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Fiscal Decentralisation and Economic Growth across Provinces: New Evidence from Vietnam Using a Novel Measurement and Approach

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Abstract: Fiscal decentralisation has attracted great attention from governments, practitioners, and international institutions with the aims of enhancing economic growth in the last 5 decades. However, satisfactorily measuring the degree of fiscal decentralisation across countries has appeared to be problematic. In addition, the link between fiscal decentralisation and economic growth across provinces has largely been ignored, in particular for emerging markets such as Vietnam. As such, this study is conducted to determine the extent of fiscal decentralisation and to assess its impact on economic growth based on data from all 63 provinces of Vietnam in the period after the 2008 financial crisis. Instead of using traditional measures of fiscal decentralisation, the study uses the Fiscal Decentralisation Index (FDI) together with the two most important and inseparable components of the index, those being (i) the Fiscal Importance (FI) and (ii) the Fiscal Autonomy (FA). The Difference Generalised Method of Moments (DGMM) is utilised to correct for the potential problem of endogeneity between fiscal decentralisation and economic growth. Results show that the two indicators (FI and FDI) have a negative impact while FA has a positive impact on economic growth across provinces. On the ground of these empirical findings, implications for specific policies have emerged for Vietnam and other emerging markets on the extent of fiscal decentralisation, and its major determinants, which positively support economic growth in the future.

Keywords: fiscal autonomy; fiscal decentralisation; fiscal importance; DGMM; Vietnam

JEL Classification: C33; O47; H72

1. Introduction

A decision regarding fiscal division has never been a purely economic decision. The relationship between economic growth and fiscal decentralisation is always a pertinent matter to different actors in the economy. Many theoretical and quantitative studies seeking to understand, evaluate and quantify growth effect of the fiscal decentralisation have been conducted (Lin and Liu 2000; Oates 1972; Thiessen 2005; Thornton 2007; Woller and Phillips 1998; Zhang and Zou 1998).

Distinguished from other studies, Vo (2010, 2019) and Vo et al. (2019) argue that the theories on fiscal decentralisation can be presented and summarised on two main aspects: (i) Fiscal Autonomy (FA) and (ii) Fiscal Importance (FI). On that basis, the author has developed the Fiscal Decentralisation Index (FDI) and applied it to different countries. In this study, for the first time, the FDI is adopted and fully applied on a provincial level in the context of Vietnam. As such, fiscal decentralisation

by provincial governments will be more thoroughly evaluated through the FDI that reflects Fiscal Autonomy and Fiscal Importance.

In this study, we focus on whether increasing fiscal decentralisation will help or hinder provincial economic growth in Vietnam. Few studies on fiscal decentralisation are conducted in Vietnam due to difficulties in gathering data for quantitative research (Nguyen and Anwar 2011). Moreover, when assessing the extent of fiscal decentralisation in provincial governments, most of the previous studies focus on calculating the ratio of provincial revenue and provincial expenditure over total fiscal revenue and total fiscal expenditure, respectively. This assessment, though simple, is unable to shed light on the most fundamental features of the fiscal decentralisation process. As such, we employ the framework of Vo (2010) in order to clarify the growth effect of fiscal decentralisation in the context of Vietnam.

According to reports from Vietnam's Ministry of Finance (MOF), in 2015, Vietnam's public debt level was at 61.30% Gross Domestic Product (GDP). The fiscal deficit was around 5.00% GDP. In the composition of Vietnam's public debt, the government's debt has always accounted for a large percentage compared to provincial debts. The evidence shows that most of the resources for investment and development are held by the Ministries, and then partially allocated to the provinces.

Currently, only 13 out of 63 provinces in Vietnam achieve fiscal balance. Ho Chi Minh City (HCMC), despite being an economic powerhouse, still has difficulty in balancing its budget. On the other hand, many provinces and cities still rely on provisions from the central government. As a result, fiscal decentralisation reforms have become an urgent problem to the government in the process of public re-investment. However, fiscal decentralisation, the transfer of budget responsibilities from the central government to the provincial government, should follow a roadmap with specific programs and plans and be carefully assessed.

Our study significantly contributes to policy influences as well as to the current literature of fiscal decentralisation. First, although the link between fiscal decentralisation and economic growth is critical, few studies have been conducted in Vietnam. For example, Vo (2009b) compared the level of fiscal decentralisation in Vietnam to other Asian countries. The study focused on a macroeconomics level of fiscal decentralisation and its potential impact to economic growth for the case of Vietnam. Su et al. (2014) examined the effect of fiscal policies on the sustainability of economic growth at a provincial level in Vietnam, but their focus was on the long-run relationship between the two key variables with a very crude measurement of fiscal decentralisation. Our study is distinct and different from previous studies. First, a more appropriate measure of fiscal decentralisation is utilised in this study. This measure of fiscal decentralisation takes into account both major aspects of fiscal decentralisation including (i) fiscal autonomy and (ii) fiscal importance of subnational governments. Second, we attempt to empirically investigate the relationship between fiscal decentralisation and economic growth in Vietnam based on an appropriate econometrics approach. Based on important findings from this study, we can offer proper policies and recommendations for the appropriate extent of the fiscal decentralisation not only for Vietnam's Governments but also for other developing countries. Third, and the first of its kind in Vietnam, we utilize a panel of Vietnam provinces for the analysis which is in contrast to another study which was conducted by Nguyen (2009), who used the cross-sectional data of all provinces in Vietnam. An obvious advantage of panel data is not only taking such heterogeneity explicitly into account by controlling for individual variances, but also utilizing more information and less collinearity among the selected variables, more degrees of freedom, and more estimation efficiency (Gujarati and Porter 2009). As such, our study provides additional and important empirical evidence on the link between fiscal policy and economic growth.

