised through Law no. 32 of 2004 on local government and Law no. 33 of 2004 on Fiscal Balance between the central and local government. The implementation of fiscal decentralization is indicated by increased amountof fiscal transfers from the central government to the local governments in the form of fiscal equalization fund. In 2001 the amount was Rp 81,1 trillion and continued to increase, reachingRp477 trillion in 2014.

In conjunction with the decentralized policy, the level of fragmentation of local governments in Indonesia has also increased considerably due to territorial splits in a large quantity. During the period of 1999-2014 there were 223 new local governments, consisting of 8 provinces, 181 districts and 34 municipalities, so the total autonomous regions reached 542 regions by 2014, up to 70 percent more compared to 1999. Territorial splits in Indonesia is one of the largests and fastests in the world (Niazi, 2012; Firman, 2009). Nevertheless, it mostly seemsto be for political interests and inefficient from the economic and financial prespectives. The phenomena serve as a starting point for this study to discuss how governmentfragmentation and fiscal decentralization influence on economic growth in Indonesia.

2. Theoritical Background

2.1. Government Fragmentation

Fragmentation or consolidation structure, in essence, is related to government responsiveness toward public preference and efficiency in public goods provision. The classical theory of public goods identifies the presence of trade off between economies of scale and heteroginity costs. Policy makers, on the one hand are encountered with the option to gain economies of scale from centralized public goods provisions, where the average costs of goods provision will decline as production incrases, while on the other hand, welfare will rise when public goods provision is adjusted according to the preference of each resident(Musgrave, 1959;Oates 1972; Alesina and Spolaore,1997; Cantarero dan Perez, 2012; Vazquez, 2013). Another trade off is related to government accountability and administration costs. A government with a small structure is more accountable, but the number of units will incrase and consequently pushes administration costs up. In contrast, a government with a large structure reduces administration costs but less accountable (Reino dan Vazquez, 2013; Padovano, 2013). Larger jurisdictions will reduce political accountability, a relative capability of the residents to influence government decision (Seabright, 1996). Some empirical studies confirm a trade offon public goods provision (Alesina and Spolaore,1997; Alesina, 2003; Cantarero dan Perez, 2012; Vazquez, 2013).

Under such conditions, Boyne (1992) stresses the importance of theapropritegovernance structure because it will ensure availability of public services that meet public's preferences at appropriate cost. Boyne (1992) identifies this structure into three different effects including tehnical, competitive, and political effect. Technical effects include economies of scale and scope. If economies of scale are a vital part of public goods provision, the consolidated structureis more desirable than the fragmented. However, if public's preference is preferred, the fragmented structure becomes a good option. In addition, competitive effects also require the fragmented structure to make local governments more responsive and efficient. Furthermore, political effects require fragmentation to better public's control and monitoring for the local government.

Nelson and Poster (1999) classify this distinction to the polycentrist view which supports fragmentation and centrist view whichadvocates consolidation. Opponents of fragmentation argue that public goods and services substantially have economies of scale and scope, making them most efficient to operate in large population, compared to fragmentation that cannot take advantage of this because of the limitations in production scale. The consolidated governance structureis more desirable for capturing economies of scalesand agglomeration potential, overcoming externalities, promoting fiscal balance and more efficient coordination, and land-use or facilityplanning (Grassmueck and Shields, 2010; Oakerson 1999; Nelson and Foster 1999). Moreover, consolidation reduces bureaucratic overlaps, inconsistent and confusing rules,declines transaction costs and ultimately improves governance efficiency (Grassmueck and Shields, 2010; Oakerson, 1999; Nelson and Foster, 1999). The consolidated structure can take greater advantage of human, material, financial resources and offer a wider range of services to local communities and businesses than the fragmented systems in small units and under limited resources (Grassmueck and Shields, 2010).

Nevertheless, proponents of fragmentation contend that a system with larger local administrative units provides more plausibility to find appropriateness between services and taxes which have to pay (Oates, 1999; Nelson dan Poster, 1999; Hendrick, Jimenez dan Lal, 2011). Meanwhile, the consolidated structure raises transaction costs with increasing variety of public policy preferences. With more constituents, services and goods provision must consider various interests, so that each interest group needs to adapt to each other. Furthermore, in a larger government size, communities will be further away from the government offices and subsequently this reduces the ability to control accountability of their elected officials (Grassmueck and Shields, 2010). Oates (1999) asserts that competition not only ensures efficient public services, but also reflects public preferences, and for the unique preference, people may not gain benefits from centralized production efficiency. Thus, in this perspective, the benefits of fragmentation for economy is likely more accepted so that many countries have local governments on a small scale in order to build closeness to the public preferences.

