

Priority-Driven Budgeting Policy and Regional Inequality: The Intervening Effect of Economic Structure Transformation

Abdiyanto, Suwardi Lubis, Syaad Afifudin and Rujiman
Graduate School of North Sumatera University, Medan, Sumatera Utara, Indonesia

Abstract: Resources are scarce and the main challenges faced by local governments in developing countries are to allocate effectively. This challenge relates to government's effort to reduce regional inequality. This study examined the relationship between priority-based budgeting policy and local growth imbalance by using economic structure transformation as the intervening variable. Researchers employed multivariate regression and path-analysis to examine the relationship. The results revealed that the priority-based budgeting affected local inequality significantly through structural transformation. It explicitly demonstrates that the prioritized government allocation in education, health and education plays an important role to strengthen economic transformation leading to reduce regional divergence.

Key words: Priority budget policy, regional inequality, economic structure transformation, economic growth, education

INTRODUCTION

In public sector management, there are two goals that public spending is supposed to strive towards, i.e., equity which is understood as equitable distribution of economic wealth and efficiency which is perceived as rectifying potential market failures (Van de Walle, 1995). Those goals become a main struggle for local governments to develop meaningful and fiscally prudent budgets, due to fluctuation of financial and political uncertainties. Through priority-based budgeting, local governments can achieve a fiscal health and wellness in which they assess their picture of fiscal health and objectively determine how to match available resources with community priorities.

Priority-based budgeting which is similar to results-oriented (or performance or output) budgeting (Roberts, 2003) is a response to poor economic conditions. It focuses on the three key components: the final outcome, the mix of strategies needed to reach, it and the activities actually undertaken to achieve the outcome. Priority-based budgeting in contrast to incremental budgeting where resource allocation is determined based on marginal shifts in costs, fixes the amount of governmental resources and then allocates resources across the various programs. The programs receive their allocation based on their priority. The priorities may include safe and secure communities, health, education and community development among others. Outcome assessment then determines the efficacy of the programs. The outcome is generally a larger policy objective, an objective which the spending agencies bind themselves

to achieve within the agreed confines of time and budget. Effective resource allocation to health, education and other social services is crucial for achieving equitable and sustainable development in a competitive environment (World Bank, 1994). For advanced economy countries, this issue is relatively well-handled. Meanwhile for emerging economies, it could be a serious challenge (OECD, 1995). Therefore, it is important to take a close look at developing countries' expenditure composition in recent years in order to test whether current public spending policies are in line with the nation's new strategy of growth with equity (Norton and Elsom, 2002).

World Bank (2005) reported two phenomenon's were threatening the implementation of the decentralization process in Indonesia, i.e., the similarity of public spending across regions without considering the different problems of each region and the increasing public spending corruption. The first phenomenon reflected a budgeting planning problem meanwhile, the second one revealed the effectiveness and efficiency problem in providing public goods. In the other words, the deviation of local government budget usage both administratively and spending marked up has finally resulted in unachieved output target that had been planned or even achieved but sacrificing more costly in the process. The World Bank Report was supported by research of Akin *et al.* (2005) which found that inappropriate-decentralized budget policy gave negative impact on the health care provision in Uganda. Thornton (2007) supported the finding in which his study revealed the failure of proper decentralized-budget in accelerating economic growth in OECD countries.

In the context of local autonomy, the budget is governments' most important economic policy tool to alleviate regional inequality through economic growth or transformation. Public budgets translate a government's policies, political commitments and goals into decisions on how much revenue to raise and allocate in meeting the country's competing needs from bolstering security to improving health care to alleviating poverty (Holmes and Evans, 2003). It underlines the fact that economic transformation requires financial resources. However, a well-designed budgetary resource's planning is a prerequisite. Recently, many emerging countries have developed the priority-based budgeting. It is a way for local governments to spend within their means by continuously focusing on the results most relevant to their communities and the programs that influence those results to the highest possible degree (Alonso *et al.*, 2006). In this new approach, the process involves a systematic review of existing services. It includes an analysis of why the services exist, what value they offer to citizens, how they benefit the community, what they cost and what objectives and citizen demands they are achieving. Each service or program is assigned a score based on its contribution to desired results so that tax dollars can be allocated to those with the greatest impact (Leruth and Paul, 2006).

Based on this fact in this study, researchers would like to examine the effect of priority-based budgeting on economic structure transformation and regional inequality. The study will provide some important contributions such as a testing of the impact of budgeting policy on a transforming region, a shift-share analysis on the impacted economic sectors and a clustering analysis of the economic transformation-regional inequality relationship matrix. It will also expand the implementation of budgeting policy as the local government tool to manage the economic development. In this study, we will test specifically the intervening effect of economic transformation in the relationship between priority-based budgeting and regional inequality. It will attempt to review whether or not the prioritization of infrastructure projects of government is coherent with the developmental needs of the regions and provinces. The expected empirical findings from this study will be valuable information to set and up-date the local government policy options on alleviating poverty and accelerating economic growth.

Literature review: Learning from the emerging countries' experiences in implementing decentralized governance, autonomous local development also leads to a great deal of regional inequality, particularly because of differences

in prior resource endowments and institutions (Bardhan, 1998). Moreover, like in Peru, it happens when local government mismanages its financial resources and sets inappropriate priorities in its budgeting policies (Ahmad and Garcia-Escribano, 2008). Meanwhile, successful economic transformation depends on a good match between prioritized programs and resource allocation (OECD, 2012). In the other words, the way which public expenditures are allocated, plays an important role on both economic growth and the alleviation of poverty and regional inequality. Referring to those prior studies, it provides an indication of a strong relationship between public budgeting, the change within the structure of an economy over time and local disparity. Therefore, the following sections will discuss those variables' nexus and its hypothesis' development.