Following this introduction, the paper is constructed as follows: The literature review is examined in Section 2. Section 3 introduce the fiscal decentralisation and its measurement in previous studies while Section 4 discusses the research methodology. Section 5 presents empirical results and discussions, followed by conclusions and policy recommendations in Section 6.

2. Literature Review

2.1. Theoretical Background

Besides empirical research, many scholars assess the effect that fiscal decentralisation has on economic growth. Fiscal decentralisation can affect economic growth in two different directions. Firstly, fiscal decentralisation can lead to economic growth due to the public spending aspect. Secondly, fiscal decentralisation can cause a destabilisation of the macroeconomics, meaning a negative impact on economic growth. Thirdly, the impact of fiscal decentralisation on economic growth differs between developed and developing countries, specifically a positive impact in developed countries but a negative one in developing countries. The reason is that in developing countries, the provincial government lacks management capability when decentralised, leading to budget leaks or wasteful and inefficient public investments.

Oates (1993) argues that public spending on infrastructure and social elements has a positive effect on provincial economic development as the local government better understands the features of local population as well as their needs, thus distributing public resources more efficiently than the central government. Similarly, Zhang and Zou (1998) argue that the local government has more advantages in providing public services locally than the central government. As a result, the decentralisation of revenue sources and spending responsibilities to the provincial government is a way to improve the efficiency of public sector investment, reducing fiscal deficits and helping to develop the economy.

Vo (2010) presents an assessment of the main channels through which fiscal decentralisation will have a positive impact on the local economy. Firstly, fiscal decentralisation brings efficiency in distributing resources. This tends to ensure that local preferences will be met with minimum expenses, as the relatively more accessible local government, compared to the central government, helps to reduce the costs of providing public goods and services. Secondly, competition among provincial governments will increase when there is decentralisation—the pressure of re-selecting provincial leadership will motivate higher productivity and reduce careless spending, thus growing the local economy. Since the size of each provincial government is smaller than that of the state, it can lead to an optimal scale of education, medical services and infrastructure provision, trimming administrative expenses and raising efficiency. Thirdly, fiscal decentralisation induces economic growth by reducing corruption. The extent of corruption is often related to bad management, impeding economic growth by draining government revenue and increasing wasteful spending.

On the other hand, there are opposing theoretical views on the impact of fiscal decentralisation on economic growth. According to Prud'Homme (1995) and Tanzi and Schuknech (1996), given the assumptions that fiscal decentralisation matches spending responsibilities and that the provincial government lacks capability and accountability, fiscal decentralisation can have a negative effect on economic growth. Prud'Homme (1995) and Tanzi and Schuknech (1996) argue that the provincial government cannot be efficient in delivering public goods and services on a national level due to the economies of scale. Fiscal decentralisation incurs the risks of corruption and self-interests at the provincial level as the power of authority lies with the provincial leadership.

2.2. Empirical Studies in Foreign Countries

There are several empirical studies on the relationship between fiscal decentralisation and economic growth in different countries. Most utilise panel data of different provinces of one country or of across countries. China is a representative case study on this relationship from a provincial angle. Zhang and Zou (1998) used panel data of 28 provinces of China in the 1986—1992 period, concluding that the extent of fiscal decentralisation affects economic growth negatively. On the other hand, Lin and Liu (2000) discovered the positive effect of fiscal decentralisation on growth by using panel data of Chinese provincial governments from 1970–1993. As such, these studies covering different periods of time appeared to report significantly different results. Moreover, these two studies were interested in the economic reform in China in 1978. While Zhang and Zou (1998) excluded the

period with major economic reform in China in the data utilised in their analysis, Lin and Liu (2000) utilised the longest possible period of data. However, Lin and Liu (2000) did not take into account any technique in order to exclude the potential impact of the economic reform on the growth effect of fiscal decentralisation. As such, systematic shocks in a long time period may possibly bias the empirical results when the major events are not satisfactorily controlled for.

In Romania, Adrian and Petronela (2015) conducted research on the relationship between fiscal autonomy and provincial development at a district level in the 2008–2011 period. An increase in provincial fiscal autonomy tends to increase the extent of development in that province. From these results, it can be implied that that the higher the extent of provincial fiscal autonomy, the higher the capability of provincial public authorities in meeting the needs of local communities, hence raising local economic growth.

National panel data are also extensively used in other research. Martinez-Vazquez and McNab (2006) use panel data from 66 developed and developing countries between 1997 and 2002. The Ordinary Least Squares (OLS) technique is employed to analyse the relationship between fiscal decentralisation, macroeconomic stability and economic growth. The authors concluded that fiscal decentralisation in developed countries has a negative impact on economic growth while in developing countries, the impact is unclear.

Ezcurra and Rodríguez-Pose (2013) used panel data from 21 Organisation for Economic Cooperation and Development (OECD) countries in Central and Eastern Europe between 1990 and 2005. Based on OLS regression results, the study concluded that fiscal decentralisation negatively affects economic growth. Similar results were found in a study by Baskaran and Feld (2013) in 23 OECD countries between 1975 and 2008 based on a fixed effect model.

