INTERGOVERNMENTAL TRANSFER IN INDONESIA AND THE FLYPAPER EFFECT PHENOMENON (EVIDENCE FROM REGENCIES / MUNICIPALITIES IN INDONESIA)

By

Dhani Setyawan

THESIS

Submitted to
KDI School of Public Policy and Management
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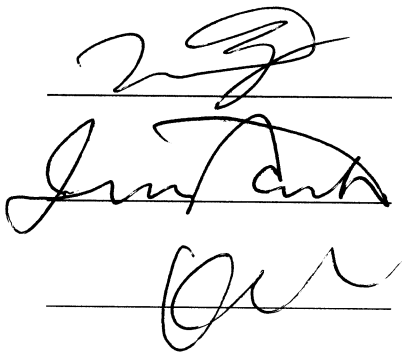
Committee in charge:

Professor Younguck KANG, Supervisor

Professor Jin PARK

Professor Kieun RHEE



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ABSTRACT

INTERGOVERNMENTAL TRANSFER IN INDONESIA AND THE FLYPAPER EFFECT PHENOMENON (EVIDENCE FROM REGENCIES / MUNICIPALITIES IN INDONESIA)

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The purpose of this study is to identify and analyse the impact of the Intergovernmental transfer (Balance Fund) and Local Own Revenue to the local government expenditure as well as to know the occurence of flypaper effect phenomenon in the relationship between those variables. Flypaper effect is a condition which the stimulus of local government expenditure caused by changes in central government transfers has a greater effect than the stimulus that caused by changes in local income. This study is performed in two parts, firstly, using cross section data of 188 municipalities and regencies from 2006 to 2008, and secondly, using panel data of 484 Regencies and Municipalities during 2001 to 2008. The Flypaper Effect phenomenon is measured by using data of the local government budget realization during the study period. The study shows that, firstly, Balance Fund and Local Own Revenue both partially and simultaneously have a significant impact on Local Government Expenditure. Second, the effect of Balance Fund on Local Expenditure is stronger than the effect of Local Own revenue. This proves the non occurence of flypaper effect phenomenon in the local government response to the central government transfer fund.

Dedicated to my parents & my dearest wife

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CHAPTER 1

INTRODUCTION

1.1 Background

The practice of regional autonomy in Indonesia today is a part of decentralization process. Regional autonomy is aligned with the enactment of Law No. 32 of 2004 on Local Government and Law No. 33 of 2004 on Central and Local Fiscal Balance. Further, the purpose of regional autonomy is to actualize the regions to be independent and have the freedom to regulate their own government without central government interference.

Until now, the implementation of regional otonomy has been implemented in each regencies and municipalities in Indonesia. However, the reality showed that the local governments can not be completely independent from the central government. This condition not only can be seen from the context of the political relations and regional authority's framework, but also visible in the fiscal relationship between central government and local government (Simanjuntak, 2006).

The direct implication of the implementation of regional autonomy is the need for substantial funds. The local government's main funding source comes from Local Own Revenue (PAD) which can be used to finance routine and development expenditures. Besides of local own revenue, Local governments also get support from the central government in the form of Balance Fund. Under Law no. 33 of 2004, Balance Fund consisted of General Purpose Grant (Dana Alokasi Umum - DAU), Specific Purpose

Grant (Dana Alokasi Khusus - DAK), and Revenue Sharing (Dana Bagi Hasil - DBH). The purpose of giving the balance fund is to reduce the vertical fiscal disparities (between central and local government), horizontal fiscal disparities (between local governments) and also to assist in financing local authority.

The problems that occured nowadays is the local government too much rely on Balance Fund allocation to finance their routine and development expenditures without optimizing its potentials. Local governments are trying to keep the substantial amount of Balance Fund for each period. According to Adi (2007) the proportion of Balance Fund is still the highest compared with other local revenue, including Local Own Revenue. He also mentioned that the Local Own Revenue is only able to finance local government spending at a maximum of 20%. This condition is not in line with the objectives of regional autonomy which is making the local government independent with its local potentials. This condition has lead to an asymmetrical behavior in local government.

According to Alderete (2004), when the central government provides assistance through transfers to local governments to improve their local expenditure, there is speculation that local government spending may respond asymmetrically to changes in transfer. Similarly, Maimunah (2006) proves the asymmetric behavior from the effect of balance fund on local government expenditure and local own revenue. The magnitudes of balance fund to local government expenditure much higher compare to Local Own Revenue. This showed that the transfer is so dominant in financing the local government expenditure. Indeed, this trend showed that the dependence of local governments to the central government is still high. In the long run this dependency should be reduced, because it will negatively impact on the local government independency.

Flypaper effect is the main discussion in this study. Flypaper effect is a condition which the stimulus of local spending caused by changes in central government transfers has a greater effect than the stimulus that caused by changes in local income (Oates, 1999).

Indonesia is an archipelagic country consisting of 33 provinces and 524 districts (DGFB, 2010). Each district has distinct regional characteristics that affect the amount of income or expenditure that can be obtained. These distinct circumstances is the reason that makes the author wants to examine the influence of the Balance Fund and the Local Own Revenue to the local government expenditure and whether there is a flypaper effect phenomenon of such influence on the local government districts in Indonesia.

1.2 Objectives of Study

The purpose of this study is to empirically prove the influence of Balance Fund and Local Own Revenue (PAD) on the Local Government expenditure and also to analyze the possibility of the flypaper effect occurence on the local government expenditure in Indonesia.

1.3 Significance of the Study

This study will provide some contributions of empirical research, theory and policy, namely (1) empirical contributions, to give empirical analysis of the influence of the Balance Fund and the Local Own Revenue to the allocation of local government expenditure in Indonesia, (2) policy contribution, to provide input for the Central and local Government in terms of making policy in the future, and (3) theorical contribution,

as material reference and additional data for other researchers whose interested in this study.

1.4 Research Question

To achieve the purpose of the study, this study would answer: (1) Whether Balance fund and local own revenue have positive significant effect on Local government expenditure; (2) Whether Balance fund and local own revenue can be used to predict the allocation of Local government expenditure; and (3) Whether or not flypaper effect phenomenon occurred in the intergovernmental transfer to the local government.

1.5 Scope and Limitations

This study will be performed in two parts, firstly, using cross section data of 188 municipalities and regencies from 2006 to 2008, and secondly, using panel data of 484 Regencies and Municipalities during 2001 to 2008. The effect of local government expenditure (Flypaper Effect) is only be measured by using the data of the amount of realization of Balance Fund and local own revenue which are collected from the local government budget realization (APBD) during the study period.

CHAPTER 2

FISCAL DECENTRALIZATION IN INDONESIA

Since the beginning of its independence, the Indonesian government had implemented intergovernmental transfer policy. Various types of subsidies and grants are distributed to the regions, which generally intended to cover the difference between the amounts of spendings and revenues. Nevertheless, the criteria of the various grants and subsidies are not clear and very depending on the central government's policy. This condition made local governments difficult in preparing the Local budget (APBD) because the local governments did not have certainty about the amount of subsidy that they would receive.