With regard to the effect of fragmentation on economic growth or government efficiency, based on his study, Schenider (1986) concludes that fragmentation encourages efficiency and prevents local governments from unnecessary growth. Likewise, Grassmueck and Martin Shields (2010) suggest that a region with fragmented governments has relatively strong economic performance.

Nevertheless, Dolan (1990) and Goodman (2015) find a significant positive relationship between fragmentation and government costs, indicating inefficiency so that it can impede economic growth. In addition, Nelson and Foster (1999)find no evidence that fragmented government structures will promote economic growth. Higher fragmentation will actually lower the growth of income per capita. Dowding&Mergoupis (2003) find no evidence of a positive effect of fragmentation on efficiency. Smaller administrative units do not necessarily lead to higher levels of public satisfaction than the larger.

2.2. Measurements of fiscal decentralization and structure fragmentation

Fiscal decentralization inherentlyconsists of such different dimensionsthat providing a single measure which covers all dimensions can be a challenge. Combining the various aspects of decentralization into a single measure is also unfavorable because the weighting is generally unable to capture all relevant contexts and eliminates much of the necessary information, thereby reducing the ability to explain the effects of decentralization (Vazquez and Mcnab, 2006; Vazquez and Tomoveef, 2010). The difference in the fiscal decentralization dimensions not only has major implications for the theoretical perspective, but also for empirical studies (Liu, Vazquez and Tomoveef, 2013).

Most studies investigating fiscal decentralization use the ratio of local government's revenue or expenditure to the ratio of the central government's revenue or expenditure as a proxy for fiscal decentralization (revenue and expenditure side), without seeing whether the local goverments really have freedom to perform functions or authority on this revenue (Golem dan Perovic, 2014; Laleona, Madrazo dan Jano, 2010; Vazquez dan Mcnab, 2006). Such a measure is actually less accurate to capture decentralization phenomena, because in many countries, fiscal decentralization is executed exclusively through the incrase in grant transfers and revenue sharing instead of transfer of power in expenditure and taxation. This measure tends to fail to make the right distinction between administrative and substantive decentralization since high revenue and expenditure sharing does not always represent high autonomy (Thornton, 2007). This measure may also not reflect the autonomy of local governments in making decisions (Davoodi and Zou, 1998). Buser (2011) explains that autonomy is crucial in the design of decentralization and if local government autonomy is absent, the actual decentralization may not exist. The results of the empirical literatures consistently find positive effect of regional autonomy on economic growth.

In this context, Laleona, Madrazo and Jano (2010) suggest the importance of elaborating the size of fiscal decentralization in order to reflect the true fiscal autonomy of a local government. Golem and Perovic (2014)use the Stegarescu indicator to effectively measure local tax autonomy. The results of their study found that fiscal decentralization can avoid local governments from unnecessary growth in expenditure. As a consequence, fiscal decentralization creates competition among local governments, erodes fiscal illusion and improves overall government transparency, thereby reducing the potential for wasteful and excessive spendings.

Like decentralization, fragmentation cannot be easily operationalized (Dowding & Mergoupis, 2003; Liu, Vazquez dan Timovee, 2013). Nevertheless, in general, the literatures tend to use relative measurements, in which a number of local governments in a geograpichal area are standardized with population or area size (Nelson, 1992). Therefore, the more local government, the more fragmented the government structure. On the contrary, the smaller the number of local governments, the less fragmentedor the more consolidated government structure (Boyne 1992). Fragmentation is also applicable both vertically for the relationship among different level of administration, and horizontally for the relationship among the same level of the administrative structure (Boyne, 1992).

Boyne (1992) introduces*concentration*, which relates to distribution of local governmental fiscal and responsibilities in a geographical area. A consentrated structure refers to a condition where most functions and funds are located in a small number of authorities, while the condition in which most functions and responsibilities are distributed widely to a number of administrative units is called dispersion. A geograpichal area may contain many units (fragmented), but responsibilities and funds can only be controlled by a small portion of units (concentrated). However, Grassmueck dan Shields (2010) still use fiscal fragmentation to explain *fiscal concentration*, using *Hirschman-Herfindahl Index* (HHI) and *Metropolitan Power Diffusion Index* (MPDI) measurement. According to Hendrick, Jimenez and Lal (2011), *Hirschman-Herfindahl Index* (HHI) is a more comprensive fragmentation measurement.