2.3. Studies in Vietnam

Some studies on fiscal decentralisation have been recently conducted in Vietnam. Nguyen (2009), based on the endogenous economic growth theory, the fiscal theory, and the relationship model between economic growth and fiscal decentralisation, determined a relationship between fiscal decentralisation and economic growth in 64 provinces of Vietnam in two different time periods, 1997–2001 and 2002–2007.

Another study by Su et al. (2014), based on the endogenous growth model, used panel data from 62 provinces between 2000 and 2011 and utilised the Pooled Mean Group (PMG) and Difference Generalized Method of Moments (DGMM) technique by Arellano and Bond (1991) to empirically analyse the relationship between fiscal policies and economic growth in Vietnam. The study puts forward the following conclusions: (i) Fiscal decentralisation and economic growth are positively correlated in the long term, however, when the economy detracts from the long-term equilibrium, government efforts in adjusting fiscal policies have little effectiveness, (ii) Revenue decentralisation is positively correlated with economic growth in the long term, while expenditure decentralisation is negatively correlated with economic growth, and (iii) Regular expenditure on education and training, scientific research, environment and medical services, positively affects economic growth, while investment spending has a negative impact. Su et al. (2014) discussed various aspects of fiscal policies, however, they estimated fiscal decentralisation as a simple ratio of provincial fiscal expenditure or revenue over total fiscal expenditure or revenue. Nevertheless, it is argued that they focused on the growth effect of fiscal policy instead of a growth effect of fiscal decentralisation.

Vo (2009b) looked into the status of fiscal decentralisation in Vietnam based on lessons from other Asian countries. The study points out that the degree of fiscal autonomy of provincial governments in Vietnam is the lowest among comparable Association of Southeast Asian Nations (ASEAN) countries (Indonesia, Philippines and Thailand) and China. If the government of Vietnam wants to reform fiscal decentralisation to improve provincial fiscal autonomy, factors that can help to boost fiscal decentralisation include allowing provincial governments to set appropriate fees in the local context and lowering the tax remittance rate to the central government. Although Vo (2009a) did a great comparison of fiscal decentralisation between Vietnam and other Asian countries using a strong

foundation of theories and historical fiscal data, he did not make further steps to identify the influence of fiscal decentralisation to economic growth in his paper using a quantitative approach.

3. Fiscal Decentralisation and Measurement

3.1. Fiscal Decentralisation

Fiscal decentralisation, also known as financial decentralisation, is the transfer of partial power from the upper government to lower tiers of the government. This is part of public sector reforms, creating a competitive environment for different levels of government in providing optimal public goods and services to the society and stimulating economic growth (Bird et al. 1993; Liu et al. 2017; Martinez-Vazquez et al. 2016).

Fiscal decentralisation is understood as the process of shifting rights and responsibilities from the central government to the provincial government or to the private sector. Fiscal decentralisation is concerned with the distribution of public resources between the central and provincial government, focusing on the two main issues that are the division of revenue sources and spending responsibilities (Woller and Phillips 1998). Fiscal decentralisation can also be defined as the delegation of rights, responsibilities and interests between different levels of government in budgetary management and execution.

3.2. Measurements of Fiscal Decentralisation

There are various measurements of fiscal decentralisation in empirical research, based on two main indicators, (i) expenditure ratio and (ii) revenue ratio. Each author has his own assessment on the extent of decentralisation and the features of each country or region in order to construct a measurement of fiscal decentralisation (Rodriguez-Pose and Krøijer 2009; Rodríguez-Pose et al. 2009).

A number of previous studies have measured the extent of fiscal decentralisation from a spending angle (Law et al. 2014; Rodríguez-Pose et al. 2009; Zhang and Zou 1998). Additional spending financed by the central government for assigned programmes and missions is deducted from total expenditure by the provincial government. As a result, total fiscal spending is equal to total spending by provincial governments after deducting additional spending made by the central government to the provincial government. The Expenditure Ratio (ER) is calculated as follows:

$$ER = \frac{Total\ spending\ by\ provincial\ government}{Total\ fiscal\ spending}$$

Other scholars measure fiscal decentralisation from a revenue angle (Lin and Liu 2000; Thornton 2007). The revenue ratio is calculated as the total revenue by the provincial government over the total fiscal revenue, in which total provincial revenue includes the revenue that the province receives in full and the portion of revenue between the provincial and central government after deducting additional provisions from central budget. The Revenue Ratio (RR) is calculated as follows:

$$RR = \frac{Total\ revenue\ by\ provincial\ government}{Total\ fiscal\ revenue}$$

The closer ER and RR get to 1, the higher the extent of revenue decentralisation.

In a different approach, Vo (2008, 2009a) developed the Fiscal Decentralisation Index (FDI), which comprises Fiscal Autonomy (FA) and Fiscal Importance (FI). First, fiscal autonomy is the transfer of taxing powers and assignment of responsibilities for the delivery of public goods and services. It is

affected by regulations regarding fiscal transfers between the central and provincial government as well as provincial borrowings (Vo 2008, 2009a). Fiscal autonomy is calculated as follows:

$$FA = \frac{\sum_{i=1}^{p} OSR_i}{\sum_{i=1}^{p} E_i}$$

In which: OSR_i is the own-sourced revenue and E_i is the own-sourced expenditure of the province i, and p is the number of provinces.