The idea of fiscal decentralization actually had appeared in Law No. 5 of 1974 on "the Fundamentals of Local Government". In contrary, what happened at that time was fiscal centralization system. Fiscal centralization was caused by the increase in state revenue from oil and gas sector in the 1970s. The central government had the ability to control budgets even to the Local government level. This condition happened because there was some reluctance from central government to give fiscal management authority to the local government for reasons of political stability.

Juridical basis that regulates the implementation of regional autonomy has been revised two times. In the early enactment, the juridical basis was based on Law No. 22 of

1999 and Law No. 25 of 1999 which regulates the Regional Autonomy and Fiscal Decentralization. Nowadays, along with the development of regional autonomy, those Laws were amended by the issuance of Law No. 32 of 2004 and Law No. 33 of 2004 which regulates "Local Government" and "Central and Local Fiscal Balance".

According to Law No. 33 of 2004 on "Central and Local Fiscal Balance" stated that, Fiscal Balance between central and local government is government financing system in the framework of a unitary state that includes the financial distribution between central and local governments. The equality among regions should follow a democratic, fair, transparent and proportional with regard to the potential, condition and local needs. Moreover, the obligations and the division of authority and authorization procedure should include a sound financial supervision and management.

2.1 Intergovernmental Transfer

Under the Law No. 32 of 2004, central government granting intergovernmental transfer for the local governments, namely Balance Fund (Dana Perimbangan), which consist of: General Purpose Grant (Dana Alokasi Umum - DAU), Specific Purpose Grant (Dana Alokasi Khusus - DAK), and Revenue Sharing (Dana Bagi Hasil - DBH). Apart from the Balance funds, the Local governments also have their own funding sources of revenue: Local Own Revenue (Pendapatan Asli Daerah - PAD), Financing and other legally Local Income.

2.1.1 General Purpose Grant (DAU)

DAU is a kind of intergovernmental transfer that is not tied to specific spending

programs. The purpose of this transfer is to close the fiscal gap and to give the ability of fiscal equalization between regions and also equalization between central and local governments. Therefore, DAU for each region will not be the same amounts. Regions that have low Local Own Revenue (PAD) will get higher amounts of DAU, and vice versa regions that have high PAD will get low amounts of DAU.

DAU is a block grant provided to all regencies and municipalities for the purpose of filling the gap between capacity and fiscal need and distributed by a formula based on certain principles which generally indicate that poor and under developed regions should receive more DAU compare to rich regions. In other words the purpose of DAU is to give an equitable public service delivery among local governments in Indonesia.

By definition the DAU can be interpreted as follows:

1. As a component of the balance funds in the state budget (APBN), the allocation is based on the concept of the fiscal gap which is the difference between fiscal needs and fiscal capacity.
2. An instrument to overcome the horizontal imbalance that is allocated for the purpose of equitable distribution of financial capability among the regions and its use is fully determined by the Local governments.
3. This Equalization grant (DAU) serve to neutralize the imbalance of financial capability in the presence of differences of PAD and Revenue Sharing (DBH) between regions

According to Law no. 33 of 2004, the total DAU formula is set at least 26% of domestic net revenue specified in the State Budget (APBN). The amounts of DAU for each local government are allocated on the basis of fiscal gap and basic allocation. Fiscal

gap is calculated based on the local fiscal needs minus with local fiscal capacity, while the basic allocation is computed based on the number of local civil servants. Distribution of DAU conducted each month and distributed 1 / 12 yearly of total DAU.

2.1.2 Specific Purpose Grant (DAK)

Specific Purpose Grant is a fund sourced from the revenue of state budget (APBN) allocated to specific regions in order to help funding for special regional activities and in accordance with national priorities. DAK is prioritized to help the regions with financial capacity below the national average. Additionally, DAK has been given in order to fund the provision of physical infrastructure facilities and basic community services which currently delegated as regional affairs. DAK is allocated to local districts to fund certain needs that are specific (special need[1]) which is depending on the availability of funds in the state budget.

By definition the DAK can be interpreted as follows:

1. Prioritized to help the areas with the financial capacity below the national average, in order to fund the provision of physical infrastructure facilities and basic community services that already given as regional affairs;
2. To support the infrastructure development acceleration in coastal regions and small islands, border areas with other countries, remote areas, areas prone to flooding / landslides, and includes the local area tourism;
3. To encourage productivity, employment opportunities and economic diversification, especially in rural areas, through specific activities in agriculture, marine and

[1]Special need is a need that is difficult to estimate with a general allocation formula (DAU), and / or need that is a commitment or a national priority.

fisheries, and infrastructure;

4. To improve access for the poor to basic services and basic infrastructure through special activities in education, health, and infrastructure;
5. To maintain and improve the quality of life, prevent environmental damage, and reduce disaster risk through specific activities in the environmental field, accelerate delivery and improve coverage and reliability of infrastructure services and basic facilities in one integrated system through specific activities in the field of infrastructure;
6. To improve coordination and synchronization of activities funded from DAK which the activities funded from the budget of the Ministry / Institution.

2.1.3 Revenue Sharing (DBH)

DBH is a fund sourced from the revenue of state budget (APBN) allocated to the region based on percentage proportions to fund the local needs. DBH consist of two types, namely DBH from tax and DBH from Natural Resources. The pattern of revenue sharing is done with a certain percentage based on the region. DBH from tax is derived from: 1) Land and Building Tax (PBB), (2) Acquisition Rights to Land and Buildings tax (BPHTB) and (3) Income Tax. While DBH from Natural Resources is derived from: (1) Forestry, (2) General Mining, (3) Fisheries, (4) Oil Mining, (5) Natural Gas, and (6) Geothermal.

Based on the Law No. 32 of 2004, as a consequence of broad autonomy authority, local governments have an obligation to improve services and community welfare in a democratic, fair, equitable, and sustainable. This obligation could be met if local governments are able to manage optimally their natural resource potentials, human

resources and financial resources. Each region is required to enhance the capabilities of human resources in order to explore its potential and to manage it. Therefore, local own revenue expected to continuosly increasing and local government dependence on central government transfer expected to be reduced.

2.2 Local Own Revenue (Pendapatan Asli Daerah - PAD)

Nowadays, with the implementation of regional autonomy, the local governments have its own authority to fully regulate its administrative functions. With such authority, the local governments are also required to make regional policy to create and enhance people's welfare. In order to achieve this, the local own revenue is expected to be able to support local needs (local government expenditure) and also expected to be increasing each year. Related to this, Local governments are also has greater freedom in exploring the potential of local source revenues as a form of decentralization principles.

PAD is revenue earned from Local government which consists of local taxes, Retribution, Income from Separation of local property product and other legally local revenue (Article 157 of Law No. 32 of 2004 and Article 6 of Law no. 33 of 2004). PAD is one source of revenue that should always keep in spur growth. In the autonomy era, the local government is demanded to be more dependent in financing local development and improving service to the community. Therefore, investment growth in the regencies and municipalities should be prioritized because it expected to give a positive impact on improving the national economy.

2.3 Local Government Expenditure (Belanja Daerah)

Local income earned from both PAD and the intergovernmental transfer would be used by local governments to finance their Local Expenditures which consist of: Routine Expenditures and Development expenditure. Routine Expenditures is a form of non physical expenditure which occurs continuously throughout the budget period. For example: civil servants salaries, honorarium, goods expenditures, and other expenditures. Routine expenditure is generally used to finance local government operations and the impact can not be enjoyed directly by the public.

