ABSTRACT

Title of Dissertation: ON THE EFFECTS OF INTER-GOVERNMENTAL TRANSFERS ON MACROECONOMIC STABILITY

Gustavo Axel Radics, Doctor of Philosophy, 2012

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This dissertation explores the effects of inter-governmental transfers on macroeconomic stability, evaluating the case of Peru, which experienced a large increase in transfers to local governments from 2001 to 2010, linked to the fiscal revenue from the development of natural resources.

The findings indicate that, although the surge in transfers in Peru is not an imminent threat on macroeconomic stability, it created a fiscal risk through two main channels. First, the reduction in the fiscal space of the central government to conduct counter-cyclical fiscal policy, since it shares with sub-national governments an increased proportion of its revenue from corporate income tax on extractive industries, which is the tax that grew most in Peru over the last decade and is also the most volatile. And second,

the high increase of local expenditures due to increased transfers from the central government, which is a manifestation of the flypaper effect. This increased local expenditure contributed to a larger share of local government participation in the general government. In turn, this increased participation contributed to put pressure on the central government to allocate more funds to local governments when transfers fell. Contrary to conventional wisdom, the results also show that local governments in Peru do not reduce their fiscal effort in terms of own taxation in response to the high increase in transfers.

This dissertation builds on the literature on the link between decentralization and macroeconomic stability, with particular reference to the allocation of the fiscal revenue from the development of natural resources among levels of government, which is an important issue in many countries around the world, in the context of the high rise in commodity prices of the last decade. It provides lessons related to the consequences of sharing a large proportion of the fiscal revenue from the development of natural resources with sub-national governments, as well as policy options for Peru to improve its decentralization process.

ON THE EFFECTS OF INTER-GOVERNMENTAL TRANSFERS ON MACROECONOMIC STABILITY

By

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Dedication

To my wife Kelly, whose patience and support allowed me to complete this dissertation.

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List of Abbreviations

AMPE	Association of Municipalities of Peru
ASAT	Association of Tax Administration Services
BCRP	Banco Central de la República de Peru – Republic of Peru's Central Bank
BUN	Basic unmet needs
CAF	Corporación Andina de Fomento – Andean Corporation of Development
CE	Current expenditure
CERT	Consumption expenditure growth in real terms
CI	Current income
CIUP	Centro de Investigación de la Universidad del Pacífico – Research Institute of Universidad del Pacífico
CTAR	Consejo Transitorio de Administración Regional – Transitory Counsel of Regional Administration
DDGG	District governments
DGPP	Dirección General de Presupuesto Público – General Directorate of Public Budgeting
DEN	Population density
DGDP/C	Department gross domestic service per capita
DP	Department poverty
DS	Debt service
DSWG	Debt service without guarantee
ECLAC	Economic Commission for Latin America and the Caribbean
ED	Emergency decree
ED	Executive decree
ESSALUD	Health Insurance agency of Peru
FOCAM	Fondo de desarrollo de Camisea – Fund for Camisea development
FONCOMUN	Fondo de Compensación Municipal – Municipal Compensation Fund
FONIPREL	Fondo de incentivos para la inversión regional y local – Incentive fund for regional and local investment
GCP	Grant consumption path
GDP	Gross domestic product
GFSM	Government Finance Statistics Manual
GLS	Generalized least squares
GPC	Grupo Propuesta Ciudadana – Citizen Proposal Group
IADB	Inter-American Development Bank
ICP	Income consumption path
IFAS	Integrated financial administration system
IMF	International Monetary Fund
INEI	Instituto Nacional de Estadísticas e Informática – National Institute of Statistics and Informatics
JNE	Jurado Nacional Electoral – National Electoral Jury
KE	Capital expenditure
LAC	Latin America and the Caribbean
LD	Legislative decree
LLGG	Local governments

MEF	Ministry of Economics and Finance
MPT	Municipal promotion tax
NAO	National Accounting Office
NCD	National Council for Decentralization
NFERT	Non-financial expenditure in real terms
OFR	Other fragmentary resources
OI/TI	Own income over total income
OLS	Ordinary least squares
ONP	Oficina de Normalización Previsional – Pension Normalization Office
OORR	Ordinary resources
PCM	Presidencia del Consejo de Ministros – Ministerial Council Presidency
PCSE	Panel corrected standard errors
PI	Plan of Incentives for the improvement in municipal management
PIA	Presupuesto institucional de apertura – Institutional opening budget
PIM	Presupuesto institucional modificado – Institutional modified budget
PIP	Public investment Project
PMM	Program for Municipal Modernization
PPGG	Provincial governments
PR	Primary result
RRGG	Regional governments
S./	Peruvian New Soles
SAT	Servicio de Administración Tributaria – Tax Administration Service
SD	Supreme decree
SIAF	IFAS after its name in Spanish
SNG	Sub-national governments
SNIP	Sistema Nacional de Inversión Pública – National Public Investment System
STD	Short-term debt
SUNAT	Super-intendencia de Administración Tributaria – National Tax Administration Agency
TDS	Total debt stock
TDSWG	Total debt stock without guarantee
TT	Total transfers
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VAT	Value added tax

Chapter 1: Introduction

During the last decade and in spite of the recession of 2008-2009, the world has experienced a period of high economic growth led by developing countries, which has contributed to increase the availability of resources for public expenditures. Much of this fiscal revenue bonanza has been associated with the boom in commodity prices, and in many countries public funds linked to natural resources are automatically allocated to subnational governments (SNG) through inter-governmental transfers. My interest is to assess the effect of these transfers on SNG from the perspective of macroeconomic stability. In particular, I intend to evaluate whether transfers, in particular those based on natural resources, constitute a fiscal risk through two main channels: (1) The reduction in the fiscal space of the central government to conduct counter-cyclical fiscal policy due to the higher participation of SNG in the public sector; and (2) The fiscal decisions of SNG in response to transfers, which may create the need to allocate increasing funds to them.

I focus on the case of Peru, where transfers to SNG associated to natural resources such as minerals and hydrocarbons have been experiencing high growth and volatility between 2001 and 2010. These funds, which are not linked to new expenditure responsibilities at the subnational level, are mostly allocated to the local level of government, which has higher fiscal autonomy than the regional level. The funds are disbursed on the basis of devolution: money flows to where resources are extracted. Also, SNG are only restricted to allocate most of these funds for public investment.

This dissertation is organized as follows. In this chapter I introduce the problem, describing the salient issues related to decentralization and transfers in Peru. I also summarize the main questions, findings and conclusions of this dissertation.

In the second chapter I review the relevant literature, describing the theoretical and empirical channels through which transfers affect macroeconomic stability. This includes the assessment of the effects of transfers on the finances of SNG, along with the analysis of the particular case of transfers based on natural resources.

In the third chapter I describe in more detail the latest decentralization process in Peru, with particular attention to the characteristics of the system of transfers to SNG. In the fourth chapter I review the salient studies related to the topic of this dissertation on Peru. In the fifth chapter I present the leading questions and methodology, focusing first on a descriptive analysis of the effect of transfers on Peru's general government; and then on the effect of transfers on the fiscal decisions of Peru's local level of government, using both descriptive and econometric analysis.

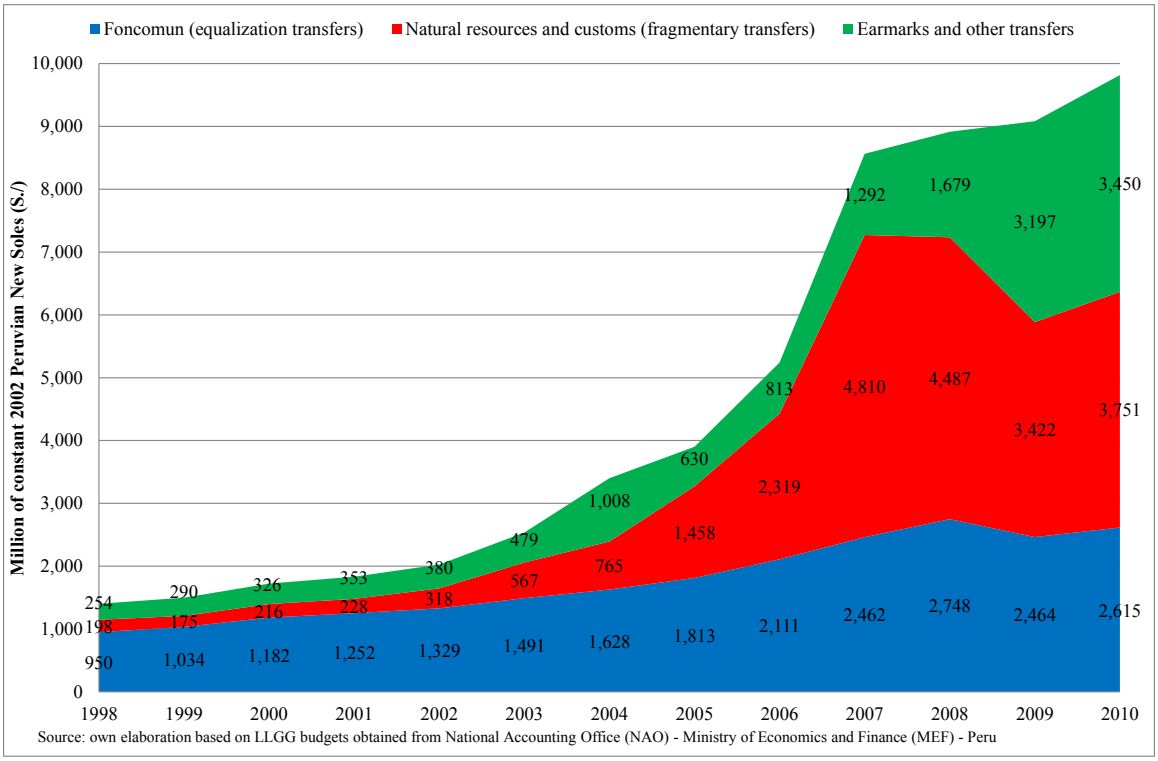
The sixth chapter presents the results of my research, followed in the seventh chapter by conclusions, policy implications and recommendations.

In the context of the growth in commodity prices of the last decade and the distribution of the fiscal rent from natural resources among levels of government, I expect this dissertation to shed light on the effects of transfers on macroeconomic stability. The conclusions and implications of this research provide lessons to gain a better understanding of the decentralization process and improve its design not only in Peru, but also in other countries, especially those with high fiscal revenue from natural resources.

Motivation

The motivation for this research is the extraordinary growth in transfers to local governments (LLGG) in Peru during the past decade, depicted in Figure 1.1. Indeed, between 2001 and 2010, transfers to LLGG at constant 2002 prices in Peruvian Soles (S/.) increased more than 5 times, at an annual rate of 21 percent.[1]

Figure 1.1 – Central government transfers to Peru's LLGG – 1998 – 2010



The main source of this growth has been public revenue from the development of natural resources. In Figure 1.1 this type of transfers is called "natural resources and customs", and is also labeled "fragmentary transfers", following Herrera (2008), because the revenues are not allocated to all SNG, but only to those from where the resources are

[1] Table A1.1 in Annex 1 presents the yearly inflation and average yearly exchange rate (Peruvian S./ per US dollar) between 1998 and 2010. The average yearly inflation for the series was less than 3 percent, and the average yearly exchange rate was 3.25 S./ per US$, with relatively low volatility for both series.

exploited. Fragmentary transfers have grown enormously, but they are also subject to high volatility: between 2001 and 2007 they increased at an annual rate of 66 percent in constant terms. However, three years later they declined 22 percent.

The two other types of transfers to LLGG shown in Figure 1.1 are "FONCOMUN" (Spanish abbreviation for "Municipal Compensation Fund") and "Earmarks and other transfers". FONCOMUN has traditionally been the main source of revenue for local governments, and as its name suggests, it is intended to serve to equalize income. It derives most of its funds from two percentage points of the national value added tax (VAT), whose growth is relatively stable and follows closely the country's economic performance. "Earmarks and other transfers" includes transfers with conditionality; programs that have been reassigned to LLGG; donations; incentive-based grants; and discretional lump-sum grants from the central government that have grown significantly in 2009 and 2010 to compensate for the reduction in the other two transfers, especially fragmentary transfers, due to the economic slowdown of 2009.

This extraordinary growth in transfers to LLGG elicits a number of questions related to what Bird (1999), describes as the effects of transfers on the policy outcomes of government activity: allocative efficiency, which inquires how these funds are spent; distributional equity, related to how money is shared among SNG; and macroeconomic stability, which assesses whether transfers create fiscal risks. These three analytical standpoints are important and can often be intertwined. In this dissertation, however, the focus is to explore the implications of the growth in transfers from the perspective of macroeconomic stability.

Decentralization and macroeconomic stability

The threat of transfers on macroeconomic stability is that when they are the dominant source of funding of SNG, they can alter the perception about the levels of local expenditure that can be sustained, stimulating what is known as the *"soft budget constraint"*, by which *"an entity can expand its expenditures without itself facing the full cost"* (Rodden, Eskeland and Litvack, 2001). This can result in a higher participation of SNG in the general government, often at the expense of the central government; an increase in the total size of the public sector; and/or a higher probability of financial bailouts from the central government (Rodden, 2002).

There are three main channels through which this occurs (Rodden, 2003): first, larger grants tend to be associated with similar increases in subnational expenditures. The empirical literature shows that very little of windfall transfers is absorbed by savings or tax reductions, either at the central or the local government; instead, the "flypaper effect" prevails, by which *"money sticks where it hits"* (Hines and Thaler, 1995), meaning that increases in transfers translate into similar increases in expenditures of SNG. Second, transfers create a "fiscal illusion" by which the link between taxation and benefits breaks. Since the money comes from the center, SNG internalize its benefits but not its cost ("common pool" problem), and the central government has reduced capacity to monitor the use of funds ("principal agent" problem). This fosters less local oversight and accountability, which in turn encourages overspending. Third, the higher the vertical imbalance that grants create, defined as the ratio of transfers to total income at the subnational level, the more SNG are encouraged to spend and borrow when revenues fall, in the expectation of a bailout from the central government.

The effect of transfers on macroeconomic stability has been highlighted in the recent past due to the fiscal costs created by SNG in a number of countries, including in Latin America and the Caribbean (LAC) the cases of Argentina (2001), Brasil (1999) and Colombia (1999). To mitigate these threats the central government has the ability to impose restrictions on subnational spending and borrowing (Rodden, 2002). However, the challenge is not only to have restrictions enacted, but also to be able to enforce them through appropriate monitoring and evaluation of SNG financial management (Parry, 2007). Those restrictions directly controlled by the central government, such as external borrowing, are clearly easier to enforce. Those that depend more on the discretion of the local authorities require closer oversight.

The assignment of revenue from natural resources

Figure 1.1 above also shows that since 2006 most transfers to LLGG in Peru are fragmentary and based on natural resources such as minerals and hydrocarbons. This complicates macroeconomic stability since it takes away from the central government a large source of funding that is given to SNG with less capacity to handle its inherent volatility. This higher volatility vis-à-vis other revenue sources increases the pressure on the central government to compensate SNG when transfers fall, and as shown in Figure 1.1, the costs associated to this decline can be quite high. Also, the unequal distribution of fragmentary transfers, which allocates funds to those SNG from which resources are extracted, can generate compensatory demands of non-recipients, with a potentially large fiscal cost for the central government.

The assignment of revenue from natural resources among levels of government is usually a contentious issue, especially in those countries in which this type of revenue is

relatively large (Bahl, 2002). Mc Lure (2003) mentions that if SNG were to choose "behind the veil of ignorance" without knowing the allocation of natural resources among them, a central collection and distribution of these revenues would be optimal. But once the veil is lifted and everyone knows its allocation, those regions with more resources will demand a large share of revenues.

From an efficiency and distributional standpoint, producing SNG should be reimbursed for the local costs associated with the exploitation of natural resources, including any environmental and social damage. This means that the relevant question concerns the distribution of the rent *net* of costs of exploitation. From a macroeconomic perspective, although it tends to be politically infeasible, the most desirable arrangement is centralization of net natural resource revenue, assigning other tax bases to SNG, combined with a transfer system that addresses the goals of fiscal decentralization. An alternative is to assign a small fraction of natural resource bases to producing SNG, with safeguards to deal with their inherent volatility. The least preferred scheme is revenue sharing of taxes from natural resources, because it fully transmits the volatility of the revenue source (Ahmad and Mottu, 2002); as shall be seen revenue sharing is the current arrangement in Peru.

Mainly due to political pressure most countries allocate a share of the revenue from natural resources on a devolution basis, transferring funds to those SNG from which resources are extracted. Indeed, due to the boom in commodity prices and associated investment in extractive industries during the last decade, the volume of such transfers has increased significantly across the world. In this regard, the case of Peru is interesting

since the share of public revenue of its SNG from natural resources is relatively high (Morgandi, 2008).

Decentralization in Peru

Peru is a unitary country, which means that SNG have restricted fiscal autonomy relative to federal countries, and it has traditionally been highly centralized (IADB, 1997; Carranza and Tuesta, 2003). Indeed, relative to the seven largest countries in LAC (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela, also known as LAC-7), Peru is the second most centralized country after Chile and the latest one to have initiated a major decentralization effort, which began in 2001. The country's estimated population of 29.5 million (2010) has concentrated since the 1940s in the capital, Lima, which holds around one-third of the total. Peru is divided in three geographic "natural zones": the more prosperous and populated Coast; the under-developed and deprived Highlands, from which residents have tended to emigrate during the past 60 years, especially to the Coast; and the relatively unpopulated and also poor Rainforest, which comprises most of the country's territory.

Since the first constitution the country has been politically organized in departments, provinces and districts, based on the administrative divisions of the colonial period. In the Constitution of 1979, which followed a military government, the term "region" was introduced to replace the previous "departments" as the intermediate level of government. Regions were defined as de-concentrated units of the central government. At the local level, however, autonomy was reinstated, including regular elections of mayors since 1981.

Peru has 26 regions or departments.[2] The local level is composed of "provinces" and "districts"; this division is formalized since the Constitution of 1823 and has its origins in the French model of municipalities. Provinces are larger units within a region, each of which includes a provincial capital and a variable number of districts. The provincial capital has jurisdiction over its own area (operating as another district), but it also has functions over the whole province (Alvarado, 2003). By the end of 2010 there were 1834 LLGG, divided into 195 provincial capitals and 1639 districts.

Throughout the country's independent history, decentralization efforts were made by civil governments, being later reversed by autocratic rulers (Carranza and Tuesta, 2003). At the regional level, there was a strong decentralization effort during the first García Administration (1985-90). In 1988, the government enacted a Regionalization Law that created twelve regions based on the forced integration of the existing departments. These regions had broad delegated attributions, but limited autonomy. During the last months of the first García Administration there was a hurried transfer of functions to these new regional governments, which was incomplete and influenced by the ongoing political and economic developments, namely, the internal conflict against the terrorist movement "Shining Path" and hyperinflation, respectively. The Fujimori Administration (1990-2000) focused successfully on tackling these major problems and stopped the process of regional consolidation. After President Fujimori dissolved Congress in 1992, the regions were definitively suppressed (Carranza and Tuesta, 2003).

[2] Includes the city of Lima, whose mayor is the head of both the province of Lima and the regional government of Metropolitan Lima; and the city of El Callao (next to the city of Lima), which holds a mayor who presides the province of El Callao, and a regional president who presides the regional government of El Callao, both different authorities with separate functions over the same geographical area.

From 1992 and until the demise of President Fujimori in 2000, the increasing autocracy coincided with a more centralist configuration of the State. A Transitory Counsel of Regional Administration (CTAR after its name in Spanish) was created in each historic department, as a de-concentrated unit of the central government that executed regional expenditures. Each CTAR did not have own resources or tax functions, although it did have technical, budgetary and administrative autonomy to execute its expenditure functions, under the supervision of the central government. In 1993 a new Constitution was approved, which was ambiguous in terms of decentralization, although it left the door open to future legal developments (Carranza and Tuesta, 2003).

At the local level, since 1981 and for the first time local elected authorities began to execute newly assigned functions, which included the regulation of local transport, territorial conditioning and the capacity to manage their user fees (Flores, 2005). Initially there was a timid decentralization of resources to LLGG, which created fiscal imbalances. Hence, in 1985 municipalities gathered around the newly formed "Association of Municipalities of Peru" (AMPE, after its name in Spanish) to demand an increase in transfers. This led to the assignment of funds that replaced the residual grants that were being annually authorized in the general budgets. They included two points of Peru's VAT; the toll tax, vehicle tax and the tax on bets; and the "Glass of Milk" social program, financed with Treasury funds.

Following President Fujimori's self-coup in 1992, the central government not only eliminated the regional governments, but it also restructured in 1993 the municipal tax system, taking away some sources of income of LLGG. Indeed, it eliminated and reduced tax bases; established exonerations; and modified the distribution of the VAT

and the vehicle tax, creating the "FONCOMUN", whose formula favors rural districts in detriment of urban provincial municipalities (particularly the Municipality of Lima), many of which were governed at the time by opposition parties.

The Constitution of 1993 recognizes as municipal resources those stemming from FONCOMUN and from the "canon." The latter is defined as the participation of SNG in the income generated from the development of natural resources in their territories.[3] This participation was initially 20 percent of the corporate income tax on companies dedicated to the development of natural resources, and began to be distributed to municipalities on a devolution basis in 1996.

Latest push for decentralization

The demise of the Fujimori Administration due to a corruption scandal in November 2000 brought a renaissance of democracy to Peru along with renewed popular pressure for decentralization. Since then the latest decentralization process has begun, which can be characterized by two major developments. First, the Toledo Administration (2001-06) led a Constitutional reform that created in March 2002 a legitimate intermediate level of government, the "regional governments" (RRGG), over the structure of the functioning CTARs. The first election of "regional presidents" took place in December 2002; they serve four-year terms with the possibility of reelection.[4] President Toledo also spearheaded the approval of a legislative package between 2002 and 2004, which set the roadmap for an effective decentralization of resources, functions

[3] The Constitution of 1979 also recognized the participation of SNG in the exploitation of natural resources in their territories.

[4] Mayors of LLGG also serve four-year terms which coincide with the period of regional presidents, with the possibility of reelection.

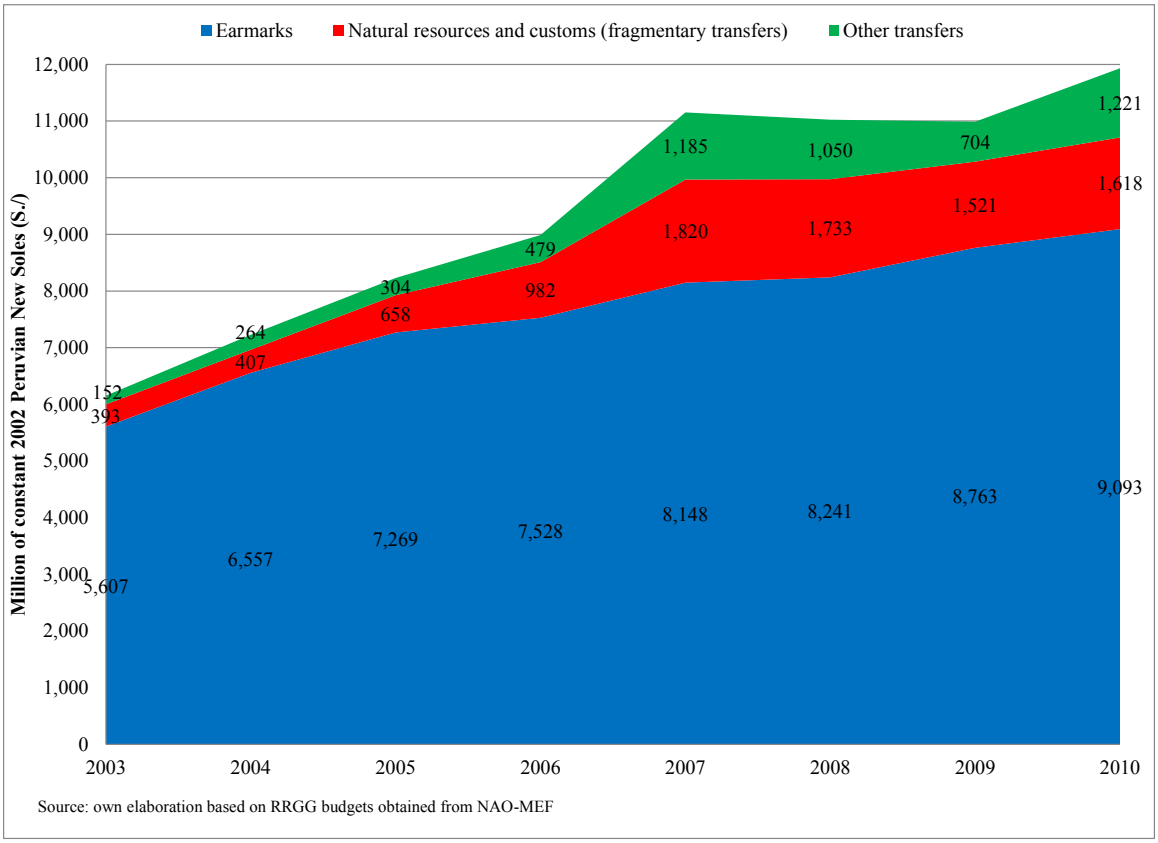
and programs to regional and local governments, under the principles of fiscal neutrality, gradualism, and stimulation of economic competitiveness.

The compliance with this roadmap of decentralization has proceeded at a slow pace. A condition for the transfer of tax bases to RRGG has been the creation of "regions," which are defined as the political and administrative union of two or more of the existing departments. In a referendum held in October 2005, however, the population of 15 out of 16 of Peru's departments where the elections took place rejected the proposals to create regions; since then there has been relatively little effort to push for what is called as "regionalization." Moreover, the ambitious agenda to transfer expenditure functions to RRGG has mostly meant a formal recognition of the responsibilities that were already undertaken by the former CTARs as de-concentrated agencies of the central government: the central ministries have been reluctant to increase funding and human resources to the RRGG. Hence, most of the budget of RRGG is determined by the central government, and largely earmarked to payroll, especially in education and health. In turn, RRGG do not collect taxes and their own resources are limited to user fees, which yield little revenue. All this leaves limited autonomy to regional authorities, except in those regions that receive high transfers associated to natural resources.