Basically, HHI is a measurement which is used to see market power of companies using share of the companies in an industry. By the same analogy, HHI can be used to see the power of government by looking at the local government's market share to the total "market" of local government in a region (Grassmueck and Shields, 2010). HHI is formulated as follows:

$$\mathrm{HHI}_i = \sum_{j=1}^{n} \left(\frac{E_{ij}}{TE_i} \right)^2$$

where, $E_{ij}$is local government's expenditure *j* in region *i*, and *TEi*is the total of expenditure in regions *i*.The value of HHI ranges from 0 which indicates a very fragmented structure and 1 which indicates a veryconsolidated structure. The increase in the number of local governments will make the HHI smaller, which reflects increasing fragmentation. Thus the fragmentation index will change with the increase in the number of local governments.

Besides HHI, fragmentation can also be measured using Metropolitan Power Diffusion Index (MPDI) which is introduced Miller (2002). Contrary to HHI, MPDI is calculated through square root of the ratio of local government's total revenue to expenditure, as the following formula:

$$\mathrm{MPDI}_i = \sum_{j=1}^{n} \left(\frac{E_{ij}}{TE_i} \right)^{\frac{1}{2}}$$

MPDI values range from 1 to infinity, where 1 indicates very high consolidation rate or very low fragmentation. Conversely, the higher MPDI values indicate high level of fragmentation.

With regard to the above measurements, the study also used various measures of fiscal decentralization; (i) revenue indicator, refers to ratio of local of government's revenue to central government's revenues, (ii) expenditure indicator, refers to ratio of local of government's expenditure to central government's expenditures, and (iii) autonomy indicator or local-own sources, refers to ratio autonomy revenue of total local government reveue. Furthermore, the fragmentation uses two measurements, relative fragmentation that is standardized with population size and fiscal fragmentation as measured by HHI. One of the reasons for standardization using population size is that based on Reino and Vazquez (2013), the size of the population has stronger correlation with regional fragmentation than with the geographical area.

2.3. Fiscal Decentralization on Economic Growth Model

There are two approaches which are often used in several studies examining the effect of fiscal decentralization on economic growth (Bodman and Ford, 2006; Laleona, Madrazo and Jano, 2010; Buser 2011). The first formal model was introduced by Davoodi and Zou (1998). They lay the foundations of analysis based on the theoretical framework of the Barro's endogenous growth model, in which the production function consists of a variety of inputs including private and government expenditures. This perspective has been adopted by several studies, including; Zhang and Zou (1998); Xie, Zou and Davoodi (1999), Zhang and Zou (2001), Akai and Sakata (2002), Akai, Nishimura and Sakata (2004), Iimi (2005), and Jin and Zou (2005). Meanwhile, other studies, such as Lin and Liu (2000), Vazquez and Mcnab (2003), Thieben (2003); and Bodman and Ford (2006) use theoretical frameworks of Mankiw, Romer, and Weil (1992) based on the Augmented Solow's exogenous economic growth model. In this approach, fiscal decentralization is assumed to enter into the growth process through its impact on the total factor productivity or technology (Buser, 2011). This model recognizes that exogenous parameters reflect not only economic technology aspects but also measures of decentralized public sector performance. The level of technology does not merely reflect technology itself but differences in endowment and institutional resources of a country or region over time, as well as various other characteristics (Laleona, Madrazo and Jano, 2010).

In principal, there is nothing more superior between the both approaches (Buser, 2011). However, the current literatures tend to adapt and be developed according to the augmented Solow growth model. Thus, the literatures become more comprehensive as a result of increasing alternative theories, for example through institutional approach (Buser, 2011) or political freedom (Iimi, 2005). These theoriesare not contrary to the Solow approach, but in fact as a complement or addition which focuses on how the policy environment or other aspects can influenceefficient availability and allocation of the Solow' input model (Buser, 2011).

This study employs a formal model which is introduced by Zhang and Zou (1998) which was also followed by other studies such as Akai and Sakata (2002), Iimi (2005), and Jin and Zou (2005). Furthermore, fragmentation is added as one of the explanatory variables in the model to capture the role of government structure in economic growth, as well as to see its effect on supporting the benefits of fiscal decentralization. Fiscaldecentralization variables consist of different measurements, including the ratio of revenue, expenditure, and localown-source revenue (FD_Autonomy). Various measures of fiscal decentralization are used due to difficulty to obtain a single measure of fiscal decentralization which can cover all dimensions (Rodríguez-Pose and Krøijer, 2009; Vazquez &Mcnab, 2006; Vazquez and Tomoveef, 2010)

Meanwhile, control variables which are involved in this study followed *Levine-Renelt conditioning Variabel.* Levine and Renelt (1992) analyze the variables which are included in many studies on economic growth. The results show that several variables are consistently relevant, including initial level of real GDP per capita, the rate of population growth, human capital, and investment ratio to GDP. In the economic development literatures (Barro, 1996; Levine and Renelt 1992; Mankiw, Romer, and Weil 1992), these control variableshave a very strong relationship with economic performance. Some studies which examine the relationship of fiscal decentralization and economic growth used the same control variables, e.g., Davoodi and Zou (1998), Woller and Phillip (1998), Thiessen (2003), Iimi (2005), and Rodríguez-Pose and Krøijer 2009). In addition, some studies added other variables as controls such as openness (Jin and Zou, 2005; Vacquez and McNab, 2006; Akai and Sakata, 2007) and inflation (Jin and Zou, 2005; Patonov, 2013).