Priority-driven budgeting policy: In the context of the economies in transition, the traditional approach to governmental budgeting which is incremental, finally does not work properly due to the dynamic change of global economy. This gradual approach is workable if suboptimal, in periods of reasonably stable expenditure and revenue growth in which the government's analytical and political attention focuses only on how to modify this year's spending plan based on revenues anticipated in the next year. It happens because the current level of expenditures can be funded with relatively little controversy (Kavanagh *et al.*, 2011).

To handle this issue, priority-driven budgeting is a common sense, strategic alternative to incremental budgeting. Priority budgeting represents a fundamental change in the way resources is allocated. It is the practice of developing budgets based on the relationship between program funding levels and expected results from that program. Administrators can use the priority-based budgeting process to develop more cost efficient and effective budgeting outlays long-term. Fan and Rao (2003) suggest that government expenditure with its multitude of categories, needs to be examined from the perspective of wealth creation and poverty alleviation. Such a carefully targeted analysis would enable government to better assess the efficiency and effectiveness of its spending and make changes where necessary.

Priority budgeting is both a philosophy of how to budget scarce resources and a structured although flexible, step-by-step process for doing so (Fan and Rao, 2003; Kavanagh *et al.*, 2011). The philosophy of priority-driven budgeting is that resources should be allocated according to how effectively a program or service achieves the goals and objectives that are of greatest value to the community (Norton and Elsom, 2002).

In a priority-driven approach, a government identifies its most important strategic priorities and then through a collaborative, evidence-based process, ranks programs or services according to how well they align with the priorities. The government then allocates funding in accordance with the ranking.

The government policy in determining the prioritized economic sectors in its public budgeting affects long-run economic growth based upon the view that a right budgeting policy leads to better resource allocation and a more productive public sector. Oates argued that this might be because locally determined policies were better able to take account of regional and local conditions through the provision of public goods such as infrastructure and education. Meanwhile, Brennan and Buchanan (1980) believed that the competition among different levels of government had promoted lower tax rates and the efficient production of public goods under revenue constraints. Martinez-Vazquez and McNab (2003) added that proper budgeting policy provided incentives for local governments to innovate in the production and supply of public goods and services.

The size and structure of public expenditure will determine the pattern and form of growth in output to the economy. Analysis of the relationship between government spending on public infrastructure and economic growth is especially important in developing countries, most of which have experienced increasing levels of public expenditure overtime (World Bank, 1994). Research of Rostow (1960) and Musgrave (1974) reveals that government expenditure is relatively high in the early stages of development because the state is required to invest in the social overhead capital (such as schools, universities and hospitals). Government takes the active roles in these investments due to private savings are insufficient to finance these essential expenditures. However, this role will be decreasing as the economy starts to grow in which particular investments increase proportionally with respect to public investments and public expenditure falls. In the other words, it supports the basic idea of priority-driven budgeting implementation in developing countries, like Indonesia.

The emerging country's government concentrates its public expenditure on education, health, roads, electricity and water supply those are necessities to launch the economy from the traditional stage to the take off stage of economic development (Laitner, 2000; Musgrave, 1974; Rostow, 1960). This policy relates to the seminal research of Kuznets (1973) which listed structural transformation as one of the six main features of modern economic growth. He defined the transformation as the real

location of economic activity across three broad sectors (agriculture, manufacturing and services) that accompany the process of contemporary economic growth.

Therefore, we hypothesize the association between priority-driven budgeting and economic structural transformation as follows:

- H_1 : priority-driven budgeting influences structural transformation

Priority-driven budgeting policy, regional inequality and poverty reduction: Public investments which are one of the development budget elements, have contributed significantly to agricultural growth and rural poverty reduction in rural areas and also to urban poverty reduction through growth in the national economy. However, despite these successes many governments of developing countries still face severe budget constraints to implement development programs. It means that public resources need to be more effectively targeted to the sectors and regions that can generate the largest amount of economic growth and poverty reduction (Fan *et al.*, 2000).

In case of China, government spending on rural infrastructure (roads, electricity and telecommunications) had a substantial impact on poverty and inequality, mainly through improved opportunities for non-farm employment and increased rural wages. Meanwhile, investments in irrigation had only a modest impact on rural poverty and inequality (Fan *et al.*, 2004a). The similar case happened in Thailand in which additional government spending on agricultural R&D improved agricultural productivity the most and has the second-largest impact in reducing rural poverty. Meanwhile, investments in rural electrification, road expenditure and education significantly influence towards rural poverty and regional inequality as well (Fan *et al.*, 2004b). In case of India, a study by Amis and Kumar found that to ensure an effective poverty reduction, the provision of physical and social infrastructure should be the main focus. In the context of global comparison, the study of Canning and Bennathan (2000) that compared the impact of infrastructure investment in electricity generation and paved roads in 52 and 41 countries, found that the rate of return to infrastructure investment may vary depending on the income level of the country and the type of infrastructure. The study also suggested that infrastructure in isolation had limited impacts on economic growth and that there should be a mixture of physical and human capital investments to maximize the return.

Those findings were in line with the report of DFID (2002). It identified, the various channels through which

investment in infrastructure can contribute to sustainable growth such as improving access to schools and health centers and improving environmental conditions. Therefore in promoting a rapid reduction in poverty, infrastructure played an important role and an investment in physical infrastructure should also involve improvement of social infrastructure (Jalilian and Weiss, 2004). This supported a research finding in Nigeria by Ogun (2010) that investments in social infrastructure able to reduce the poverty compare to physical infrastructure investment. Ahmad and Garcia-Escribano (2008) added that higher income levels enabled lower level governments to better respond to the population's request for specific types of expenditures. The researchers found that levels of poverty and income across states were negatively related. Based on those empirical findings, we proposed the following hypothesis:

- H₂: priority-driven budgeting negatively influences regional inequality and poverty reduction

Economic structure transformation: In this study, we define (economic) structural transformation as a fast economic growth accompanied by diversification and technological upgrading of production and exports, increasing international competitiveness and expanding employment opportunities that result in shared prosperity. Therefore, it is more than just growth or poverty reduction.