Figure 1.2 shows transfers to RRGG since they have been functioning as a legitimate intermediate level of government (2003 to 2010). As can be seen earmarks are by far the largest category, although its importance has reduced from almost 90 percent on average during the first cohort of regional presidents (2003 to 2006) to around 75 percent on average during the second cohort (2007 to 2010). Similar to what is shown in

Figure 1.1 for LLGG, fragmentary transfers have almost doubled their participation between the same two periods, although the participation of RRGG is smaller than for LLGG. Lastly, "other transfers" have also increased significantly between both periods, although from a low base: in 2009-10 most of this category is explained by compensatory transfers from the central government due to the economic slowdown of 2009.

Figure 1.2 - Central government transfers to Peru's RRGG – 2003 to 2010



Source: own elaboration based on RRGG budgets obtained from NAO-MEF

The initial push of the latest decentralization effort focused on the newly created RRGG, partly neglecting the local level of government, which has more autonomy (Casas, 2006). Starting in 2004 the central government has de-concentrated to LLGG some programs related to rural highways, social infrastructure, alimentary and nutrition projects, with transfers earmarked to these functions (included in "earmarks and other transfers" in Figure 1.1 above). However, the second major development of the ongoing

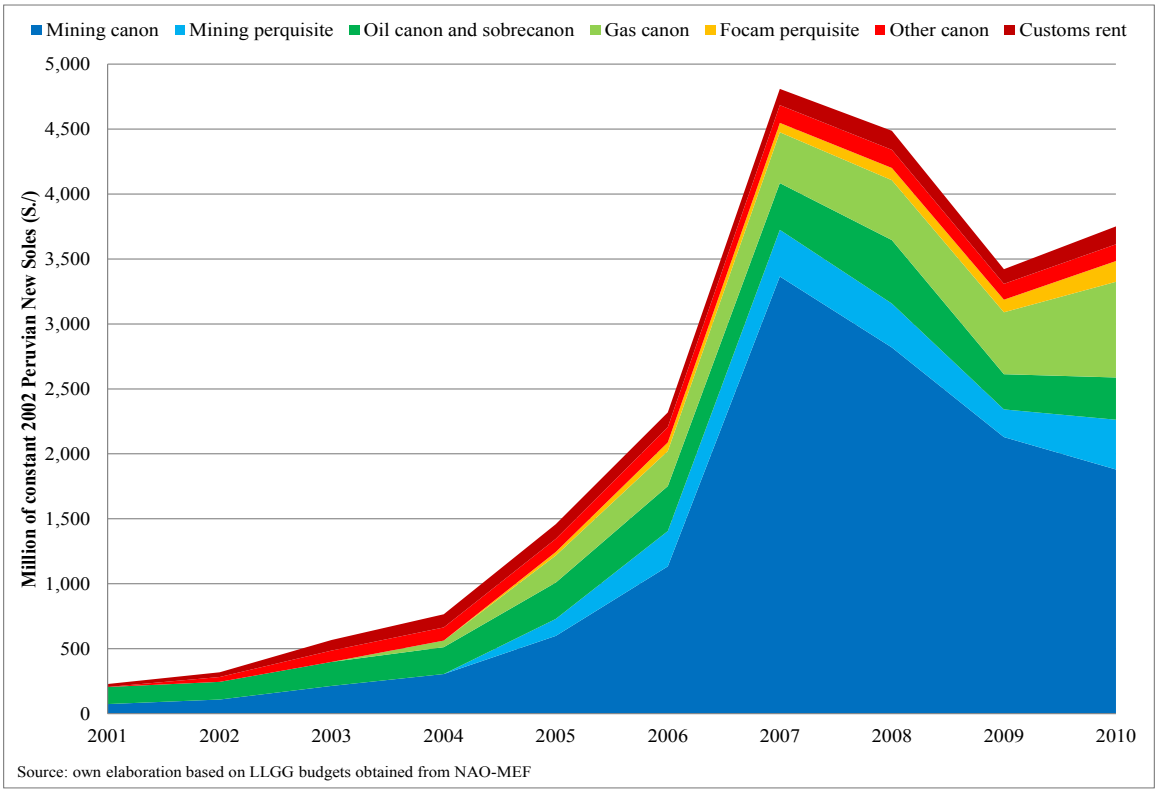
decentralization process has mostly benefited LLGG, and it is related to the surge in fragmentary transfers shown in Figures 1.1 and 1.2.

To a large degree this development traces back to July 2001, a few days before the end of the transitional Administration of President Paniagua (November 2000 to July 2001), when the Peruvian Congress enacted the "Canon Law".[5] This law increases the participation of SNG in the corporate income tax stemming from the development of natural resources from 20 to 50 percent, and defines the rules for the distribution of these resources among the SNG of each producing department. It comprises resources generated by mining, gas, hydro-energy, forestry and fishing activities. In the case of gas the resources include the "perquisite", which is an increasing fixed percentage of the sale value of the extracted gas. The canon law excludes oil, which preserves its own distribution regime specific to each producing department, and whose origin dates back to the 1970s with successive amendments.

The canon law is often overlooked in the description of the formal steps in Peru's current decentralization process, but as suggested in Figures 1.1 and 1.2, it has been of crucial importance to explain the growth of transfers to SNG, especially LLGG, after 2001. Between 2005 and 2010 over 70 percent of the average resources transferred to LLGG under the label "fragmentary transfers" in Figure 1.1 are linked to the categories included in the canon law. This is depicted in Figure 1.3, which opens the categories included in Figure 1.1 under the label "fragmentary transfers to LLGG".

[5] Peruvian Law No. 27506 of July 10, 2001. See Table A-1 in Annex 1 for a description of all transfer systems to LLGG in Peru.

Figure 1.3 - Transfers under "natural resources and customs" – 2001 to 2010



The categories related to the canon law are "mining canon", "gas canon" and "other canon", while two other fragmentary transfers linked to natural resources were introduced in 2004: the "mining perquisite" is an increasing fixed percentage of the sale value of the extracted mineral; and the "Focam perquisite" is a transfer for the right of way of the Camisea gas pipeline. Salient among these categories is the "mining canon", with an average of 57.1 percent of total fragmentary transfers during this period and a peak of 70 percent in 2007. The "oil canon and sobrecanon" (average of 12.3 percent of total fragmentary transfers during this period) and "gas canon" (average of 11.7 percent) are important as well. Lastly, "customs rent" is not linked to natural resources, but it is

included in this category because it is also a fragmentary transfer.[6] The main restriction on the use of fragmentary transfers is that they need to be allocated mostly to public investment, although the stringency of this requirement differs according to each type of transfer and has been gradually relaxed throughout the past decade.

The legal framework has contributed to the extraordinary growth in fragmentary transfers, but two other important factors help explain it as well. First, the increase in commodity prices during the world economic expansion of mid-2003 to mid-2008, which was especially sharp in products related to the mining industry. This tendency has resumed since the end of the economic slowdown of 2009, and has been mostly linked to the high demand for raw materials from other developing countries, especially China.

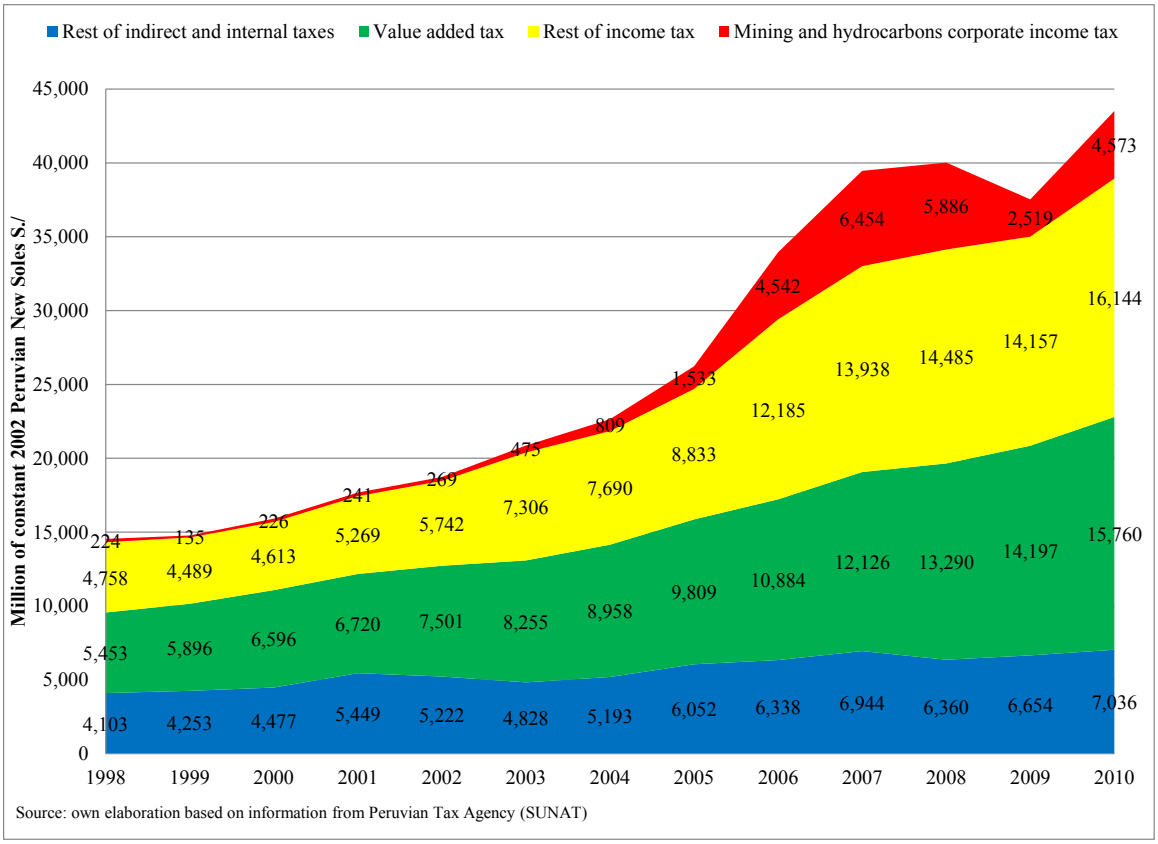
The second factor is the strong increase of Peru's economy, which had an average annual real growth rate of 5 percent between 1998 and 2010, being the best performer among the LAC-7 countries during this period. This high economic growth has been partly explained by private investment and exports in extractive industries, attracted by the higher yields offered by commodity prices and the large mineral and hydrocarbon reserves of Peru, in a context of macroeconomic prudence and stability on the part of Peruvian national authorities.

As a result, public revenue has grown significantly. Figure 1.4 shows the evolution of internal tax collection in Peru in constant 2002 S/. during 1998-2010. As can be seen, the tax that has grown most in this period is "mining and hydrocarbons corporate

[6] It corresponds to 2 percent of total import duty for the provincial and district LLGG where the customs agency is located (1 percent in the case of the LLGG of the city-port of El Callao, through which most import operations of Peru take place).

income tax", although from a low base, of which the participation of mining has been on average 85 percent: it grew at an annual rate of 28.6 percent in constant terms, with "rest of income tax" a far second with 10.7 percent. It is also the most volatile tax: The ratio of its standard deviation to its mean during this period is 1.11, while for the second most volatile, which is also "rest of income tax", is 0.47.

Figure 1.4 - Tax collection in Peru by major components – 1998 to 2010



Source: own elaboration based on information from Peruvian Tax Agency (SUNAT)

As previously mentioned, 50 percent of the corporate income tax on mining and gas activities is automatically transferred to SNG by mandate of the canon law. This means that the tax that has grown most and has been most volatile during the past decade happens to also be the one on which the central government can only manage half of its collection. As a consequence, the central government loses fiscal room to maneuver in

order to conduct counter-cyclical fiscal policy, while SNG, especially LLGG, need to cope with large and volatile transfers that may create incentives to overspend in the expectation of even larger transfers from the central government.

To summarize, two broad developments have characterized Peru's latest decentralization effort: first, the creation of RRGG, along with the formal transfer of functions and programs, especially to RRGG, without a thorough estimation of the necessary resources to execute these functions and the associated transfer of funds. Second, and more important in terms of fiscal effect, the large increase in fragmentary transfers (mostly linked to mining and hydrocarbons) to those SNG, especially LLGG, from which the natural resources are extracted, without associated expenditure responsibilities other than the allocation to public investment.[7] This dissertation will evaluate whether this second development has created fiscal risks in Peru.

Leading research questions

As shown in Chapter 2, the literature on decentralization has extensively theorized and documented the dangers on macroeconomic stability of large increases in transfers to SNG without clearly defined expenditure responsibilities. Are these dangers materializing in Peru? Are fiscal transfers a threat to macroeconomic stability?

This is a question that has not been thoroughly explored for the case of Peru. As analyzed in Chapter 5, previous studies have focused on the quality of information of debt of LLGG (World Bank, 2006; and Moron, 2010); the determinants of fiscal results of LLGG (Moron, 2010); and the effect of transfers on LLGG own revenue collection

[7] This characterization of the evolution of Peru's latest decentralization process is based on the analysis by Mendoza (2008).

(Alvarado, 2003; Aguilar and Morales, 2006; Rabanal and Melgarejo, 2006; Aragon and Galloso, 2006; Ruhling, 2008; Vega, 2008; Llempen and Velazquez, 2009; CAF, 2010; and Canavire-Bacarreza, Martínez-Vásquez and Sepúlveda, 2011). In contrast, the effect of transfers on expenditures of LLGG in Peru, through an assessment of the flypaper effect, has been relatively ignored: only Aragon (2009) analyzes the issue, although using information from 1998 to 2001, well prior to the recent surge in transfers. In turn, no study integrates these different dimensions through the assessment of the effect of transfers on macroeconomic stability.

In this regard, there are two main channels through which the growth in transfers associated to natural resources can become a fiscal risk in Peru: (1) The reduction in the fiscal space of the central government to conduct counter-cyclical fiscal policy due to the higher participation of SNG in the public sector; and (2) The fiscal decisions of SNG in response to transfers in terms of own revenue collection and expenditure, which in turn affects their fiscal balance, accumulated savings and indebtedness, and may create the need to allocate increasing funds to them.

With respect to the first channel, transfers to SNG between 2003 and 2010 have been growing at an annual rate that is 30 percent higher than that of central government tax collection (including customs) (17 percent vs. 13 percent on average per year, respectively), with almost all of the additional increase funneled to LLGG. This means that the share of expenditures of the central government in total expenditures of the general government (the latter defined as the addition of central, regional and local governments), should have been declining relative to the share of SNG during the past decade, and/or maintaining its size through debt financing. In either case this entails that

the central government has fewer tax resources at its disposal as a share of the general government, which decreases its room to maneuver to conduct counter-cyclical fiscal policy.

This first channel will be analyzed through a descriptive analysis of the evolution of Peru's general government, between 2001 and 2010. The main questions that will be assessed for the case of Peru are the following:

1. Has the share of the central government in the general government spending been reduced between 2001 and 2010 in response to the surge in transfers to SNG?

2. Has the size of the general government increased relative to GDP?

This section provides a measure of the increase in the size of the public sector following the large increase in transfers to SNG. As will be seen, the size of the public sector has increased relative to gross domestic product (GDP), and the challenge for the central government is to continue contributing to address the goals of the decentralization process without increasing transfers in a manner that reduces much further its available resources for counter-cyclical fiscal policy.

The second channel through which transfers can become a fiscal risk for Peru refers to the response of SNG to the surge in transfers of the past decade. The analysis will focus on LLGG, rather than RRGG, mainly because transfers to LLGG grew much more than for RRGG; and LLGG are much more numerous and have more fiscal autonomy than RRGG, since they collect their own taxes, receive a larger share of transfers without earmarks, and control much more of their expenditures: this makes them more difficult to monitor, and hence riskier from a fiscal standpoint.

In particular, I will assess the following three questions:

3. Have LLGG in aggregate worsen their fiscal position in response to the surge in transfers?

This section will take advantage of the official classifications of LLGG according to size, needs and resources that the Government of Peru has introduced during the last few years, in order to describe the response of fiscal aggregates of municipalities (own resources, expenditures, fiscal balance, savings and indebtedness) to transfers. In particular, I will track the evolution of indicators of fiscal dependence of LLGG from transfers; the allocation of what is known is Peru as "ordinary resources" from the central government during the economic slowdown of 2009 according to the classification of municipalities by the amount of resources and main type of transfer they received; and the use that LLGG make of each source of income in current and capital expenditure.

As will be seen, although the fiscal response of municipalities to transfers does not constitute an immediate threat to macroeconomic stability in Peru, it has increased the fiscal risks from the decentralization process due to the pro-cyclical response of LLGG expenditure to transfers. This response is partly disguised by the fact that the allocation of the mining canon since 2007 is made in the middle of the budget year, which gives little time to LLGG that receive large mining transfers to spend those funds within the same budget year. However, municipalities do react strongly to transfers, albeit with a lag for those that receive large transfers from mining canon, which puts pressure on the central government to maintain the flow of resources to LLGG in the event of a cyclical decline in transfers, which happened in 2009 and 2010 in the context of the international crisis.

4. Do LLGG reduce their fiscal effort in Peru in response to transfers in the form of a reduction in own revenue collection?

This is a question that has been thoroughly studied in Peru, with inconclusive evidence. The issue is labeled "fiscal sloth" stemming from the assumption that local authorities reduce their effort to collect own revenues, in the form of local taxes and other own income, in response to the increase in transfers. The contribution of this dissertation is to focus on different categories of LLGG, to assess the problem of fiscal sloth in those municipalities where it matters most in terms of participation in total municipal own revenue collection. I will conduct a descriptive and econometric assessment of the effect of transfers on LLGG fiscal effort, comparing municipalities that received a surge in transfers, especially from natural resources, to those that did not.

The results show that fiscal sloth is not a relevant problem in Peruvian municipalities. Indeed, there is evidence that LLGG that are main cities and receive more transfers increase their own tax collection in response to transfers, partly because a large proportion of grants linked to natural resources are earmarked to public investment, which gives LLGG an incentive to increase own resources to fund current expenditures.

5. Do LLGG increase their expenditure substantially in response to transfers, exhibiting what is known as the flypaper effect?

This section will analyze in depth the preliminary descriptive findings from question 3, assessing econometrically the response of LLGG expenditure to transfers and the existence of the flypaper effect. My main interest is to assess the reaction of expenditures to transfers according to the volume and type of transfers that LLGG

receive, to determine whether municipalities that received large transfers from natural resources increased their expenditures substantially in response to them.

The results confirm the strong effect of transfers on municipal expenditure, with LLGG displaying a flypaper effect. In the case of municipalities in which the main source of transfers is linked to mining, the flypaper effect is present with one year lag. This is linked to the low budget execution in 2007, which in turn is explained by the high increase in mining transfers that year; the change in the allocation rules of the mining canon, which since 2007 is disbursed in a single installment in the middle of the budget year; and the renovation of mayors at the start of that year, with a low reelection rate, which entailed a learning curve for the newly elected authorities.

As will be described in Chapter 5, the conventional wisdom in Peru is that local authorities do not spend enough of their budget. This perception is partly strengthened by the developments of 2007, which in turn led to a number of studies assessing the determinants of expenditure efficiency of LLGG in Peru, including Herrera and Francke (2007), Aragon and Casas (2008), and Loayza, Rigolini and Calvo (2011).

This dissertation takes a different approach from those studies, building on the vast international literature on the flypaper effect and the link between decentralization and macroeconomic stability, to show that LLGG in Peru do respond strongly to transfers, albeit with a lag, especially in the case of municipalities with high transfers from mining. In turn, this creates a fiscal risk to the central government through the pressure to maintain a steady flow of transfers to SNG.

In terms of policy implications, the case of Peru provides lessons to improve its decentralization process and informs other countries that are evaluating to share the fiscal revenue from the development of natural resources among levels of government. This dissertation illustrates the consequences of sharing a high proportion of this rapidly growing and volatile fiscal revenue from the standpoint of macroeconomic stability, a decision that is intrinsically political but is very difficult to reverse once it is established. These consequences are informed by the literature on the "soft budget constraint" and can generate fiscal risks such as those that materialized in Argentina, Brazil and Colombia during the decade of 1990. Although not part of the empirical analysis, the dissertation also discusses the effects of the large increase in transfers from the standpoint of efficiency and equity, within the context of Peru's current decentralization process.

The policy recommendations highlight the importance of assessing and communicating the fiscal risks related to the recent surge in transfers. In this regard, there are a number of reforms that can be considered: 1. Improve the reports of budget execution of SNG, which are currently compared to the annual budgets including accumulated savings, hence stimulating higher spending; 2. Strengthen the capacity of the central government to monitor the compliance of fiscal rules by SNG according to their different characteristics, focusing on LLGG with high debt and high growth of transfers and expenditures; and 3. Modify the rules by which mining transfers are allocated to SNG during the budget cycle, in order to allow for better budget planning at the subnational level throughout the year.

The next section will assess the state of the knowledge on the effect of transfers on macroeconomic stability.

Chapter 2: Literature review

This section reviews the literature on the effect of transfers on macroeconomic stability, which in turn guides the evaluation of the case of Peru that provides the motivation for this dissertation. First it is necessary to clarify definitions on decentralization and an understanding of the main drivers of the process.

What is decentralization?

Decentralization can be broadly defined as the process of *devolution* of political, economic and administrative power from the central to the intermediate and local levels of government (Carranza and Tuesta, 2003). A key feature of a decentralized country is that SNG can make autonomous decisions (Baskaran, 2009), which usually entails that subnational authorities are elected by the citizens of their respective jurisdiction (World Bank, 1999). This is to be distinguished from a process of *deconcentration*, which is the redistribution of decision making among different levels within the central government; or *delegation*, which is the transfer of responsibilities and power from the central government to semi-autonomous organizations not wholly controlled by the central government but ultimately accountable to it (Prud'homme, 1995). In turn, countries can be defined as more or less decentralized depending on their position along the continuum of autonomous decisions that SNG can make (Baskaran, 2009).

Fiscal decentralization in particular refers to the definition of responsibilities for revenues, transfers, expenditures, financial management and indebtedness among the different levels of government, including institutional management of inter-governmental

fiscal relationships (Carranza and Tuesta, 2003). Decentralization is often understood to describe both the *process* by which the central government transfers responsibilities to SNG; and the *state* that results in a decentralized system (Prud'homme, 1995). It is important to distinguish these two dimensions to understand the trade-offs of alternative *sequences* of a decentralization process, in order to approach the desired outcomes and avoid unwanted results (Bahl and Martínez-Vázquez, 2006).

Why do countries decentralize?

Decentralization is a complex and evolving process that is deeply intertwined with the history, cultural heritage and geography of each particular country (Stein, 1998; Arzaghi and Henderson, 2005). Hence, it is difficult to make generalizations about the drivers of this process. This said, during the past 35 years there has been a world-wide trend toward decentralization of government, which has gone hand in hand with processes of democratization. The main cases in point are the regions of LAC and the former Soviet bloc, which have moved toward decentralization during the last few decades, and happen to also be regions whose countries have been veering toward democratic systems of government.

This trend, which is analyzed by Arzaghi and Henderson (2005), typically implies that democratization tends to elicit at the subnational level demands for increased regional and local political autonomy. This leads to the creation of the institutions of decentralization, which entails the establishment of legitimate subnational authorities in laws and/or constitutional amendments. In turn, these authorities demand greater fiscal autonomy, increasing fiscal decentralization, which is usually measured as the proportion of subnational expenditure in total public expenditure. Also, countries that have

traditionally been federal tend to stay that way and even increase their own fiscal decentralization. Certainly this trend does not occur in every country, and other structural forces are also important to explain why countries decentralize. In this regard, income per capita, territorial size, population, the degree of ethnic fractionalization and a decentralized population are all positively correlated with higher fiscal decentralization (Oates, 1972; IADB, 1997; Panizza, 1999; Arzaghi and Henderson, 2005).

Dimensions of analysis of decentralization

From an institutional standpoint, decentralization brings elected officials closer to citizens, and is viewed as a way to improve governance through four main channels (Beasley, Faguet and Tommasi, 2003): (i) Reduction in power and interference of the central government; (ii) Making the public sector more accountable through increased transparency and oversight; (iii) Responding better to people's needs; and (iv) Improving the targeting of public benefits to disadvantaged groups. Hence, decentralization works better, making government more effective and responsive, under conditions of openness, competition, transparency and strength of civil society. The threat is that when these conditions are not met, decentralization can foster the emergence of local ruling elites, patronage and corruption.

In seeking to improve governance, decentralization changes the pattern of fiscal relations among levels of government, altering the incentives and accountability structures of politicians and public officials. This highlights the importance of an appropriate definition of intergovernmental fiscal relations as a condition for a successful decentralization initiative.

In turn, economists have traditionally evaluated decentralization using the three dimensions of public finance described by Bird (1999): allocative efficiency, distributional equity and macroeconomic stability. In this regard, it is through the channel of allocative efficiency that fiscal decentralization is expected to bring most welfare benefits. Indeed, the Decentralization Theorem introduced by Oates (1972) lays out the proposition that in the absence of economies of scale or inter-jurisdictional externalities, the decentralized provision of public goods and services will typically improve welfare relative to the central government, reflecting better the preferences and conditions of the citizens of the particular jurisdiction. The magnitude of these welfare gains depends on the heterogeneity in demands and costs across jurisdictions (Oates, 1999).

In the cases of distributional equity and macroeconomic stability, however, the responsibility to conduct these dimensions should mainly be of the central government, which has the resources and coordination capacity to exercise them. In the first case, SNG are limited by the capacity of households to move. Hence, any subnational redistribution program may attract poor households and expel wealthy ones, making the program fiscally unattainable and generating inefficiencies. This said, the central government can improve redistribution in a decentralized country through the appropriate definition of a system of intergovernmental transfers that takes into account the differential fiscal capacity and expenditure needs of SNG.