Apart from Routine Expenditures, local governments also make non-routine expenditure and generally in a physical form which benefits for more than one year. Development expenditure incurred by local government which benefits can be felt directly by the people because it is intended to improve public services. For example: expenditure for roads construction, school buildings, hospitals, bridges construction and so forth. All of those expenditures can be felt directly by the public.

2.4 The objective of Intergovernmental Transfer

At least there are five main purposes of intergovernmental transfers. First of all, Vertical Equalization, Central Government controls most of the sources of the main state revenue (taxes). Meanwhile, local government controls only a small portion of state revenue sources, or only has the authority to levy local taxes. This condition causes the vertical imbalance between Central and Local Government. As a result, regions with abundant natural resources can not fully gain the wealth of their region. This condition can be resolved by using Balanced Fund, especially Revenue Sharing (DBH). With

Balanced Fund, the regions that produced revenue sources (taxes and natural resources) would receive a larger portion of revenue sharing.

Secondly, Horizontal Equalization, the Local Government ability to generate income are varies greatly depending on the condition of the regions itself. This implies to the fiscal capacity in the regions. In addition, each area also has varies local government expenditures depending on the total population, the proportion of the population, and the geography condition. This implies to the variation of fiscal needs in the regions. The difference between fiscal needs and fiscal capacity is called fiscal gap. This fiscal gap will be offset by transfers from the central government in the form of DAU.

Thirdly, maintain the achievement of minimum service standards in each region. Each region has a varying ability to provide public services for its citizens; this is mainly due to differences of resources possessed by each region. Meanwhile, the minimum public service standard for each local government in Indonesia must be maintained equally. Therefore the central government must ensure standards of public services in each region by providing subsidies.

Fourth, overcome problems arising from the various or abundance effects of public service. Each type of public services will not be enjoyed only by people in that certain area, but also can be enjoyed by people from other area. For example, good education, inter-regional highway, and proper local hospitals, can not be restricted only to public benefit for certain areas. Nevertheless, without any benefit (in the form of income), local government is usually reluctant to invest in it. Therefore, the central government needs to provide some incentives or give financial resources to the local government to fulfill such public services.

Finally, stabilization, this can be done by using transfer as a stabilizer at the time of sluggish regional economic activity or at the time of increases economic activity. At the moment of regional economic activity is slowing down, granting the transfer can be increased, and vice versa when the economy is increasing, granting the transfer can be reduced. However, accuracy is needed to calculate the decrease and increase in the transfer and determine the right moment to conduct the policy in order not to cause conflict with the purpose of stabilization.

CHAPTER 3

FLYPAPER EFFECT

Oates (1999) stated that several studies have been done to know the behavior of local governments in responding the central government transfers. He concluded that there was a different response of local governments expenditure towards central government transfers compare to their local own revenue. In brief, the response of local government to central government transfer is greater than their local own revenue so-called flypaper effect.

Some empirical studies had showed the occurrence of differences stimulus between grants and Local own revenue. The phenomenon of flypaper effect had brought broader implications that the transfer would increase the local government spending (Turnbull, 1998). While, according to Hines & Thaler (1995) flypaper-effect is seen as an anomaly in a rational behavior. If the transfer should be considered as an (additional) income for the people (as well as local taxes), then it should be spent in the same way too.

Similarly, Aaberge & Langorgen (1997) analyzed the fiscal and local government spending behavior by using simultaneous setting and they found a flypaper-effect in the local response to the changes in transfer revenue. The problem for the Norwegian local government in making resource allocation decisions are: the selection of the best combination of local taxes, budget surpluses and deficits, and output in the public service,

which is limited by the "rules" that the total local government spending plus the budget surplus can not exceed the total of central government grants plus local taxes.

Flypaper effect phenomenon can occur in two versions (Gorodnichenko, 2001). Firstly, lead to the increase in local taxes and excessive of government budget spending. Secondly, lead to a higher elasticity of local government expenditure to transfer rather than the elasticity of local government expenditure to local tax revenue. Those above studies, support the hypothesis of flypaper-effect.

3.1 Theories of flypaper effect

Those above anomalies conditions triggered intensive discussion among economists. Their debates offered some explanations. In the economic realm, there are two theories that can explain the flypaper effect phenomenon (Sagbas and Saruc, 2004), namely the bureaucratic model and the fiscal illusion model. The bureaucratic model examines flypaper effect from the viewpoint of bureaucrats, while the fiscal illusion model examines from the viewpoint of society who have limited information on their local authority budgets.

3.1.1 The bureaucratic model

The bureaucratic school of thought initiated by Niskanen (1968). In his view, bureaucrats have a powerful position in the public decision making. He assumed that the bureaucrats behave to maximizing budget as proxy of their power. Implicitly, this bureaucratic model confirmed the flypaper effects as a result of the behavior of bureaucrats who spend transfer (grants) more freely rather than raise taxes. Likewise,

McGuire (1973) argued this as the behavior of the local decision-maker in maximizing their utility (the greedy politicians' model). Thus, the flypaper effect occurs because the superiority knowledge of the bureaucrats about transfer. In brief, more information owned by the bureaucrats allow them to make an excessive spending

The important implication of this bureaucratic model is that fiscal decentralization can help in explaining the growth of the public sector. In a decentralized system, local governments have more information to distinguish the interests of the people so they can obtain more resources from the economy (Tiebout, 1956). This gives the implication that the economic efficiency provision of public goods can be achieved by involving the community participation.

3.1.2 The fiscal illusion model

Oates (1979) on Erik borge (1995) states flypaper effect phenomenon can be explained by fiscal illusion. He stated that the flypaper effect is the result of ignorance of the people to the local government budget. Grossman (1990) described that fiscal illusion happened because of the separation of taxing and spending power that obscured the tax payers (people) perceptions. Apparently, fiscal illusion is defined as either public misperception about the financing or budget allocations which the decisions on both cases resulting from this kind of misperception. Logan (1986) argues that the misperceptions can continue in the long run.

Turnbull (1992) offers another explanation about these misperceptions. According to Turnbull, the uncertainty of public goods price level would create a risk. This risk in the long run will lead to an excessive spending. Likewise, Fillimon, Romer, and

Rosenthal (1982) developed a hypothesis of fiscal illusion in the context of the public ignorance about the number of transfers of their local government received. In this case, the local governments trying to hide the number of transfers received and then spend it at the maximum level. As a result, people see that there has been an increase of local government spending with a higher increase than the increase in quantity demanded as a reflection of the increase in revenue.

3.2 Flypaper effect phenomenon in other countries

The studies of flypaper effect have been done in several countries. As an illustration, Legrenzi & Milas (2001) showed an empirical evidence of the existence of flypaper-effect in the long run for the sample municipalities in Italy. They stated that the local Governments consistently increase their expenditure more with respect to increase in state transfer rather than to increase in own revenues.