The formula implies that the value of FA is within the (0,1) range, with a minimum value of 0 and a maximum value of 1. If FA is equal to 1, the province has sufficient budgetary revenue to match its budgetary spending, reflecting a high level of autonomy and independence from the central budget, allowing the province to be proactive and innovative in growing its economy. Conversely, if FA is low or close to 0, the province is almost entirely dependent on the central budget as its own revenue cannot cover its spending.

Secondly, fiscal importance is the relative significance of fiscal activities undertaken by the province compared to those by the state. Provincial fiscal autonomy implies that by decentralisation regulations, the provincial government can balance its revenue sources by managing its tax bases in order to finance the expenses incurred in delivering public goods and services. In Vo (2008, 2009a), public expenditure representing fiscal activities is calculated as follows:

$$FI = \frac{\sum_{i=1}^{p} E_i}{TE}$$

In this formula, FI is the fiscal importance of province i, TE is the total public sector expenditure by all levels of government in the country, while E_i is the public expenditure incurred by the province i. The value of FI is within the (0,1) range. The closer FI gets to 1, the higher the percentage of the total fiscal spending by the country accounted for by the public spending of the province, reflecting the significant standing of the province. Conversely, if FI gets close to 0, the public spending by the province is very low relative to the country, implying a minor role in national economic development.

Combining the two aforementioned indicators, Vo (2008, 2009a) proposed the Fiscal Decentralisation Index (FDI), calculated as follows:

$$\text{FDI} = \sqrt{FA \times FI} = \sqrt{\frac{\sum_{1}^{p} OSR_i}{\sum_{1}^{p} E_i} \times \frac{\sum_{1}^{p} E_i}{TE}}$$

The FDI of the provincial government is capped at unity (1.0). Accordingly, there are 4 degrees of FDI measurement:

- *Perfect fiscal decentralisation*: FDI = 1
- *Relative fiscal decentralisation*: 0.5 < FDI < 1
- *Relative fiscal centralisation*: 0 < FDI < 0.5
- *Perfect fiscal centralisation*: FDI = 0

4. Research Methodology and Data

4.1. Research Model and Data

The research applies the endogenous growth model to empirically study the impact of fiscal decentralisation on provincial economic growth. The regression equation is as follows:

$$LnY_{it} = \beta_0 + \beta_1 LnY_{it-1} + \beta_2\, PC_{it} + + \beta_3 CON_{it} + e_{it}$$

In which: i and t denote data from province i (i = 1, 2, . . . , 63) in year t (t = 2008, . . . , 2013).

Economic growth is measured as the log of provincial GDP per capita: LnY_{it} is a function of the lagged variable LnY_{it-1}, PC_{it} is the degree of fiscal decentralisation and CON_{it} are the control variables. Details of the variables utilised in this study are carefully presented in Table A1 in the Appendix A. According to Vo (2008, 2009a), the degree of fiscal decentralisation is measured by the following three indicators: (i) Fiscal Autonomy (FA), (ii) Fiscal Importance (FI), and (iii) Fiscal Decentralisation Index (FDI). The selected control variables are (i) investment capital in the province, (ii) labour force growth rate, (iii) inflation rate of the province, and (iv) trade openness. Table 1 summarises the definition of variables used in previous studies.

Table 1. Summary of variables used in the study.

No.	Variable	Definition	Study	Expectation
Dependent variable				
1	*Y*	GDP per capita		
Fiscal Decentralisation (PC) includes				
2	*FA*	Fiscal autonomy	Vo (2008, 2009a)	+
3	*FI*	Fiscal importance	Vo (2008, 2009a)	+
4	*FDI*	Fiscal decentralisation index	Vo (2008, 2009a)	+
Control Variables (CON) includes				
5	*POP*	Labour force growth rate	Zhang and Zou (1998)	+
6	*INF*	Inflation rate	Hanif et al. (2014), Zhang and Zou (1998)	−
7	*CAP*	Investment capital in the province	Zhang and Zou (1998)	+
8	*OP*	Trade openness	Zhang and Zou (1998)	+

Based on mixed findings from Zhang and Zou (1998) and Lin and Liu (2000), we consider that including two extremes of the world economy (the global financial crisis in 2007 and the world recession in 2014) can possibly affect the macroeconomic fundamentals in Vietnam. As such, in order to consider the effects arising from these potential influences, we reasonably consider that it is appropriate to conduct the analysis covering the period from 2008 to 2013. In addition, we note that historical data on public finances at the provincial level are very limited in Vietnam in terms of availability. As such, the data set used for the research are the balanced panel data of 63 provinces of Vietnam within the six years from 2008 to 2013 with 378 observations. The data are sourced from Ministry of Finance (MOF), General Statistics Office (GSO), and Annual Abstract of Statistics on provinces of Vietnam.

On the basis of relevant theories and empirical results on fiscal decentralisation and economic growth from other previous studies, we provide the following expectations, as indicated in Table 1.

4.2. Regression Methodology

Although different econometric methods have been employed to study the relationship between fiscal decentralisation and provincial economic growth, in this research, the authors used the Difference Generalized Method of Moments (DGMM) by Arellano and Bond (1991). The DGMM method helps to solve several problems. Firstly, as the variables in the model can be considered endogenous, panel data regression on the relationship between fiscal decentralisation and economic growth can occur in two directions, from the independent variables to the dependent variables or vice versa. The regression of these variables can lead to a correlation with the error term, which means there exists bias coefficients. Secondly, fixed effect potentially involves characteristics of unobserved factors and errors of presented variables. Thirdly, the introduction of the lagged variable in the equation will lead to autocorrelation. Fourthly, panel data used in the study has a short time period (short T) and a large number of panel members (large N).