With respect to macroeconomic stability, SNG lack the capacity to conduct monetary and exchange rate policy, and due to their small and open nature any subnational fiscal stabilization package is likely to have spillover effects on other SNG, and likely would be most effective if coordinated with the central government, increasing

transaction costs (IADB, 1997; Oates, 1999). This implies that the central government should be the main entity responsible for macroeconomic stability and requires ample fiscal resources to conduct this function. Hence, intergovernmental transfers should be kept to the essential minimum to fund clearly defined expenditure responsibilities of SNG, plus any equalization system that is deemed necessary.

On the other hand, when expenditures of SNG tend to be financed through their own taxes, then decentralization brings the taxpayer closer to expenditure decisions of their local authorities. This may result in a closer oversight of the allocation of funds and a more responsible fiscal behavior of subnational authorities (World Bank, 1999). Consequently, it is desirable that a process of fiscal decentralization fosters to the extent possible the fiscal autonomy of SNG.

The above discussion brings to the fore the economic arguments for the assignment of expenditures and revenues among levels of government. In this regard there are two important considerations. One is the presence of externalities, which requires the assignment of public responsibilities to the level of government best able to internalize them: SNG should be responsible for all forms of spending that do not inflict an externality (Oates, 1972), which entails that they can assume a wide array of expenditure responsibilities.

A second consideration refers to scale economies: some types of government activities might be organized at lower cost if they are undertaken on a larger scale. This applies to a number of expenditures, such as national defense, but it is particularly relevant for the assignment of revenues. Indeed, there are scale advantages to assign most

major taxes, with the exception of levies on immobile structures (land and property), to the central government.

This often leads to a situation in which the expenditure responsibilities of SNG far outweigh their own taxes, creating what is called a vertical fiscal imbalance in SNG, or "pre-transfer fiscal deficits" (Ter-Minassian, 1997a). There are also horizontal imbalances, both because the capacity to collect own revenues differs across jurisdictions due to the distribution of tax bases; and also because SNG face different demand and cost pressures to meet their assigned expenditure responsibilities (Ter-Minassian, 1997a).

The vertical and horizontal fiscal imbalances are both important rationales for the creation of intergovernmental transfers. Another key argument for transfers is the implementation of centrally determined standards for public services. These objectives, however, can be conflicting: while imbalances are better targeted through lump-sum grants, central standards tend to be associated to conditionality. Hence, different combinations of grants tend to be used. Other goals of transfers include the correction of spillovers, and enhancement of tax effort and expenditure efficiency (Ahmad and Searle, 2005). In general, a transfer system should set a clear mandate for the provision of services, giving adequate resources to SNG along with flexibility to make their own decisions, while being held accountable for results. The design should also be embedded of simplicity, objectivity and transparency (Bird, 1999).

Following Ahmad and Searle (2005) the typology of transfers includes: (i) *Revenue sharing*, which is the distribution of central taxes among levels of government using pre-determined formulas. SNG tend to have autonomy in the use of these funds,

which are useful to correct vertical imbalances. (ii) *Special purpose grants* intend to follow planning objectives of the central government and correct spillovers. They can be open-ended (related to current expenditures), or close-ended (specific projects). These grants can be conditional and include matching requirements from SNG; they can reduce subnational accountability if they rely excessively on earmarks, and in developing countries they can be difficult to monitor due to poor local financial information. (iii) *Equalization transfers* are unconditional grants aimed at allowing SNG to provide access to comparable levels of public services. The best equalization method compensates for differential expenditure needs and revenue capacities of SNG, although it is intensive in information, making it difficult to implement in most developing countries.

With respect to debt, allowing SNG to borrow has potential benefits, including the possibility of expanding their capacity to provide infrastructure projects at the subnational level, and deepening the domestic capital market at the national level. However, this requires strict monitoring and control from the central government in order to avoid potential financial difficulties of SNG that may induce costly bail-outs from national taxpayers. In this regard, as shown by Singh and Plekhanov (2005), the control from the central government should increase with the degree of vertical fiscal imbalance of SNG, given that an increasing proportion of the resources that will be used to repay the local debt will come from national taxpayers.

The capacity of the central government to monitor and control SNG indebtedness can often be impaired by the poor quality of fiscal information at the subnational level (Bird, 1999). Indeed, the implementation of an IFAS in SNG tends to be scarce and costly (Tanzi, 2002; Parry, 2007); financial statements of SNG are usually not

comprehensive (Parry, 2007; Ahmad, Albino-War and Singh, 2005); the structure of public accounts among levels of government is rarely uniform; and in many developing countries they are not audited regularly and properly (Bahl and Martinez-Vazquez, 2006). Hence, the central government should also consider the imposition of certain standards of fiscal transparency when allowing SNG to borrow.

The potential costs of fiscal decentralization may arise from multiple reasons that are mainly related to weaknesses in the political framework of SNG and the coordination of inter-governmental relationships, as well as a sequencing of the decentralization of responsibilities to SNG that does not take into account sound institutional and economic principles. For example, the lack of appropriate subnational governance mechanisms may induce SNG authorities to benefit interest groups instead of local society at large, fostering corruption and an inefficient allocation of resources. Also, a poorly designed transfer system may accentuate fiscal disparities among SNG, contributing to a widening economic gap that could lead to inefficient internal migration. Below I explore the potential costs of decentralization in terms of macroeconomic stability.

Decentralization and macroeconomic stability – Literature review

The relationship between decentralization and macroeconomic stability has attracted broad attention during the last few decades due to the fiscal crises elicited by SNG in a number of countries, including in LAC the cases of Argentina, Brasil and Colombia. If poorly conducted, decentralization can generate fiscal imbalances in SNG that may force the central government to step in, worsening the national fiscal stance in the short run and expanding the size of the State in the long run. The key features of this dimension are related to the autonomy of SNG, or their capacity to fund their

expenditures with their own taxes; the link between transfers and clearly defined expenditure responsibilities associated to them; and the debt autonomy of SNG.

Conceptually, when local expenditures are mostly financed by local taxation there is a clear link between the taxpayer and the spending decisions of the local authority. Arguably this leads to increased control, eliciting a size of the decentralized public sector that closely matches citizens' preferences (World Bank, 1999). Also, in a context of high population mobility, tax autonomy of SNG elicits competition among jurisdictions, which also restricts their size (Brennan and Buchanan, 1980).

On the other hand, when expenditures of SNG are mostly financed by transfers, the high vertical fiscal imbalance may create the following problems:

1. Since SNG expenditures are largely funded by other jurisdictions, citizens have less incentive to control their local authorities; and the central government tends to have incomplete information about the use of transfers by SNG. Both situations describe principal-agent problems that may stimulate SNG to allocate resources in an inefficient manner;

2. The effect of subnational tax competition is weaker, since local taxes fund only a small fraction of SNG expenditure;

3. Common pool problems may emerge, since each individual jurisdiction has incentives to be financed out of the taxes paid by other SNG, increasing expenditures beyond their budget constraint in the expectation of additional transfers. This is a version of the "soft budget constraint" problem, a concept introduced by Kornai (1979) with reference to state-owned companies in the former Soviet bloc (Vigneault, 2005).

Hence, high dependence on transfers may lead to soft budget constraints at the subnational level, creating fiscal imbalances and/or expanding the size of the public sector (Rodden, 2003). This is stimulated, among other factors, if SNG also have high debt autonomy (Rodden, 2002); expenditure functions are loosely defined; there is lack of transparency with regard to fiscal aggregates of SNG (Bordignon, 2000); the central government allocates discretionary transfers; and there is a history of financial bailouts by the central government (Stein, 1998).

These theoretical predictions have been confirmed in a number of empirical studies. World Bank (1999) finds that when expenditure decentralization is financed through intergovernmental transfers it leads to an increase in the size of the State, while when it is funded by own taxes of SNG it reduces it. Moreover, when transfers to SNG grow fast, expenditures of SNG tend to grow equally fast, which may generate fiscal deficits at the subnational level that are covered by the central government, contributing in the short term to macroeconomic instability.

This does not mean that transfers are inherently bad or should only be a small fraction of subnational expenditures. All over the world many SNG have low fiscal capacity and can only provide local goods and services through a generous provision of transfers. Indeed, Australia is a good example of a country where SNG have large vertical fiscal imbalances without this generating macroeconomic instability. But transfers in Australia are allocated to clearly defined expenditure functions; borrowing of SNG is strictly controlled; and the central government enforces its no-bail-out decision, minimizing the incentive problems previously described.

In a study focused on LAC countries, Stein (1998) shows that the combination of a high vertical fiscal imbalance, discretionary transfers from the central government and borrowing autonomy of SNG leads to a larger public sector. The existence of discretionary transfers allows the central government to bail out or increase transfers to SNG that already have a relatively higher vertical fiscal imbalance. In turn, Rodden (2003) also finds for a large and diverse sample of countries that when decentralization is funded by local resources, it retards the growth of government; while if it is funded by transfers, it leads to faster growth in overall government spending. He also tests for his sample the reaction of expenditures to transfers at the subnational level, and finds that it is close to 1, meaning that SNG spend virtually every dollar of increased transfers.

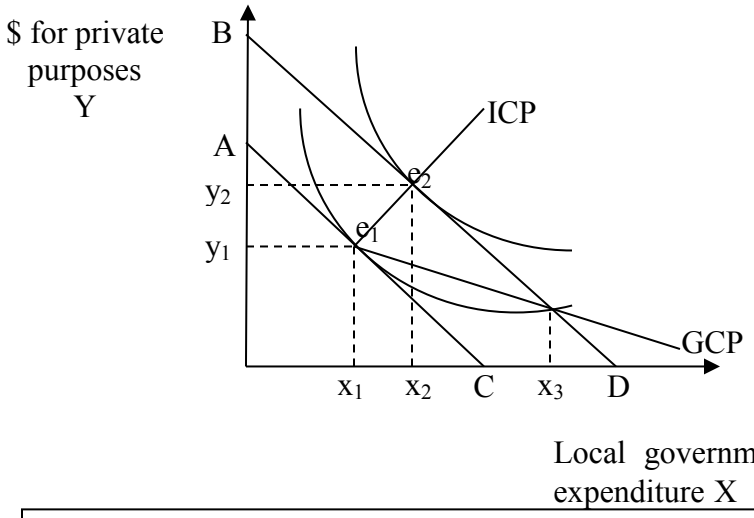
The flypaper effect

This last finding by Rodden (2003) is a well-studied empirical regularity labeled the "flypaper effect" by economist Arthur Okun, since the money that the central government sends out, "sticks where it hits" (Hines and Thaler, 1995). Indeed, as mentioned by Heyndels and Van Driessche (2002), *"how LLGG respond to grant windfalls is without any doubt the most analyzed empirical issue in fiscal federalism"*.

Empirical studies of the flypaper effect are based on the median voter model, which assumes that the median voter is representative of the community at large, and a SNG reflects the preferences of that community. This model, developed by Bradford and Oates (1971), predicts that general lump-sum grants have similar (or the same) stimulatory effects on SNG spending as an equivalent rise in income in the community. This traditional result is depicted in Figure 2.1, taken from Bailey and Connolly (1998), which maps the preferences of the median voter between two alternatives, private and

public goods. A general lump-sum grant of CD received by the local government shifts the budget line from AC (pre-grant) to BD (post-grant), the equilibrium shifting from e_1 to e_2. An equivalent increase in the disposable income, equal to AB, of the median voter would have the same result as a lump-sum general grant of the same amount. This is known as the "equivalence theorem", since it would also yield the budget line BD with equilibrium again at e_2 (assuming normal goods).

Figure 2.1 – Possible effects of varying lump-sum grants and median voter income



Source: taken from Bailey and Connolly (1998)

However, the empirical evidence contradicts this theoretical result: there is a large difference between the stimulatory effects of an unconditional general lump-sum grant and an equivalent increase in individuals' incomes. Given dE/dG as the rate of change of expenditure relative to the rate of change of grants, in the ten papers surveyed by Bailey and Connolly (1998) this measure has a wide disparity, varying between 0.25 and 1.00; but increases in individuals' incomes yield the measure dE/dI (where I represents income) between 0.05 and 0.10. This result is systematic evidence of the flypaper effect.

In Figure 2.1, ICP represents the income consumption path showing the locus of consumption choices arising from the increase in median voter income. However, GCP (the grant consumption path) represents the empirical result where receipt of a lump-sum grant has a greater stimulatory effect on local government spending than an equivalent increase in median voter income, x_3 being greater than x_2. As mentioned by Bailey and Connolly (1998) *"a flypaper effect occurs as long as GCP lies below ICP"*.

Most surveys of the flypaper effect focus on possible errors in empirical studies and alternative explanations of the phenomenon. With regard to the former, there are three main types of errors (Bailey and Connolly, 1998): 1. Misspecification of the type of grant; this may be the case with an open-ended matching grant, which has a larger stimulatory impact because it also includes a substitution effect (Chernick, 1979). There is also a form of endogeneity with this type of transfer, since the amount of the grant awarded depends on the grantee's level of expenditure. 2. Use of an inappropriate functional form; using a linear, rather than a logarithmic, functional form may inflate the spending response to grants (Becker, 1996). 3. Use of inappropriate or omission of appropriate variables; an important variable that is frequently excluded is the characteristics of the population, since a given level of service can be achieved using less resources for some communities than for others. Two other potentially relevant omitted variables are local government's savings ratio (if SNG save, they overestimate municipal expenditures, and hence the flypaper effect), and expenditure on private sector alternatives: substantial alternative private sector provision could lead to lower demand for public sector provision.

Even correcting for these types of errors the flypaper effect persists. There are many alternative explanations that try to explain it, but according to Bailey and Connolly (1998) …*"no single one of them has been verified both theoretically and empirically"*. As mentioned by Oates (2008), the flypaper effect suggests that the response of public officials to the will of the local electorate may not be as straightforward as indicated by the median-voter model.

An interesting explanation of the phenomenon that fits well with the structure of incentives in public organizations is that officials have their own set of objectives, including the pursuit of budget maximization, which encourages them to spend during the budget cycle all the funds they have (Niskanen, 1971). This may be reinforced by the yardsticks used by public opinion to judge the performance of public organizations. Indeed, in the case of Peru, perhaps the most important measure presented by central government authorities, members of Congress and the press to judge the performance of SNG is the fraction of budget execution relative to all available resources.

Another group of explanations relies on the social costs of distortionary taxation. Vegh and Vuletin (2011) show that an increase in private income leads to a greater demand for both public and private spending; but since public spending requires larger tax revenues, which can only be raised by increasing the tax rate, the latter distorts private sector´s consumption choices; whereas an increase in transfers provides the government with a source of income that is distortion-free. Hence, an increase in transfers leads to higher spending than the same increase in private income. The authors predict a positive correlation between the flypaper effect and the level of the tax rate, and confirm this prediction for a dataset of Argentine provinces and 28 American cities.

Notwithstanding the multiple theoretical explanations for the existence of the flypaper effect, this is a pervasive phenomenon that, in the words of Rodden (2003), *"…leads SNG to spend virtually every dollar of increased transfers"*. Most studies on the flypaper effect focus on alternative theoretical explanations of its occurrence, and/or document the phenomenon empirically. However, fewer papers connect the effect directly to its implications in terms of macroeconomic stability. Rodden (2003) is a notable exception: he shows that the flypaper effect contributes to create macroeconomic instability and/or expand the size of the public sector when transfers grow rapidly and represent the main source of revenue of SNG. However, he utilizes an international panel data that precludes specific country case-studies. In turn, Melo (2002) conducts an analysis for Colombia and finds that the flypaper effect is present in levels of high vertical fiscal imbalance. She also shows that when transfers fall, SNG expenditures also fall when the main source of local revenue comes from own taxes, but they do not fall when local income is highly dependent on transfers.

For the purpose of this dissertation, there are three main questions associated to the flypaper effect that have important effects on macroeconomic stability:

1. Does the central government decrease own expenditures in response to higher transfers? The evidence presented in the empirical studies shows that the size of the public sector tends to expand, which is frequently due to the fact that the central government does not reduce expenditures or even expands them in response to the increase in outlays of SNG. This is especially the case when additional transfers to SNG are not associated to clearly defined expenditure responsibilities. As shall be seen below,

transfers linked to the fiscal revenue from natural resources tend to fall into this category, which suggests that they may stimulate an increase in the size of the public sector.

2. Do SNG decrease own taxes in response to an increase in transfers, a phenomenon labeled "fiscal sloth"? As shown by World Bank (1999), the evidence on this topic is inconclusive, and the problem may not be as relevant as the response of expenditures to transfers, especially in those cases in which SNG have low fiscal capacity and own taxation is already low even before large increases in transfers. However, it is to be expected that if there is a manifestation of the flypaper effect there is no fiscal sloth, and vice versa. On one hand, if there is a strong response of expenditures to transfers (flypaper effect), it is likely that a subnational government will expand own taxation in order to fund their demand for additional expenditures. On the other hand, if there is not a strong response of expenditures to transfers (absence of the flypaper effect), it may be revealing that the subnational government does not have a high demand for additional expenditures, which means that fiscal sloth is more likely to occur.

3. Is the response of expenditures symmetric, meaning that decreases in transfers induce similar decreases in expenditures? From a theoretical perspective and building on the incentive arguments laid out before, one would expect the flypaper effect to operate symmetrically if SNG operate under a hard budget constraint, meaning that the threat of the central government not to bail out jurisdictions under fiscal stress is credible. In turn, as previously mentioned, a hard budget constraint is more credible if the vertical fiscal imbalance is not large, discretionary transfers are negligible, debt of SNG is strictly controlled and bail out episodes are exceptional.

Decentralization of fiscal revenue from natural resources

The decentralization of fiscal revenue from natural resources (here I refer to extractive industries) among levels of government is a politically controversial issue that can further complicate macroeconomic stability. It usually entails the assignment of a fraction or all of the fiscal revenue from the development of natural resources to SNG on a devolution basis, meaning that the revenue is allocated to those jurisdictions from where the resources are extracted.

The strongest economic argument for this sort of allocation refers to the need to compensate for the negative social and environmental externalities inflicted by the extractive industries on the resource-rich jurisdiction. It can also be justified in order to build the necessary public infrastructure to facilitate the operation of extractive industries, such as transportation, energy and telecommunications (Bahl, 2002).

As mentioned by Bahl (2002), other arguments in favor of this type of transfers tend to be political. There is the "heritage" argument, by which the resource-rich jurisdiction should be compensated for the extraction from its soil of a non-renewable resource. A relevant question with this argument is whether the resource is of the particular jurisdiction or of the whole nation; moreover, the definition of how much of the fiscal revenue should return to the producing region is inherently debatable. Another related argument is to maintain political and national unity: in those countries in which resource-rich SNG have high autonomy and/or culturally diverse communities, the devolution of fiscal revenue from the development of natural resources may be the necessary price to pay in order to maintain the country together. This is the case of countries like Russia, Indonesia and Nigeria, among other. Lastly, in federal or large

unitary countries this type of transfer is the second-best solution in order to avoid the creation of own taxes on natural resources by SNG, which can increase distortions and preclude private investment.

On the other hand, there are clear economic arguments against natural resource-based transfers:

1. Taxes on natural resources tend to be the most volatile of all revenue sources, and the central government is much better equipped to cope with this high volatility, since it has more revenue sources than SNG and it can take larger amounts of debt to smooth expenditures throughout the economic cycle;

2. The decentralization of this type of revenue takes away from the central government an important source of tax collection, which reduces its room to maneuver to conduct counter-cyclical fiscal policy; in turn, this may lead to the creation of additional national taxes. In addition, as described earlier, the higher vertical fiscal imbalance of SNG that are recipient of this type of transfer stimulates soft budget constraints. Both avenues tend to create macroeconomic instabilities in the short term and increase the size of the public sector in the long run;

3. Since most natural resources tend to be based in geographically concentrated areas, these types of transfers exacerbate inequalities and fiscal disparities, which may lead to inter-jurisdictional conflicts; they also put pressure on the central government to compensate non-recipient SNG, which may create further macroeconomic imbalances and stimulate a bigger size of the public sector;

4. From an allocative efficiency standpoint, the transfer of large resources to SNG without clearly defined expenditure responsibilities and governance mechanisms can lead to corruption and/or the allocation of funds to projects with low social return.

In this regard, Mc Lure (2003) mentions that if SNG were to choose "behind the veil of ignorance", without knowing the allocation of natural resources among them, a central collection and distribution of oil revenues would be optimal. But once the veil is lifted and everyone knows its allocation, those regions with more resources will demand a large share of revenues. This is indeed what happened in countries such as Argentina, Colombia and Peru during the 1990s: in the context of constitutional reforms, SNG pushed politically and managed to include their rights to rents from natural resources in the Constitution itself (Brosio, 2003).

Hence, although it tends to be politically unfeasible, from a macroeconomic perspective the most desirable arrangement is centralization of net natural resource revenue (after compensation for negative environmental and social externalities), assigning other tax bases to SNG and a transfer system that addresses the goals of fiscal decentralization (Ahmad and Mottu, 2002). An alternative is to assign a small fraction of natural resource bases to producing SNG, with safeguards to deal with their inherent volatility. The least preferred scheme is revenue sharing of natural resources: as mentioned before, it complicates macroeconomic management by taking away large amounts of revenue from the central government; and it does not provide stable financing to SNG, since it transmits to them the inherent volatility of those revenues. It also does not diffuse separatism, since producing regions can do better by keeping all revenues.

Ahmad and Mottu (2002) classify arrangements of natural resource revenue assignment into four categories, depending on whether the country is unitary or federal. Small unitary countries tend to centralize revenues, often because LLGG do not have important expenditure responsibilities. Large unitary states (such as Colombia, Indonesia and Peru) tend to be more pressed to share revenues with SNG, which leads to difficulties in terms of macroeconomic management. The same issues arise in federal countries such as Nigeria, where oil revenue is transferred through highly volatile revenue-sharing arrangements, leading to major fiscal management problems that these governments cannot address for lack of alternative revenue bases. Large federal countries such as Canada and the United States assign oil tax bases to SNG (overlapping with the federal government), instead of sharing oil revenue collected centrally. This tax assignment, if properly controlled in order to preclude disincentives for private investment, may create more accountability for SNG, while revenue disparities among regions may be addressed, as in Canada, through an equalization transfer system.

In turn, with respect to the vertical allocation of fiscal revenue between the central government and SNG, World Bank (2010) makes the distinction between "oil economies" and "economies with oil", relative to the contribution of the extractive sector to the economy. It asserts that in those countries where the contribution of the sector to the economy is small ("economies with oil"), the share of the revenue by SNG can be larger, since the arguments against decentralization of that rent have less importance. Australia is a case in point, where the public rent from natural resources is relatively low as a fraction of GDP, and the participation of SNG in this rent is relatively high. On the other hand, in countries where the importance of the sector in the economy is large ("oil

economies"), the participation of SNG in this rent should be smaller. An example is Venezuela, where the public income from oil is large and also highly centralized.

In this regard there can be a problem of time-consistency with a legal framework that shares fiscal revenue from natural resources among levels of government, since it may be enacted in a period in which the importance of the extractive industry in the economy is low, leading national policy makers to accept a high share of SNG in this revenue. However, once the importance of this industry increases, as has happened in a number of countries due to the commodity boom of the last decade (including Peru), it becomes politically difficult to change the legislation, leaving the central government to cope with the drawbacks of sharing with SNG a large fraction of the fiscal revenuefrom natural resources.

There are few international studies that compare the allocation of fiscal revenue from natural resources across levels of government. One of them is Morgandi (2008), who analyses the issue in 7 countries that are rich in natural resources: Nigeria, Bolivia, Brazil, Ghana, Indonesia, Papua New Guinea and Mexico. The average fiscal rent that was shared with SNG in those seven countries, using information for 2006 and 2007, was 33 percent, which is much less that what was shared in Peru in 2010, which reached 57 percent. Noteworthy, Bolivia and Brazil, which are neighbor countries of Peru, are the only countries in the sample that shared with SNG a higher proportion than Peru (63 and 69 percent, respectively).

Similar to the flypaper effect, there is little empirical literature on the relationship between decentralization of fiscal revenue from extractive industries and macroeconomic

stability. This is surprising, considering that in many countries transfers based on natural resources to SNG have been growing significantly during the past decade as a consequence of both an increasing world-wide trend in decentralization of government and the boom in commodity-based industries. The relative lack of research on this relationship may be partly attributed to the fact that the extraordinary growth of this type of transfer is a recent phenomenon.

Linking to the arguments laid out above, the high growth of natural resource based transfers to SNG without clearly defined expenditure responsibilities, other than their allocation to public investment, may elicit a flypaper effect at the subnational level. In turn, the volatility of this type of transfers may induce soft budget constraints, especially when SNG have a high vertical fiscal imbalance, low capacity to collect own revenue, debt autonomy, there are previous bail-out episodes, and the central government can allocate a significant amount of discretionary transfers. This risk is highlighted in ECLAC (2009) in the context of the exposure of subnational finances in LAC to the world recession of 2009, with special reference to the cases of Bolivia and Peru.

Brosio and Jimenez (2010) suggest that the earmark of this type of transfer to public investment makes it less prone to generate soft budget constraints, since capital expenditure is a relatively flexible component of outlays that SNG can adjust downward in the event of a reduction in grants. However, assuming the existence of a flypaper effect, there is still risk of a soft budget constraint if some of the conditions that lead to it are in place. Moreover, the central government may yield to the pressure from SNG to maintain or increase the overall level of transfers in the event of a reduction in natural resources based grants for a number of reasons, including: 1. Political negotiations in

responsive arenas, such as the National Congress; 2. Allocation by SNG of all income not related to natural resources to current expenditure, thus increasing their dependence on a steady flow of grants; and 3. Need of higher resources by SNG to operate and maintain any investments made with transfers based on extractive industries.

Having discussed the current understanding of the link between decentralization and macroeconomic stability, with particular reference to the case of decentralization of fiscal revenue from natural resources, in the next section I turn to an explanation of the key features of the latest fiscal decentralization process of Peru, which is the case study for this dissertation.