Similarly, Deller et al (2002) analyze the relationship between income derived from the state shared revenue using a cross section data for 581 Wisconsin cities and villages in the United States and found that for every dollar increase in income per capita, the total expenditure per capita increased by about 12-15 cents. While for every dollar increase in per capita revenue sharing, the expenditure per capita increased by 46-55 cents. These results are consistent with the hypothesis of flypaper-effect. They also found a decrease in local property taxes revenues per capita amounted to 32-41 per cents as a result of an increase of one dollar in revenue sharing. As a result the revenue sharing is stimulated spending greater than expected (flypaper effect), revenue sharing lowered the local pressure for gaining a higher income from property taxes. They suspected that the

local response pattern is also affected by the determination formula of profit-sharing itself.

Indeed, Slack (1980) also conducted an empirical analysis study with a sample of municipalities in Canada and he stated that unconditional grants to municipalities is followed with the increase in municipalities spending (but with a smaller number than the grants). However, the spending response to the conditional grants was not too obvious. Also, Zampeli (1986) provide a similar evidence for data in the municipal governments in the United States, flypaper-effect occured in reaction to the unconditional grants expenditure. Above all, those studies support the hypothesis of Flypaper effect.

3.3 The flypaper effect as one of the indicators for the success of decentralization

3.3.1 The effect of Intergovernmental transfer to local expenditure

Since the implementation of fiscal decentralization in Indonesia, the central government expects the region to manage its resources so as not to rely solely on the Intergovernmental Transfer (Balanced Fund). In some regions the role of the Balanced Fund is significant because the local spending policy is dominated by the amount of Balanced Fund they received rather than the PAD (Sidik, 2002). The relationship between revenues (taxes) and expenditures had been widely discussed and the various hypotheses about the relationship had been empirically tested (Chang & Ho, 2002).

Furthermore, some studies claimed that revenue affects expenditure, while some others claimed the expenditure that affects revenue (Doi, 1998). Whilst the study of the effect of transfers or central government grants toward spending decisions or local government spending is already discussed for more than 30 years (Gamkhar & Oates, 1996). Theoretically, the response of distributive and allocative effects should have no

different impact from other funding sources, such as local tax revenues (Bradford & Oates, 1971). However, in empirical studies this condition is not always happened. This means, the stimulus from the transfer or grant to the local spending is often greater than the stimulus of local revenue (local taxes) itself (flypaper effect).

Additionally, Holtz-Eakin et al (1994) stated that there is a closed relation between the central government transfers to the local government spending. Also, Gamkhar & Oates (1996) analyzed the local government response to changes in the number of transfers from the federal government in the United States from 1953 to 1991. They stated that the reduction in the amount of transfers caused a decrease in local spending.

Legrenzi & Milas (2001) found empirical evidence that in the long run, the transfer affects the local government expenditure and the declining of the number of transfers may cause a decrease in local government expenditure. Furthermore, Priyo Hari Adi (2008) strengthens this trend. He found that the Indonesian local government is not getting more independently; on the contrary the local government dependence on central government transfers becomes higher. This gives strong indications that the behavior of local government spending is greatly influenced by the transfer revenue source.

Certainly, the above research results have shown that the intergovernmental transfer is an important source of income for a region to fulfiil it's spending. The total amount of intergovernmental transfer can show the level of independence of a region. In brief, the more intergovernmental transfer received it means the region is still highly depending on the central government in fulfilling its spending, which indicates that the region had not been independent, and vice versa.

In a budgeting process, there is an incrementalism theory. Incrementalism budgeting theory is a budgeting system which simply increases or decrease the amount of budget on pre-existing items using previous year budget data as a basis to adjust the size of the addition or subtraction for the current year budget.

Based on the concept above, my study hypothesis can be expressed as follows:

H_{1a}: Balanced Fundcurrentyear ($Trans_t$) has a positive significant effect on Local Government Expenditure Current Year ($Locexp_t$)

H_{1b}: Balanced Fundprevious year[2] ($Trans_{t-1}$) has a positive significant effect on Local Government Expenditure Current Year ($Locexp_t$)

3.3.2 The effect of Local Own Revenue to local expenditure

Studies about the influence of local own revenue to local spending has been done (eg Von Furstenberg et al, 1986; Legrenzi & Milas, 2001). The hypothesis which states that local revenue (mainly tax) will affect local government spending is known as tax spend hypothesis (Doi, 1998; Von Furstenberg et al 1986). In this case local government spending will be adjusted depends on local government revenue (income changes occurred before changes in expenditure).

In the international context, several studies have been done to see the impact of local income to expenditure. Cheng (1999) found that the tax-spend hypothesis applies to the case of local government in several Latin American countries, namely Colombia, Dominican Republic, Honduras, and Paraguay. Likewise, Hoover & Sheffrin (1992), they are empirically found that there is a difference relationship in the two different time frames. They found that for the sample data before the mid-1960s the tax effect on

[2] $Trans_{t-1}$: using lag 1 year data of Balanced Fund

spending, while for the sample data after the 1960s taxes and spending do not affect each other (causally independent).

The above research results have shown that the Local Own revenue (PAD) is an important source of income for a region to fulfil its spending. The total amount of PAD can show the level of independence of a region. The more local revenue gained may allow the region to fulfill its local expenditure without depending on central government transfer, which shows that local governments have been able to be more independent, and vice versa.

Based on this concept, my study hypothesis can be expressed as follows:

H_{2a}: Local Own Revenue (PAD) current year ($Ownrev_t$) has a positive significant effect on Local Government Expenditure current year ($Locexp_t$)

H_{2b}: Local Own Revenue (PAD) previous year [3] ($Ownrev_{t-1}$) has a positive significant effect on Local Government Expenditure current year ($Locexp_t$)

3.3.3 The flypaper effect as a phenomenon in predicting the local government expenditure

Legrenzi & Milas (2001) assert that the government policy variables in the short run are adjusted with the transfer they received. Holzt-Eakin et al (1994) analyzed the maximization model under uncertainty of intertemporal utility function using annual time series data from 1934 to 1991. They found that, the extent of local spending can be rationalized through a model in which decisions are based on the availability of permanent resources, not the temporary resources. They found that grants last year can predict expenditures of the current year, but on the contrary, spending last year can not

[3] $Ownrev_{t-1}$: using lag 1 year data of Local Own Revenue (PAD)

predict earnings for the current year.

Flypaper effect is the major phenomenon in this study. Pramela (2009) stated that the flypaper effect is a condition that occurs when governments spending respond (more improvident) in using transfers (grants) than using its own capabilities (PAD). She conducted the research using 13 municipalities / regencies in Sumatra Island and found flypaper effect in response to DAU and PAD. She also observed the occurrence of flypaper effect in predicting the future local government expenditure. Furthermore, Sukri and Halim (2004) on Pramela (2009) found the same result of flypaper effect for the research in Java and Bali Islands. They empirically prove that the magnitude of local spending is influenced by the amount of DAU received from the central government (DAU predictive power to the local government spending is higher than the predictive power of PAD).

In brief, from those above several studies, they have given the fact that Indonesian local government is still dependent on central government. This is proven by the occurrence of flypaper effect in the regions object of their research. Undoubtedly, this means that the regions are not yet independent.