5. Results and Discussions

The sample is formed from data collection of 63 provinces of Vietnam from 2008 to 2013, with 378 observations. Table 2 depicts the descriptive statistics. Figure 1 shows the degree of fiscal autonomy, Ha Noi and Ho Chi Minh City (HCMC), the two largest cities, have high FA ratios in 2013 (78.28%

and 82.64%, respectively) as these two cities have large revenue sources, supporting their own fiscal autonomy. Ha Giang had the lowest FA ratio in 2013 at 11.94%. Ha Giang, being a poverty-stricken province in the northwest mountainous region, has no advantageous factors to appeal to businesses. As such, it has little revenue source that cannot cover its expenditure needs and has to rely almost entirely on provisions from the central government. Ha Noi, HCMC and Da Nang have higher FA ratios than other provinces in the country.

Table 2. Descriptive statistics of variables in the model.

Variable	Observations	Unit	Mean	Standard Variation	Min	Max
Fiscal autonomy	378	%	42.63%	16.90%	11.94%	99.71%
Fiscal importance	378	%	1.59%	1.71%	0.37%	12.37%
Fiscal Decentralisation Index	378	%	7.74%	4.17%	3.65%	30.16%
Inflation	378	%	−0.35%	7.93%	−22.48%	23.70%
Labour force growth rate	378	%	2.11%	3.14%	−16.12%	17.80%
Trade openness	378	%	78.20%	107.45%	0.19%	898.55%
Ln (investment capital)	378		30.06	0.86	27.71	33.26
Ln (GDP per capita)	378		16.91	0.60	15.45	19.79
Ln (lag of GDP per capita)	378		16.73	0.69	15.25	22.71

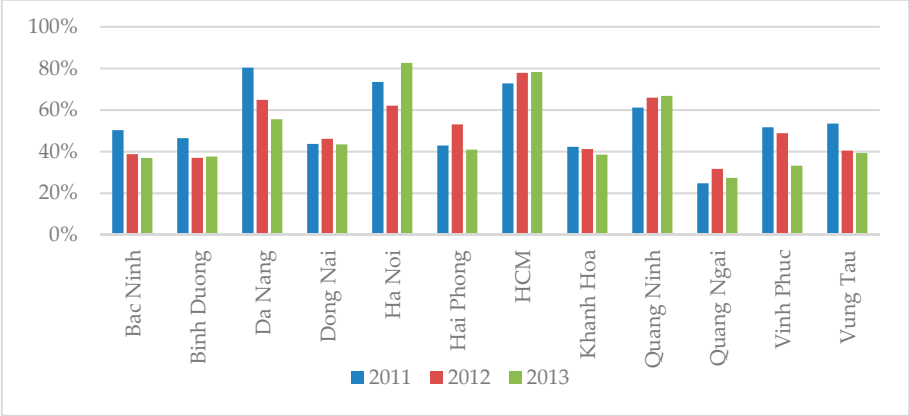

Figure 1. Fiscal autonomy ratio of selected provinces in Vietnam over the 2011–2013 period.

Looking at Fiscal importance (FI) in Figure 2, Ha Noi had the highest FI ratio in the country (11.2% in 2010). Budget spending of provinces in the Red River Delta region was consistently among the highest in the country. Tra Vinh had the lowest FI ratio, at 0.365% in 2011.

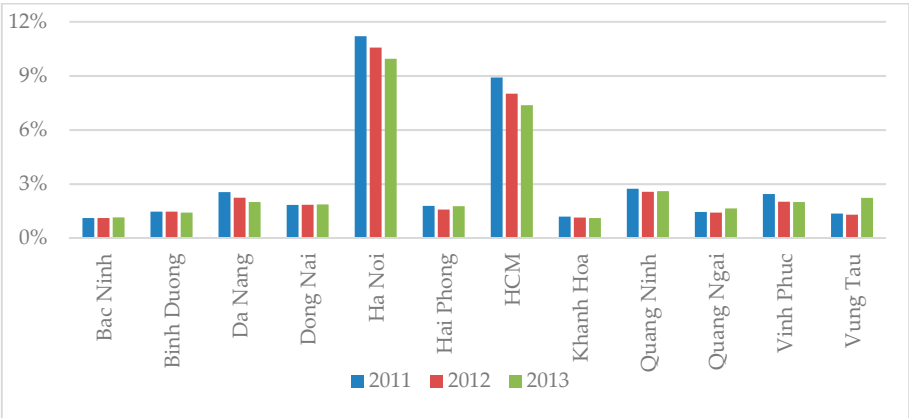

Figure 2. Fiscal importance ratio of selected provinces in Vietnam over the 2011–2013 period.

In Table 3, Ha Noi had the highest FDI of the country (30.16% in 2009), followed by HCMC, as tax revenue sources are concentrated in these two cities and they also have significantly higher economic development than other provinces. When the FDI calculation proposed by Vo (2008, 2009a) was applied, the portion of tax revenue split between the central and provincial government was deducted from the own-sourced revenue of the province. Since this tax revenue source accounts for a higher percentage in HCMC's budget revenue composition than Hanoi's, HCMC's FDI was lower than that of Hanoi, even though HCMC had the highest budget revenue sum in the country. Ca Mau had the lowest FDI value (3.65% in 2009).

Table 3. The value of fiscal decentralisation index for 13 provinces in 2008–2013 (%).