Chapter 3: Key features of Peru's latest fiscal decentralization process

As described in the introduction, Peru is a unitary country in which the participation of SNG in the public sector has traditionally been small relative to the LAC-7 countries, with the exception of Chile. This traditional centralization of government started to change in 2001, when the more open democratic environment that followed the resignation of President Alberto Fujimori (July 1990 to November 2000) fostered demands for increased subnational autonomy. At that time there was a broad political consensus to increase the decentralization of government, and the issue is prominently included in the "National Accord", subscribed in March 2002 by Peruvian's most important political parties, which consists of 31 State policies that serve as a guideline for the country's sustainable development and to strengthen its democratic governance.[8]

The main political push of the decentralization process occurred between 2001 and 2004, when most of the legal framework that serves as its roadmap was enacted. Table A1.2 in Annex 1 summarizes all its salient legal features. In order to lead the implementation of the decentralization process, the "Bases of decentralization" Law of July 2002 created a "National Council for Decentralization" (NCD) as a central government agency with cabinet rank, overseen by representatives from the local, regional and central levels of government. The NCD was eventually dissolved in December 2006, during the second Administration of President Alan García (2006 to 2011), and its functions were transferred to a newly created "Decentralization

[8] More reference to the "National Accord" can be found at its website: http://www.acuerdonacional.pe/.

Secretariat", within the Ministerial Council Presidency (PCM in Spanish). This decision has been interpreted to have lowered the priority of decentralization in the public agenda (see for example PRODES, 2007 and Grupo Propuesta Ciudadana, GPC, 2008).

Initial focus on Regional Governments

One of the salient characteristics of the process was a Constitutional Reform in March 2002 that created a popularly elected intermediate level of government, the "Regional Governments" (RRGG), in the geographic space of the 26 historic departments of Peru. The RRGG were established over the administrative structure of what were until then the "Transitory Counsels of Regional Administration" (CTAR after their name in Spanish), which had been functioning since 1992 as de-concentrated units of the central government. The first election of "regional presidents" took place in December 2002. The term in office of Regional Presidents lasts four years, and they can run for reelection. This is similar for LLGG, and the regional elections have coincided with local elections in 2002, 2006 and 2010.

This Constitutional Reform not only created the RRGG, but it also introduced a second intermediate level of government, which is the "Regions". Each region is supposed to be formed by the integration of two or more neighboring RRGG, by means of a referendum of the citizens of the involved departments. The creation of regions has long been an aspiration of Peru's policymakers, mainly as a way to gain economic efficiency and sustainability through economies of scale in the administration of the country's territory. Indeed, as a precedent to the current decentralization process, the first Administration of President Alan García (1985 to 1990) enacted a "Regionalization Law" in 1988 that created twelve regions based on the forced integration of the existing 24

departments of the interior of the country. The Fujimori Administration eventually dissolved these regions in 1992 and established the CTAR over the space of the historic departments of Peru.

Between 2002 and 2004 the successive laws defined a number of incentives for the formation of regions. Noteworthy, the "Fiscal Decentralization Decree-Law" of February 2004 mentions that upon the formation of any region, it would receive 50 percent of national taxes collected in its territory.[9] However, the law also states that transferred taxes would substitute the grants that RRGG were already receiving, and RRGG cannot receive more taxes than those necessary to comply with their expenditure functions. Additionally, the "Incentives for the Integration and Formation of Regions Law" of April 2004 provides the guidelines for the formation of regions and adds incentives for their formation, including additional transfers from the central government, preference for international loans, increased fiscal space for internal credits, and procurement incentives for businesses located in the RRGG to be integrated, among other.

In October 2005 a referendum was conducted in Peru's 16 departments that had submitted proposals to integrate into 5 different regions. In 15 of these departments the population voted against these proposals (in many of them by a large margin), thus preventing the formation of any region. This result is partially explained by the fact that the regional presidents did not have incentives aligned with the formation of regions, since it would entail the elimination of at least one of the RRGG in order to create the

[9] Each region would also receive additional income if it adopted tax administration measures, in coordination with the central government's tax administration agency, which increased tax collection in its territory.

government of the newly formed region. A second referendum was scheduled to be held in 2009, but it was postponed due to the lack of proposals from the departments. Since the decentralization roadmap had as one of its central tenets the formation of regions, this outcome represented an important setback for the process.

The creation of RRGG was accompanied by the enactment in November 2002 of the "Organic Law of RRGG", which defines the characteristics and functions of RRGG. This includes an exhaustive list of 185 expenditure functions in the fields of agriculture, transport, health and education, among other, along with guidelines for the progressive annual transfer of these functions from the central government through an "accreditation" process. Since the RRGG were established over the administrative structure of the CTAR, many of these expenditure functions were already being exercised when the first regional presidents took office in January 2003. However, some of these functions were new and/or entailed the transfer of additional financial and administrative resources in order to be adequately performed.

Hence, the central government enacted an "Accreditation System Law" in June 2004, which intended to certify and strengthen the capacities of SNG to exercise their functions and programs, with special attention to RRGG. In spite of some efforts from the central government until 2006 to comply with the certification requirements, the process has tended to be a validation of the functions that the RRGG were already exercising when they were CTAR, with little additional resources or capacity strengthening (Defensoría del Pueblo, 2009). Moreover, a number of functions of RRGG are shared with the central and local levels of government, which has led to overlap and inefficiency, especially with respect to public investment.

On the revenue front, the Organic Law of RRGG states that a Fiscal Decentralization Law would be proposed, which would include the roadmap for the transfer of taxes to RRGG within an integral tax reform. Indeed, the "Fiscal Decentralization Decree-Law" was enacted in February 2004, although instead of setting a roadmap for the transfer of taxes to RRGG, it established that upon the formation of regions, each of them would receive 50 percent of central government taxes collected in their territory. Since no regions have been created yet, RRGG do not have own sources of revenue, except for some fees-for-service that have historically collected around 3 percent of their total income.

Hence, the fiscal characteristics of RRGG have not changed dramatically relative to the CTAR since their creation in 2002. Almost all of their resources are transferred from the central government, and nearly 70 percent of them are earmarked for current expenditure, mostly to fund salaries in education and health (see Figure 1.2 in Chapter 1). Additionally, regional presidents have little control over their current expenditure, which is still largely defined by the central government, with marginal changes with respect to the scheme that prevailed with the de-concentrated CTAR.

RRGG do have more autonomy with respect to public investment, especially since 2007, when a national law was passed that decentralized the evaluation and approval of public investment projects to SNG. In this regard, a number of important investment projects that were being carried out by the central government were decentralized to RRGG; and transfers earmarked for public investment have increased substantially since 2004, especially those related to natural resources (see Figure 1.2 in Chapter 1), in spite of the fact that RRGG receive a smaller proportion of these types of

transfers than LLGG. However, the autonomy of regional authorities with respect to public investment is somewhat restrained by the existence since 2003 of the process of "participatory budgeting", by which organized civil society participates in the definition of priorities for investment, both at the regional and local level of government. In a number of RRGG this process of participatory budgeting has been dominated by LLGG, which have been successful at extracting resources for their respective jurisdictions, at the expense of projects with a regional scope.

Finally, since almost all the resources of RRGG are transferred by the central government, the former have little debt autonomy. Indeed, only a few RRGG have been able to obtain loans, using future transfers for repayment, with heavy involvement of the central government as guarantor and in the definition of the terms and conditions of credits.

Developments with LLGG

Given that the effort of the decentralization process centered during its initial years on the creation of RRGG and the formation of regions, the local level of government received relatively less attention. LLGG have a longer tradition than RRGG in Peruvian history as autonomous entities. Indeed, there have been popular elections for local authorities since 1981, following the return of democracy. A feature of Peru's municipalities is their division into two levels: "Provinces" and "Districts". This separation has its origins in the Constitution of 1823, only two years after the country's independence, and it is based on the French model of local government organization. Provinces are larger units within a region, each of which includes a provincial capital and several districts. The provincial government has jurisdiction over the whole province,

exercising functions that comprise the geographic space of several districts, and also over the provincial capital, where it operates as another district. In turn, each district exercises functions over its smaller surface within each province. By the end of 2010 Peru had 1834 LLGG, divided into 195 provinces and 1639 districts.[10]

Peru is the country with most LLGG relative to its population of the LAC-7 countries (Vega, 2008). It had in 2010 an average of 16,064 inhabitants per municipality, and the median population is much lower with 4,501 inhabitants per LLGG. This relatively high fragmentation allows on one hand a closer proximity to citizens' needs and demands, which is an important goal of decentralization; on the other hand, however, it generates too many small administrative units that lack the resources and capacity to provide appropriate local public goods and services.

This is a particular concern in urban areas, which tend to be administered by one or even two provinces with a variable number of districts, each of which has responsibility for the collection of their own municipal taxes, including the property tax. As an example, the city of Lima, which is the country's capital, is administered by the Provincial Municipality of Lima, alongside 42 other districts. The urban area of Lima, in turn, is linked to the Provincial Municipality of El Callao, which has 5 additional districts. This multiplicity of administrative units in urban areas is also prevalent in the cities in the interior of the country, creating coordination problems in the management of public works that intend to benefit the whole urban area. It also limits the fiscal capacity

[10] There is another local level of government named "populated centers", but by the end of 2010 there were only 8 of them in the country.

of the provincial government and each individual district, since they cannot seize economies of scale in the administration of local taxes.

In this respect, similar to the goal of regionalization, the Peruvian decentralization process also intends to gain efficiencies through the integration of LLGG. The legislation on this front emerged after the initial efforts of regionalization. Hence, in May 2007 the central government enacted the "Promotion for the merging of municipal districts Law" and the "Municipal mancommunity Law". The former gives fiscal incentives through additional transfers for the merging of small districts that do not comply with the minimum population requirements of the "Territorial organization and demarcation Law" of July 2002.[11] In spite of these fiscal incentives, so far there has not been any merging of districts, partly due to the same reason why RRGG have not merged into regions: incumbent authorities have no political incentive to give up their positions.

The "Municipal mancommunity Law" promotes the cooperation of two or more LLGG in the execution of public investment projects (PIP) and the provision of services. Since the law's enactment over 200 LLGG have joined efforts forming more than 40 municipal mancommunities with a variety of goals. However, there are still pending reforms in the budget, procurement and investment systems to expedite the execution of resources through this mechanism (Pro Decentralization, 2010).

Different to RRGG, LLGG have their own sources of revenue, which are mainly municipal taxes and fee-for-services. These resources provide an important fraction of

[11] Pro Decentralization (2009) shows that according to Peru´s 2007 population census, 48.8% of all LLGG should be merged because they do not comply with the minimum population requirement set in the "Territorial Organization and Demarcation Law".

total income in many LLGG, especially in urban areas, albeit the fiscal restrictions due to the high municipal fragmentation previously described. Table A1.4 in Annex 1 summarizes the characteristics of the most important taxes and fees of LLGG. The legal framework for municipal taxation has remained largely the same since the enactment of the "Municipal Tax Law" in 1993. The current decentralization process has not tackled yet the issue of municipal taxation, even though there is room to improve the design of local taxes in order to increase municipal own revenue.

Under the current framework LLGG do not have any legal capacity to modify tax rates and/or the tax base (for example, valuation of properties); they only control tax administration. In this regard, an institutional innovation of a number of urban LLGG has been the creation of "Tax Administration Services" (SAT, after their name in Spanish), which are semi-autonomous tax administration agencies that obtain operating revenue from a fraction of their tax collection. The SAT also has some degree of administrative autonomy, allowing it to keep a stable bureaucracy, which tends to be better paid than other municipal employees. The Municipality of Lima created the first SAT of Peru in April 1996, and 8 other cities have followed thereafter. Evaluation studies suggest that cities with SAT have better tax collection performance than comparable cities without SAT (DIE, 2009).

As a recent development, Peru's Ministry of Economics and Finance (MEF) started in 2010 two grant schemes called the "Plan of Incentives for the Improvement in Municipal Management" (PI) and the "Program for Municipal Modernization" (PMM), which transfer funds to LLGG conditional on the adoption of policy measures in fields oriented to modernize and make progress to a results approach to public management

(more on this below). One of these fields is the improvement of LLGG tax collection. This initiative shows a higher priority of municipal taxation in the central government's agenda.

A milestone of the decentralization process for LLGG was the enactment in May 2003 of an updated "Organic Law of LLGG", which defines the characteristics and functions of LLGG. Similar to the Organic Law of RRGG, it states the exclusive and shared functions of provincial and district governments. It also mentions that transfers to LLGG would be doubled between 2004 and 2008, from 6 to 12 percent of the budget of the public sector. In this respect, and as expanded later in the text, the central government has transferred to LLGG programs that were formerly executed by the central ministries, earmarked to rural highways, social infrastructure, and nutrition projects, among other, under close supervision from the central government.

Another important piece of legislation for LLGG is the "Fiscal Decentralization Decree-Law" of February 2004, previously mentioned with reference to RRGG, which introduces all fiscal rules for SNG, along with requirements to ensure fiscal transparency and responsibility. This decree and its regulation, clarifies the nine fiscal rules that apply to SNG, along with their concept and methodology of estimation. It also includes a transition period in 2006 and 2007 to comply with these rules. Moreover, it states that all RRGG and selected LLGG (to be defined between MEF and the NDC) should begin multiannual fiscal reports consistent with the National Multiannual Macroeconomic Framework. Table 3.1 summarizes Peru's fiscal rules for SNG, including their temporary amendment in 2009-2010 following the international economic crisis (this amendment was extended through 2012).

Table 3.1 – Fiscal responsibility rules for SNG in Peru

Fiscal Rule	S.D. Nº 144-2005-EF	E.D. 108-2009
1.Total debt stock (TDS) / Net current income (CI)	TDS/CI ≤ 100 percent	TDS/CI ≤ 120 percent
2.Debt service (DS) / CI	DS/CI < 30 percent	DS/CI < 30 percent
3.Average primary result (PR)	$(PR_t+PR_{t-1}+PR_{t-2})/3 > 0$	$(PR_t+PR_{t-1}+PR_{t-2})/3 > 0$
4.Short-term debt (STD)	STD < CI/12	STD/CI < 35 percent
5.Total debt stock without guarantee from the National Government (TDSWG)	TDSWG/CI ≤ 45 percent	Suspended
6.Total debt service without guarantee from National Government (DSWG)	DSWG/CI ≤ 25 percent	Suspended
7.Non-financial expenditure in real terms (NFERT)	$((NFERT_t - NFERT_{t-1}) / NFERT_{t-1}) \leq 3$ percent	Suspended
8.Consumption expenditure in real terms (CERT)		$((CERT_t - CERT_{t-1}) / CERT_{t-1}) < 4$ percent
9.End of term Rule	Forbids to incur in current expenditures that imply commitments of payment for the following term	
10.Exception rule in case of natural disasters	Does not apply on rule 7	

Source: Government of Peru (2011) based on Fiscal Responsibility and Transparency Law, Fiscal Decentralization Decree Law, Supreme Decree (SD) 144-2005-ED and Emergency Decree (ED) 108-2009.

Given that RRGG are almost entirely funded by transfers, and the central government has a tight control over their current expenditures, they tend to comply with fiscal rules, since they have relatively little fiscal autonomy. However, the supervision of the compliance of LLGG with fiscal rules is more relevant than for RRGG in order to prevent fiscal risks for the central government, for two main reasons: first, LLGG have more fiscal autonomy than RRGG, since they collect their own sources of revenue and have more discretion over their current expenditures; and second, they are much more numerous than RRGG, which makes them more difficult to monitor. In this regard, many LLGG have not been complying with some of the fiscal rules, including rules number 3 and 7 in Table 3.1. Additionally, the transition period to comply with the fiscal rules

included in the Fiscal Decentralization Decree-Law has never been enforced; neither has been the requirement for SNG to conduct fiscal reports consistent with the Multiannual Macroeconomic Framework.

With respect to financial administration, Peru's central government implemented for its central ministries since the late 1990s an IFAS, which allows tracking the financial transactions of public entities. Given that back then the RRGG were de-concentrated agencies of the central government (CTAR), dependent on the Ministry of the Presidency, they were automatically included in the IFAS. When the RRGG were created in 2002, they naturally inherited the technological infrastructure of the CTAR. Hence, there is complete, updated and reliable information on all financial and budgetary transactions conducted by the RRGG since their creation, which is available online in the website of MEF.[12]

At the local level, however, the IFAS was installed more gradually, owing to the political autonomy of LLGG and the fact that it is more costly and difficult to introduce, considering that many municipalities are small and distant, lacking personnel and technological equipment. However, by the end of 2007 the IFAS was operative in all LLGG, enabling Peru's central government to have online access since 2008 to all budgetary transactions of Peru's 1834 LLGG. This information is also available online at the MEF website, and it has improved the reliability and transparency of municipal fiscal

[12] See http://www.mef.gob.pe.

information, contributing to make Peru one of the most advanced developing countries in terms of fiscal transparency of SNG.

The source of budgetary information of Peru's SNG is MEF's National Accounting Office (NAO), which every year compiles and standardizes the information on budget execution of the previous fiscal year, which coincides with the calendar year. This information is sent to NAO until every May by all public agencies, including RRGG and LLGG. In turn, NAO sends every June for the review of Congress the "General Government Financial Statements", reflecting yearly budget execution and financial statements of all agencies of Peru's government. With the approval of Congress, this information is published by October of every year.

Before 2008, when the IFAS was not yet installed in all municipalities, NAO had to rely on the self-reported fiscal information submitted by each LLGG. This had two main drawbacks: first, not all LLGG submitted complete and timely information, which meant that there were some omissions, averaging around 10 percent of all municipalities every year between 1998 and 2007, although the percentage of omissions steadily decreased from 20 percent in 1998 to 4 percent in 2007; the omitted LLGG tended to be small, rural districts, which had more difficulties submitting the required information. Second, in the absence of the IFAS it was harder for the NAO to check the reliability of the information submitted by LLGG.

In this regard, Table 3.2 presents the institutional coverage of LLGG of the NAO database since 1998. It also contrasts the information on two of the main transfers to LLGG reported both by MEF and the LLGG themselves (FONCOMUN and mining

canon). This is a way to assess the reliability of the information submitted by municipalities, since it can be compared to the data on transfers that MEF controls. As can be seen, these two transfers reported by LLGG are not much lower than the information reported by MEF, averaging 94 percent for FONCOMUN between 1998 and 2007, and 95 percent for the mining canon between 2001 and 2007. Moreover, these fractions are every year higher than the proportion of LLGG that submitted information, suggesting that the omitted municipalities tend to be smaller than average.

Table 3.2 – Coverage of LLGG fiscal information in NAO database

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Provincial Governments (PPGG)	193	193	193	194	194	194	194	195	195	195	195	195	195
Total District Governments (DDGG)	1626	1626	1628	1634	1634	1635	1635	1637	1639	1639	1639	1639	1639
Total LLGG	1819	1819	1821	1828	1828	1829	1829	1832	1834	1834	1834	1834	1834
Total PPGG in NAO Database (debt)	179	185	184	183	185	186	191	188	189	194	195	195	195
Total PPGG in NAO Database (budget)	178	176	178	182	185	186	191	188	189	194	195	194	195
Coverage of PPGG (budget)	92%	91%	92%	94%	95%	96%	98%	96%	97%	99%	100%	99%	100%
Total DDGG in NAO Database (debt)	1375	1447	1435	1473	1438	1500	1500	1536	1552	1567	1635	1633	1637
Total DDGG in NAO Database (budget)	1300	1380	1390	1462	1438	1501	1518	1550	1551	1568	1632	1624	1628
Coverage of DDGG (budget)	80%	85%	85%	89%	88%	92%	93%	95%	95%	96%	100%	99%	99%
LLGG in NAO Database (budget)	1478	1556	1568	1644	1623	1687	1709	1738	1740	1762	1827	1818	1823
Coverage of LLGG (budget)	81%	86%	86%	90%	89%	92%	93%	95%	95%	96%	100%	99%	99%
Foncomun transfers reported by MEF (in million of current S./)	S/. 1,256	S/. 1,239	S/. 1,399	S/. 1,370	S/. 1,431	S/. 1,597	S/. 1,793	S/. 2,031	S/. 2,388	S/. 2,807	S/. 3,263	S/. 3,015	S/. 3,284
Foncomun transfers reported by LLGG (in million of current S./)	S/. 1,118	S/. 1,134	S/. 1,253	S/. 1,279	S/. 1,329	S/. 1,528	S/. 1,729	S/. 1,957	S/. 2,324	S/. 2,758	S/. 3,257	S/. 3,006	S/. 3,257
Reported coverage (as % of transfers)	89%	92%	90%	93%	93%	96%	96%	96%	97%	98%	100%	100%	99%
Mining canon transfers reported by MEF (in million of current S./)				S/. 81	S/. 116	S/. 229	S/. 346	S/. 666	S/. 1,310	S/. 3,868	S/. 3,327	S/. 2,728	S/. 2,360
Mining canon transfers reported by LLGG (in million of current S./)				S/. 75	S/. 108	S/. 219	S/. 324	S/. 646	S/. 1,248	S/. 3,771	S/. 3,341	S/. 2,597	S/. 2,341
Reported coverage (as % of mining canon transfers)				92%	93%	96%	93%	97%	95%	97%	100%	95%	99%

Source: own elaboration based on data by NAO, MEF

With respect to accounting standards, until 2008 the economic classification of the fiscal information presented by Peru´s NAO needed some adjustments to be compatible with international standards, including the Government Finance Statistics Manual of the International Monetary Fund (IMF, 2001). In this regard, the economic classification of the budget provides the basis to estimate the fiscal deficit, since it distinguishes public income and expenditures according to whether they are of a current, capital or financial nature. For this dissertation I performed these adjustments to the entire database of LLGG, following the detailed instructions laid out in MEF (2006). In 2008 and starting in fiscal year 2009, Peru´s NAO modified its accounting regulations to make them more akin to international standards. I made these changes for 2009 and 2010 compatible with the series until 2008 following the guidelines in MEF (2008). Annex 2 explains the specific adjustments that were made to the fiscal database of LLGG.

The time period used for analysis is 1998 through 2010, in order to include a few years prior to the start of the decentralization process, which began to have fiscal impact in 2002. However, there are two salient problems with the fiscal database of LLGG prior to 2001: 1. As displayed in Table 3.2 above, there is a relatively higher proportion of omitted LLGG; and 2. The available information is not sufficiently disaggregated; for example, until 2000 own income of LLGG does not distinguish among the different taxes that municipalities collect, or among the different transfers from natural resources that they receive. On the expenditure side, it does not disaggregate current and capital expenditures according to their specific elements. For these two reasons, in the results section below the entire database (1998 to 2010) is only used for descriptive purposes,

while the quantitative analysis is performed on the database for which disaggregated data is available (since 2001).

With reference to municipal debt, a study conducted by the World Bank (2006) using information for 2003 found problems related to its registration. Indeed, for a sample of LLGG the study showed that many municipalities concealed or miss-registered much of their debt. However, these obligations were mostly owed to other agencies of the central government, such as social security contributions and national taxes, while the debt with other creditors was better registered and tended to be paid regularly (especially with the banking system). This study was updated in 2010 using information on LLGG for 2009 (Moron, 2010), finding that the problem still existed, but it was mostly restricted to stocks of older debt, since the IFAS contributed since 2008 to minimize the scope for inappropriate accounting practices with respect to public creditors. Hence, despite these caveats, the fiscal database on LLGG can in general be considered reliable.

As mentioned in the introduction, perhaps the most remarkable feature of the evolution of LLGG finances during the past decade, which provides the motivation for this dissertation, has been the extraordinary growth in transfers from the central government. Indeed, as shown in Figure 1.1 in Chapter 1, transfers have increased more than five times in real terms between 2001 and 2010, at an annual rate of 21 percent in constant 2002 S/. This is intimately related to the growth in transfers linked to natural resources, especially mining, but it is also explained by the introduction of new grants and the growth in other transfers.

Table A1.3 in Annex 1 presents the list of all transfers made to LLGG until 2010, along with their source of funds, the requirements on their use, their legal base and main changes, and their distribution rules. They can be broadly classified into three distinct categories: “FONCOMUN”; “Natural resources and customs”; and “Earmarks and other transfers”. FONCOMUN is the Municipal Compensation Fund, which has traditionally been the main redistributive grant to LLGG; since 2002 municipalities have no restrictions on the use of funds from this source (previously they had to allocate them to public investment).

“Natural resources and customs” is a category that is also known as “fragmentary transfers”, following Herrera (2008), owing this name to the fact that they are only allocated to the LLGG where the activity takes place. It includes the “Canon”, which proceeds from taxes, perquisites and permits paid by mining, gas, fishing, forestry and hydro-energy exploitation. “Oil canon and over-canon”, which is a transfer based on a different tax regime than the other canon, and applies to oil exploitation. Mining perquisite, which is a payment made for the exploitation of minerals. The “Fund for Socioeconomic Development of Camisea” (FOCAM) perquisite, which is a compensation paid to SNG for the right of way of the Camisea Gas pipeline. And the participation in custom rent, which is a fraction of import duties allocated to the provincial government where the custom agency is placed. Most fragmentary transfers need to be allocated to public investment, but since 2005 this restriction has been gradually lifted, allowing for a fraction of expenditures on maintenance and pre investment studies.

"Earmarks and other transfers", in turn, is mainly composed of a number of transfers most of which have predetermined recipients and conditions on the use of funds for certain activities. The most traditional such transfer is the "Glass of Milk" program, which covers all LLGG and it is earmarked to provide a daily ration of food to vulnerable population. This category also includes a number of central government social programs that are executed by LLGG, mainly earmarked to road infrastructure, complementary food programs, and social and productive infrastructure (described above); in this regard, the funding for social programs increased significantly in 2009-10, when in the context of the international financial crisis, the central government allocated on a discretional basis additional funds for sanitation, transport, social assistance, basic education, urban development, management and financial intermediation, and irrigation, among other sectors. This funding has been included under a broad category named "ordinary resources for LLGG". In turn, "Other current and capital transfers" includes transfers from municipal enterprises, RRGG and other national funds; and donations by individuals, corporations, bilateral and multilateral organizations; these transfers also tend to be earmarked to specific activities or projects.