3. Data and Method of Analysis

The present study involvespanel data of 32 provinces in Indonesia from 2001 to 2013. DKI Jakarta is excluded from the data, because the districts / municipalities in the DKI province do not hold autonomous right, but become an integral part in the provincial government. Regional revenue and expenditure policies in the DKI province are still under the authority of the governor. Unlike other disticts and municipalities in Indonesia, Mayors and Regents in the DKI province are not directly elected by the community residents, but directly stipulated by the Governor. Without this autonomy, regional characteristics as well as the goals and objectives for fragmentation and decentralization studies cannot be fulfilled. In the previous studies, Fitrani, Hofman& Kaiser (2005) and Qibthiyyah (2008) also excluded this province. Indeed, Imansyah and Martinez-Vazquez (2010) only involved 25 provinces from 33 provinces in Indonesia. Furthermore, the province of North Kalimantan was not involved because it was formed in 2013, so the available data was inadequate.

$$GROWTH_{IT} = \beta_0 + \beta_1 GROWTH_{it-1} + B_2 FRAG_{IT} + \beta_3 FD_{it} + \beta_4 MYS_{it} + \beta_5 PTR_{it} + \beta_6 Pop_{it} + \beta_7 INV_{it} + \beta_8 Inflation_{it} + \beta_9 Openness_{it} + \mu_{it} \ldots\ldots\ldots (1)$$

where;

GROWTH = Real Growth of Per Capita GDRP
FD = Fiscal Decentralization
FRAG = Fragmentation
MYS = Mean Years of Schooling
PTR = Pupil Teacher Ratio
Pop = Population Growth
Inv = Investment/GDRPRatio (%)
Inflation = Inflation rate (%)
Openness = Export+Import/GDRP Ratio

We use three measurements of fiscal decentralization (FD_Revenue, FD_Expenditure and FD_Autonomy) and two measurement of the government fragmentation, relative fragmentation standardized with population size and fiscal dispersion computed through the Hirscman-Herfindal Index (HHI). To obtain the same sign, we use a 1 minus HHI calculation, as used by Alesina (2004), so higher HHI values indicate higher fragmentation level.

We use also instrumental regression (IV) on fragmentation (model 7) as alternative model. It apply several variables which have been identified as determinants of fragmentation in the previous studies (Reino dan Vazquez, 2013; Fitrani, Hofman & Kaiser, 2005).Then we have the determinant model of government fragmentation as follow (Zulyanto,et al 2018):

$$Frag_{it} = \alpha_0 + \alpha_1 Density_{it} + \alpha_2 Ethnic_{it} + \alpha_3 GDRPcap_{it} + \alpha_4 Gini_{it} + \alpha_5 Majority_{it} + \alpha_6 Election_{it} + e_{it}$$

Frag refers to relative fragmentation, Density refers to the level of Population Density (km2), Ethnic is Ethnic Fractionalization refers to Alesina (2004), GDRPcap refers income per capita, Ginirefers income inequality, Majority refers the percentage of votes gained by winning parties in province legislative election, and Election is a dummy that refers to the period when the direct election for the head of local government starts, 1 ;2005 and after, 0 : before 2005)

4. Empirical Result

Tabel 1. Regression Result : The Effect of Government Fragmentation and Fiscal Decentralization on Economic Growth