Province	2008	2009	2010	2011	2012	2013
Bac Ninh	7.15	6.82	7.94	7.50	6.59	6.53
Binh Duong	10.83	12.80	8.56	8.27	7.37	7.32
Da Nang	15.41	14.38	14.95	14.30	12.06	10.54
Dong Nai	11.18	10.10	10.40	8.96	9.24	9.02
Ha Noi	29.84	30.16	29.43	28.69	25.62	28.67
Hai Phong	8.25	8.08	9.16	8.76	9.18	8.51
HCM	27.92	26.66	25.42	25.47	24.98	24.01
Khanh Hoa	8.96	8.69	8.14	7.13	6.87	6.56
Quang Ninh	11.98	10.21	11.60	12.95	13.02	13.21
Quang Ngai	7.37	6.98	6.57	6.00	6.72	6.72
Vinh Phuc	7.86	10.70	10.76	11.26	9.93	8.16
Vung Tau	10.53	9.47	8.70	8.54	7.24	9.36

We initially consider the correlation among the variables in the proposed model by looking at a correllation matrix, which is shown in Table A2 in the Appendix A. It can be observed that there is a strong correlation among FDI, FI and FA. Thus, we separately use those three explanatory variables in different estimations. Estimation results in Table 4 show that fiscal decentralisation has an impact on economic growth in Vietnam in terms of DGMM estimations.[1] In particular, positive FA (statistically significant at the 5% significance level) implies a positive effect on provincial economic growth. This is consistent with a study by Adrian and Petronela (2015), which states that the degree of fiscal autonomy helps to boost the economic growth of the province. This fiscal autonomy allows the provincial government to proactively and flexibly manage its responsibilities, independent of the central government.

On the other hand, FI has a negative impact on provincial economic growth, as seen from its negative coefficient at the 1% significance level. FDI has a negative impact, although at a lower extent compared to FI. This can be explained by the fact that in most provinces in Vietnam, fixed expenses account for a major portion of total fiscal spending. As a result, if regular spending can be lowered while investment spending is increased, provincial economic growth can be stimulated. In addition, the extent of fiscal decentralisation in provincial governments in Vietnam is very low, with large gaps in FDI among provinces. The FDI values of provinces in Vietnam belong to the Relative Fiscal Centralisation category. This is in line with the theory which argues that the impact of fiscal decentralisation on economic growth in developing countries is negative, as well as with previous

[1] We have utilised the fixed and random effects model and our analyses indicate that the fixed effect mode appears to be more appropriate than the later on the ground of the Hausman test. Detailed analyses of these approaches are available upon request. However, we consider that with the apperance of the lagged value of the dependent variable in the regression, the estimated coefficients using both fixed and random effect models may be biased. As such, in this study, we used the Difference Generalised Method of Moments (DGMM) to correct the potential problem of endogeneity between fiscal decentralisation and economic growth. Thus, necessary statistical tests, including AR(1), AR(2), and Sargan tests were conducted and presented to ensure the appropriateness of the DGMM.

studies (Zhang and Zou 1998; Martinez-Vazquez and McNab 2006; Ezcurra and Rodríguez-Pose 2013; Baskaran and Feld 2013).

The lag of economic growth has a positive effect on its current value, as seen from the positive estimation coefficient at the 1% significance level in all of the three regression equations. The estimation coefficients of labour force growth rate and trade openness, the control variables, are mostly positive but are statistically insignificant. The results concur with studies by Nguyen (2009) Nguyen (2009). Trade openness has a positive coefficient that is statistically significant when the fiscal decentralisation variable is FDI. This is consistent with results from the study by Zhang and Zou (1998). The investment capital variable has a positive coefficient at the 1% significance level, except for the FA model. As such, it can be concluded that investment has a positive effect on provincial economic growth.

Table 4. Results (using the Difference Generalized Method of Moments (DGMM)).

Dependent Variable: Economic Growth (LnGDPPC)			
Fiscal Decentralisation Variable	**FA**	**FI**	**FDI**
Fiscal autonomy	0.30 **		
Fiscal importance		−6.08 ***	
Fiscal decentralisation index			−1.84 **
Labour force growth rate	−0.03	0.07	0.06
Trade openness	0.00	0.01	0.02 **
Investment capital	0.02	0.20 ***	0.18 ***
Inflation rate	0.48 ***	0.43 ***	0.43 ***
Lag of Economic growth	0.89 ***	0.74 ***	0.73 ***
Constants	1.17 ***	−1.39	−0.64
AR (1)	0.00	0.00	0.00
AR (2)	0.27	0.51	0.46
Sargan test	0.07	0.11	0.13
Legend:		*** $p < 0.01$; ** $p < 0.05$	
Number of observations		378	

Notes: ***, and ** indicate significance levels of 1%, and 5%, respectively. LnGDPPC—the logarithm of Gross Domestic Product per capita.

Results from the model also show that inflation rate has a positive coefficient at the 1% significance level. In other words, inflation rate in the 2008–2013 period has a positive impact on provincial economic growth. This contradicts the author's expectation but falls in line with Nguyen (2009).

6. Conclusions and Recommendations

This study was conducted to determine and quantify the degree of fiscal decentralisation in 63 provinces of Vietnam between 2008 and 2013. The fiscal decentralisation index used in this study is based on the Fiscal Decentralisation Index developed by Vo (2008, 2009a). In this index, two important and inseparable constituent elements, Fiscal autonomy and Fiscal importance, are considered and utilised. The DGMM technique was employed to correct for the endogeneity in the model. The study has identified the degree of fiscal decentralisation in different provinces in Vietnam as well as the Fiscal autonomy and Fiscal importance capability of the 63 provinces. At the same time, the main focus of this study was to discover and quantify the relationship between fiscal decentralisation and provincial economic growth in Vietnam in the 2008—2013 period.