"Earmarks and other transfers" also includes two relatively recent transfer systems that intend to stimulate a culture of competition and incentives among SNG. The first one is the "Incentive Fund for Regional and Local Investment" or FONIPREL after its name in Spanish. It is a competitive Fund, introduced in 2008, which co-finances pre investment studies and PIP presented by SNG in priority development sectors. FONIPREL clusters regional, provincial and district governments into different groups according to their basic unmet needs (BUN) and the volume of transfers they receive

from “determined resources” (FONCOMUN and “natural resources and customs”). Hence, it provides an official classification that allows distinguishing the heterogeneity among LLGG along these categories.

The second recent transfer system is composed of two joint new programs mentioned above, which are the PI and the PMM. They were introduced in 2010, and their main goal is to stimulate LLGG to modernize and make progress towards a results approach to public management. Both mechanisms allocate funds according to the achievement of a number of targets by LLGG, in the areas of municipal taxation; infant malnutrition; improvement of public services and infrastructure; and streamlining local procedures. These funds group LLGG according to their size, providing a third official classification of their heterogeneity.

Until 2001, when the current decentralization process started, there were five main transfers to LLGG: FONCOMUN, which represented in 2001 more than two-thirds of total transfers (68 percent); the “Glass of Milk” program, which was the main contribution to “Earmarks and other transfers” (19 percent); the mining canon, oil canon and over-canon, and participation in custom rent, which back then were the only transfers included under “Natural resources and customs” (13 percent). In turn, by 2010 there were several more transfers, many of which grew significantly throughout the decade. This changed the relative importance of these three broad categories: FONCOMUN fell to 27 percent in 2010; “natural resources and customs” is the most important category since 2006, with 38 percent of the total in 2010; and “Earmarks and other transfers” grew significantly in 2009-10 in the context of the international financial crisis, surpassing FONCOMUN with 35 percent in 2010.

In the case of FONCOMUN, even though it grew between 1998 and 2010 at an annual rate of almost 9 percent in real terms, it was surpassed by other transfers, many of which were reformed and/or created as part of Peru's current decentralization process. It also declined in 2009 due to the international economic crisis, since it derives most of its resources from the Municipal Promotion Tax (MPT), which is a two-percent surcharge on the Value Added Tax (VAT), which in turn follows closely the country's economic cycle. In 2010 and in spite of the strong economic growth of Peru (8.8 percent in real terms), FONCOMUN did not grow so much (6.2 percent in real terms) partly because the central government began to subtract from FONCOMUN the devolutions for excess or incorrect payments of the MPT (see Table A1.3 in Annex 1 for a detailed explanation).

As shown in Figure 1.3 in Chapter 1, "natural resources and customs" is the category that grew most between 1998 and 2010 at an annual rate of nearly 28 percent in constant 2002 S/. Since 2001, the most important transfer has clearly been the mining canon, which represented on average around 48 percent of transfers in this category during 2001-2010; it is followed in importance by the oil canon and over-canon, with an average of around 23 percent of the total; gas canon (12 percent); mining perquisite (9 percent); and participation in customs rent (7 percent). Both fishing and especially forestry canon are relatively unimportant (less than 2 percent on average).

As described in Table A1.3 in Annex 1, the Canon Law of July 2001 increased the participation of SNG in the corporate income tax from the mining industry from 20 to 50 percent. It also introduced the gas, forestry, fishing and hydro-energy canon. These changes began to be implemented in 2002 for the mining, forestry and hydro-energy canon; in 2003 for the fishing canon and in 2004 for the gas canon. The successive legal

amendments to the Canon Law changed marginally the distribution rules among SNG and gradually relaxed the restrictions on the use of funds, maintaining the source of funding for the different transfers.

The "oil canon and over-canon" is the oldest of all transfer systems currently in place, tracing its origin back to 1976. Different to the other sectors, this canon has particular rules of distribution and utilization in each of the four departments from where oil is extracted (Loreto, Piura, Ucayali and Tumbes). In all four cases it is defined as 10 percent of total oil production value (ad-valorem). The over-canon is an additional 2.5 percent over the canon, which has the same tax base as the canon in the cases of Loreto and Ucayali, and it is applied over the participation in the rent from oil production in Piura and Tumbes. These sources of fund did not change between 1998 and 2010, although there have been successive legal modifications to the distribution rules among SNG, and similar to the other canon, the restrictions on the use of funds have gradually been relaxed.

The "mining perquisite" was created in 2004, and transfers to SNG began in 2005. It is a payment for exploitation of minerals, based on a percentage of the international value of mineral concentrate, which ranges from 1 percent to 3 percent increasing with the net value of sales. All proceeds are transferred to SNG. The distribution rules have not changed since its creation, although similar to the canon, the restrictions on the use of funds have gradually been relaxed.

In turn, the "FOCAM perquisite" was also created in 2004 and began distribution in 2005. It is funded by 25 percent of the gas perquisite of the two lots of the Camisea

Gas Project, after the deductions of the gas canon, benefitting SNG in the departments of Ayacucho, Huancavelica, Ica and Lima, plus an additional 2.5 percent of the gas perquisite for the department of Ucayali. Since its creation it has averaged around 2.6 percent of "natural resources and customs". The distribution rules among SNG and the restrictions on the use of funds have not changed since its creation.

Lastly, participation in customs rent is funded by 2 percent of the rent collected by each of the country's customs through import operations; originally established in 1993, its distribution rules changed in 2001 for all LLGG, and later in 2005 for the province of Callao, which is the country's main port and hence has by far the largest custom tax collection. LLGG have fewer restrictions on the use of funds from this transfer.

The category "earmarks and other transfers" has also grown significantly, at an annual rate of over 24 percent in constant 2002 S/. between 1998 and 2010. The first spike of the category in 2004 is related to the transfer of social programs from the central government to LLGG described above. In turn, the extraordinary growth in 2009 is mainly explained by discretionary ordinary resources to LLGG, which in the context of the international financial crisis increased around 230 percent with respect to 2008. In 2010 ordinary resources to LLGG fell 33 percent with respect to 2009 (S/. 1,035 million), but it was still more than double the amount of 2008, and this reduction was more than compensated by the introduction of the PI and PMM (S/. 1,262 million). With respect to the other transfers, FONIPREL has averaged around 8 percent of this category since its introduction in 2008; the "Glass of Milk" transfer has been nominally frozen since 2006, and its importance has fallen significantly, from over 90 percent of this category in 2001

(17 percent of total transfers) to 8 percent in 2010 (less than 3 percent of total transfers). Lastly, "other current and capital transfers", which includes transfers from municipal enterprises, RRGG, and other national funds, along with donations by individuals, corporations, bilateral and multilateral organizations, has averaged around 18 percent of this category in 2006-10.

Table 3.3 presents summary statistics for all transfer systems to LLGG between 1998 and 2010, ordered by the yearly average amount of each transfer (available information is only disaggregated since 2001). "Natural resources and customs" and "earmarks and other transfers" grew significantly and they are also highly volatile. On the other hand, "FONCOMUN" has grown at a slower rate with lower volatility. Inside the first two categories, the transfers that have grown most and also have a high yearly average are mining canon, ordinary resources to LLGG and gas canon.

Indeed, as shown in Figure 1.1 in Chapter 1, ordinary resources to LLGG grew in 2009-10 mainly to compensate LLGG for the decline in other regular transfers, particularly mining canon, oil canon and over-canon, and FONCOMUN. As shown in Figure 1.3 in Chapter 1, in spite of the crisis of 2009 the gas canon and FOCAM perquisite never stopped growing: both depend on gas. On the other hand mining canon, mining perquisite and oil canon and over-canon decreased significantly in 2009, although the latter has lower volatility because it grew much less than mining canon in the previous years.

Table 3.3 – Summary statistics of transfers to LLGG – 1998 to 2010

Transfer	Time period	Standard deviation (in million of current S./)	Yearly average (in million of current S./)	St dev/Average	Yearly average growth (in real terms)
Total transfers	**1998-2010**	**4086**	**5283**	**0.77**	**17.61%**
Natural resources and customs	**1998-2010**	**2116**	**2021**	**1.05**	**27.78%**
FONCOMUN	**1998-2010**	**827**	**1994**	**0.41**	**8.80%**
Earmarks and other transfers	**1998-2010**	**1357**	**1267**	**1.07**	**24.27%**
Mining canon	2001-2010	1423	1467	0.97	43.35%
Ordinary resources to LLGG	2006-2010	982	1321	0.74	35.00%
PI & PMM	2010		1262		
Gas canon	2004-2010	281	437	0.64	56.13%
Glass of milk	1998-2010	28	342	0.08	1.55%
Oil canon and over-Canon	2001-2010	141	308	0.46	10.58%
FONIPREL	2008-2010	153	301	0.51	75.25%
Other transfers to LLGG	1998-2010	252	251	1.01	34.11%
Mining perquisite	2005-2010	51	112	0.46	24.02%
Participation in customs	2001-2010	51	112	0.46	22.08%
FOCAM perquisite	2005-2010	57	102	0.56	42.35%
Hydro-energy canon	2002-2010	25	88	0.29	12.09%
Fishing canon	2003-2010	13	34	0.37	8.64%
Forestry canon	2002-2010	2	2	0.93	34.97%

Source: own elaboration based on information by NAO-MEF.

Similar to FONCOMUN, participation in custom rent has a relatively low volatility and also fell in 2009, although it grew at a higher rate. As previously mentioned, “Glass of milk” has a relatively high average, but its growth rate is very low, which is indicative that it is increasingly losing relevance. “Other transfers to LLGG” increased at a high rate, although from a low base, and it has high volatility. FONIPREL also grew significantly, although from a low base; and PI & PMM started in 2010.

To summarize, after an initial push until 2005 under the leadership of the NDC, Peru´s current decentralization effort has proceeded very gradually, with an initial focus on the creation of RRGG over the administrative structure of the CTAR, on the

geographic space of the historic departments of Peru. With regard to the intermediate level of government the process has entailed two main developments: first, the attempt to create regions, as the union of two or more departments, in order to gain efficiencies from economies of scale in the administration of the territory. This process suffered an important setback in the referendum of 2005, putting on hold not only the formation of regions, but also the steps ahead in fiscal decentralization, since the transfer of taxes to the intermediate level of government was tied to the process of regional integration. The second main development has been the accreditation of the capacity of RRGG to exercise their exclusive 185 expenditure functions included in the Organic Law of RRGG. As mentioned above, by and large this has meant so far a validation of the functions that the RRGG were already exercising when they were CTAR, with little additional resources or capacity strengthening from the central government.

In this context, the local level of government was relatively neglected, at least during the first years of the current decentralization process. However, since 2007 there have been important policy reforms geared toward LLGG, including the "Promotion for the merging of municipal districts Law" and the "Municipal mancommunity Law"; FONIPREL, which allocates most of its resources to LLGG; and more recently the PI and PMM, which contribute to develop a culture of competition and incentives in LLGG, while tackling important issues in municipal management. As mentioned in Chapter 1, however, the Canon Law of 2001 has in practice been the most important development in Peru's fiscal decentralization, increasing substantially transfers to SNG, particularly to LLGG.

As shown in the literature review, this extraordinary increase in transfers to SNG, without clearly defined expenditure responsibilities, can generate distortions related to the effect of transfers on the three traditional functions of government: allocative efficiency, distributional equity and macroeconomic stability. Indeed, to some extent the creation of FONIPREL, along with the PI and PMM, has been a reaction of Peru´s central government to the perceived distortions generated by the canon along those three dimensions: FONIPREL allocates more co-financing to SNG that do not receive significant canon (distributional equity), and also promotes a better use of investment funds, most of which are derived from canon (allocative efficiency). PI and PMM, in turn, seek to improve tax collection at the local level, under the assumption that the large transfers in canon are decreasing incentives of LLGG to increase their own resources, generating "fiscal sloth" (macroeconomic stability); and they also try to generate incentives to make a better use of transfers towards centrally defined priorities (allocative efficiency), while giving more weight in the targets and transfer rules to SNG with higher needs (distributional equity).

In this dissertation I focus on the analysis of the effects of this extraordinary increase in transfers from the perspective of macroeconomic stability, understood as the potential of the decentralization process to create fiscal risks. In the next section I review the previous studies that have been done on this subject with reference to Peru.

Chapter 4: Studies on decentralization and macroeconomic stability in Peru

Introduction

Fiscal decentralization is a complex issue, which brings forth the attention of specialists to analyze aspects related to its design, management and effects on socioeconomic, governance and fiscal outcomes, among other. In the case of Peru the current decentralization process started in 2001, at a time when the country´s fiscal condition was relatively uncertain, following the recessionary period of 1998 to 2000, and when other countries in the region, noteworthy Brazil, Colombia and Argentina, were grappling with the effects of their own decentralization processes on macroeconomic stability. Hence, policymakers in Peru, especially at MEF, have been traditionally cautious about the transfer of fiscal responsibilities to SNG, seeking to avoid the sort of fiscal imbalances that harmed other countries in the region. As described in the literature review, these imbalances have been closely related to the transfer of large amounts of resources without clearly defined expenditure responsibilities.

This helps explain the heavy emphasis of Peru´s current decentralization effort on fiscal responsibility. Indeed, in the context of the "National Accord" of March 2002, the guiding decentralization principles stated by Peru´s central government are "fiscal neutrality, gradualism and stimulation of economic competitiveness". Also, the legal framework described in Chapter 3 defined early in the process a set of stringent, numerous and even contradictory fiscal rules for SNG (see World Bank, 2006), with the goal of maintaining a tight control over their fiscal behavior. Moreover, central

government authorities have tended to be reluctant to tackle such issues as the estimation and transfer of resources to RRGG to exercise the expenditure functions detailed in the Organic Law of RRGG, which is partly due to their potentially high fiscal cost. In fact, the roadmap of the fiscal decentralization process was defined in a way that makes it very difficult to transfer tax bases to SNG, since for RRGG this is contingent on the formation of regions; and for LLGG the topic of revenue mobilization was until recently relatively neglected, although the PI and PMM programs described in Chapter 3 show more attention to the topic.

Owing to prudent macroeconomic policies and a favorable international context, Peru had a stellar economic performance during the past decade, including the highest growth rate of the LAC-7 countries, low inflation and relatively small exchange rate volatility, along with a consistent reduction of public debt relative to GDP. All this contributed to the award of investment grade on the country's debt emissions by three leading international credit rating agencies (Fitch, Moody's and Standard and Poor's).

Hence, given these precedents, the developments with the Canon Law, which basically increased from 20 to 50 percent the share of SNG in the corporate income tax on extractive industries, and the extraordinary growth in transfers to SNG that ensued, especially to LLGG, may come across as a surprise. Indeed, as will be described in Chapter 6, this high growth in transfers has altered the distribution of expenditures among Peru's levels of government, especially with respect to public investment. It also created a fiscal risk for the central government, which now has less room to maneuver to conduct counter-cyclical fiscal policy, since it controls fewer resources; and as the 2009 international crisis has shown, LLGG in Peru have developed a sort of "addiction to

transfers"[13] obtaining more resources from the central government, especially in the context of economic slowdown.

In hindsight, the high participation of SNG in the fiscal revenue from natural resources given by the Canon Law can be partly explained as a combination of political opportunity and time inconsistency. The Law was approved on July 11th, 2001, only 17 days before the end of the transitional Presidency of Valentín Paniagua, who took over in November 2000, after having been President of Congress, when President Fujimori resigned amidst a widespread corruption scandal. At that time there was a combination of a relatively weak Presidency, following the strong rule of the Fujimori Administration; increased political demand for decentralization, as part of a more open democratic environment; and the fact that the Constitution of 1993 left as a legal requirement the regulation of its Article 77, which states in its second paragraph that *"It corresponds to the respective jurisdictions, conforming to law, to receive an adequate participation in the total income and rent obtained by the State in the exploitation of natural resources in the form of canon"* (see detail in Table A1.3 in Annex 1). The combination of these factors provided a window of opportunity that was seized by advocates of decentralization.

The time inconsistency of the canon law has to do with the fact that when it was approved in July 2001, international prices of minerals exported by Peru, such as copper, silver, gold and zinc, among other, were at a historic low, which in turn discouraged private investment in the sector. The low prices prompted demands by SNG for a higher

[13] This phrase borrows from Reinhart, Rogoff and Savastano (2004), who coined the phrase "addiction to debt" to describe countries that have repeatedly defaulted on their public debt.

participation in a stream of resources that at the moment was relatively low, and whose decentralization did not appear to pose a significant threat to the economic authorities at Peru's MEF. It was difficult to foresee at the time the period of high prices that started in 2003, which after a brief respite in 2009, has resumed since 2010. Indeed, had the prices been in 2001 at the average of the past five years, the decisions regarding the share of SNG in the canon might have been different.

Review of studies on Peru

Peru's current decentralization effort has attracted considerable attention from specialists, in particular the developments related to the large increase in transfers to SNG linked to natural resources. The studies include overall assessments of the process,[14] along with the effects of decentralization on the functions of government as defined by Bird (1999): economic efficiency, distributional equity and macroeconomic stability.

On the first topic, in an analysis of the efficiency of municipal expenditure and its determinants, Herrera and Francke (2007) find that transfers of FONCOMUN and canon have a negative effect on expenditure efficiency of a number of categories of LLGG, which were classified by the authors using conglomerate analysis techniques.

In turn, Aragon and Casas (2008) find that those LLGG that report lack of specific public management skills in topics such as project management, accounting, finance, planning and coordination, tend to have less capacity to execute public investment; they also show that more experience tends to improve the execution capacity

[14] Assessments of Peru's decentralization process include Carranza and Tuesta (2003), Ahmad and García Escribano (2006), Casas (2006), De la Cruz (2005), Vega (2008), PRODES (2007) and Polastri and Rojas (2006).

of LLGG, using as a proxy the reelection of mayors. An important assumption of this paper is that transferred funds ought to be spent when they are received, because of their opportunity cost, even though this would likely violate Peru's fiscal rule that constrained until 2008 the yearly growth of non-financial LLGG expenditure to 3 percent. Indeed, the authors mention that ...*"generally, fiscal decentralization implies transfer of resources to SNG with the explicit mandate of increasing local expenditure"*; in the context of the international financial crisis of 2009, they state that ...*"the current political speech is to exercise pressure over regional and local authorities so that they increase their public investment"*.

This last point suggests that Peru´s policy makers generally expect SNG to immediately spend windfall transfers, an assumption that is reinforced in news articles in major newspapers, along with popular indicators used by members of Congress.[15] This is partly related to a feature in Peru´s budget process, by which every year SNG have two budgets as their reference for execution: first they have the Institutional Opening Budget or PIA after its name in Spanish, which is the budget proposal that is reviewed and approved by each SNG legislature and by the National Congress, with the expected available resources during the budget year. Their second reference is the Modified Institutional Budget or PIM after its name in Spanish, which is the budget that accounts for the true availability of resources of each entity once the budget year starts. An important characteristic is that PIA and PIM tend to differ significantly each year in SNG, mainly for two reasons: first, the PIM incorporates throughout the year

[15] See for example note in "El Comercio" of Peru, one of the leading national newspapers: http://elcomercio.pe/politica/310439/noticia-regiones-canon-minero-regalias-entre-que-menos-invirtieron.

supplementary credits, which are resources that were not adequately forecasted during budget preparation; and second, the PIM also incorporates what is known as "statement balances", which are funds that were not executed during the previous years that are automatically incorporated once a new budget year starts. These funds apply to the budget category known as "determined resources", which include most of the transfers (FONCOMUN, natural resources and customs and FONIPREL, among other) along with own resources of LLGG.

The most popular yardstick used in Peru, including MEF, to evaluate budget execution refers to the PIM.[16] This sets a high bar on SNG that receive large transfers from natural resources, generating incentives to spend as much as possible of available resources during each budget year. For example, a frequent target of criticism due to low budget execution is the Regional Government of Áncash, which receives the largest proportion of mining canon in Peru (26 percent of the total in 2010, see GPC, 2011, for information on budget execution by RRGG); as expected, Áncash´s PIM in 2010 was the largest of all RRGG, with more than double the amount of resources of the following RRGG; however, its budget execution against this PIM was "only" 41 percent, which was the lowest in the country, a performance that, as previously mentioned, is often criticized in the press. By the same token, the executed budget of Áncash was also the highest in the country, 60 percent higher than the second RRGG in line; and the annual average growth of Áncash´s executed budget between 2006 and 2010, which reached 98 percent (almost double each year), was also the highest in the country (excluding the city

[16] As mentioned above, FONIPREL, for example, has as one of its performance criteria to evaluate projects presented by SNG since late 2009 the indicator of budget execution against PIM of each entity, clustering SNG in groups with similar PIM.

of Lima, which as a RRGG has grown from a low base). As will be analyzed in Chapter 6, the extraordinary increase in expenditure execution of the Regional Government of Áncash is also repeated in most LLGG that received large increases in transfers, especially from natural resources. Indeed, it can be considered a remarkable achievement that SNG with low technical capacities relative to the central government are able to increase expenditures at such high rates, raising questions about the quality and transparency of these outlays.

This feature of Peru´s budget, along with the framework of fiscal rules, which until 2008 imposed a limit on the yearly growth of non-financial expenditure in constant terms of 3 percent,[17] suggests that SNG have to operate under contradictory pressures: on one hand the expectation is to comply with the PIM, which entails for places like Áncash an effort of budget execution even more extraordinary than the one they are already displaying; and on the other hand, the requirement to comply with the strict limits on the growth of expenditures set by the fiscal rules, in a context of large transfers.

Linking to the flypaper effect introduced above in the literature review, a key feature in this discussion is the degree of dependence on transfers of SNG: when most resources come from grants, the accountability of local authorities to their constituencies and the link in each jurisdiction with the median-voter gets blurred, and the expectation of bailout in case of fiscal strain increases. Moreover, in localities with high poverty that suddenly receive extraordinary amounts of transfers, which is the case of many of the LLGG where extractive activity takes place, the pressure to spend those funds as soon as

[17] Since 2009 this was modified to a limit of 4 percent on the growth of government consumption expenditure in constant terms.

possible is high. Hence, the assumption that creates the puzzle of the flypaper effect, by which local authorities should behave as representatives of the median-voter, whose propensity to spend windfall income is low, does not capture the complexity of the situation of many of these LLGG, which receive most of their funds from transfers, and whose inhabitants themselves may have a high propensity to consume windfall income due to their poverty. In turn, the more discretion SNG have in the use of transfers, the more need of technical assistance and oversight mechanisms from the central government to reduce the scope for inefficient expenditure, corruption, and/or fiscal behavior that puts pressure on national fiscal policy.

As a complement to the papers by Herrera and Francke (2007) and Aragon and Casas (2008), Huanqui (2010) finds that when Peru´s LLGG have more technical capacities, their expenditure tends to be more efficient; she concludes that transferring resources without first strengthening technical capacities tends to lead to inefficient expenditure.

Lastly, Loayza, Rigolini and Calvo (2011) analyze the leading factors affecting the ability of Peruvian LLGG to execute their allocated budget, measured as annual budget execution over available budget, which is in turn separated into its current and capital components. The authors also base their analysis on the premise that is has been a disappointment that LLGG have not been able to use fully their allocated budgets. They use an unbalanced panel of 1,688 LLGG between 2007 and 2009. The authors divide the factors that affect the ability of LLGG to execute their budget into four categories: the budget size; local capacity (proxied by population, education of population, and proportion of white-collar personnel in LLGG); local needs (measured by poverty rate

and percent of urban population); and political economy constraints (proxied by percentage of winning votes of the elected mayor in the 2006 elections, and whether the mayor was reelected in 2006). Their basic estimation methodology is ordinary least squares regression (OLS) with robust standard errors, clustered by province.

As expected, they find that a larger allocated budget is significantly related to a lower execution rate, with a larger effect on capital than current expenditures. With respect to local capacity, they find that LLGG with larger populations, whose population has higher education, and with a higher proportion of white-collar personnel, have higher execution rates. In terms of local needs, LLGG with higher poverty rates and lower degree of urbanization have higher budget execution. Lastly, with respect to political economy constraints, in those LLGG where the mayor is elected with a larger share of the vote, budget execution is higher, and mayors who get reelected execute a higher proportion of their available budget (especially their capital budget) in the first year of their second administration relative to incoming mayors.

The authors conclude that increasing LLGG budgets without increasing local capacity is not wise policy. They also analyze important determinants of budget execution rates that are also used in this dissertation, such as local needs and political economy constraints. However, they base their analysis on the premise that LLGG should execute their entire allocated budget, which can be contrary to the median-voter theorem that is the basis of the "flypaper effect". Moreover, by using as dependent variable the rate of budget execution with respect to the PIM, which includes the "statement balances" of previous years, they fail to properly acknowledge the high increase of budget execution in real terms of LLGG in recent years; and by not analyzing in detail the

evolution and timing of the allocation rules of natural-resources based transfers (particularly mining transfers), they also do not provide a clear picture of the evolution of LLGG finances. These topics are tackled in this dissertation.

On the issue of distributional equity, Herrera (2008) analyses how to redesign Peru´s transfers system, incorporating horizontal equity criteria in the distribution of resources, using a methodology based on the estimation of tax capacity and expenditure needs of SNG. The author focuses his interest on LLGG, which concentrated 80 percent of transfers to SNG in 2006. As cited above, he makes a classification of transfers according to being "integral", when they reach all LLGG (includes FONCOMUN and Glass of Milk), and "fragmentary", which are only allocated to the SNG where the economic activity takes place (mainly natural resources and customs). He goes on to show that the latter, which have grown considerably to become the main source of funding of LLGG, makes Peru´s transfer system regressive, allocating more resources to the least poor departments. The author proposes a system of transfers that compensates based on tax capacity and expenditure needs, which would entail a reallocation of most of the current grants from natural resources.

It needs to be mentioned that although Herrera's proposal may be desirable from a distributional perspective, it has low political feasibility since, as one would expect, those SNG that are beneficiary of windfall revenues from natural resources, are strongly against changes in the current rules that would take away resources from them. Indeed, a number of proposals presented to Congress to redistribute the fiscal revenue from natural

resources following equalization criteria, or even intending to stabilize those transfers to reduce their inherent volatility, have systematically been rejected by lawmakers (see World Bank, 2006).