Dependent Variable: Real Growth of Per Capita GDRP

VARIABEL	Model (1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.437 (3.644)	5.599* (3.184)	5.560* (3.118)	4.323* (4.088)	5.453 (4.185)	5.555 (4.178)	3.772 (5.073)
Growth(-1)	0.164*** (0.045)	0.160*** (0.045)	0.162*** (0.046)	0.155*** (0.041)	0.151*** (0.042)	0.153*** (0.043)	0.157** (0.072)
HHI	4.257* (3.181)	0.925 (2.879)	1.181 (2.825)				
Frag				2.676* (1.424)	2.000 (1.230)	2.165* (1.236)	2.352 (5.102)
FD_Autonomy	0.108** (0.049)			0.104** (0.047)			0.102** (0.041)
FD_Revenue		0.603 (0.492)			0.514 (0.463)		
FD_Expenditure			0.248 (0.429)			0.189 (0.420)	
MYS	-0.150 (0.440)	-0.297 (0.396)	-0.290 (0.397)	-0.188* (0.454)	-0.265 (0.427)	-0.258 (0.431)	-0.197 (0.479)
PTR	-0.129* (0.070)	-0.128* (0.072)	-0.123* (0.070)	-0.130* (0.072)	-0.126* (0.071)	-0.121* (0.070)	-0.130** (0.055)
POP_Growth	-0.645*** (0.201)	-0.659*** (0.207)	-0.656*** (0.201)	-0.694*** (0.210)	-0.669*** (0.211)	-0.668*** (0.209)	-0.693*** (0.225)
Investment	0.044** (0.017)	0.046** (0.018)	0.047** (0.018)	0.053** (0.020)	0.051** (0.020)	0.053*** (0.020)	0.052** (0.023)
INFLATION	-0.030 (0.064)	-0.028 (0.067)	-0.025 (0.066)	-0.025 (0.064)	-0.026 (0.066)	-0.024 (0.066)	-0.025 (0.052)
OPENNES	-0.007 (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.006 (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.006 (0.005)
R Square	0.42	0.41	0.41	0.42	0.41	0.41	0.70
F Value	24.49	45.76	65.49	27.80	53.02	71.37	1472.43
Prob> F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N of Observasi	372	372	372	372	372	372	372
Province Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prob Hausman Test	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*Note : Robust standard errors in parentheses, *p <0.1;**p < 0.05; ***p <0.01*

4.1. Effect of Government Fragmentation

We found a weak significant positive effects of government fragmentation on economic growth, especially on model 1, 4 and 6. This means that the increase in the number of local governments exerts a real influence in stimulating economic growth in Indonesia. It confirms fragmentationproponents who states that fragmentation can support government efficiency and drive economic performance as suggested by the Tiebout's model (1956) and the Leviathan Hypothesis (Brennan and Buchannan, 1980). Boyne (1992) asserts that fragmentation is the appropriate structure to create public service which can fulfill the public preference due to either competition effect which enables more responsive or efficient local govermentsor political effect which allow people to control and monitortheir local officials. These results also correspond to Grassmueck and Martin Shields (2010) which indicated that regions with fragmented governments have relatively strong economic performance. Furthermore, fragmentation promotes more efficient local governments and prevents unnecessary spendings (Schenider, 1986).

The study denotes the absence of significant negative effect of fragmentation on economic growth in Indonesia. In fact, ample supporting evaluations and qualitative analyses show various weaknesses and problems arisen from the territorial split policy in Indonesia, indicating its failure and its detrimental effect on economy in general (*Bappenas*, 2008; Ratnawati, 2010; *Kemendagri*, 2011; Imron, 2011, Jaweng, 2014; Tryatmoko, 2014).

The Ministry of National Development Planning (*Bappenas*) and UNDP (2008) have identified that economic growth in the splitted regions is lower than in its previously united regions. Evaluation by the Ministry of Home Affairs (MOHA, 2011) indicated that mostnew local governmentshave not showed satisfactory performance. In addition, Decentralization Support Facility (DSF) reveals that the costs for territorial split outweigh the benefits it can provide (Ratnawati, 2010).Lewis (2017) concludesthat territorial split has no effect on the educational environment and instead but has an adverse impact on the provision of clean water and sanitation service. Moreover, according to Tryatmoko (2014), among the newly autonomus regions, the number of the developing regions is far fewer than the underdeveloping, so it can be concluded that the territorial split policy produces counterproductive results towards its objecitves. Formation of new administrative regions in Indonesia seems highly political and generally inefficient from the financial and economic perspective (Fitrani, Hofman and Kaiser, 2005; Vazquez, 2011; Niazi, 2012). Imron (2011) suggests that the demands for territorial splits in Indonesia are closely related to rent seeking motives, where local elites and politicians try to regain power through the creation of new administrative regions. All too often, territorial split becomes merely elite's agenda, both the regional and the central elites, who seek for its economic and political benefits.

As a response on the evalution, the central government has imposed moratorium on creating new autonomus regions. If the moratorium is withdrawn, the number of new autonomus regions will grow rapidly, given the fact that to date there have been 237 proposals on new autonomus regions admitted by the Ministry of Home affairs (*MOHA*, 2017). Furthermore, the central government looks hesitate to continue the territorial split policy. This is indicated by delay in completion and enactment of government regulation (*PP*) on Regional Planning and Grand Design of Regional Planning (*Desertada*), as follow-up of Law 23/2014 on Local Government. Indeed, this government regulation is urgently required to serve as direction and foundation for the territorial split policy in Indonesia, including for determination of the ideal number of local governments.