Based on this concept, my study hypothesis can be expressed as follows:

- **H_{3a}: Balanced Fund currentyear ($Trans_t$) has a greater effect on Local Government Expenditure current year ($Locexp_t$) rather than Local Own Revenue (PAD) current year ($Ownrev_t$)**
- **H_{3b}: Balanced Fund previous year ($Trans_{t-1}$) has a greater effect on Local Government Expenditure current year ($Locexp_t$) rather than Local Own Revenue (PAD) previous year ($Ownrev_{t-1}$)**

CHAPTER 4

THE FINDINGS AND RESULTS

This study using Regencies / Municipalities data in Indonesia during period from 2001 until 2008 with total of 484 Regencies / Municipalities (source: BPS – Indonesia Central Bureau of Statistics). Due to the changes in the number of regions in Indonesia during the period of study – the regions experienced unification, division and establishment during 2006 until 2008 – then the sample will be used in this study are the regions that meet the following criteria:

1. The availability of Local Budget Realization Report data (APBD)[4] from 2006 until 2008.
2. Regencies / Municipalities that already exist and not experiencing changes (division, unification)[5] during 2006 to 2008

[4]The availability of APBD data (Local Budget Realization Report data) depends on whether regencies / municipalities are already formed or not during the study period.

[5]For example, during the year 2001, the total number of regencies / municipalities in Indonesia are 337 regencies / municipalities, while in 2008 the total number of regencies / municipalities are increased to 484 regencies / municipalities. The total number of regencies / municipalities are increased by about 147 regencies / municipalities during 8 years. Some regencies / municipalities that is found not having APBD data during the study period is caused by the current regencies/municipalities has not been established/formed yet.

Referring to those above criterias, there were only 188 Regencies / Municipalities that can be used as a sample in this study. This study is using secondary data ie Local Own Revenue (PAD), Balance Fund (Dana Perimbangan) and Local Expenditure which are included in the Local Budget Realization Report data (APBD). This data was obtained from Directorate General of Fiscal Balance website (http://www.djpk.depkeu.go.id/).

This study is using regression analysis that are simple regression and multiple regression analysis. Simple regression analysis is used to observe the effect of Balance Fund **(Trans)** and local own revenue **(Ownrev)** to total local expenditure **(Locexp)** in cross section with the following equation:

$$\boldsymbol{Y_t = \beta_0 + \beta_1 x_i + e}$$

Where:

$\boldsymbol{Y_t}$: Total Local Expenditures (**$Locexp_t$**)

$\boldsymbol{\beta_0}$: Constant

$\boldsymbol{\beta_1}$: Regression Coefficient

$\boldsymbol{x_i}$: Total **$Trans_t$** (**$Trans_{t-1}$**) **or** Total **$Ownrev_t$** (**$Ownrev_{t-1}$**)

$\boldsymbol{e}$: Error term

Multiple regression analysis is used to predict whether the variables of Balance Fund **(Trans)** and Local own revenue **(Ownrev)** are simultaneously affecting the local expenditure **(Locexp)**. The regression equation used is as follows:

$$Y_t = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + e$$

Where:

Y_t : Total expenditures (**$Locexp_t$**)

β_0 : Constant

β_1, β_2 : Regression Coefficient

x_{1i} : Total **$Trans_t$** (**$Trans_{t-1}$**)

x_{2i} : Total **$Ownrev_t$** (**$Ownrev_{t-1}$**)

e : Error term

In addition to those above cross-section data analysis, using a model by Sacbas and Saruc (2004), a panel data analysis was carried out to examine the flypaper effect. In panel data analysis, 484 regencies/municipalities data are used over the period of 2001 until 2008.

The aim of using those above data analysis is to prove the hypothesis (**H_{1a} ,H_{1b} ,H_{2a} ,H_{2b} ,H_{3a} ,H_{3b}**) of the effect of Balance Fund **(Trans)** and Local own revenue **(Ownrev)** to local expenditure **(Locexp)**.

4.1 Analysis the effect of $Trans_t$ and $Ownrev_t$ to $Locexp_t$

Simple regression model is used to know the effect of Balance Fund current year (**$Trans_t$**) and Local Own revenue current year (**$Ownrev_t$**) to the Local Expenditure current year (**$Locexp_t$**). To simplify the regression calculation, this study was completed by using STATA 10.0.

Table 1:
Analysis the effect of Balance Fund current year ($Trans_t$) to the Local Expenditure current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)		
	Year 2008	Year 2007	Year 2006
Constant	12985.94 (1.00)	92762.3 (4.56)	38196.35 (3.02)
Transfer Current Year ($Trans_t$) (Balanced Fund)	1.130835 (52.28)	1.463722 (35.31)	0.8767144 (33.76)
Adjusted R-squared	0.9360	0.8695	0.8589
Included observations	188	188	188

Notes: **Figures in brackets are t-statistics.**

Table 2:
Analysis the effect of Local Own revenue current year ($Ownrev_t$) to the Local Expenditure current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)		
	Year 2008	Year 2007	Year 2006
Constant	**510765.8** **(28.17)**	**454341.3** **(21.53)**	**337776.5** **(25.04)**
Own Revenue Current Year ($Ownrev_t$)	**1.896648** **(11.33)**	**3.190334** **(10.17)**	**2.456278** **(11.51)**
Adjusted R-squared	**0.4052**	**0.3537**	**0.4130**
Included observations	**188**	**188**	**188**

Notes: **Figures in brackets are t-statistics.**

Due to the simple regression results from table 1 and table 2 **(using year 2008 results)**[6], it can be interpreted that: with 1% significant level, 1% increasing in **Balanced Fund 2008** (**$Trans_t$**) will followed by 1.1308% increased in **Local expenditure 2008** (**$Locexp_t$**). Additionally, 1% increased in **Own Revenue 2008** (**$Ownrev_t$**) will followed by 1.8966% increased in **Local Expenditure 2008** (**$Locexp_t$**), holding other factors constant.

[6]The year of 2008 is used as the year that can represent the year of 2006 and the year of 2007. The output interpretation in the year 2008 can also be found similar for year 2006 and year 2007.

From the Significance test results, **Balanced Fund 2008** (**$Trans_t$**) obtained t-statistic of **52.28,** then hypothesis **H_{1a} is accepted**, which means **Balanced Fund 2008** (**$Trans_t$**) has a positive and significant impact on **Local expenditure 2008** (**$Locexp_t$**). This means the higher the current year's Balance Fund (**$Trans_t$**) the greater the local expenditure current year (**$Locexp_t$**). Additionally, **Own Revenue 2008** (**$Ownrev_t$**) obtained t-statistic of **11.33,** then hypothesis **H_{2a} is accepted**, which means **Own Revenue 2008** (**$Ownrev_t$**) has a positive and significant impact on **Local expenditure 2008** (**$Locexp_t$**). This means the higher the current year's local own revenue (**$Ownrev_t$**) the greater the local expenditure current year (**$Locexp_t$**).