Structural transformation has become hot issue in the policy debate of developed and developing countries where various observers have claimed that the sectorial reallocation of economic activity is inefficient and calls for government intervention (Hayami and Ruttan, 1970, 1985; Herrendorf and Valentinyi, 2005; Cordoba and Ripoll, 2008). Bah (2009) reports that many developing countries are following processes those are very different from the path of developed countries. Bah (2009) finds that developing countries are the least productive in agriculture, followed by services and then manufacturing. This finding challenges the basic premise that structural transformation implies breaking down the spatial, economic and institutional barriers that limit a society's capacity for growth. Consequently, it may demand new technology, better use of existing technology or simply innovativeness that enables a producer to organize his production differently when incentives are provided. In the context of developing countries, the governments' spending budgets failed to meet this objective (Echevarria, 1997; Kongsamut *et al.*, 2001; Laitner, 2000; Gollin *et al.*, 2002, 2007).

Meanwhile, the results by Aschauer (1989) seem to indicate that productivity growth which is considered as

the main objective of structural transformation, is closely linked with the existence of paved roads and highways, mass public transportation, sewage and running water systems all key components of what constitutes basic infrastructure. The findings pull out the study of Tazi and Zee in which they argue that growth and government spending is in no way correlated. Devarajan *et al.* (1996) finds that growth is positively impacted by the expansion of the public segment of expenditure. Nonetheless, these authors also argue that excessive productive expenditure has the same negative impact as non productive expenditure.

On the other hand, referring to macroeconomic literature (Fernald, 1999) certifies that in Western economies-United States included the augment in productivity has been closely tied with public funds being earmarked for basic infrastructure such as roads, seaports, airports and railways' development (Kim, 1995, 2004). However, Logan (1972) argued that the drive toward a high rate of growth based on industrialization might lead to a movement of the most productive resources to specific areas of concentrated development. At this point, policy conflicts may emerge. If locational efficiency is used as the sole criterion for investment, regional imbalance will most likely increase (Syrquin, 1988). This may lead to pressure to disperse the benefits of growth evenly throughout the nation which in turn, could slow the rate of national growth. This finding reflects a disadvantage of structural transformation on economic development in which it leads to regional inequality as India has experienced in 1990s (Bhattacharya and Sakthivel, 2004). However, these imbalances in regional economic development and the lack of spatial integration can both be traced, therefore to a spatial organization that did not allow free movement of production factors (labor, capital, entrepreneurs, information) throughout the nation (Venables and Kanbur, 2003). On another scale, Williamson (1965) showed that regional inequalities in developing nations may actually increase with industrialization up to a point when agglomeration diseconomies lead to a dispersion of industry and more regional equality.

Those findings closely relate to the seminal research of Kuznets (1973) which identified the shift of resources from agriculture to industry as the central feature of this transformation. The high price elasticity of demand for industrial goods also accelerated the demand for industrial goods and facilitated the shift of factors from agriculture to industry (Chenery and Elkington, 1979). In less developed countries this shift has also triggered a migration from rural to urban locations leading to take place ahead of the growth of demand for labor and an increase of expected income more than current wages (Lewis, 1954). Urban sprawl as an impact of

Table 1: Summary of hypotheses

Hypothesis	Description
H ₁	Priority-driven budgeting influences structural transformation
H ₂	Priority-driven budgeting negatively influences regional inequality and poverty reduction
H ₃	Structural transformation negatively influences regional inequality

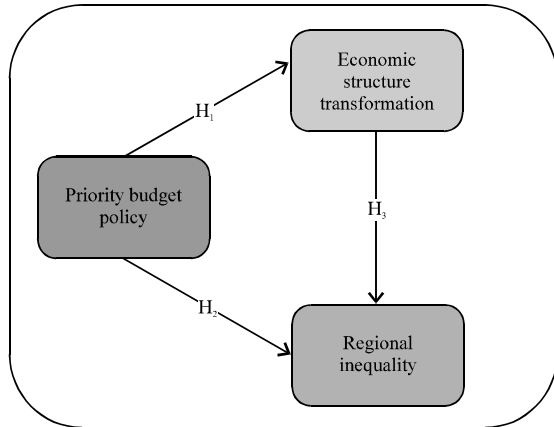


Fig. 1: Research model of priority budget policy and regional inequality

structural transformation has a number of negative consequences and thus has been extensively criticized for being inefficient, inequitable and environmentally insensitive (Carruthers, 2002; Carruthers and Ulfarsson, 2002). In the centre of inconclusive findings and arguments, however, we hypothesize the relationship between (economic) structural transformation and regional inequality as follows:

- H₃: structural transformation negatively influences regional inequality

The summary of all proposed hypotheses as shown in Table 1. Therefore, we model the hypotheses testing in the following research framework (Fig. 1).

The study is different from prior studies in terms of providing the effects of priority-driven budgeting and structural transformation on regional inequality and poverty reduction. Specifically, it tests structural transformation as the intervening variables in the linkage of government expenditure in physical and social infrastructures on balancing the regional income and reducing the poverty. It becomes important since Law No. 32/2000 on Local Autonomy gives many autonomous Indonesian local governments have more power to manage and allocate its own local revenue and spending. However, the local government budget policy is still far away from the intended objective, i.e., sustainable regional economic growth. The results will provide valuable and recent information on the test of whether the

prioritization of infrastructure projects of government is coherent with the developmental needs of the regions and provinces or not.