In Government of Peru (2011) there is also an official acknowledgement of the unequal development opportunities generated by the allocation of transfers from natural resources among SNG. It shows that the Gini coefficient of these transfers per capita in 2009 was 0.79, which indicates a high concentration of transfers in communities that reside in the area of influence of the extractive activity, which is something to be expected from the allocation rules of the canon: 10 percent of LLGG had per capita transfers between S./ 600 and S./ 16.000 per year, while 50 percent of LLGG had per capita transfers of less than S./ 100. It also mentions that 90 percent of the natural resources transfers in 2001-10 concentrated in 11 of the 24 departments of the country; in turn, the 5 departments with most transfers of this sort have on average 35 percent of poverty, while the 9 departments with least transfers have on average 49 percent of poverty.

Indeed, due to the enormous differences in the allocation of fiscal rent from natural resources among SNG in Peru, the distributional issue has gained relevance in the past few years. It is a topic that is closely related to the effects of extractive industries on local communities, which has generated an escalation of conflicts during the last few years. According to an estimate by Monge, Portocarrero, Viale and García (2008), using information of Peru´s "People´s Advocate Office" for August 2008, 55 percent of total recorded conflicts were of a socio-environmental nature related to extractive industries, up from only 8 percent in January 2005. The motivations for these conflicts include

pollution, displacement of other economic activities, disagreements on the terms of the compensation by private companies to local communities, and increasingly, tensions over the distribution of fiscal transfers among SNG. An example of the latter has been the dispute between the neighboring departments of Moquegua and Tacna in June 2008, in the south of Peru, over the share of each department in the distribution of the canon from a mining company in the border of the two departments. The dispute led to a prolonged and conflictive strike with a high economic and social cost. This type of conflicts can be labeled as "wars of abundance", since they involve departments with relatively high socio-economic indicators that yet struggle to define which gets more resources, in this case from the mining canon.

With respect to the effect of transfers on macroeconomic stability in Peru, which is the topic of this dissertation, studies have focused on analysis of the indebtedness of LLGG and the quality of debt information; the compliance of SNG with fiscal rules; determinants of fiscal results of SNG; and the effect of transfers on the generation of own revenues at the local level. Only one paper analyses the flypaper effect in Peru (Aragón, 2009), but during 1998 to 2001, which is prior to the recent surge in transfers to SNG.

As mentioned above, World Bank (2006) makes a detailed study of the indebtedness of LLGG and financial management practices at the local level of government. Using information for 2003, it finds that consolidated debt of LLGG had reached 1.5 percent of GDP during that year, up from 0.9 percent in 1998, and it was concentrated in a few large LLGG, most of them in Lima, which could increase the risk

of moral hazard. Although this figure was manageable from a macroeconomic perspective, it signaled evidence of over-indebtedness, especially since in 2003 46 percent of LLGG were not complying with the first fiscal rule, which set a limit of debt over current income of less than 100 percent. Indeed, that year 90 percent of LLGG did not comply with at least one of the fiscal rules included in Peru´s legal framework.

An important contribution of the study is a survey in 43 deliberately chosen LLGG to assess the quality of debt accounting and financial management practices. The survey found that most creditors of municipal debt were other public sector entities, such as the National Tax Administration Agency (SUNAT after its name in Spanish), the Pension Normalization Office (ONP) and the Health Insurance (ESSALUD), along with domestic providers and contractors, and only 5 percent of total debt was with the banking system. Also, as much as 98 percent of non-banking municipal debt was in arrears, especially with other public entities, and many of the surveyed municipalities deemed much of the intra-State debt as unpayable, turning it into a disguised financial bailout.

The problem was related to poor accounting and financial management practices, which concealed and/or registered inappropriately much of municipal debt, under-estimating the true indebtedness of LLGG. This situation restrained the capacity of many municipalities to access financial markets, since banks demand the regularization of debts and compliance with fiscal rules as a lending condition. In turn, it is difficult to comply with fiscal rules without assisting LLGG in tackling the problem of accumulated debt and correcting poor accounting practices.

The study also notes that the legal framework for fiscal responsibility of SNG in Peru was precipitated in a rather disorderly fashion, ending up with an accumulation of fiscal rules that are inconsistent with each other, and which are also very numerous (eight at the time), making them complicated for compliance and evaluation. It also warns about the need to identify and correct other factors of the decentralization process beyond debt management, which can press on LLGG indebtedness, including the unbalances between income and responsibilities at the local level, or the enormous inequalities created by transfers of canon and perquisite among similarly sized municipalities.

Moron (2010) conducts a study on fiscal performance of LLGG in Peru, in which he starts by updating the problems with municipal debt found in World Bank (2006). In a survey for a sub-sample of 17 of the LLGG analyzed by that study, the author also found in most municipalities problems with the stock of debt, which tends to be inherited from previous administrations, and it is concentrated in arrears with public creditors: SUNAT, ONP and, to a lower degree, ESSALUD. He also uncovered poor financial management practices, including the under-registration of debt interests and penalties and lack of recognition of debts from previous administrations. Moreover, most of the surveyed LLGG ignored the existence of fiscal rules, and only those municipalities that intended to acquire debt with banks knew about them. Noteworthy, the introduction of the IFAS in all LLGG in 2007 reduced significantly the scope for poor financial management, restricting it to a problem with the historic stock of municipal debt. Hence, the IFAS has proved to be an important contribution to fiscal transparency at the local level of government in Peru, and the main challenge ahead in many LLGG is related to the regularization of the stock of debt, mainly with public creditors.

The author goes on to evaluate the compliance of LLGG with the seven most relevant fiscal rules during 2003-2008, which as described in Figure 1.1 in Chapter 1 was a period of extraordinary growth in transfers. He finds that, notwithstanding the problems with the registration of stocks described above, there was a significant improvement in the observation of rule number 1 (debt over current income less than 100 percent), with 98 percent of LLGG complying with it in 2008.

However, in spite of the extraordinary growth in transfers, the author found that a growing number of LLGG did not comply with rule number 3 (average primary result of past three years should be positive), with 52 percent of municipalities not observing this indicator in 2008. Also, only 25 percent of LLGG complied that year with rule number 7, by which non-financial public expenditure should not grow more than 3 percent per year. These two fiscal rules are related and suggest that LLGG have been reacting to windfall transfers by increasing their expenditures in a similar fashion, to the point of even surpassing their total income.

The paper also assesses the determinants of fiscal performance of LLGG by running an econometric model proposed by Braun and Llach (2008), which uses as dependent variable primary result over net current income of each municipality. The explanatory variables are of structural, macroeconomic, institutional and political type. It uses a panel of 1380 LLGG (75 percent of the total) between 2003 and 2008. The explanatory variables are "compliance with debt-related fiscal rules", which is instrumented to correct endogeneity; the macroeconomic variable is a calculation of

district GDP per capita built by the authors, to capture the economic cycle,[18] lagged one year since the distribution of mining canon is made the year following its collection; the structural variable is population density; the institutional variables are vertical fiscal imbalance and earmarking; and the political variables are electoral year (captured by a time-dummy); removal of mayors from office; coincidence between national and local political party; and a categorical variable measuring number of years in office.

The author finds that compliance with fiscal rules favors fiscal performance; among the political variables, removal of mayors from office and experience in office have both negative and statistically significant sign, the latter signaling that as mayors gain experience they improve their expenditure capacity, thus worsening the fiscal balance; while coincidence between national and local political parties is not significant. With respect to the rest of variables, GDP per capita has a positive and significant effect on fiscal outcomes with diminishing returns (the square of the variable has a negative sign); and population density has a positive and significant effect. Noteworthy, vertical fiscal imbalance has negative sign and is statistically significant, signaling that as LLGG become more dependent on transfers, their fiscal performance worsens. Lastly, earmarks have a positive and significant sign, which means that as the proportion of transfers with defined allocation increases (LLGG have less discretion over transfers), fiscal performance improves.

This paper provides an important background for this dissertation, by evaluating some of the determinants of the fiscal performance of LLGG in Peru. However, it does

[18] Official figures of GDP are only available at the department level.

not conduct an integral assessment of the effect of transfers on macroeconomic stability, analyzing the effect of the growth of transfers on the capacity of the central government to conduct counter-cyclical fiscal policy. Neither does it analyze the effect of transfers on own income and expenditures of LLGG, which is crucial to understand the performance of their primary result. Moreover, since it uses information until 2008, it does not capture the effect of the international crisis of 2009-2010 on local finances. These are gaps that this dissertation fills.

A third paper on this topic is Leyton and Revilla (2008), who analyze the determinants of indebtedness in the 42 districts of the city of Lima. They show that in 2006, 14 districts did not comply with fiscal rule number one, having more debt than current income. Similar to the findings in Moron (2010), fiscal rules did not have an influence on indebtedness in Lima. Using information for 2006, they build an econometric model using as dependent variable debt over current income, and as explanatory variables transfers per capita, existence of an internal local development plan, existence of a concerted local development plan (which is elaborated with participation of representatives of the community), the human development index and the existence of an operative plan. As expected, they find that transfers increase the ratio of debt over current income. They also find that the existence of a concerted local development plan reduces it, which suggests that the inclusion of the citizenry in local planning can promote more transparency in debt management, hence inducing fiscal responsibility.

Lastly, Table 4.1 below shows official estimates of the compliance of LLGG with fiscal rules between 2005 and 2009, taken from Government of Peru (2011). As

mentioned in Moron (2010), most LLGG do not present indebtedness problems, but there is high non-compliance with the rule of positive average primary result over the past three years (rule number 3), which reaches 69.2 percent of incompliance in 2009; and with the new rule introduced in 2009, in the context of the international financial crisis, by which growth in consumption expenditure, in constant terms, should be less than 4 percent (rule number 8), with 73.3 percent of incompliance. The latter has an even higher rate of non-compliance than the rule on expenditure that prevailed until 2008, which was more stringent and set the limit on the annual growth of non-financial expenditure in constant terms to 3 percent. As mentioned before, this signals a high rate of growth of public expenditure of LLGG as a response to the large increase in transfers, which even led to a progressive worsening of the average primary result of most LLGG in recent years. In Chapter 6 I analyze these developments and their relation with the recent growth in transfers to LLGG.

Table 4.1 – Compliance of LLGG with fiscal rules (as fraction of total LLGG)

Fiscal rules	2005			2006			2007			2008			2009		
	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
1. TDS/CI	90.1	4.7	5.2	92.3	2.6	5.1	94.1	2	3.9	97.9	1.7	0.4	94.4	4.7	0.9
2. DS/CI	91.8	3.1	5.2	93.2	1.7	5.1	96.1	0	3.9	99.5	0.2	0.4	98.3	0.9	0.9
3. PR	75.9	8.6	15.5	66.7	19.3	14.1	66	21.9	12.1	51.6	40	8.3	26.1	69.2	4.7
4. STD	41.9	52.9	5.2	54.6	40.3	5.1	52.5	43.5	4.1	38.2	61.4	0.4	68	31.1	0.9
5. TDSWG	68.6	26.2	5.2	78.7	16.1	5.1	85.8	10.3	3.9	86.8	12.9	0.4	Suspended		
6. DSWG	58.2	36.6	5.2	69.4	25.4	5.1	96	0.1	3.9	99.3	0.3	0.4	Suspended		
7. NFERT	57.8	31.8	10.4	12.3	78.6	9.1	35	56.8	8.2	24.9	71	4.1	Suspended		
8. CERT													25.6	73.3	1.1
Source: taken from Government of Peru (2011). For reference of each fiscal rule, see Table 3.1 in Chapter 3.															

Although there is only one paper that assesses the flypaper effect in LLGG in Peru (Aragon, 2009), and using information for 1998-2001, which is prior to the boom in transfers that started in 2003, there are at least 8 papers studying the effect of transfers on

local revenues. Indeed, different to most other countries, which have focused on the expenditure response to transfers in the context of the evaluation of the flypaper effect, in Peru there has been much interest in assessing the hypothesis of what has been labeled "fiscal sloth", by which LLGG reduce their tax effort in response to transfers.

Alvarado (2003) has been a pioneer of this type of work. In her paper she provides a rich description of the fiscal characteristics of LLGG in 2000 and 2001, classifying them into two basic variables: population and proportion of urban households, and their interaction with local revenue (taxes and user charges). As expected, taxes have mainly an urban nature, representing around 20 percent of total resources in highly populated and urban districts, diminishing for other scales and representing a negligible amount in small and rural areas. Something similar occurs with user charges, although the elasticity is much lower. In her description she finds that small LLGG in which transfers represent close to 90 percent of total resources tend to have higher indebtedness per capita, a result consistent with the theorized effects of large vertical fiscal imbalances, which foster over-indebtedness. Also, districts that receive large unexpected transfers tend to use FONCOMUN for current expenditures, expanding the size of government. This is especially critical in small, rural districts, which have little own resources to finance current expenditures following negative shocks in transfers. The author tests two econometric models for the year 2003, assessing the effect of transfers first on fiscal effort, and second on capital expenditures financed by own resources. She finds evidence that transfers reduce fiscal effort, with more effect on taxes than on user charges, and also tend to free own local revenue for current expenditures.

Aragón and Gayoso (2005) focus on the causal relationship between transfers and fiscal effort, building a simple model that predicts that higher transfers increase local public expenditure, which in turn reduces marginal political revenues of higher expenditures (which enter with diminishing returns), lowering the incentives for own fiscal effort. In this model, the negative relationship between transfers and fiscal effort decreases with the initial level of local expenditure: the higher the level of initial expenditure, the lower the trade-off between transfers and fiscal effort.

The authors test these predictions using information for 2000 and 2001. The econometric model measures tax collection per capita against the amount of transfers received, using a first-difference model and applying it to three clusters of LLGG classified according to their initial level of expenditure per capita. Since the FONCOMUN allocation formula assigns more weight to rural municipalities, which tend to have low fiscal capacity and hence low fiscal effort, the authors use as an exogenous variable an additional transfer distributed during 2000 to a group of LLGG, which was not related to local fiscal effort but to population size. Consistent with their model, the authors find a negative relationship between transfers and fiscal effort at the local level, and a diminishing effect as the initial level of LLGG expenditure increases.

Aguilar and Morales (2005) test the effect of transfers on economic activity, and expand on the theoretical factors that affect local government own revenue: the tax base and the fiscal effort. The tax base depends on production, income and wealth of a district, while fiscal effort is a function of the capacity and incentives of LLGG to collect own revenue. The incentives, in turn, can be inversely related to the funds that municipalities obtain from alternative sources, such as transfers, donations and credit operations (the

latter can also lead to higher tax effort to repay the debt). Hence, own revenues are modeled as a function of the production level (GDP, only available at the department level); the district's wealth (proxied by degree of urbanization, only available at the time for 1993); own-resource collection capacity (not included; it is assumed to be proxied by the capacity to obtain credit and donations); transfers from the central government; credit operations; and donations. They also include multiplicative dummies for each region, and a dummy to control for the effect of natural disasters: the "El Niño" climate phenomenon of 1998 and the earthquake of 2001.

The authors use the MEF database during 1998-2002, working with a balanced panel of 1,032 LLGG (56 percent of the total; transfers to districts excluded from the sample represent around 20 percent of total transfers). They work with variables in levels and constant 1994 S./. They find a positive relationship between transfers and local effort: each additional S./ in transfers increases own-revenue in a range of between 0.11 S./ (fixed effects) and 0.44 S./ (random effects). In all specifications, donations also have a positive and significant effect, while for credit operations the results are not uniform, but tend to be positive and small. In the case of the regional dummy variables, 11 out of 24 regions showed a positive effect of transfers on tax effort (in 3 cases statistically significant); 11 showed a negative effect (3 statistically significant); and in 2 regions the effect changed with the specification (ambiguous). The authors cannot identify common characteristics among regions in which the effect is positive or negative.

Rabanal and Melgarejo (2006) also assess fiscal effort through a panel regression model using fixed and random effects with a balanced panel dataset for 1999-2004 (1,106 local governments); it includes as dependent variable own collected real revenue per

capita of LLGG, as a function of all transfers, including as control variables department gross real value added per capita and dummy variables multiplicative of total local transfers to distinguish local governments that receive "Mining" and "Oil" canon. The information is taken from the MEF database. The authors find that transfers have a positive effect on own-revenue collection (a "complementary effect"), although tax effort diminishes for LLGG recipients of the "mining" and especially the "oil" canon.

In his PhD dissertation, Ruhling (2008) studies the property tax in Peru, conducting a qualitative study to assess whether there is a substitution effect of transfers on property tax. Using survey techniques, he rejects a substitution effect in the majority of the 36 municipalities he assessed. His argument is that mayors react to a whole set of different incentives in the face of increasing transfers, with many engaging in increasing collection of the property tax. He provides a thorough analysis of the operation of this levy, showing how the central government controls the rates and most of the base of the tax, leaving to LLGG the tax registry and the administration. His research suggests an environment that has traditionally lacked predictability for municipalities, in which transfers are *"a patchwork of political liabilities of the past rather than connected with thorough compensation or service improvement functions"*. The surveys conducted in the 36 municipalities with annual tax revenues above S./ 300.000 provide a rich assessment of the problems, incentives and constraints faced by mayors in different types of municipalities, along with innovative strategies to conduct tax administration.

Llempén and Velásquez (2009) evaluate the response of district municipalities to transfers from canon and over-canon. The authors tested a panel model during 2003-2007 that assessed the effect of canon and over-canon transfers on different types of own

resources, controlling by population, urbanity and population size, among other variables. They also used propensity score matching, comparing LLGG in terms of population, urbanity, poverty and executed budget in 2001 and 2007. The results of the panel model indicate that canon and over-canon transfers have a significant and negative effect on total own income, and user-fees, while the propensity score matching estimation finds a negative average also for own taxes, especially in 2007, which is when canon and over-canon transfers to LLGG reached their highest level.

Vega (2008) reproduces the analysis of Alvarado (2003) for 2005, and also finds a significant substitution effect of transfers on own revenues of LLGG, but with a lower coefficient than Alvarado (-0.04 vs. -0.35). He also finds a higher effect on taxes than on fees for service (-0.071 vs. -0.022). However, when the author reproduces the analysis of Aguilar and Morales (2005) for the years 2001 to 2005, he also finds a positive and significant effect of transfers on own revenues.

In turn, CAF (2010) mentions that adding basic controls that influence tax collection such as the level of GDP or poverty, there is not a significant statistical relationship between natural resource-based transfers and tax collection. Hence, beyond the fact that local tax collection in Peru is very low, there is no evidence of a different effect between LLGG with and without canon.

Lastly, Canavire-Bacarreza, Martinez-Vázquez and Sepúlveda (2011) assess the determinants of own revenue collection in LLGG in Peru, using a panel of 192 provincial governments (PPGG) and 1630 district governments (DDGG) between 2006 and 2008. They point that theory is not conclusive on the size of the final effect of transfers on

LLGG tax effort, and the empirical evidence suggests it could be either positive or negative. They test econometric models that alternatively use as dependent variable total own revenue and tax revenue of LLGG in per capita terms, and as explanatory variables they include total transfers, extractive transfers and FONCOMUN separately, and a number of control variables including proportion of population by age cohort, population, area, poverty, illiteracy, GDP/capita, population in agriculture, employed population, regional dummies, and proportion of skilled to total workers in each LLGG. They test separately for all LLGG and for PPGG and DDGG, and given the large number of municipalities that do not collect any own taxes, they use a Tobit censored model and random effect panel regressions excluding the LLGG with 0 values.

Their results show for the most part a positive relationship between transfers and total own revenue and tax revenue of LLGG, and in particular for transfers from extractive industries, except for some specifications for FONCOMUN transfers that present a negative and statistically significant sign. This positive effect has a higher and more significant coefficient for non-tax own revenue vis-à-vis tax revenue of LLGG. The control variables tend to conform to expectations: GDP/capita is positive but not consistently significant; poverty is negative and significant; population in agriculture is negative and significant; and population is positive and significant, although not for all specifications.

All these studies on the effect of transfers, and in particular of natural-resource based transfers, on own revenues of LLGG point to contradictory evidence, with results depending on the underlying assumptions, database and model specification. A concern that is generally absent in these papers relates to the relative relevance of this topic.

Indeed, in the context of the literature review on the relationship between decentralization and macroeconomic stability, most international studies have focused on the expenditure response to transfers, rather than the effect of transfers on own collection, as part of the assessment of the flypaper effect.

This said, the response of local taxes and user fees to transfers is an important topic, especially considering that one of the pillars of fiscal decentralization is the ability of SNG to be able to finance at the margin their expenditures with their own revenues. However, since most LLGG in Peru are small and with high needs, their potential tax base is very limited. Hence, given the current legal framework for local taxation, even if most LLGG reach their potential collection, it will not represent a large increase in their income, and they will still be heavily dependent on transfers. In this context, the analysis of whether transfers have a positive or negative effect on own revenue collection of LLGG is more relevant in urban settings, where the potential tax collection is higher and can make a difference in the provision of much needed public goods and services. This requires an analysis of the effect of transfers on own revenues of LLGG depending on their differential characteristics, which will be conducted below in the results section.

As mentioned above it is surprising that in spite of the profligacy of studies on the effects of transfers on local taxation, there is only one paper on the flypaper effect. In effect, Aragón (2009) evaluates the hypothesis first proposed by Hamilton (1986) that the flypaper effect is partly attributed to costly taxation: the more costly it is for local authorities to collect own revenue, the more likely they will be to finance more of their expenditures out of transfers. Using the same database described in Aragón and Gayoso (2005) for the years 1998 to 2001, the author finds that those LLGG that reported to have

a tax registry during those years had a lower propensity to spend their transfers, resulting in a smaller flypaper effect. Although this paper is conceptually interesting as part of the theoretical literature on the determinants of the flypaper effect, its conclusions are not clearly linked to the effect of transfers on macroeconomic stability, and the time series is dated, since it is prior to the recent boom in transfers to SNG in Peru.

To summarize, the studies on the link between decentralization and macroeconomic stability provide useful precedents to this dissertation, along with gaps that this dissertation intends to fill. They have partly focused on issues related to compliance with fiscal rules and quality of debt data of LLGG; along with determinants of fiscal results of LLGG (World Bank, 2006; Moron, 2010; Government of Peru, 2011; Leyton and Revilla, 2008). These studies, however, do not provide a thorough analysis of the effect of transfers on macroeconomic stability, which entails on one hand an assessment of their effect on the fiscal space of the central government to conduct counter-cyclical fiscal policy, and on the other hand an analysis of the response of own revenue collection and expenditures to transfers at the local level of government. This second point is important, since the analysis of fiscal results and indebtedness of LLGG is not sufficient to understand the potential fiscal risk that transfers can create, for example by inducing a reduction in local revenues and/or an unsustainable growth in expenditures.

In turn, there has been a strong interest on the effect of transfers on revenue collection of LLGG, also labeled “fiscal sloth” (Alvarado, 2003; Aguilar and Morales,

2006; Rabanal and Melgarejo, 2006; Aragon and Galloso, 2006; Ruhling, 2008; Vega, 2008; Llempen and Velazquez, 2009; CAF, 2010; and Canavire-Bacarreza et al, 2011). As stated above, this issue is clearly important, but for the purposes of this dissertation there are some caveats about the reviewed studies: first, they do not frame the issue within the broader context of the effect of fiscal sloth on macroeconomic stability, which could be done by signaling in which LLGG this phenomenon is relatively more important, and hence they have higher risk of running out of own resources to finance their expenditures in the event of sudden decreases in transfers. Second, and related to this topic, none of these papers provides a differential assessment of the response of LLGG to transfers considering the high heterogeneity of municipalities in Peru (although Canavire-Bacarreza et al distinguish between PPGG and DDGG); and lastly, these studies have focused on the revenue response to transfers but do not analyze the response of expenditures, as part of the assessment of the flypaper effect.

With respect to the last point, only one paper was found that assesses the flypaper effect in Peru (Aragon, 2009). However, similar to what is found in much of the literature review, the author concentrates on developing a theoretical model that intends to explain the flypaper effect, but he does not provide a link to the macroeconomic implications of his findings, and the database he uses is dated, since it is prior to the surge in transfers that started in Peru in 2003.

Having reviewed the literature on Peru, along with an identification of the research gaps this dissertation intends to fill, in the next section I develop the leading questions and methodology that is used to analyze the effect of transfers on macroeconomic stability.

Chapter 5: Leading research questions and methodology

Introduction

The focus of this dissertation is to assess the effect of the large increase in transfers to SNG in Peru on fiscal aggregates from the standpoint of macroeconomic stability, with particular attention to the effect of transfers based on natural resources on the local level of government.

SNG can create fiscal risks to the central government even if their debt situation appears to be under control. Indeed, the volatility of transfers based on natural resources means that in the event of a sharp reduction in grants, as happened in Peru in 2009, the central government may be pressured to allocate more funds to SNG to maintain a level of expenditure that grew significantly as a pro-cyclical response to the sharp increase in transfers of the previous years. These additional transfers, in turn, reduce even more the discretionary spending of the central government, which may induce fiscal deficits and/or a bigger role of the public sector in the economy. This outcome is related to the unintended consequence of several years of increasing automatic transfers to SNG, especially those linked to the extraction of natural resources.

In the case of Peru the analysis will focus on LLGG rather than on RRGG, for the following main reasons: first, the distribution rules of transfers from natural resources mean that LLGG receive much more funds than RRGG; second, LLGG have more fiscal autonomy, since they collect their own revenue sources and have more discretion in the allocation of expenditures, especially with respect to current expenditures; third, and

related to the last point, LLGG have a longer history, since they have existed since the origin of Peru and were reinstated in 1981 as autonomous and legitimate entities, while RRGG used to be deconcentrated branches of the central government until they became a legitimate level of government in 2002; and fourth, LLGG are much more numerous, making them more difficult to monitor, which may create unexpected risks to the central government.

Effects of transfers on Peru's general government

With respect to the reduction in the fiscal space of the central government to conduct counter-cyclical fiscal policy due to the higher participation of SNG in the public sector, the main questions that I will assess are the following:

1. Has the share of Peru's central government spending been reduced as a proportion of the general government spending in response to the high increase in transfers to SNG?