While the multiple regression analysis is used to determine the effect of **Transfer Current Year (Trans$_t$)** and **Own Revenue Current Year** (**$Ownrev_t$**) against **Local Expenditure Current year** (**$Locexp_t$**), the results can be shown in the table below:

Table 3:
Analysis the effect of Transfer Current Year ($Trans_t$) and Own Revenue Current Year ($Ownrev_t$) against Local Expenditure Current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)		
	Year 2008	Year 2007	Year 2006
Constant	21493.02 (2.24)	63560.96 (3.65)	54819.12 (5.64)
Transfer Current Year ($Trans_t$) (Balanced Fund)	0.6108201 (13.54)	1.175207 (8.83)	0.7563436 (34.01)
Own Revenue Current Year ($Ownrev_t$)	1.010308 (56.89)	1.307209 (33.43)	1.04968 (11.72)
Adjusted R-squared	0.9677	0.9077	0.9186
Included observations	188	188	188

Notes: **Figures in brackets are t-statistics.**

Table 3 **(using year 2008 results)** shown that the Adjusted R-Squared of 0.9677 means that 96.77%, both variables (**Balanced Fund 2008** and **Own Revenue 2008**) can explain the model and the remaining of 3,33% is explained by other variables outside of

this model. This indicates that both Balanced Fund current year (**$Trans_t$**) and Own Revenue current year (**$Ownrev_t$**) influence significantly against Local expenditure current year (**$Locexp_t$**).

As for observing the **Flypaper Effect Phenomenon**, this study compared the value of each coeficient when all of the variables (Balanced Fund and Own Revenue) are regressed simultaneously. Coefficient for **Own Revenue 2008** (1.010308) is greater than coefficient for **Balanced Fund 2008** (0.6108201). Thus, the magnitude of Own Revenue current year (**$Ownrev_t$**) is significantly more powerful against Local Expenditure current year (**$Locexp_t$**) than Balanced Fund current year (**$Trans_t$**). This study concluded that the hypothesis **H_{3a}** that states "**Balanced Fund current year ($Trans_t$) has a greater effect on Local Government Expenditure current year ($Locexp_t$) rather than Local Own Revenue (PAD) current year ($Ownrev_t$)"** is **rejected.**

4.2 Analysis the effect of $Trans_{t-1}$ and $Ownrev_{t-1}$ to $Locexp_t$

Simple regression model is used to know the predictive power of each independent variable - the effect of Balance Fund previous year (**$Trans_{t-1}$**) and Local Own revenue previous year (**$Ownrev_{t-1}$**) -to Local Expenditure current year (**$Locexp_t$**).

Table 4:
Analysis the the effect of Balance Fund previous year ($Trans_{t-1}$) to Local Expenditure current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)	
	Year 2008	Year 2007
Constant	17920.98 (0.83)	6581.99 (0.32)
Transfer Previous Year ($Trans_{t-1}$) (Balanced Fund)	1.314342 (29.92)	1.30794 (30.51)
Adjusted R-squared	0.8271	0.8325
Included observations	188	188

Table 5:
Analysis the the effect of Local Own revenue previous year ($Ownrev_{t-1}$) to Local Expenditure current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)	
	Year 2008	Year 2007
Constant	491979.1 (27.79)	456646.2 (20.50)
Own revenue previous year ($Ownrev_{t-1}$)	3.354684 (12.74)	3.190769 (9.05)
Adjusted R-squared	0.4631	0.3021
Included observations	188	188

Notes: **Figures in brackets are t-statistics.**

Due to the simple regression results from table 4 and table 5 **(Using year 2008 results)**, it can be interpreted that: with 1% significant level, 1% increasing in **Balanced Fund 2007** (**$Trans_{t-1}$**) will followed by 1.3143% increased in **Local Expenditure 2008** (**$Locexp_t$**). Additionally, 1% increased in **Own Revenue 2007 ($Ownrev_{t-1}$)** will followed by 3.3547% increased in **Local Expenditure 2008** (**$Locexp_t$**), holding other factors constant.

From the Significance test results, **Balanced Fund 2007** (**$Trans_{t-1}$**) obtained t-statistic of 29.92**,** then hypothesis **H_{1b} is accepted**, which means **Transfer 2007**(**$Trans_{t-1}$**) has a positive and significant impact on **Local Expenditure 2008** (**$Locexp_t$**). This means the higher the previous year's Balance Fund (**$Trans_{t-1}$**) the greater the local expenditure current year (**$Locexp_t$**). Additionally, **Own Revenue 2007 ($Ownrev_{t-1}$)** obtained t-statistic of **12.74,** then hypothesis **H_{2b} is accepted**, which means **Own Revenue 2007 ($Ownrev_{t-1}$)** has a positive and significant impact on **Local Expenditure 2008** (**$Locexp_t$**). This means the higher the previous year's local own revenue (**$Ownrev_{t-1}$**) the greater the local expenditure current year (**$Locexp_t$**).

While the multiple regression analysis is used to determine the effect **$Trans_{t-1}$** and

$Ownrev_{t-1}$ against **$Locexp_t$**, the results can be shown in the table below:

Table 6:
Analysis the effect of Balance Fund previous year ($Trans_{t-1}$)and Local Own revenue previous year ($Ownrev_{t-1}$) against Local Expenditure current year ($Locexp_t$)

Variable	Local Expenditure current year ($Locexp_t$)	
	Year 2008	Year 2007
Constant	59461.14 (3.96)	8682.6 (0.44)
Transfer Previous Year ($Trans_{t-1}$) (Balanced Fund)	1.091695 (32.39)	0.963915 (5.30)
Own revenue previous year ($Ownrev_{t-1}$)	1.671782 (14.58)	1.197404 (26.52)
Adjusted R-squared	0.9191	0.8538
Included observations	188	188

Notes: **Figures in brackets are t-statistics.**

Table 6 **(using year 2008 results)** shown that the Adjusted R-Squared of 0.9191 means that 91.91%, both variables Balanced Fund 2007 and Own Revenue 2007 (**$Trans_{t-1}$** and **$Ownrev_{t-1}$**) can explain the model and the remaining of 8,09% is explained by other variables outside of this model. This indicates that both Balanced Fund previous year (**$Trans_{t-1}$**) and Own Revenue previous year (**$Ownrev_{t-1}$**) influence significantly against Local Expenditure current year (**$Locexp_t$**).

As for predicting the **Flypaper Effect Phenomenon**, this study compared the value of each coeficient when all of the variables (Balanced Fund and Own Revenue) are regressed simultaneously. Coeficient for **Local Own Revenue previous year (2007)** (1.6718) is greater than coefficient for **Balance Fund previous year (2007)** (1.0917). Thus the magnitude of **Local Own Revenue previous year ($Ownrev_{t-1}$)** is significantly more powerful in predicting **Local Expenditure** comparing to the magnitude of **Balance Fund previous year ($Trans_{t-1}$)**. This study concluded that the hypothesis **H_{3b}** that states **"Balanced Fund previous year ($Trans_{t-1}$) has a greater effect on Local Government**

Expenditure current year (Locexp$_t$) rather than Local Own Revenue (PAD) previous year (Ownrev$_{t-1}$)" is **rejected.**

4.3 Panel Data Analysis (Sacbas and Saruc 2004)

Table 7:
Panel Data Analysis to see the effect of Balance Fund and Own Revenue to Local Government Expenditure

Variable	Local Expenditure
Constant	365.8427
Transfer (Balanced Fund)	0.8682307 (8.51)
Own Revenue (PAD)	3.980366 (3.21)
R-squared	0.9462
Included observations	2338

Notes: **Figures in brackets are z-value**

As for observing the most dominant variable affects Local Expenditure (**Locexp)**, this study compared the value of each coeficient when all of the variables (Balanced Fund and Own Revenue) are regressed simultaneously with panel data. Coeficient for **Own Revenue** (3.9804) is greater than coefficient for **Balanced Fund** (0.8682). Thus the magnitude of **Own Revenue** is significantly more powerful against **Local Expenditure** comparing to the magnitude of **Balance Fund (No evidence of Flypaper Effect Phenomenon)**.