MATERIALS AND METHODS

The objective of the study, applied the quarterly data for the period 2007:1-2011:4. To get the structural transformation value, we used shift-share analysis. We attempted to determine how much of business sectors could attribute to national trends and how much was due to unique regional factors. Shift share helps answer why certain economic sectors are growing or declining in a regional industry, cluster or occupation. Therefore, we employed the shift-share formula as follows:

$$PS_{iregency}^t = Y_{iregency}^{t-1} \times \left(\frac{Y_{province}^t}{Y_{iregency}^{t-1}} - 1 \right)$$

$$P_{iregency}^t = Y_{iregency}^{t-1} \times \left(\frac{Y_{iprovence}^t}{Y_{iprovence}^{t-1}} - \frac{Y_{iregency}^t}{Y_{iregency}^{t-1}} \right)$$

$$D_{iregency}^t = Y_{iregency}^{t-1} \times \left(\frac{Y_{iregency}^t}{Y_{iregency}^{t-1}} - \frac{Y_{iprovence}^t}{Y_{iprovence}^{t-1}} \right)$$

$$\Delta Y = PS + P + D \tag{1}$$

Where:

- Y = Gross Domestic Regional Product (GDRP)
- i = The number of sub-economic sectors (nine sub-economic sectors)
- PS = Proportional Share
- P = Provincial share
- D = Differential shift
- ΔY = National shift share

Meanwhile, we used Williamson Index (WI) to measure of regional inequality, following the equation:

$$I_w = \frac{\sqrt{\sum_{i=1}^n (Y_i - \bar{Y})^2 \frac{P_i}{P}}}{\bar{Y}}, \quad 0 < I_w < 1 \tag{2}$$

Where:

- Iw = Williamson Index
- Y_i = GDRP per capita

\bar{Y} = GDP per capita
 p_i = Regional population
 P = National population

Then, we grouped local government budget into three main posts, i.e., education, health and infrastructure which Ogun (2010) called it as social and physical infrastructures. To test the proposed hypotheses, we deployed a Cobb-Douglas multiple regression that was transformed into log-linear (ln) form:

$$Y_{1\text{atau}2} = A \times X_1^b \times X_2^c \times X_3^d \quad (3)$$

$$Y_2 = A \times Y_1^e \quad (4)$$

$$\ln Y_1 = \ln A + b \ln X_1 + c \ln X_2 + d \ln X_3 \quad (5)$$

$$\ln Y_2 = \ln A + b \ln X_1 + c \ln X_2 + d \ln X_3 \quad (6)$$

$$\ln Y_2 = \ln A + e \ln Y_1 \quad (7)$$

Where:

$\ln Y_1$ = Structural transformation
 $\ln Y_2$ = Regional inequality
 X_1, X_2 and X_3 = Local government budget in education, health and infrastructure, respectively

Table 2 reveals the government budget allocation for three main economic sectors. It reflects the government budget priority in the last 5 years. Local government paid more attention and main concern on education sector than health and infrastructure in which its total allocation growth rate had doubled (5.57% in 2007 became 11.10% in 2011) within 5 years. Meanwhile, ironically, the allocation for infrastructure development had decreased around 50% in the same period.

The differential shift analysis (Table 3) demonstrated that industrial and agricultural sectors were highly competitive sectors compared with other ones in which experienced high growth rate or fast shift. A positive value of the differential shift-share in an economic sector reflected its high and swift competitive growth.

The structural transformation shift analysis (Table 4) showed that manufacturing industry was the economic sectors experiencing the biggest transformation. It increased in terms of the size relative to other sectors. It informed us that this regency had reallocated its economic activity across the broad sectors agriculture, manufacturing and services. It means that this regency is developing in which the process of structural transformation from agriculture into manufacturing and services involves a shift of labor out of rural areas and into urban ones. The fact is in line with the labor pull approach describing how a rise in non-agricultural

Table 2: Regency budget allocation (2007-2011)

Variables	2007	2008	2009	2010	2011
Education sector					
Total expenditure (Rp)	59,671,687,865	70,744,474,146	111,162,858,200	99,543,808,900	198,389,384,537
Total budget (Rp)	1.069.649.333.590	1.250.601.634.668	1.318.235.177.352	1.409.834.108.800	1.786.448.175.612
Expenditure/budget (%)	5.57	5.65	8.43	7.06	11.10
Health sector					
Total expenditure (Rp)	36,899,122,840	44,799,218,401	44,265,853,945	38,785,178,600	52,542,527,622
Total budget (Rp)	1.069.649.333.590	1.250.601.634.668	1.318.235.177.352	1.409.834.108.800	1.786.448.175.612
Expenditure/budget (%)	3.44	3.58	3.35	2.75	2.94
Infrastructure sector					
Total expenditure (Rp)	287,964,843,899	267,799,228,276	258,811,204,641	236,533,745,700	242,003,586,400
Total budget (Rp)	1.069.649.333.590	1.250.601.634.668	1.318.235.177.352	1.409.834.108.800	1.786.448.175.612
Expenditure/budget (%)	26.92	21.41	19.63	16.77	13.54