Nonetheless, though most evaluation and argumentation disagrees on the territorial split policy, this study does not show a significant negative effect of fragmentation on economic growth in Indonesia. This result consistently reveals positive effect of fragmentation. Acccording to Granado, Vazquez, danSimatupang (2008), the more fragmented system createsyardstick competitionamong local govermentsand expenditure spillover effects. The progress and services of jurisdictions can be a reference and benchmark for local communities to evaluate performance of their local officials, and eventually will motivate local governments to perform more excellently. The positive effect of fragmentation, however, is reduced by several weaknesses in the process of formation of new administrative regions in Indonesia, which for further context result in unsatisfactory performance of the newly created local governments. Therefore, basically the fragmentation policy in Indonesia has been fairly consistent with the public economic literatureswhich identify the benefits of fragmentation for the regional economy and the results will look more satisfactory if creation of new admistrative regions is performedproperly, according to the objective criteria and standardized procedures.

The international experience also shows small size of local authorities and high levels of fragmentation in many countries. For instance, the average population size of local goverments in such countries as Australia, France, Germany, Hungary, Italy, Russia Spain, Switzerland, Thailand and Ukraine are under 10,000. Thus, high fragmentation is presumably common in highly decentralized developed countries. In the case of Indonesia, despite an increase in local government fragmentation through the formation of new administrative regions, the average population size of all local governments in Indonesia is relatively substantial, with 488,000 in 2004, and the average population of newly established regional governments is 214,000 in the same year. In this context, Vazquez (2011) argues that based on international experience and evidences from the most rigoriousscientific research, territorial splits will not be a serious threat to the overall efficiency of Indonesia's decentralized system.

4.2. Effect of Fiscal Decentralization

Fiscal decentralization shows positive effect of fiscal decentralization on economic growth. Of the three fiscal decentralization measures, Autonomy indicator (FD_Autonomy), refers to the ratio of total own-resourcesto the total local governmnet revenue shows a strong significant effect, while two other fiscal decentralization indicators are not significant. Nevertheless, these results can be trusted, given the fact that the Autonomy Indicator is an accurate measure to explain fiscal decentralization in Indonesia.In practice, the fiscal decentralization system in Indonesia is expenditure oriented instead of reveneu based. The implementation of decentralization manifests on transfer of power in expenditure responsibilities, while control over most revenue is conducted by the central govermenment. This situation is unccommon in other developing countries which implement decentralization in their public sectors (Lewis and Oosterman, 2009; Firman, 2003).

The implementation of fiscal decentralization in Indonesian is mainly conducted trough fiscal transfers from the central to the local government in form of fiscal equalization funds, the amount of which is likely to increase from year to year. Meanwhile, contribution of the Local Own-source Revenueto the total amount of Local Government revenue remains limited. In such decentralized fiscal system, the use of the regional and central revenue and expenditure ratio as fiscal decentralization proxy cannot accurately capture fiscal decentralization phenomena because it does not indicate whether local governments have power to execute such function and authority (Golem danPerovic, 2014; Laleona, MadrazodanJano, 2010; Vazquez danMcnab, 2006). In addition, this measure may not reflect local governments' autonomy to make decisions (Davoodi andZou, 1998). Buser (2011) argues that autonomy is crucial in the decentralization design and without local governments' autonomy, decentralization may not exist. Hence, the autonomyratio to the total regional revenues is more accurate and it is evident that this measure can explain the significant positive relationship between fiscal decentralization and economic growth. This indicates that the ratio of independence or autonomy has become an important aspect in the implementation of fiscal decentralization in Indonesia, where the higher degree of independence and autonomy ratio lead to higher economic growth.

With its progress, the central government is also aware of the weaknesses of such decentralized system. To reduce regional dependence on fiscal transfers from the center, the government expands local government authority in regional taxation in a gradual manner through Law number 28/2009 on Local Taxes and Levies. This law allows expansion of taxation and levy authority by extending the local tax base and granting authority to the local government to set tax rates. The expansion of the authority can widen the existing tax base, localize the centralized tax and add new taxes.

This significant positive result is in line with such earlier studies on fiscal decentralization in Indonesia as a study by Wibowo (2008) and Aisyah (2008), which found empirical evidences on benefits of fiscal decentralization to promote economic growth. In addition, this result supports previous research by Rochana (2010) which signifies congruity between revenue and expenditure decentralization in order to gain more benefits for economic growth in Indonesia. More decentralized taxation system is required to improve the impact of fiscal decentralization on economic growth in Indonesia (Wibowo, 2008). Furthermore, this study verifies studies by Malik,et.al (2006), Iimi (2005), Lin and Liu (2000), and Pantonov (2013) which showed posivelysignifican relationship between both variables.