To answer this question I will describe the recent evolution of total tax collection of the central government, distinguishing taxes from extractive industries, most of which are automatically shared with Peru's SNG. In turn, I will show the evolution of the relative proportion of transfers with respect to total tax collection of the central government; and I will also describe the evolution of the share of SNG in the primary expenditure of the general government, distinguishing between current and capital expenditure. This section allows having a measure of the change in the room to maneuver of Peru's central government to conduct counter-cyclical fiscal policy following the large increase in transfers of the last decade.

2. Has the size of Peru's general government augmented relative to GDP in response to the increase in transfers?

To answer this question I will describe the evolution of the primary expenditure of Peru's general government relative to GDP, distinguishing LLGG, RRGG and the central government. I will frame this description within the analysis of the recent fiscal performance of the country's non-financial public sector, in order to assess whether the increase in transfers has contributed to a worsening of the country's fiscal position.

In this regard, as described in the literature review, the allocation of vast amounts of grants to SNG with loosely defined expenditure responsibilities can generate fiscal imbalances and/or a larger share of the public sector in the economy. In the case of Peru this will be evaluated against the background of the international financial crisis of 2009-2010, which elicited a large increase in discretionary transfers to LLGG from the central government, to compensate them for the reduction in their regular grants.

Effect of transfers on fiscal decisions of LLGG

As the next step I will evaluate the fiscal decisions of LLGG in response to transfers. First I will describe the main features of the evolution of fiscal aggregates of LLGG, considering all LLGG and taking into account their different characteristics, with particular attention to the effect of transfers on own resources, current and capital expenditures, fiscal results, accumulated savings and debt. Then I will use econometric models to complement the descriptive analysis, building on the studies reviewed above to assess the effect of transfers on own revenue collection (fiscal sloth) and on expenditures of LLGG (flypaper effect).

Classification of LLGG

In order to assess the fiscal response of LLGG to transfers it is important to disentangle the heterogeneity of municipalities, which in Peru and similar to other countries is very high. Indeed, the classification of municipalities into groups with similar characteristics can help assess the differential fiscal risk each of these groups may generate due to the fiscal response of LLGG to transfers.

In this regard, and as pointed out by Herrera and Francke (2007), until recently there was not an official classification of municipalities in Peru, which would allow assorting them according to similar characteristics for the purpose of policy decisions and/or research. As a precedent, in their paper Herrera and Francke (2007) use cluster analysis to classify PPGG and DDGG in Peru into relatively homogeneous categories, taking into account the following characteristics of LLGG: population size, degree of urbanity and poverty level.

Since 2008, however, and owing to the creation of FONIPREL and the PI and PMM, which are the competitive transfer schemes described above, the Government of Peru has introduced official classifications of SNG designed for the purposes of these schemes. In particular, FONIPREL uses cluster analysis to classify each level of SNG (DDGG; PPGG; and RRGG) into groups according to their needs, measured by basic unmet needs (BUN). The available indicators of BUN used by FONIPREL to classify SNG during 2010 were: percentage of population with no access to drinkable water, sanitation and electricity; percentage of female illiteracy (all based on the 2007 population census); and the percentage of chronic malnutrition (based on the 2005 census of scholar weight and height). As explained in MEF (2010) FONIPREL uses cluster

analysis to classify SNG, applying the Ward hierarchical methodology, which allowed grouping SNG into conglomerates with the highest internal homogeneity and the largest possible difference between each conglomerate. This analysis is conducted separately for each level of government. For DDGG, FONIPREL determined that the optimal number of conglomerates was three, which was also the number of conglomerates assumed for PPGG and RRGG. The three conglomerates or groups are labeled "very high", "high" and "medium" BUN.

FONIPREL also classified SNG in 2010 into three groups according to the amount of determined transfers per capita that each of them received between 2007 and 2009.[19] These groups are labeled according to whether each SNG received "less", "medium" or "more" resources on average during those years. The analysis is made separately for DDGG and PPGG: in the latter case the amount of average determined resources is divided by the entire population of the province. Each of these three groups is determined according to ranges of monetary transfers that each SNG received: LLGG with "less resources" include DDGG and PPGG that received less than S/. 467 and S/. 147 per capita of determined resources, respectively. LLGG governments with "medium resources" received between S/. 467 and S/. 978 for DDGG; and between S/. 147 and S/. 405 for PPGG. Lastly, LLGG with "more resources" received more than S/. 978 and S/. 405 for DDGG and PPGG, respectively (see MEF, 2010).

In turn, the PI and PMM classify all LLGG into three other groups according to their size and urbanity: main cities; LLGG that are not main cities with more than 500

[19] In the case of LLGG determined resources during those years where FONCOMUN and natural resources and customs.

urban houses; and LLGG with less than 500 urban houses. The statistical information is for 2010, and it is updated yearly by Peru's INEI.

These three classifications will be used in this dissertation because they provide an official assortment of municipalities according to characteristics that are relevant to assess the effect of transfers on fiscal aggregates of LLGG. Along with these three classifications I introduce a fourth one, which sorts LLGG based on the main transfer of determined resources that each of them receives. These transfers differ in their growth rates, volatility, timing of disbursement and restrictions on their use, which can result in different fiscal risks on LLGG. Similar to FONIPREL I take the average value of determined resources between 2007 and 2009, to classify LLGG according to whether the main transfer each of them receives is FONCOMUN, mining canon and perquisite, gas canon and perquisite, oil canon and over-canon, hydro-energy canon, fishing canon, FOCAM or customs. Each of these transfers has different monetary values, volatility, conditionality, timing of allocation and rules of distribution, which in turn can be expected to have a different effect on fiscal aggregates of LLGG. Lastly, as a fifth classification I conduct assessments of the differential effect of transfers on provincial governments (PPGG) and district governments (DDGG), which have different revenue sources and expenditure functions.

Table 5.1 presents descriptive statistics of these five classifications of heterogeneity of LLGG. With respect to BUN groups, 59 percent of LLGG have either high or very high need. These LLGG tend to be more rural and with less population. In turn, according to resource groups, 64 percent of LLGG have less resources, while those with more resources tend to have relatively less population and density, and slightly less

poverty. The classification according to size shows that around 86 percent of LLGG are either small (more than 500 houses) or very small (less than 500 houses), with poverty increasing as the population is smaller and more rural, while LLGG that are main cities have a much higher average population and concentrate 67 percent of the country's population. With respect to main transfer groups, around 59 percent of LLGG, comprising 22 of Peru´s 25 departments receive as main transfer FONCOMUN; in turn, almost 32 percent of LLGG from 16 departments receive more Mining; Gas is the main transfer for 4.6 percent of LLGG, all located in only one department; while 3.5 percent of LLGG from four different departments receive more Oil. Lastly, PPGG are relatively more populated and on average are less poor than DDGG. However, although not shown in the table, a larger proportion of the former have high or very high needs (74 percent) relative to the latter (57 percent). Moreover, DDGG tend to receive relatively more resources per capita; and most LLGG of less than 500 houses are DDGG. Finally, relatively more PPGG receive FONCOMUN as main transfer, while relatively more DDGG receive Mining or Gas as main transfers.

Table 5.1 – Descriptive statistics of classifications of LLGG used in dissertation

Classification according to BUN							Classification according to main transfer						
BUN Group	**No. of LLGG**	**%**	**Avg Urban Pop (2007)**	**Avg Pop (2010)**	**Avg Dens Pop (2010)**	**Avg Poverty (2009)**	**Main transfer**	**No. of LLGG**	**%**	**Avg Urban Pop (2007)**	**Avg Pop (2010)**	**Avg Dens Pop (2010)**	**Avg Poverty (2009)**
Very high need	494	26.9%	29.2%	7721	106	69.4%	FONCOMUN	1080	58.9%	48.8%	19060	283	54.0%
High need	588	32.1%	41.1%	9033	216	53.6%	Mining	582	31.7%	47.7%	10435	161	45.3%
Medium need	752	41.0%	66.5%	27043	313	37.6%	Gas	85	4.6%	35.3%	9600	73	63.3%
Resource Group	**Classification according to resources**						Oil	65	3.5%	58.2%	14642	58	50.8%
More resources	209	11.4%	51.1%	4680	26	40.6%	FOCAM	9	0.5%	32.8%	7404	24	52.6%
Medium resources	450	24.5%	46.3%	8916	88	52.7%	Customs	8	0.4%	93.3%	118422	791	9.7%
Less resources	1175	64.1%	48.5%	20827	315	52.7%	Hydroenergy	4	0.2%	45.0%	3275	26	52.6%
Size Group	**Classification according to size and urbanity**						Fishing	1	0.1%	59.1%	8844	21	46.4%
Main cities	249	13.6%	91.3%	79426	1125	25.3%	**Type of LLGG**	**Classification according to type of LLGG**					
More than 500 houses	555	30.3%	54.9%	10503	165	51.8%	Provincial govenrment	195	10.6%	66.5%	40154	449	49.0%
Less than 500 houses	1030	56.2%	34.3%	3743	42	57.3%	District government	1639	89.4%	46.1%	13198	200	59.2%
Total	1834	100.0%	48.3%	16064	226	51.3%	Total	1834	100.0%	48.3%	16064	226	51.3%

Sources: FONIPREL for BUN and resources; PMM and PI for size and urbanity; INEI for socio-economic indicatores; own elaboration for main transfer, based on information by MEF.

In order to understand the distribution of LLGG among the different categories, I crossed the information between pairs of categories (for example, allocation of LLGG according to BUN and Resources), and performed Chi Square tests of association to evaluate whether differences across categories are statistically significant at the 1 percent level, distinguishing between PPGG and DDGG:

a. Crossing between needs and resources: there are relatively more DDGG with high need that receive more resources, and relatively less DDGG with very high need that receive more resources.
b. Between size and resources: there are relatively more main cities and LLGG with more than 500 urban houses that have less resources; and relatively more LLGG with less than 500 urban houses with medium and more resources.
c. Between size and needs: there are relatively more main cities with medium needs, and relatively more LLGG with less than 500 houses with high and very high needs.
d. Between main transfer and resources: there are relatively more LLGG that receive FONCOMUN as main transfer that have less resources; there are also relatively more LLGG with mining and gas as main transfer that have medium or more resources; and relatively more LLGG with oil as main transfer that have medium resources.
e. Between main transfer and size: this relationship only shows statistically significant differences across categories for DDGG. There are relatively more DDGG that have mining as main transfer with less than 500 houses, and relatively less DDGG that have mining as main transfer with more than 500 houses. There are also relatively more DDGG that have gas and oil as main transfer with more than 500 houses,

relatively less DDGG that have gas as main transfer and are main cities; and relatively less DDGG that have oil as main transfer with less than 500 houses.

f. To conclude, between main transfer and needs: again, this relationship is only significantly different across categories for DDGG. Relatively more DDGG with FONCOMUN as main transfer have high or very high need; relatively more DDGG with mining as main transfer have medium need; relatively more DDGG with gas as main transfer have very high need. Lastly, relatively more DDGG with oil as main transfer have medium or high need.

Inquiries related to fiscal decisions of LLGG

The dimensions of heterogeneity described above allow having a better understanding of the main concerns of this section of the dissertation, which can be summarized as follows:

3. Have LLGG worsened their fiscal position in response to transfers?

Here I will describe the evolution of the aggregate fiscal position for all LLGG between 1998 and 2010, distinguishing the different sources of total income (own income and transfers); total expenditure (economic classification in current and capital outlays); primary and economic result (excluding and including debt interest and service, respectively); accumulated savings and debt. I will also analyze the relative importance of the different components of income and expenditure, along with the vertical fiscal imbalance and measures of the relative exposure of LLGG to changes in transfers.

I will also analyze this evolution distinguishing among the different categories of LLGG introduced in this dissertation. In particular, I will evaluate the allocation of

ordinary resources to these different categories between 2006 and 2010; along with the use of the main sources of income of LLGG (FONIPREL, natural resources and customs, and own taxes) in current and capital expenditures, focusing on the classification by resources and main transfer groups.

This description will provide the stylized facts of the evolution of LLGG public finances, assessing whether the fiscal response of municipalities to transfers generates a fiscal risk to Peru's general government, and which particular group of LLGG is more at risk. In turn, it provides the basis for the more detailed analysis of the response of own income (fiscal sloth) and expenditures (flypaper effect) to transfers.

4. Do LLGG reduce their fiscal effort in response to transfers, in the form of a decline in own revenue collection, which is labeled "fiscal sloth"?

Here I will first describe the evolution of own resources of LLGG, focusing on the classification by type of LLGG (PPGG and DDGG) and size. In this description I divide own resources into two categories: local taxes and other own income.[20]

The analysis of the evolution of own income of LLGG will focus on main cities, which is where own income is more relevant, since they concentrate most own resources of LLGG, comparing the different categories by resources and main transfer groups. In particular I will assess the behavior of own revenue collection between municipalities that received windfall transfers and those that did not. I will also distinguish the periods before and after the high increase in transfers.

[20] See Table A.3 in Annex 1 for an explanation of the different concepts of LLGG own resources.

Following this descriptive analysis I will test econometric models of the effect of transfers on own revenue collection of LLGG, building on the studies analyzed in the previous chapter. In this regard I will focus on local taxes, which are more sensitive to transfers since they are not intended to finance specific services (see Alvarado, 2003).

The econometric models are based on an analysis of the determinants of LLGG tax collection, using the available information for the case of Peru. My main interest is to evaluate whether LLGG reduce their own tax collection in response to transfers, comparing in particular the different categories of municipalities according to resources and main transfer groups. Due to the timing of mining transfers, I assess the effect of the lagged variable of transfers on own tax collection of LLGG. I also introduce a measure of "symmetry", inspired by Gramkhar and Oates (1996), which is a dummy variable that takes the value of 1 whenever total transfers decline, to assess whether LLGG tax collection reacts differently when transfers increase and decrease.

As part of the construction of the econometric models I analyze descriptive statistics and scatter plots of the variables of interest; assess the validity of the balanced panel of LLGG that is included in the regression analysis; and in particular I tackle potential endogeneity concerns related to the interaction between the allocation rules of transfers and local tax collection of LLGG.

To conclude, I will explore the relatively ignored topic of the effect of transfers on LLGG expenditures in Peru, through a formal assessment of the flypaper effect.

5. Do LLGG increase their primary expenditure substantially in response to transfers, exhibiting what is known as the flypaper effect?

The assessment of the response of primary expenditure of Peruvian LLGG to transfers is of crucial importance to evaluate the potential fiscal risk of the recent surge in grants, especially those linked to natural resources, which tend to be highly volatile. I construct an econometric model of the determinants of LLGG expenditure, building on the vast international literature on the flypaper effect and the available information for the case of Peru. I analyze all LLGG, distinguishing between PPGG and DDGG, and focusing on the comparison of the reaction of primary expenditures to transfers according to resource and main transfer groups.

I also compare LLGG according to needs and size groups: in the former case, I evaluate whether the response of primary expenditure to transfers increases with BUN of LLGG, a question analyzed by Espinoza (2008). In the case of the latter, building on the analysis by Aragon and Casas (2008), I assess whether larger LLGG present a higher flypaper effect, since they are assumed to have a higher capacity to spend.

Similar to the analysis for own resources, I evaluate the effect of lagged transfers on primary expenditure of LLGG, using the measure of "symmetry" described above, distinguishing between PPGG and DDGG and the different categories of LLGG by resources and main transfer groups. I also analyze descriptive statistics and scatter plots of the variables of interest; and tackle the possible sources of errors in the estimation of the flypaper effect described by Bailey and Connolly (1998): in particular I estimate the regression models using both a linear and a logarithmic specification, following Becker (1996), in order to evaluate the robustness of results to different functional forms. Lastly, I assess the relevance of the estimated effect of the response of expenditure to transfers.

Chapter 6: Results

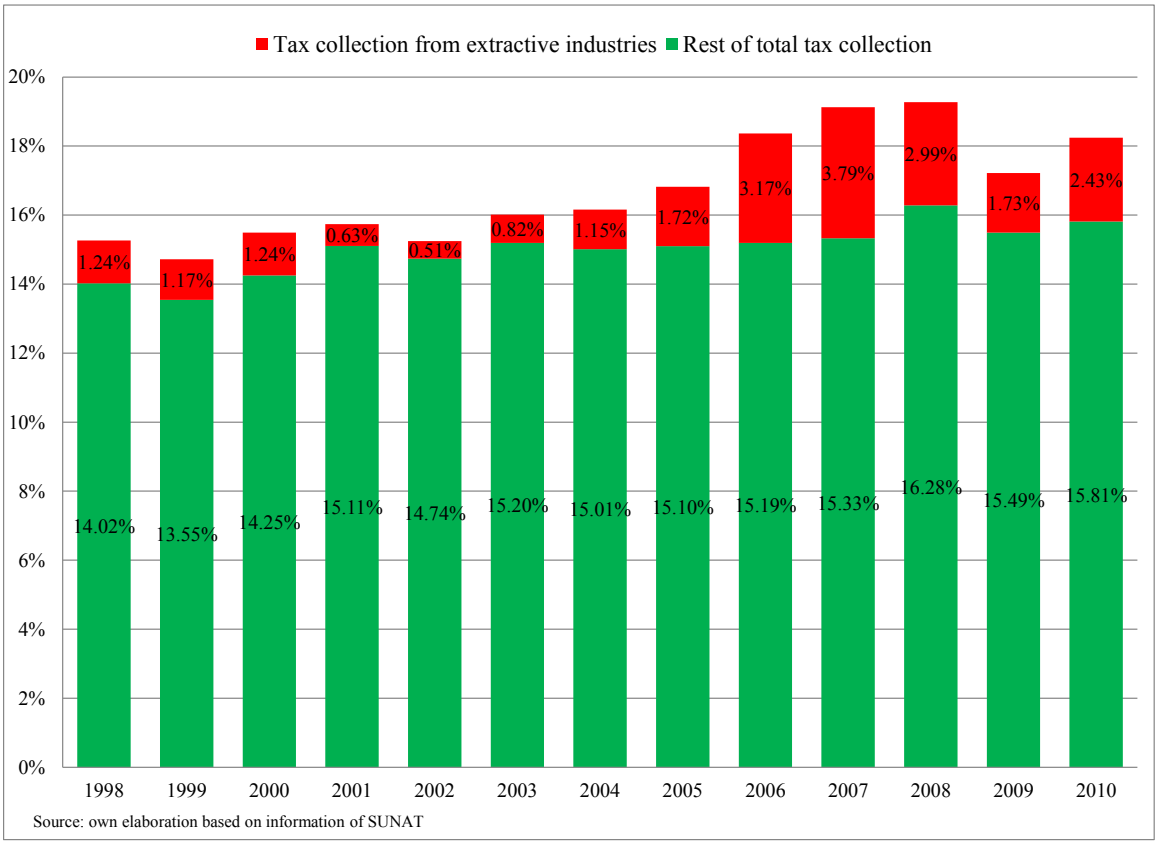
Here I evaluate the five questions posed in the previous chapter, distinguishing between the macro-fiscal implication of the large increase in transfers in Peru's general government, and the fiscal decisions of LLGG in response to transfers.

Effect of transfers on Peru's general government

The first question to be assessed is whether the share of Peru's central government has been reduced as a proportion of the general government during the past decade, in response to the considerable increase in transfers to SNG.

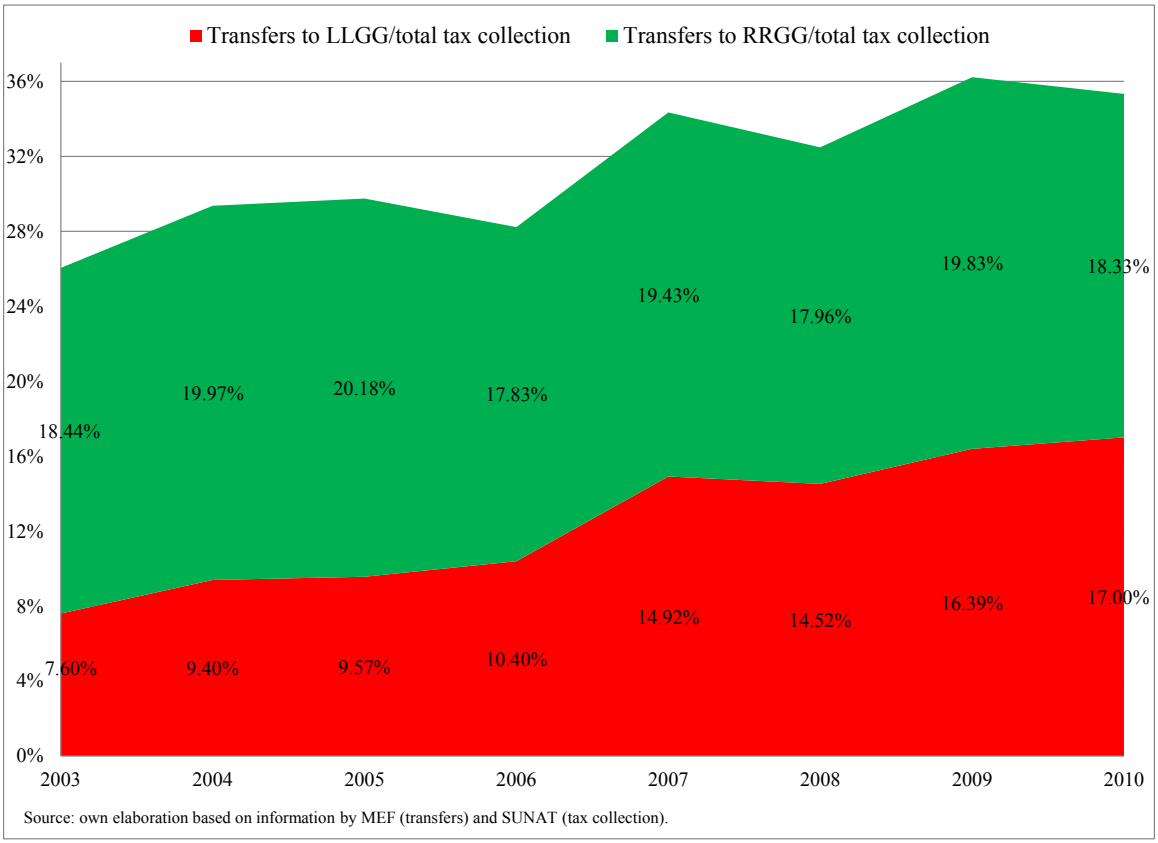
In this regard, Figure 6.1 shows the evolution of central government tax collection in Peru between 1998 and 2010 as a proportion of GDP, distinguishing between tax collection from extractive industries, which are mining and hydrocarbons (oil and gas), and the rest of total tax collection. As can be seen, tax collection from extractive industries is the source of fiscal revenue that has grown most in Peru during the past 12 years, from a low of 0.51 percent of GDP in 2002 to a peak of 3.79 percent of GDP in 2007. It is also highly volatile: the ratio of the standard deviation to the mean of the series of tax collection from extractive industries is 0.6, while for the rest of total tax collection is only 0.05. Lastly, as described above, most of the tax collection from extractive industries is transferred to SNG: indeed, between 2003 and 2010, on average 56 percent of this revenue has been transferred to RRGG and LLGG in the form of canon, over-canon and perquisite.

Figure 6.1 – Tax collection of Peru's central government as proportion of GDP



Hence, the fiscal revenue that has grown most in Peru is also the most volatile, and most of it is automatically transferred to SNG, mainly to be used in public investment. As shown in Figure 6.2 below, this has meant that an increasing proportion of the central government´s tax collection is allocated to SNG in the form of transfers. Indeed, between 2003 and 2010, the share of total transfers to SNG in central government´s tax collection has increased more than 9 percentage points, from 26 percent to 35 percent. All of this increase has occurred in transfers to LLGG, which as described above receive a larger share of transfers from natural resources relative to RRGG. In the case of RRGG, the increase in transfers from natural resources has been offset by a relative decline in other transfers, such as earmarks (more on this below).

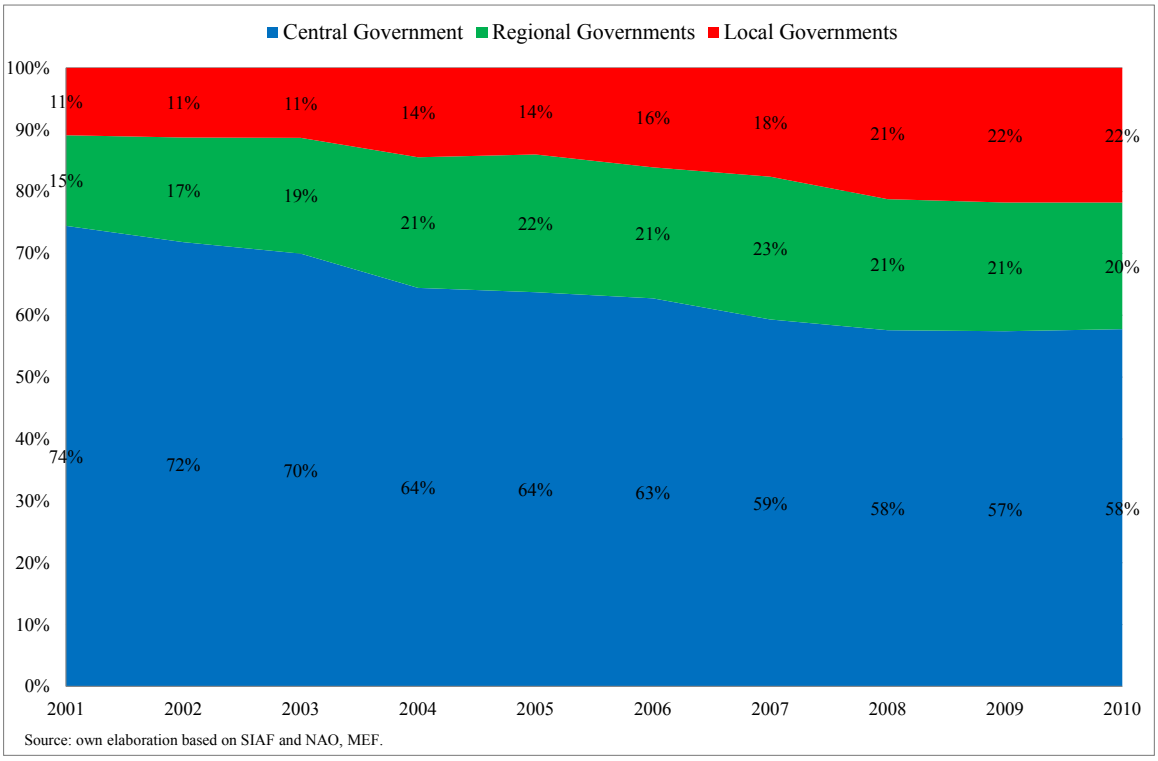
Figure 6.2 – Proportion of central government tax collection allocated to SNG



Source: own elaboration based on information by MEF (transfers) and SUNAT (tax collection).