CHAPTER 5

CONCLUSION

Based on the findings and results of data analysis above we can conclude:

1. Local Own revenue current year (**$Ownrev_t$**) has a positive and significant impact on Local Expenditure current year (**$Locexp_t$**). This means the higher the revenue derived from local taxes, Retribution, Income from Separation of local property product and other legally local revenue, the greater the local expenditure of regencies / municipalities. Similarly, Local Own revenue previous year (**$Ownrev_{t-1}$**) also has a positive and significant impact on Local Expenditure current year (**$Locexp_t$**). This means, the greater Local Own revenue previous year, the greater the Local Expenditure current year.
2. Balance Fund current year (**$Trans_t$**) has a positive and significant impact on Local Expenditure current year (**$Locexp_t$**). This means the higher Balance Fund current year received from the central government, the greater the Local Expenditure current year (**$Locexp_t$**). Likewise, Balance Fund previous year (**$Trans_{t-1}$**) also has a positive and significant impact on Local Expenditure current year (**$Locexp_t$**). This means, the greater Balance Fund previous year, the greater the Local Expenditure current year.
3. While to prove whether the flypaper effect occurs or not, we compare the magnitude of Balance Fund and Local Own revenue to the Local Expenditure**.** Certainly, the

magnitude of Local Own revenue current year (**$Ownrev_t$**) against Local Expenditure current year (**$Locexp_t$**) is higher than the magnitude of Balance Fund current year (**$Trans_t$**), so it can be conclude that the effect of Local Own revenue current year on Local Expenditure current year is stronger than the effect of Balance Fund current year. Or in other words, the behavior of local governments in setting spending policies is not triggered by the amount of Balance Fund received in the current year. This proves the non occurence of flypaper effect in the local government response to the central government transfer fund.

4. In the same way, the predictive power of Local Own revenue previous year (**$Ownrev_{t-1}$**) had a greater effect on the Local Expenditure current year (**$Locexp_t$**) than the predictive power Balance Fund previous year (**$Trans_{t-1}$**). Thus, the behavior of Local governments in establishing Local Expenditure is more determined by the amount of Local Own revenue had been received in the earlier period rather than the total amount of Balance Fund previous year.
5. Furthermore, by using panel data, it proved that the magnitude of Local Own revenue is greater than the magnitude of Balance Fund. Undoubtedly, all of the above empirical result showed the non occurrence of flypaper effect. This means local government spending policies are not dominated by the amount of Balance Fund, but it is dominated by the amount of Local Own revenue.

This study has several limitations that require development and improvement for further study. The limitations of this study are:

1. This study uses secondary data obtained from local government budget realization (APBD), published by the Directorate General of Fiscal Balance website, which is

not involved the behavioral aspects of local government in allocating resources, setting spending policies, effectiveness of absorption of Local Own Revenue (PAD) and efficiency in the use of revenues (both Local Own Revenue and Balanced Fund) to Local Government Expenditures.

2. This study does not examine the effectiveness and efficiency of the budget. For example, this study does not consider the quantity, structure, age and educational level of employees and local residents, so it can not provide conclusions about the moderating factors and contingencies.
3. This study only uses two independent variables that affect the Local government expenditure i.e Local Own Revenue (PAD) and Balanced Fund so that the results of this study is still simple

From some of the limitations mentioned above, the author gives some following recommendations i.e

1. For further studies, it is better to include aspects of local government behavior in the allocation of resources, and observe the effectiveness and efficiency in the use of the budget.
2. In addition to that, it is recommended to use more independent variables in the regression model.

APPENDICES

Appendix 1: The effect of Trans2008 and Ownrev2008 to Locexp2008

```
. reg locexp08 trans08 ownrev08, beta
```

Source	SS	df	MS	Number of obs =	188
				F(2, 185) =	2799.04
Model	1.4438e+13	2	7.2192e+12	Prob > F =	0.0000
Residual	4.7715e+11	185	2.5792e+09	R-squared =	0.9680
				Adj R-squared =	0.9677
Total	1.4916e+13	187	7.9762e+10	Root MSE =	50786

locexp08	Coef.	Std. Err.	t	P>|t|	Beta
trans08	.6108201	.0451013	13.54	0.000	.2057986
ownrev08	1.010308	.0177587	56.89	0.000	.8644904
_cons	21493.02	9583.208	2.24	0.026	.

```
. reg locexp08 trans08 , beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	2733.63
Model	1.3965e+13	1	1.3965e+13	Prob > F =	0.0000
Residual	9.5022e+11	186	5.1087e+09	R-squared =	0.9363
				Adj R-squared =	0.9360
Total	1.4916e+13	187	7.9762e+10	Root MSE =	71475

locexp08	Coef.	Std. Err.	t	P>|t|	Beta
trans08	1.130835	.0216287	52.28	0.000	.9676225
_cons	-12985.94	13002.72	-1.00	0.319	.

```
. reg locexp08 ownrev08, beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	128.37
Model	6.0907e+12	1	6.0907e+12	Prob > F =	0.0000
Residual	8.8248e+12	186	4.7445e+10	R-squared =	0.4083
				Adj R-squared =	0.4052
Total	1.4916e+13	187	7.9762e+10	Root MSE =	2.2e+05

locexp08	Coef.	Std. Err.	t	P>|t|	Beta
ownrev08	1.896648	.1673969	11.33	0.000	.6390218
_cons	510765.8	18132.99	28.17	0.000	.

Appendix 2: The effect of Trans2007 and Ownrev2007 to Locexp2008

```
. reg locexp08 trans07 ownrev07,beta

      Source |       SS       df       MS              Number of obs =     188
-------------+------------------------------           F(  2,   185) = 1063.25
       Model |  1.3722e+13     2  6.8609e+12            Prob > F      =  0.0000
    Residual |  1.1938e+12   185  6.4527e+09            R-squared     =  0.9200
-------------+------------------------------           Adj R-squared =  0.9191
       Total |  1.4916e+13   187  7.9762e+10            Root MSE      =   80329

------------------------------------------------------------------------------
    locexp08 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     trans07 |    1.091695   .0337013    32.39   0.000                .7557993
     ownrev07 |    1.671782   .1146585    14.58   0.000                .3401928
       _cons |    59461.14   15016.46     3.96   0.000                       .
------------------------------------------------------------------------------

. reg locexp08 trans07 ,beta

      Source |       SS       df       MS              Number of obs =     188
-------------+------------------------------           F(  1,   186) =  895.36
       Model |  1.2350e+13     1  1.2350e+13            Prob > F      =  0.0000
    Residual |  2.5656e+12   186  1.3793e+10            R-squared     =  0.8280
-------------+------------------------------           Adj R-squared =  0.8271
       Total |  1.4916e+13   187  7.9762e+10            Root MSE      =  1.2e+05

------------------------------------------------------------------------------
    locexp08 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     trans07 |    1.314342   .0439248    29.92   0.000                .909942
       _cons |    17920.98   21556.05     0.83   0.407                       .
------------------------------------------------------------------------------

. reg locexp08 ownrev07,beta

      Source |       SS       df       MS              Number of obs =     188
-------------+------------------------------           F(  1,   186) =  162.32
       Model |  6.9508e+12     1  6.9508e+12            Prob > F      =  0.0000
    Residual |  7.9648e+12   186  4.2821e+10            R-squared     =  0.4660
-------------+------------------------------           Adj R-squared =  0.4631
       Total |  1.4916e+13   187  7.9762e+10            Root MSE      =  2.1e+05

------------------------------------------------------------------------------
    locexp08 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     ownrev07 |    3.354684   .2633087    12.74   0.000                .6826484
       _cons |    491979.1   17701.11    27.79   0.000                       .
------------------------------------------------------------------------------
```