Based on the results of the study, certain macroeconomic policy implications can be summarised as follows. Initially, the government should improve provincial autonomy in finding revenue sources as provincial governments face constraints due to central government regulations. As of now, provincial governments are only authorised to set certain fees and rates within the current legal framework. Revenue from these fees and rates is in fact very small, accounting for only 10% of the provincial budget revenue. Provincial governments have limited means to create revenue sources, little control over the revenue collected and no incentives for prospective revenue sources. Taxing power lies with

the central government, including both tax rates and tax bases, thus leaving limited space for provincial autonomy. As a result, provincial governments are compelled to raise revenue from land sources, a source fully delegated to local governments but volatile due to its dependence on the real estate sector. Therefore, it is advisable to let provinces have the authority to set certain taxes appropriate for the local context, to adjust certain tax rates and to increase the retained portion of tax revenue meant to be split with central government. These measures will help provincial governments to balance their budget, reducing their reliance on the central government.

Government offices need to tighten control over spending, ensuring budget revenue matches expenditure needs, thereby avoiding budget deficits. Government spending should be publicised to prevent redundancy or budget leaks, while expenditure should be linked to accountability of provincial leadership, increasing transparency and reducing deficits. Government fixed expenses should be lowered through public finance reforms and workforce simplification in order to increase spending on investment to stimulate economic growth.

Additionally, Vietnam is a developing country, with vastly different levels of development among provinces. Rapidly increasing fiscal decentralisation will incur risks in resource management at the provincial level as key personnel at provincial governments are not sufficiently competent in macroeconomic management. Moreover, corruption and self-interests are also cause for concern. As a result, fiscal decentralisation should be implemented with a roadmap of specific plans and programmes to ensure effectiveness. The government needs to fight corruption and self-interests while training provincial governments to be more competent in order to enhance economic growth. At the same time, the following results were achieved through this study.

The government should increase investment capital, including state capital, on key regions as well as regions with economic and social disadvantages to narrow the gap in economic development among provinces. At the same time, incentives should be in place to raise non-public capital and foreign direct investments to help with provincial economic development. Also, inflation rate should be maintained at an appropriate level for macroeconomic stability, keeping consumer prices at a suitable level. The State Bank of Vietnam should have an enhanced role in setting interest rates that are accessible to businesses.

Global integration should be intensified to create new jobs and to seek new export markets for Vietnamese goods. Other than traditional ones, Vietnam should identify new export markets to increase its inbound foreign currencies. The investment environment should be continuously improved to assist businesses. The government also needs specific solutions to help companies prepare and improve their competitive advantage in an increasingly open market that embraces international standards.

This paper has its own limitations which should be considered in future studies. First, although the number of observations were sufficient for this paper and relevant for the purpose of this study focusing on a particular period of time (around the times with major economic events such as the global financial crisis and recessions) to consider the effects of fiscal decentralisation on economic growth across provinces, a full period of data may need to be considered in empirical studies in the future. Second, as Vo (2010) has advocated the subnational governments, including both provincial and district levels, studies in the future may also need to consider the second level of subnational governments (the district level).

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Appendix A

Table A1. Data source of variables.

No.	Variable	Definition	Measurement	Source
1	*GDP*	Economic growth	Ln (Provincial GDP / provincial population)	GSO
2	*FA*	Fiscal autonomy	Provincial own-sourced revenue/ Provincial own-sourced spending	MOF
3	*FI*	Fiscal importance	Provincial own-sourced spending/ Total fiscal spending of country	MOF
4	*FDI*	Fiscal decentralisation index	$\sqrt{FA \times FI}$	MOF
5	*POP*	Labour force growth rate	(Labour force year t + 1—Labour force year t)/Labour force year t	GSO
6	*INF*	Inflation rate	(CPI year t + 1—CPI year t)/CPI year t (%)	GSO
7	*CAP*	Investment capital in the province	State capital + non-state capital + foreign capital	GSO
8	*OP*	Trade openness	Export + import volume (%GDP)	GSO

Notes: MOF—Ministry of Finance; GSO—General Statistics Office.

Table A2. The correlation matrix among variables.

Variable	*FA*	*FI*	*FDI*	*INF*	*POP*	*OP*	*CAP*	*GDP*
FA	1.00							
FI	0.33	1.00						
FDI	0.63	0.93	1.00					
INF	0.06	−0.02	0.00	1.00				
POP	0.05	0.04	0.05	−0.09	1.00			
OP	0.26	0.25	0.31	−0.02	0.17	1.00		
CAP	0.37	0.70	0.74	−0.08	0.02	0.47	1.00	
GDP	0.25	0.30	0.37	−0.09	−0.02	0.43	0.70	1.00

References

Adrian, Liviu Scutariu, and Scutariu Petronela. 2015. The link between financial autonomy and local development: The case of Romania. *Procedia Economics and Finance* 32: 542–49.

Arellano, Manuel, and Stephen Bond. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies* 58: 277–97. [CrossRef]

Baskaran, Thushyanthan, and Lars P. Feld. 2013. Fiscal decentralization and economic growth in the OECD countries: Is there a relationship? *Public Finance Review* 41: 421–45. [CrossRef]

Bird, Richard M., Robert D. Ebel, and I. Christine. 1993. *Decentralization of Socialist State a Regional and Sectoral Study*. Washington, DC: World Bank.