Elaborated data

Table 3: Differential shift-share results

Economic sectors	Regencies 2011		Regencies		
	(a)	EN _{i,t} /EN _{i,t-n} (b)	2007 (c)	b×c (d)	Ds a-d (e)
Agriculture	5,284,409.68	1.7224	2,898,466.98	4,992,319.53	292,090.15
Mining and quarrying	427,351.75	1.8051	261,308.39	471,687.77	(44,336.02)
Manufacture	22,158,781.84	1.5522	12,708,098.77	19,725,510.91	2,433,270.93
Gas and electricity	91,437.73	1.5633	60,047.70	93,872.57	(2,434.84)
Construction	1,061,233.09	1.9124	564,118.11	1,078,819.47	(17,586.38)
Trade	9,334,037.34	1.7228	5,609,899.56	9,664,734.96	(330,697.62)
Transportation	681,999.98	1.7620	439,155.70	773,792.34	(91,792.36)
Financial	1,093,662.07	1.8888	575,715.56	1,087,411.55	6,250.52
Service	4,992,919.36	1.9635	2,925,176.76	5,743,584.57	(750,665.21)
GDRP	45,125,832.84		26,041,987.53		1,494,099.16

BPS, Deli Serdang Regency (2012)

Table 4: Regency's structural transformation shift (2007-2011)

Economic sectors	National growth	Proportional share	Differential share	Structural transformation
Agriculture	2,109,644.48	(15,652.99)	292,090.15	1,833,207.32
Mining and quarrying	190,192.89	20,206.72	(44,336.02)	214,322.19
Manufacture	9,249,569.02	(2,231,882.02)	2,433,270.93	9,048,180.11
Gas and electricity	43,705.62	(9,876.70)	(2,434.84)	56,017.16
Construction	410,592.45	104,131.75	(17,586.38)	324,047.09
Trade	4,083,156.27	(28,134.24)	(330,697.62)	4,441,988.14
Transportation	319,638.76	15,018.50	(91,792.36)	396,412.63
Financial	419,033.63	92,715.30	6,250.52	320,067.82
Service	2,129,085.15	689,365.77	(750,665.21)	2,190,384.59
Total	18,954,618.28	(1,364,107.93)	1,494,099.16	18,824,627.04

BPS, Deli Serdang Regency (2012)

productivity (an industrial revolution) attracts underemployed labor from agriculture into the modern sector (Lewis, 1954; Harris and Todaro, 1970; Hansen and Prescott, 2002; Lucas, 2004; Alvarez-Cuadrado and Poschke, 2011).

The regional inequality result for 22 districts in Deli Serdang Regency revealed that there was high regional inequality between districts which the index score was closed to 1:

$$I_w = \sqrt{\frac{7,889,577.32}{4,554.35}} = 0.62$$

It means that in the certain degree the local development has created divergence between districts and one of the possible major causes is the government budget priority (Echevarria, 1997; Kongsamut *et al.*, 2001; Kavanagh *et al.*, 2011).

RESULTS AND DISCUSSION

In this study, the result of first hypothesis testing (Table 5) reveals that local government budget allocation on health and infrastructure play important and positive effect on the strengthened structural transformation in Deli Serdang regency. It means that priority-driven budget on those posts has influenced economic sectors' transformation positively.

The finding is in line with prior studies (Laitner, 2000; Musgrave, 1974; Rostow, 1960). It confirms that economic transformation requires financial resources to pay for infrastructure, import machines and technology to educate and train skilled workers. Any structural transformation involves costs, trade-offs and uncertainties. It affirms that budgeting and public expenditure management are critical. Priority-driven budgeting enables a structural transformation in economic sectors such as in agriculture by shifting to high-value crops which are more profitable than traditional crops such as rice and corn. Such kind of transformation requires rapid technological change and improved rural infrastructure which clearly call for increased investments

in infrastructure. It also demands an equitable and efficient use of public resources or in the other words, good priority-driven budgeting. The test of second hypothesis (Table 6) shows that priority-driven budgeting can minimize regional inequality. It has a significant and negative effect on regional divergence. It means that any increase in education, health or infrastructure budget allocation will decrease local inequality leading to poverty reduction as well.

The finding confirms previous studies (Canning and Bannathan, 2000; Fan *et al.*, 2000; Jalilian and Weiss, 2004) that prioritized public budget on certain posts such as education, health and infrastructure development affect more balanced income across regions. It reveals that budget priority on infrastructure has the biggest effect in reducing inequality and poverty. It means that the more a region is open due to the availability of transportation infrastructures, the more equalized-income and the less poverty a region. The same thing happens as well for the policy of high spending in education and health posts can assist in the accumulation of human capital. It demands that any local government when determines the public budgets should thus consider how to manage public expenditures and revenues to improve the distribution of income.

This finding affirms the virtuous circle between economic and social policy, i.e., high social spending leading to higher economic growth which in turn, delivers more resources for social investment and research of Roberts (2003) that finds several important advantages of using priority-based budgeting. He believes that this type of budgeting process is a very useful way to bring about more clarity about priorities. Whether these priorities are present at a national, state or sector level, he argues, priority-driven budgeting not only helps identify these priorities but also it targets them more specifically through the public spending programs and it boosts coordination among the agencies and departments involved by clearly designating roles and responsibilities. He adds that coordination among the entities involved, paired with clear responsibilities are expected to lead to increased efficiency and effectiveness of the public spending.