Appendix 3: The effect of Trans2007 and Ownrev2007 to Locexp2007

```
. reg locexp07 trans07 ownrev07, beta
```

Source	SS	df	MS		
Model	1.5995e+13	2	7.9973e+12	Number of obs =	188
Residual	1.6067e+12	185	8.6848e+09	F(2, 185) =	920.85
				Prob > F =	0.0000
Total	1.7601e+13	187	9.4125e+10	R-squared =	0.9087
				Adj R-squared =	0.9077
				Root MSE =	93192

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
trans07	1.175207	.1330188	8.83	0.000	.2201438
ownrev07	1.307209	.0390979	33.43	0.000	.8330996
_cons	-63560.96	17421.04	-3.65	0.000	.

```
. reg locexp07 trans07 , beta
```

Source	SS	df	MS		
Model	1.5317e+13	1	1.5317e+13	Number of obs =	188
Residual	2.2846e+12	186	1.2283e+10	F(1, 186) =	1247.03
				Prob > F =	0.0000
Total	1.7601e+13	187	9.4125e+10	R-squared =	0.8702
				Adj R-squared =	0.8695
				Root MSE =	1.1e+05

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
trans07	1.463722	.0414497	35.31	0.000	.9328476
_cons	-92762.3	20341.39	-4.56	0.000	.

```
. reg locexp07 ownrev07, beta
```

Source	SS	df	MS		
Model	6.2864e+12	1	6.2864e+12	Number of obs =	188
Residual	1.1315e+13	186	6.0833e+10	F(1, 186) =	103.34
				Prob > F =	0.0000
Total	1.7601e+13	187	9.4125e+10	R-squared =	0.3572
				Adj R-squared =	0.3537
				Root MSE =	2.5e+05

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
ownrev07	3.190334	.3138372	10.17	0.000	.5976245
_cons	454341.3	21097.93	21.53	0.000	.

Appendix 4: The effect of Trans2006 and Ownrev2006 to Locexp2007

```
. reg locexp07 trans06 ownrev06, beta
```

Source	SS	df	MS	Number of obs =	188
				F(2, 185) =	547.21
Model	1.5056e+13	2	7.5281e+12	Prob > F =	0.0000
Residual	2.5451e+12	185	1.3757e+10	R-squared =	0.8554
				Adj R-squared =	0.8538
Total	1.7601e+13	187	9.4125e+10	Root MSE =	1.2e+05

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
trans06	.963915	.1818531	5.30	0.000	.167069
ownrev06	1.197404	.0451572	26.52	0.000	.8357786
_cons	8682.6	19732.48	0.44	0.660	.

```
. reg locexp07  trans06 , beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	930.74
Model	1.4670e+13	1	1.4670e+13	Prob > F =	0.0000
Residual	2.9316e+12	186	1.5761e+10	R-squared =	0.8334
				Adj R-squared =	0.8325
Total	1.7601e+13	187	9.4125e+10	Root MSE =	1.3e+05

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
trans06	1.30794	.0428719	30.51	0.000	.9129317
_cons	-6581.99	20894.75	-0.32	0.753	.

```
. reg locexp07 ownrev06, beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	81.95
Model	5.3833e+12	1	5.3833e+12	Prob > F =	0.0000
Residual	1.2218e+13	186	6.5688e+10	R-squared =	0.3058
				Adj R-squared =	0.3021
Total	1.7601e+13	187	9.4125e+10	Root MSE =	2.6e+05

locexp07	Coef.	Std. Err.	t	P>|t|	Beta
ownrev06	3.190769	.3524633	9.05	0.000	.5530348
_cons	456646.2	22280.63	20.50	0.000	.

Appendix 5: The effect of Trans2006 and Ownrev2006 to Locexp2006

```
. reg locexp06 trans06 ownrev06, beta
```

Source	SS	df	MS	Number of obs =	188
				F(2, 185) =	1056.10
Model	7.0495e+12	2	3.5248e+12	Prob > F =	0.0000
Residual	6.1744e+11	185	3.3375e+09	R-squared =	0.9195
				Adj R-squared =	0.9186
Total	7.6670e+12	187	4.1000e+10	Root MSE =	57771

locexp06	Coef.	Std. Err.	t	P>|t|	Beta
trans06	.7563436	.022242	34.01	0.000	.7998904
ownrev06	1.04968	.089571	11.72	0.000	.2756607
_cons	54819.12	9719.149	5.64	0.000	.

```
. reg locexp06 trans06 , beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	1139.58
Model	6.5912e+12	1	6.5912e+12	Prob > F =	0.0000
Residual	1.0758e+12	186	5.7839e+09	R-squared =	0.8597
				Adj R-squared =	0.8589
Total	7.6670e+12	187	4.1000e+10	Root MSE =	76052

locexp06	Coef.	Std. Err.	t	P>|t|	Beta
trans06	.8767144	.0259708	33.76	0.000	.9271915
_cons	38196.35	12657.56	3.02	0.003	.

```
. reg locexp06 ownrev06, beta
```

Source	SS	df	MS	Number of obs =	188
				F(1, 186) =	132.54
Model	3.1902e+12	1	3.1902e+12	Prob > F =	0.0000
Residual	4.4768e+12	186	2.4069e+10	R-squared =	0.4161
				Adj R-squared =	0.4130
Total	7.6670e+12	187	4.1000e+10	Root MSE =	1.6e+05

locexp06	Coef.	Std. Err.	t	P>|t|	Beta
ownrev06	2.456278	.2133522	11.51	0.000	.6450532
_cons	337776.5	13486.86	25.04	0.000	.

Appendix 6: Panel Data Analysis (Sacbas and Saruc model, 2004)

```
. xtreg d.Locexp d.Ownrev d.transfer, re robust

Random-effects GLS regression                   Number of obs      =      2338
Group variable: kodekab                         Number of groups   =       430

R-sq:  within  = 0.9464                         Obs per group: min =         1
       between = 0.8128                                        avg =       5.4
       overall = 0.9462                                        max =         8

Random effects u_i ~ Gaussian                   Wald chi2(2)       =   4284.52
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

                                                (Std. Err. adjusted for clustering on kodekab)
------------------------------------------------------------------------------
             |               Robust
  D.Locexp   |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     Ownrev  |
         D1. |   3.980366   1.240349     3.21   0.001     1.549327    6.411405
    transfer |
         D1. |   .8682307   .1020395     8.51   0.000      .668237    1.068224
       _cons |  -365.8427   11670.34    -0.03   0.975    -23239.28     22507.6
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  620273.57
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

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