Ezcurra, Roberto, and Andrés Rodríguez-Pose. 2013. Political decentralization, economic growth and regional disparities in the OECD. *Regional Studies* 47: 388–401. [CrossRef]

Gujarati, Damodar N., and Dawn C. Porter. 2009. *Basic Econometrics*, 5th ed. Singapore: Mc Graw Hill.

Hanif, Imran, Imran Sharif Chaudhry, and Sally Wallace. 2014. Fiscal autonomy and economic growth nexus: Empirical evidence from Pakistan. *Pakistan Journal of Social Sciences* 34: 767–80.

Law, Marc T., Yunsen Li, and Cheryl X. Long. 2014. Local government autonomy and city growth: Evidence from China. In *Wang Yanan Institute for Studies in Economics (WISE)*. Fujian: Xiamen University, Available online: https://economics.ucr.edu/seminars_colloquia/2014-15/applied_economics/ (accessed on 16 July 2019).

Lin, Justin Yifu, and Zhiqiang Liu. 2000. Fiscal decentralization and economic growth in China. *Economic Development and Cultural Change* 49: 1–21. [CrossRef]

Liu, Yongzheng, Jorge Martinez-Vazquez, and Alfred M. Wu. 2017. Fiscal decentralization, equalization, and intra-provincial inequality in China. *International Tax Public Finance* 24: 248–81. [CrossRef]

Martinez-Vazquez, Jorge, and Robert M. McNab. 2006. Fiscal Decentralization, Macrostability, and Growth. *Hacienda Pública Española/Revista de Economía Pública* 179: 25–49.

Martinez-Vazquez, Jorge, Santiago Lago-Peñas, and Agnese Sacchi. 2016. The impact of fiscal decentralisation: A survey. *Journal of Economic Surveys* 31: 1095–129. [CrossRef]

Nguyen, Lan Phi. 2009. *Fiscal Decentralisation and Economic Growth at Provincial Levels in Vietnam*. Hanoi: Department of Economics, Monetary Statistics, State Bank of Vietnam.

Nguyen, Lan Phi, and Sajid Anwar. 2011. Fiscal decentralisation and economic growth in Vietnam. *Journal of the Asia Pacific Economy* 16: 3–14. [CrossRef]

Oates, Wallace E. 1972. *Fiscal Federalism*. New York: Harcourt Brace Jovanovich, ISBN 978-085-793-994-4.

Oates, Wallace E. 1993. Fiscal decentralization and economic development. *National Tax Journal* 46: 237–43.

Prud'Homme, Remy. 1995. The dangers of decentralization. *The World Bank Research Observer* 10: 201–20. [CrossRef]

Rodriguez-Pose, Andres, and Anne Krøijer. 2009. Fiscal decentralization and economic growth in Central and Eastern Europe. *Growth and Change* 40: 387–417. [CrossRef]

Rodríguez-Pose, Andrés, Sylvia A. R. Tijmstra, and Adala Bwire. 2009. Fiscal decentralisation, efficiency, and growth. *Environment and Planning A* 41: 2041–62. [CrossRef]

Su, Dinh Thanh, Hoai Bui Thi Bui, and Lam Dinh Mai. 2014. The nexus between fiscal policy and sustained economic growth over the 2011–2020. *Journal of Economic Development* 280: 2–21. (In Vietnamese).

Tanzi, Vito, and Ludger Schuknech. 1996. Reforming government in industrial countries. *The Journal of Finance and Development- English Edition* 33: 2–5.

Thiessen, Ulrich. 2005. Fiscal decentralisation and economic growth in high-income OECD Countries. *Fiscal Studies* 24: 237–74. [CrossRef]

Thornton, John. 2007. Fiscal decentralization and economic growth reconsidered. *Journal of Urban Economics* 61: 64–70. [CrossRef]

Vo, Duc Hong. 2008. Fiscal decentralisation indices: A comparison of two approaches. *International Journal of Economics and Law* 2: 1–29.

Vo, Duc Hong. 2009a. Fiscal Federalism. *International Encyclopedia of Public Policy* 2: 230–40.

Vo, Duc Hong. 2009b. Fiscal decentralisation in Vietnam: Lessons from selected Asian nations. *Journal of Asia Pacific Economy* 14: 399–419. [CrossRef]

Vo, Duc Hong. 2010. The economics of fiscal decentralisation. *Journal of Economic Survey* 24: 657–79. [CrossRef]

Vo, Duc Hong. 2019. Information Theory and an Entropic Approach to an Analysis of Fiscal Inequality. *Entropy* 21: 643. [CrossRef]

Vo, Duc Hong, Thuan Nguyen, Dao Thi-Thieu Ha, and Ngoc Phu Tran. 2019. The Disparity of Revenue and Expenditure among Subnational Governments in Vietnam. *Emerging Markets Finance and Trade*, 1–12. [CrossRef]

Woller, Gary M., and Kerk Phillips. 1998. Fiscal decentralisation and IDC economic growth: An empirical investigation. *Journal of Development Studies* 34: 139–48. [CrossRef]

Zhang, Tao, and Heng-fu Zou. 1998. Fiscal decentralization, public spending, and economic growth in China. *Journal of Public Economics* 67: 221–40. [CrossRef]