Table 5: Test of hypothesis 1

Models	Unstandardized coefficients		Standardized coefficients (β)	t-distribution	
	B	SE		t-ratio	$t_{0.05}$
Constant	-145.051	25.920		-5.596	2,110
ln (X_1 -education)	0.099	0.148	0.129	0.669	2,110
ln (X_2 -health)	1.470	0.689	0.404	2.133	2,110
ln (X_3 -infrastructure)	4.546	0.741	0.869	6.138	2,110

Predictors: Constant, X_3 -education, X_2 -health, X_1 -infrastructure; Dependent variable: Y_1 -structural transformation

Table 6: Test of hypothesis 2

Models	Unstandardized coefficients		Standardized coefficients (β)	t-distribution	
	B	SE		t-ratio	$t_{0.05}$
Constant	13.406	3.347	-	4.006	2,110
ln (X_1 -education)	-0.097	0.019	-0.752	-5.095	2,110
ln (X_2 -health)	-0.176	0.089	-0.287	-1.982	2,110
ln (X_3 -infrastructure)	-0.267	0.096	-0.302	-2.789	2,110

Dependent variable: Y_2 -regional inequality

Table 7: Test of hypothesis 3

Models	Unstandardized coefficients		Standardized coefficients	
	B	SE	β	$t_{0.05}$
Constant	-3.299	0.438		-7.534
ln (Y_1 -structural transformation)	-0.062	0.033	-0.405	-1.877

Dependent variable: Y_2 (regional inequality)

Meanwhile, the test of third hypothesis (Table 7) informs us that structural transformation affects negatively regional inequality. It means that any increase in Deli Serdang regency’s nine economic sectors will reduce its local divergence. It supports the study of Devarajan *et al.* (1996) and Gomanee *et al.* (2003) that finds growth is positively impacted by the expansion of the public segment of expenditure. This research result is similar to Lorber (2011)’s findings which investigates the local disparities between Slovenian provinces. He found that regional inequalities were the result of structural inadequacy of local economies. He argues that deep structural economic changes will enable the creation and growth of high-quality jobs leading to fewer disparities between regions. In order to do so, flexibility of the labor market and educational reforms will need to be implemented. In the other words, the regions that optimize the development potentials and expand their economies using the endogenous approach will come out as winners in the race of combating regional inequalities.

Economic transformation can change poor developing countries into prosperous countries with a dramatic fall in poverty rates. China stands out as a notable example. The transformation occurs when a poor, rural-based country becomes a middle-income country with the growth of industry and services sectors. Productivity and income per capita as well as job creation grow fast. In case of Deli Serdang regency, structural

transformation has effectively reduced inequality in its 22 districts. To test whether structural transformation serves as intervening variable or not, we employed a path analysis as shown in Table 8.

The results demonstrate that structural transformation performs as mediating variable in the relationship between priority-driven budgeting and regional inequality. The effect of government budget allocation on regional divergence through structural transformation has reduced imbalanced local income drastically. It happens especially in health and infrastructure posts’ allocation. Government budget provision in health has increased 58% in reducing regional divergence meanwhile, government spending in infrastructure has doubled its impact to diminish local disparity as well. The findings are in line with research of Jahan and McCleery (2005). They argue that infrastructure development can lead to regional divergence and poverty reduction through direct or indirect channels. Through the direct channel, it reduces income inequality and poverty since people’s able to access the health and educational services, the availability of cleaner energy and the government supporting role in providing protection for any national disasters. The indirect effect of infrastructure provision on poverty occurs when the productivity of workers is increased, transport costs are reduced and more employment is generated and this will lead to effective economic growth. This implies that infrastructure provision will significantly influence economic and social lives of people.

It implies that to create balanced income and reduced poverty a proper government’s budget priority is a must. It is also critical for civil society to engage in all stages in the budget cycle not only because they can contribute valuable technical skills to the process but they also have connections with the community that enable them to bring

Table 8: The Effects of observed variables (direct, indirect and total)

Effect of between variables	Direct effect	Indirect effect through structural transformation	Total effect
Education-structural transformation	0.099	-	0.334
Health-structural transformation	1.470**	-	0.314
Infrastructure-structural transformation	4.546**	-	4.546
Education-regional inequality	-0.097***	$(0.099 \times -0.062) = -0.00198$	$-0.097 - 0.00198 = -0.09898$
Health-regional inequality	-0.176*	$(1.470 \times -0.062) = -0.09114$	$-0.176 - 0.09114 = -0.26714$
Infrastructure-regional inequality	-0.267**	$(4.546 \times -0.062) = -0.281852$	$-0.267 - 0.281852 = -0.548852$
Structural transformation-regional inequality	-0.062**	-	-0.062

***, **, *p<0.01, 0.05, 0.10

critical information about the public’s needs and priorities to budget debates. In addition to representing the concerns of marginalized people, civil society can strengthen and support the ability of the poor and most vulnerable to participate in the budget process. The success of the UK Regional Development Agencies (RDA) in implementing priority-based budgeting was in large part due to coordination, cohesion and alignment of resources. Referring to Rowan (2013) the success lies at more local prioritization for investment and alignment of public resources, plus private sector leverage. It leads to deliver better policy outcomes.

Despite the countries’ vast differences in economic systems, natural resource endowments, socioeconomic conditions and size, the empirical findings offer some important lessons:

- Spending on agricultural research, education and rural infrastructure are the three most effective types of public spending for promoting agricultural growth and reducing poverty
- Rural roadinvestment contributes not only to rural growth and poverty reduction but also to urban growth and poverty reduction
- Government spending on irrigation played an important role in promoting agricultural growth and reducing poverty in the past but today this type of spending provides smaller marginal poverty and growth returns to many Asian countries

The findings also indicate that different spending priorities are needed during different stages of development; one-size-fits-all strategies do not work. During the first phase, strategies should focus on reducing widespread poverty through broad-based economic growth that reaches rural areas. In subsequent phases, more direct attention should be focused on lagging sectors and regions as well as on poverty at the community and household levels in order to reduce the poverty and income inequalities that arise and persist despite reform. Related to the research site which located in a developing country, this study suggests good local government governance. It is related to a view that in

developing countries characterized by weak governance and institutions, the tendency for government officials to be corrupt is very high (Ali and Pernia, 2003). Therefore, in these scenario decisions to invest in infrastructure may be distorted thereby lowering the contribution of infrastructure to growth and diverting benefits intended for reducing the income inequality. A proper and well-governed government budgeting is a precondition.