4.3. Control Variables

The estimation result on the control variables showssignthat supports our hyphotesis. Population growth (POP) has a significant negative relationship direction with regional economic growth. Thus, higher population growth will depress economic growth. The negative impact of population growth on economic growth is also found by Woller and Phillip (1998), Baskaran and Feld (2009), and Iimi (2005). The larger population, the smaller amount of capital per worker and this will result in low output per worker. On the other side, with larger population, output will be distributed to more people, resulting limited output received by each resident).

Investment also has a significant positiveimpact on economic growth. This result is consistent with such previous studies as Zhang and Zou (1998), Jin and Zou (2005), Baskaran and Feld (2009), and Yushkov (2015). Meanwhile, the estimationresult showed negative direction or negative sign of inflation on economic growth, but its size is not confirmed to be significant. Basically, inflation can bring about benefits for economic growth because high inflation stimulates more physical investment, but at the same time inflation increase transaction cost of consumption activity and investment which may decline economic growth (Zang dan Zou, 1998). Therefore, negative direction of inflation on regional economic growth remains in tune with the initial view that price stability which is reflected by low inflation is more supportive for economic growth.We doalso not find a positive effect opennes. This is because regional import-export data in Indonesia does not reflect the true potential because the economic calculation is not in the producing regions, but rather the regions that have import-export infrastructure such as ports.

Meanwhile, Mean years of Shooling (MYS) have no significant effect. Some studies also cannot find significant effect of quantitive measure of education as human capital proxy (Woller dan Phillips, 1998; Thiessen, 2003). The level of education may not a good proxy todescribe such quality of regional human capital that some studies used different measure for estimation (Akai, Nishimura, Sakata, 2007; Akai dan Sakata, 2002). As an alternalive, the other study used Pupil and Teacher Ratio in Senior High School (PTR) which reflects quality of education. Lower pupil and teacher ratio implies better education and can stimulate economic growth (GII, 2014).. However, this does not mean that declining pupil and teacher ratio can be a strategic policy and priority. For a decade, PTR in Indonesia has been one of the lowests in the world because teacher recruitement outnumbers student admission in all degrees (OECD and ADB, 2015). Strategies and policies ought to address teacher allocation and distribution which to date is not evenly distributed. In some regions the number of teachers has exceeded the needs, while in some it still far below.

4.4. Specific Region

We also conducted estimation with inclusion of specific regions based on 6 economic corridors in Indonesia, considering uneven pattern in the increase in the number of local governments in Indonesia.

From 2001 to 2013, the number of local governments in Java increased very slowy, only 4.6 %, while in Papua_Maluku it increased significantly to 186,4 %. Likewise, the same incrase occurs in the other corridors, Sumatera (49,5 %), Bali_ Nusa Tenggara (36,7%), Kalimantan (41%), and Sulawesi (69,6 %). The dummy variables interaction results of both main variables with specific regions are shown in the following table;

Table2.The Results of specific regions for the effect of fragmentation and fiscal decentralization on economic growth in Indonesia

Dependent Variable: Real Growth of Per Capita GDRP

VARIABEL	Coef.	Robust Std. Err.	t – statistic
CONSTANT	2.441327	5.097988	0.48
GROWTH (-1)	0.142185	0.045	3.16 ***
Frag	-0.51068	0.916904	-0.56
FD_Autonomy	0.019659	0.063142	0.31
HC_RLS	-0.13788	0.579901	-0.24
HC_PTRSMA1	-0.11877	0.066145	-1.8 **
POP_Growth	-0.66293	0.183101	-3.62 ***
INVESTASI	0.063616	0.021149	3.01 ***
INFLASI	-0.02701	0.068567	-0.39
FD_Autonomy_Jawa	0.12514	0.058304	2.15 **
FD_Autonomy_BaliNT	0.015435	0.07053	0.22
FD_Autonomy_Kalimantan	0.172547	0.086179	2.00 **
FD_Autonomy_Sulawesi	0.134807	0.107217	1.26
FD_Autonomy_PapuaMaluku	-0.23009	0.248629	-0.93
FRAG_Jawa	53.38032	29.06405	1.84 *
FRAG_BaliNT	-2.30296	2.154064	-1.07
FRAG_Kalimantan	7.52578	3.785465	1.99 **
FRAG_Sulawesi	1.359193	3.451608	0.39
FRAG_PapuaMaluku	6.966319	2.404792	2.9 ***
R-squared	0.4484		
F value	897.98		
Prob > F	0.0000		
Number of Obs	373		
Province Fixed Effect	Yes		
Year fixed effect	Yes		