CONCLUSION

The study on the interrelated nexus of priority-based budgeting, structural transformation and regional inequality reveals that government budget allocation in education, health and infrastructure affects economic structural transformation and local inequality. Prioritized budget allocation has strengthened and increased economic transformation. Meanwhile, at the same time, it has diminished local income disparity in Deli Serdang regency. The findings also demonstrate a negative relationship between structural transformation and regional divergence. In addition, structural transformation plays a role as intervening variable as well in the effect of priority-driven budgeting on local inequality.

The findings affirm that priority-based budgeting provides a new lens that produces powerful insights and local governments that are using it are making significant breakthroughs. It implies that any government in developing countries needs to allocate a substantial proportion of its annual budget especially towards the development of social infrastructure particularly in education and health sectors. Since, investment in education and health significantly affected the development of human capital, an investment in increasing social infrastructure will improve the social life of people especially in the urban areas. Therefore, the development of adequate infrastructure depends on good and effective corporate governance and the local development agencies should play an important role to play in re-orientation of people and this will strengthen the legal institutions in minimizing corruption of those agencies.

REFERENCES

- Ahmad, E. and M. Garcia-Escribano, 2008. Constraints to effective fiscal decentralization in Peru. Working Paper 08-24, International Studies Program, Georgia State University, USA. <https://ideas.repec.org/p/ays/ispwps/paper0824.html>.
- Akin, J., P. Hutchinson and K. Strumpf, 2005. Decentralisation and government provision of public goods: The public health sector in Uganda. *J. Dev. Stud.*, 41: 1417-1443.
- Ali, I. and E.M. Pernia, 2003. Infrastructure and poverty reduction: What is the connection? ERD Policy Brief No. 13, Asian Development Bank, Manila, USA. <http://www.adb.org/sites/default/files/publication/28071/pb013.pdf>.
- Alonso, R., L. Judge and J. Klugman, 2006. PRSPs and Budgets: A Synthesis of Five Case Studies. In: Budget Support as More Effective Aid? Recent Experiences and Emerging Lessons, Koeberle, S., Z. Stavreski and J. Walliser (Eds.). The World Bank, Washington DC., USA.
- Alvarez-Cuadrado, F. and M. Poschke, 2011. Structural change out of agriculture: Labor push versus labor pull. *Am. Econ. J. Macroecon.*, 3: 127-158.
- Aschauer, D.A., 1989. Is public expenditure productive? *J. Monetary Econ.*, 23: 177-200.
- Bah, E.H., 2009. Structural transformation in developed and developing countries. Working Paper, The University of Auckland, USA.
- Bardhan, P., 1998. The State Against Society: The Great Divide in Indian Social Science Discourse. In: Nationalism, Democracy and Development, Bose, S. and A. Jalal (Eds.). Oxford University Press, Oxford, UK.
- Bhattacharya, B.B. and S. Sakthivel, 2004. Regional growth and disparity in India: Comparison of pre-and post-reform decades. *Econ. Political Weekly*, 39: 1071-1077.
- Brennan, G. and J. Buchanan, 1980. *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge University Press, Cambridge, USA.
- Canning, D. and E. Bennathan, 2000. The social rate of return on infrastructure investments. WB Policy Research Working Paper 2, World Bank, Washington, DC., USA.
- Carruthers, J.I. and G.F. Ulfarsson, 2002. Fragmentation and sprawl: Evidence from interregional analysis. *Growth Change*, 33: 312-340.
- Carruthers, J.I., 2002. The impacts of state growth management programmes: A comparative analysis. *Urban Stud.*, 39: 1959-1982.
- Chenery, H.B. and H. Elkington, 1979. *Structural Change and Development Policy*. Oxford University Press, Oxford, ISBN: 9780195200942, Pages: 526.
- Cordoba, J.C. and M. Ripoll, 2008. Endogenous TFP and cross-country income differences. *J. Monetary Econ.*, 55: 1158-1170.
- DFID., 2002. *Making the connections: Infrastructure for poverty reduction*. Department for International Development, London.
- Devarajan, S., V. Swaroop and H.F. Zou, 1996. The composition of public expenditure and economic growth. *J. Monetary Econ.*, 37: 313-344.
- Echevarria, C., 1997. Changes in sectoral composition associated with economic growth. *Int. Econ. Rev.*, 38: 431-452.
- Fan, S. and N. Rao, 2003. Public spending in developing countries, trend determination and impact. Environment and Production Technology Division EPIY Discussion Paper No. 99.
- Fan, S., L. Zhang and X. Zhang, 2004a. Reforms, investment and poverty in rural china. *Econ. Dev. Cult. Change*, 52: 395-421.
- Fan, S., S. Jitsuchon and N. Methakumnavut, 2004b. The importance of public investment for reducing rural poverty in middle-income countries: The case of Thailand. DSGD Discussion Paper No. 7, International Food Policy Research Institute, Washington, DC.
- Fan, S., P. Hazell and S. Thorat, 2000. Government spending, growth and poverty in rural India. *Am. J. Agric. Econ.*, 82: 1038-1051.
- Fernald, J.G., 1999. Roads to prosperity? Assessing the link between public capital and productivity. *Am. Econ. Rev.*, 89: 619-638.
- Gollin, D., S. Parente and R. Rogerson, 2002. The role of agriculture in development. *Am. Econ. Rev.*, 92: 160-164.
- Gollin, D., S.L. Parente and R. Rogerson, 2007. The food problem and the evolution of international income levels. *J. Monetary Econ.*, 54: 1230-1255.
- Gomanee, K., O. Morrissey, P. Mosley and A. Verschoor, 2003. Aid, pro-poor government spending and welfare. CREDIT Research Paper No. 3. University of Nottingham, Nottingham.
- Hansen, G.D. and E.C. Prescott, 2002. Malthus to solow. *Am. Econ. Rev.*, 92: 1205-1217.
- Harris, J.R. and M. Todaro, 1970. Migration, unemployment and development: A two-sector analysis. *Am. Econ. Rev.*, 60: 126-142.
- Hayami, Y. and V.W. Ruttan, 1970. Agricultural productivity differences among countries. *Am. Econ. Rev.*, 60: 895-911.