Note: **p* <0.1;***p* < 0.05; ****p* <0.01, *Sumatera as a Bencmark*

The estimation result of the economic growth model which includes the specific regions or regional characteristics show that fiscal decentralization have a significant positive effect in Java and Kalimantan. Similarly, fiscal decentralization was found to have a positive effect in Bali_NT, Sulawesi, and the benchmark region of Sumatra. However, the effect is not significant. While in Papua_Maluku, fiscal decentralization has an insignificant negative effect on economic growth. Thus, overall, the increase in fiscal decentralization brings benefits to economic growth in almost all regions of Indonesia, except Papua_Maluku.

This result can be explained by the fact that during the period of analysis, the Autonomy indicator ratio in Papua_Maluku is very low and always dominates the lowest positions. On the contrary, the FD_Autonomyratio of Provinces in Java are high and always occupy the highest positions in term the level of the FD_Autonomyratio among Indonesin provinces.

Fragmentationhasalso a significant positive effect in Java, Kalimantan and Papua_Maluku. While in Sulawesi, fragmentation also has a positive effect, but its impact on economic growth is not significant. For the Bali_NT region, the fragmentation has no significant negative effect. The positive result of fragmentation in Java is inseparable from the characteristics of territorial splits in Java, where most of the new autonomous regions are formed to improve such administrative area that administratively and institutionally is better prepared than formation of autonomous regions through other channels. In addition, various facilities and supporting infrastructures in Java has been sufficiently developed, so the territorial split policy is believed to create new administrative areas that really provide benefitsfor overall economy. This result is also in line with the evaluation of the Director General of Ministry of Home Affairs (MOHA, 2011), where the study finds that the newly autonomous local government in Java have the best performance compared to the regions in the other islands.

Meanwhile, regardless several weaknesses and problems which occur in the territorial splits in Papua_Maluku, the estimation result still showed significant positiveeffect of fragmentation on economic growth. This estimation result is suprising, given significantly different characteristics of fragmentation in Java and Papua_Maluku. In addition, most of newlyautonomuslocal governments in Papua-Maluku are not formed for administrative status improvement, meaning that they are in fact new governments which have to prepare for their own infrastructure from the beginning. Nevertheless, formation of DOB in Papua_Maluku can indeed bring their local communities closer to their government than before the split, because geographically the areas of Papua in particular are extremily wide with small population size. Hence, fragmentation allows more efficient allocation since it suits people’s preference.

The fragmentation coefficient of Java is much higher than the other areas. Large population size in Java can explain why this analysis produces a very high fragmentation coefficient. On average, the population in a district or municipality government reaches 1.24 million people, a very large number compared to the other regions such as Papua-Maluku (104.8 thousand people), or Sulawesi (233.5 thousand people). This indicates that the local governments in the Java regions have heavy workloads on public services. Thus, territorial splits in Java will have a significant positive impact on economic growth with a remarkable coefficient.

5. *Conclusion*

In line with the existing literatures, the increasing of fragmentation has a significant positive effect on regional economic growth in Indonesia. This positive impact is indeed found in the areas which have different territorial split characteristics such as the Java and Papua_Maluku. Fragmentation can produce competition and encourage efficient local governments which results in higher ecomonicgrowth. This result resolves any doubts on the benefits of territorial splitson Indonesia's economy although many evalutions showed poor performance of the newly formed local governments, particularly due to political reasons behind its formation which can be inefficient from the financial and economic perspective. Additionally, this result ascertain the view that based on international experiences and the most robust scientific research, territorial splits will not trigger a serious threat to the overall efficiency of Indonesia's decentralized system of governance. Nonetheless, various weaknesses and problems in the process of formation of administrative regions in Indonesia should still be solved to gain more benefits of government fragmentation to foster regional economic growth.

Meanwhile, fiscal decentralization has a significant positive impact on economic growth in Indonesia. The FD_Autonomyratiocontributes significantly, though both other conventional indicators havenot been confirmed to be significant. This result assured that the FD_Autonomyratio which reflects that autonomy is a better fiscal decentralization measure than other measures in terms of fiscal decentralization in Indonesia as it is more expenditure than revenue oriented, in which decentralization is implemented in terms of authority provision on expenditure, while control over most revenues is conducted by the central government. Therefore, transfer of larger responsibility for taxation management to local governments is urgently required to obtain more benefits of fiscal decentralization in Indonesia. This result is also shown from the negative coefficient of estimation results of fiscal decentralization in the Papua_Maluku, where the FD_Autonomyratio of the provinces in Papua and Maluku is very small and consistently dominates the lowest position.

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