- Hayami, Y. and V.W. Ruttan, 1985. *Agricultural Development: An International Perspective*. 2nd Edn., Johns Hopkins University Press, Baltimore, ISBN: 9780801823480, Pages: 506.
- Herrendorf, B. and A. Valentinyi, 2005. Which sectors make the poor countries so unproductive? KTI/IE Discussion Papers 2005/19. <http://www.econ.core.hu/doc/dp/dp/mtdp0519.pdf>.
- Holmes, M. and A. Evans, 2003. A review of experience in implementing medium-term expenditure frameworks in a PRSP context: A synthesis of eight country studies. Overseas Development Institute, November 2003, London.
- Jahan, S. and R. McCleery, 2005. Making infrastructure work for the poor. United Nations Development Programme, New York.
- Jalilian, H. and J. Weiss, 2004. Infrastructure, growth and poverty: Some cross-country evidence. Proceedings of the ADB Institute Annual Conference on Infrastructure and Development: Poverty, Regulation and Private Sector Investment, December 6, 2004, Tokyo.
- Kavanagh, S.C., J. Johnson and C. Fabian, 2011. Anatomy of a priority-driven budget process. Government Finance Officers Association, Chicago.
- Kim, S., 1995. Expansion of markets and the geographic distribution of economic activities: The trends in US regional manufacturing structure, 1860-1987. *Quart. J. Econ.*, 110: 881-908.
- Kim, S., 2004. Industrialization and urbanization: Did the steam engine contribute to the growth of cities in the United States? NBER Working Paper No. 11206, University of California, Berkeley, California.
- Kongsamut, P., S. Rebelo and D. Xie, 2001. Beyond balanced growth. *Rev. Econ. Stud.*, 68: 869-882.
- Kuznets, S., 1973. Modern economic growth: Findings and reflections. *Am. Econ. Rev.*, 63: 247-258.
- Laitner, J., 2000. Structural change and economic growth. *Rev. Econ. Stud.*, 67: 545-561.
- Leruth, L. and E. Paul, 2006. A principal-agent theory approach to public expenditure management systems in developing countries. Working Paper No. 06/204, International Monetary Fund, Washington, DC., USA. <https://www.imf.org/external/pubs/ft/wp/2006/wp06204.pdf>.
- Lewis, W.A., 1954. Economic development with unlimited supplies of labour. *The Manchester School*, 22: 139-191.
- Logan, M.I., 1972. The spatial system and planning strategies in developing countries. *Geographical Rev.*, 62: 229-244.
- Lorber, L., 2011. Recent transformation of economic inequality in NUTS 3 regions in Slovenia. *Geoadria*, 16: 237-251.
- Lucas, Jr. R.E., 2004. Life earnings and rural-urban migration. *J. Political Econ.*, 112: S29-S59.
- Martinez-Vazquez, J. and R.M. McNab, 2003. Fiscal decentralization and economic growth. *World Dev.*, 31: 1597-1616.
- Musgrave, R.A., 1974. *Expenditure Policy for Development*. University of Florida Press, USA.
- Norton, A. and D. Elsom, 2002. What's behind the budget? politics, rights and accountability in the budget process. Overseas Development Institute, London.
- OECD., 1995. *Budgeting for Results: Perspectives on Public Expenditure Management*. Organization for Economic Co-operation and Development, Paris.
- OECD., 2012. *China in focus: Lessons and challenges*. Organization for Economic Co-operation and Development, Paris.
- Ogun, T.P., 2010. Infrastructure and poverty reduction: Implications for urban development in Nigeria. UNU-WIDER Working Paper No. 2010/43, pp: 1-18.
- Roberts, J., 2003. Managing public expenditure for development results and poverty reduction. Working Paper 203, Overseas Development Institute, London.
- Rostow, W.W., 1960. *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge University Press, London, pp: 1-37.
- Rowan, K., 2013. Will the budget help tackle regional inequalities? Touch Stone. <http://touchstoneblog.org.uk/2013/03/will-the-budget-help-tackle-regional-inequalities>.
- Syrquin, M., 1988. Patterns of Structural Change. In: *Handbook of Development Economics*, Volume 2, Chenery, H.B. and T.N. Srinivasan (Eds.). Elsevier Science, North-Holland, Amsterdam, pp: 197-273.
- Thornton, J., 2007. Fiscal decentralization and economic growth reconsidered. *J. Urban Econ.*, 61: 64-70.
- Van de Walle, D., 1995. Public spending and the poor: What we know, what we need to know. Policy Research Working Paper 1476. World Bank.
- Venables, A.J. and R. Kanbur, 2003. Spatial inequality and development. Working Paper No. 2003-38, Department of Applied Economics and Management, Cornell University, Ithaca, New York, USA.
- Williamson, J.G., 1965. Regional inequality and the process of national development: A description of the patterns. *Econ. Dev. Cult. Change*, 13: 3-45.
- World Bank, 1994. *World Development Report 1994: Infrastructure for Development*. Oxford University Press, New York, ISBN-13: 978-0195209914, Pages: 264.
- World Bank, 2005. *East Asia Decentralizes: Making Local Government Work*. The World Bank, Washington, DC., ISBN-13: 9780821360590, Pages: 267.