In turn, the higher proportion of transfers to SNG with respect to total tax collection has increased the share of SNG in expenditures of the general government. This is shown in Figure 6.3, which displays the participation of the central, regional and local levels of government in consolidated primary expenditure during 2001-2010. In that period the participation of the central government in the primary expenditure of the general government decreased 18 percentage points, from 74 percent to 58 percent. In turn, RRGG increased their participation 5 percentage points, from 15 percent to 20 percent (CTAR in 2001 and 2002); while LLGG gained most, doubling from 11 percent to 22 percent of primary expenditure of the general government.

Figure 6.3 – Contribution of each level of government to primary expenditure

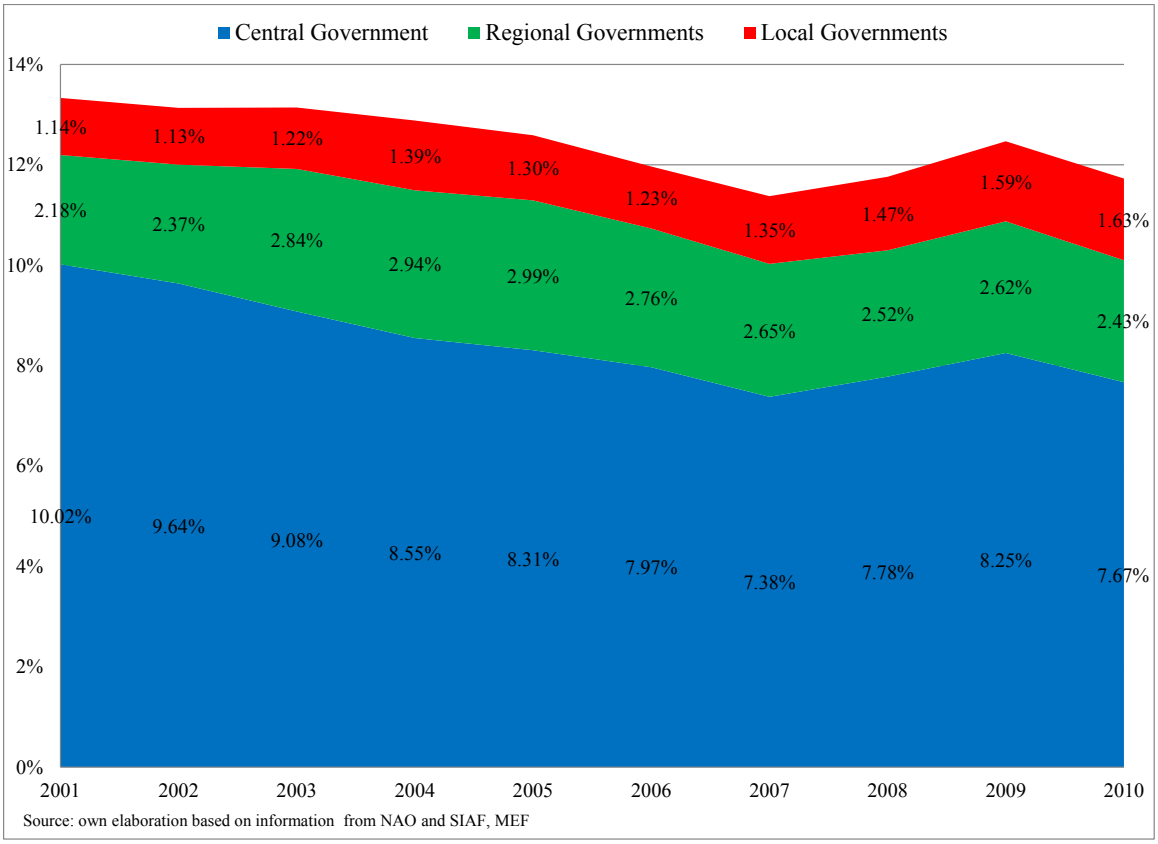


Source: own elaboration based on SIAF and NAO, MEF.

Hence, the share of the central government was reduced as a proportion of the general government between 2001 and 2010, mainly in response to the high increase in transfers to SNG linked to natural resources. With respect to the composition of this reduction in terms of current and capital expenditure, Figure 6.4 shows consolidated current expenditure by level of government in terms of GDP. As can be seen, consolidated current expenditure has decreased from a peak of 13.3 percent of GDP in 2001 to 11.7 percent in 2010. This reduction is mostly explained by the central government, whose share has declined from 10 percent in 2001 to less than 8 percent of GDP in 2010. In turn, the participation of RRGG since their creation has also declined, from 2.84 percent of GDP in 2003 to 2.43 percent in 2010, due to the relative stagnation in earmarks to RRGG; this helps explain the point highlighted in Chapter 4 that the functions transferred to RRGG as part of the decentralization process have not been linked to sufficient

resources to fulfill them. Lastly, the share of LLGG in consolidated current expenditure has increased from 1.14 percent to 1.63 percent of GDP; as will be seen below, this is mainly explained by the fact that those LLGG that receive large transfers from natural resources devote most of their other sources of income (own resources and other transfers) to current expenditures.

Figure 6.4 – Contribution of each level of government to consolidated current expenditure (as proportion of GDP)

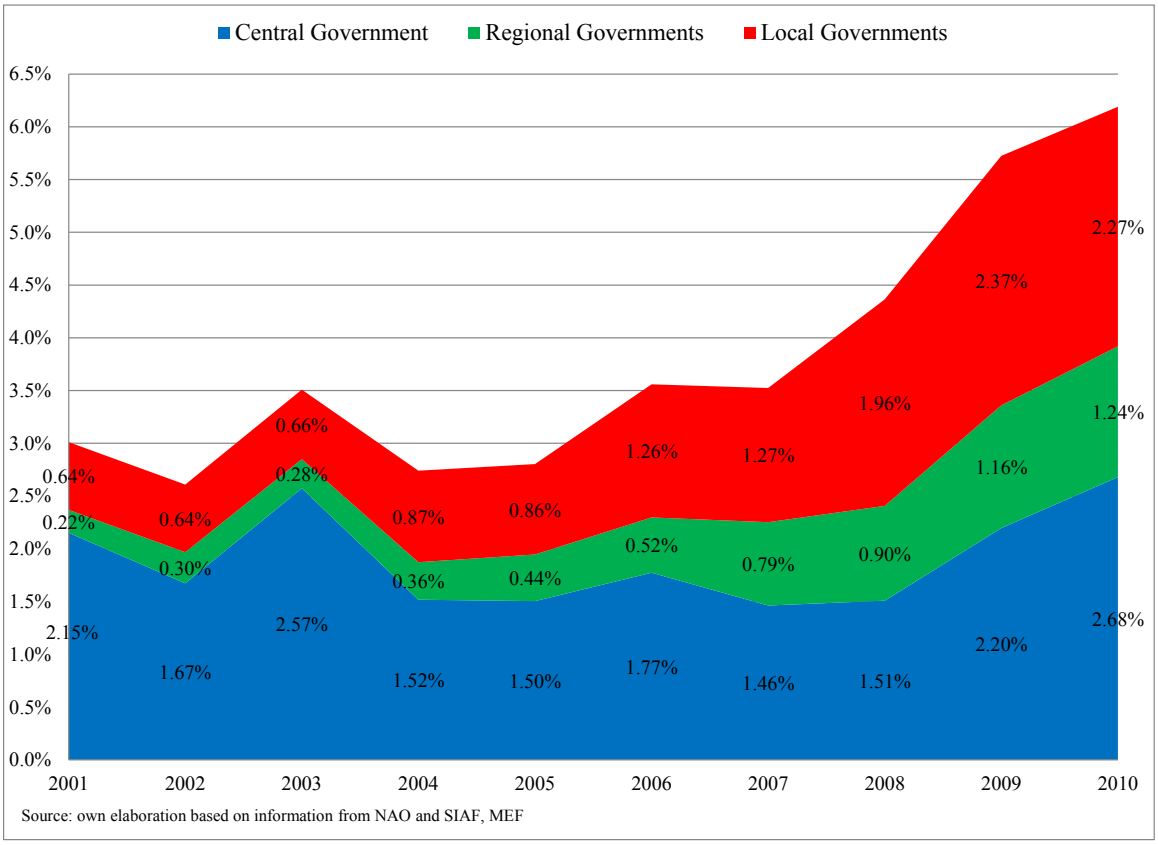


Source: own elaboration based on information from NAO and SIAF, MEF

In turn, public investment in Peru has undergone a dramatic change during the past decade (see Figure 6.5): first, between 2001 and 2010 the participation of consolidated capital expenditure in terms of GDP has more than doubled, from 3 percent to 6.2 percent. Second, public investment is now mostly executed by SNG: while in 2001 71 percent of public investment was executed by the central government, in 2010 that

proportion declined to 43 percent. This last figure is up from a nadir of 34 percent in 2008, largely due to the countercyclical stimulus package of 2009-10 implemented by Peru's central government in the context of the international financial crisis. The increase in public investment has been larger for LLGG, which have augmented their share in 1.6 percentage points between 2001 and 2010, but it has also been important for RRGG, whose participation was in 2010 one percentage point higher than in 2001.

Figure 6.5 – Contribution of each level of government to consolidated capital expenditure (as proportion of GDP)



Source: own elaboration based on information from NAO and SIAF, MEF

This larger share of SNG in public investment is mainly explained by the increase in transfers linked to natural resources, which as mentioned above are mostly earmarked to capital expenditure. However, as analyzed below, in 2009 and 2010 public investment

of SNG also increased due to large discretionary transfers from the central government, to compensate for the decline in regular transfers due to the international financial crisis.

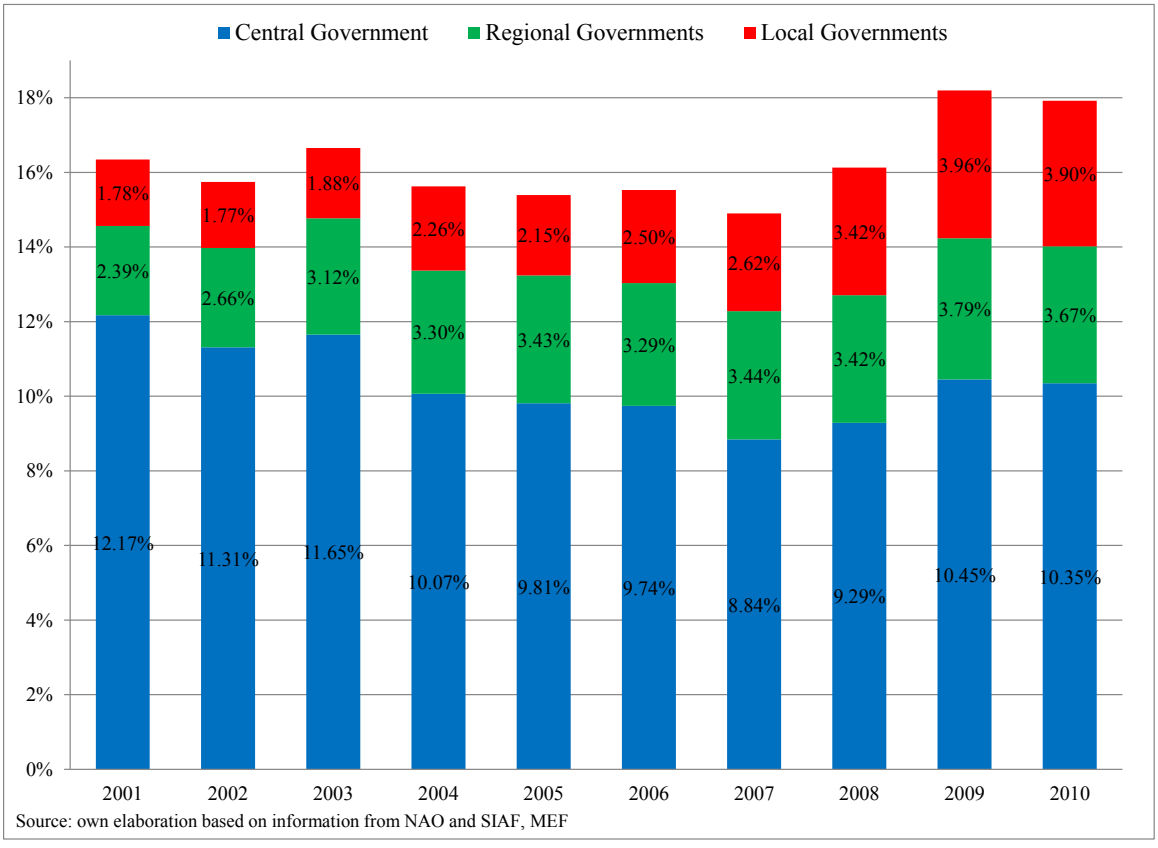
To summarize, the share of Peru's central government in the primary expenditure of the general government has decreased between 2001 and 2010 from 74 percent to 58 percent, mainly at the expense of LLGG and to a lower degree RRGG. This is largely explained by the fact that most tax collection from extractive industries, which is the tax revenue with highest growth and volatility in Peru during the last decade, is automatically transferred to SNG, particularly to LLGG. In terms of the composition of expenditure by economic classification, the central government has declined its participation both in current and capital expenditure; RRGG have increased slightly their participation in current expenditure and significantly in capital expenditure; while LLGG have increased significantly their participation in both current and capital expenditure.

Alternatively, the analysis shows that due to the increase in transfers, especially those linked to natural resources, the central government has reduced its control of tax collection between 2003 and 2010 from 74 percent to 65 percent (Figure 6.2), which is a measure of the higher restriction it faced by 2010 in its fiscal space to conduct counter-cyclical fiscal policy.

The second question of this section is whether the size of the general government has augmented relative to GDP in response to the increase in transfers. In this regard, Figure 6.6 combines Figures 6.4 and 6.5 above to portray the evolution of Peru's consolidated primary expenditure relative to GDP between 2001 and 2010. As can be

seen, the size of Peru's consolidated primary expenditure in 2010 was 17.9 percent of GDP, which was 1.7 percentage points higher than the average value for the period. This increase is mainly explained by the higher participation of SNG, especially LLGG, in the general government. Indeed, in 2010 LLGG's primary expenditure was 3.9 percent of GDP, which was 1.3 percentage points higher than the average value for the series. In turn, RRGG's primary expenditure in 2010 was 3.7 percent of GDP, 0.4 percentage points larger than the average value, and the central government's primary expenditure in 2010 was 10.3 percent of GDP, which was similar to the average for the series. Hence, LLGG contributed 75 percent of the increase in consolidated primary expenditure, while RRGG contributed 25 percent.

Figure 6.6 – Contribution of each level of government to primary expenditure (as proportion of GDP)



Source: own elaboration based on information from NAO and SIAF, MEF

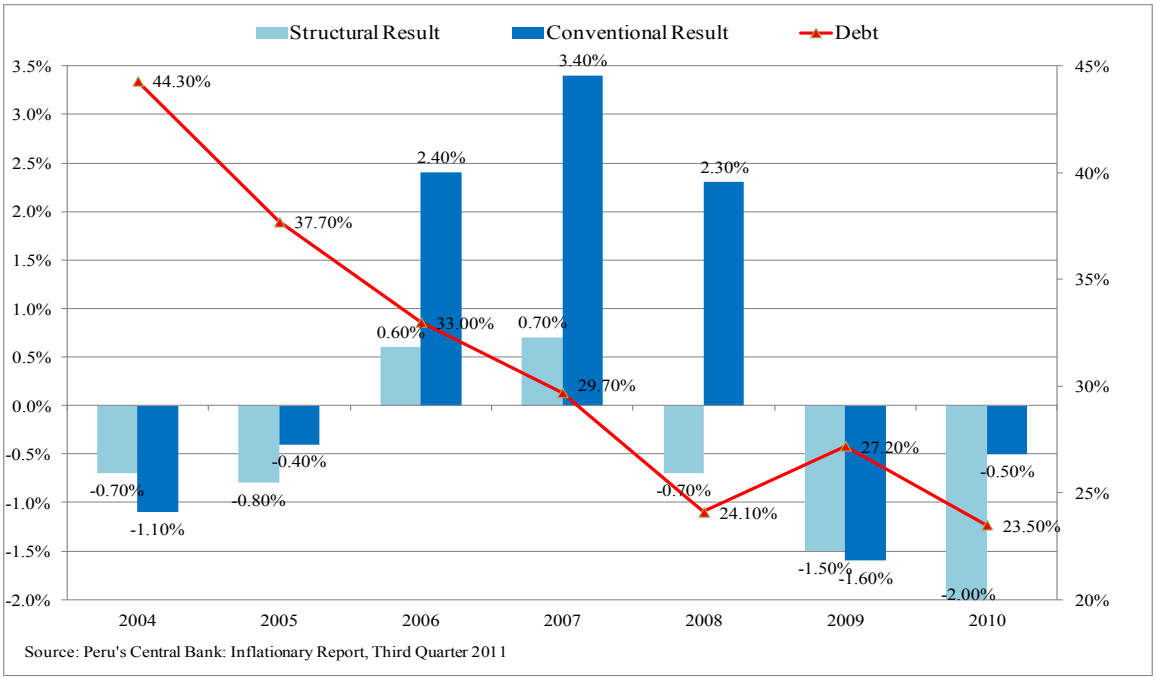
LLGG also have the most volatile primary expenditure: the ratio of the standard deviation to the average of the series is 0.32 for LLGG, while it is 0.13 for RRGG and 0.1 for the central government. As depicted in Figures 6.4 and 6.5, the increase in consolidated primary expenditure was due to higher public investment and it would have been higher had it not been for the relative decline of current expenditures, mainly from the central government. Noteworthy, in 2009-10 public investment by the central government increased by 1.23 percentage points of GDP, and it also increased in SNG partly due to larger discretionary transfers in the context of the international crisis.

Hence, the size of Peru's general government, measured by consolidated primary expenditure, has increased during the past decade, mainly due to the higher expenditure of LLGG and to a lower degree RRGG, which is associated to the surge in transfers, especially those linked to the extraction of natural resources. Did this increase in consolidated primary expenditure worsen Peru's fiscal position in terms of higher deficits and/or debt? Figure 6.7 shows that, largely thanks to the public savings accumulated between 2006 and 2008, Peru´s central government was able to conduct counter-cyclical fiscal policy, expanding public expenditure in 2009-10 without increasing indebtedness in terms of GDP. In turn, as depicted in Figures 6.1, 6.4 and 6.5, the savings accumulated by the central government until 2008 came largely from higher tax collection, especially from extractive industries during 2006-2008; a relative decline in current expenditures; and a relative stagnation of public investment during those years.

As analyzed below, SNG also contributed to public savings, especially in 2007, by increasing their expenditures with a lag in response to the surge in transfers linked to natural resources. However, as suggested in Figures 6.4 through 6.6, between 2008 and

2010 SNG increased their expenditures substantially, especially at the local level, contributing to the growth of consolidated primary expenditure relative to GDP.

Figure 6.7 – Evolution of economic result (left axis) and indebtedness (right axis) of Peru´s non-financial public sector (as proportion of GDP)



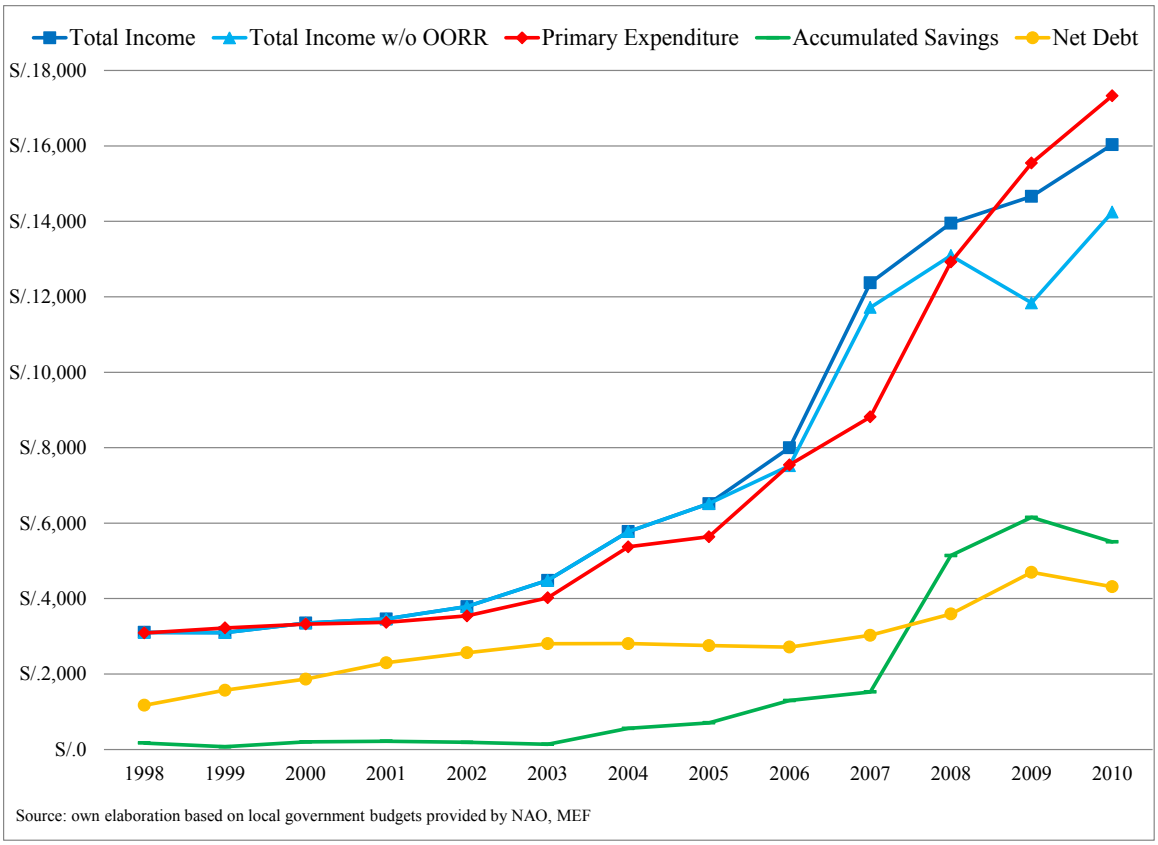
Below I analyze in detail the evolution of public accounts of LLGG in Peru, evaluating the fiscal decisions of municipalities in response to transfers, and whether this has worsened their fiscal position, generating fiscal risks to the general government through lower own revenue collection (fiscal sloth) and/or a high increase of expenditure in response to transfers (flypaper effect).

Analysis of the effect of transfers on fiscal decisions of LLGG

In this section I describe the evolution of fiscal aggregates of LLGG, trying to assess the third question of this dissertation: have LLGG worsened their fiscal position in response to transfers? In this regard, Figure 6.8 presents the evolution of the primary

balance of LLGG, which is the difference between total income minus primary expenditure, between 1998 and 2010. It also includes a series showing total income without ordinary resources (OORR) to LLGG, to highlight the discretionary transfers from the central government in 2009 and 2010, included under ordinary resources, to compensate municipalities for the decline in other transfers during the international financial crisis of 2009. Figure 6.8 shows that total income of LLGG starts to grow in 2002, which is when the canon law began to be implemented, and jumps substantially in 2007, due to high tax collection in extractive industries (see Figure 6.1), and a change in the allocation formula of the mining canon, by which in July 2007 SNG received all the canon that was owed to them during 2006 and the last five months of 2005.

Figure 6.8 – Evolution of fiscal position of Peru's LLGG (in million of current S./)



Source: own elaboration based on local government budgets provided by NAO, MEF

In 2008 and 2009 the rate of growth of total income slows down, and in particular in 2009 it would have decreased substantially had it not been for the large discretionary transfers from the national government included under ordinary resources. In turn, the slowdown in 2008 and the decline in total income without ordinary resources in 2009, is mostly explained by the reduction in transfers from natural resources. Lastly, as the world economy improved in 2010 and the prices of extractive industries jumped again, total income of LLGG recovered, and it also benefited from the introduction of new transfers (PI&PMM), and the still large discretionary transfers from the central government included under ordinary resources.

In turn, primary expenditure has tended to react with a lag to increases in transfers. In 2007 this was accentuated for two main reasons: first, LLGG had little time to react to the unexpected windfall of transfers they received in July of that year, especially from mining canon; and second, only 27 percent of mayors were reelected in the subnational elections of late 2006, which meant that most authorities were relatively inexperienced and unable to rapidly execute the windfall transfers they received. However, starting in 2008 primary expenditure had a sharp reaction, growing by 97 percent between 2007 and 2010, at an annual average rate of 25 percent in current terms. Indeed, in 2009 and 2010 LLGG had an aggregate primary deficit, in spite of the fact that transfers continued increasing, and these deficits would have been much larger had it not been for the large discretionary transfers to LLGG in the context of the crisis of 2009.

Table 6.1 below presents in detail the evolution of the main fiscal aggregates of LLGG in Peru between 1998 and 2010. The upper pane shows the evolution in current Peruvian S./ and the last column presents the yearly annual growth of the series in

constant 2002 S./. The lower pane presents the main components of income and expenditure as percent of the total, along with some key fiscal performance indicators. With respect to current own income of LLGG, it grew at an annual rate of 8.05 percent in constant terms, with local taxes (10.23 percent) growing faster than user fees, contributions and other income (6.78 percent). Comparatively, total tax collection of the central government grew at an annual rate of 9.64 percent in constant terms during the same period. Hence, this value does not give indication of "fiscal sloth" at the local level, by which the growth in transfers discourages local own revenue collection, at least at the aggregate level of LLGG.

On the other hand, as described above, the growth in transfers is remarkable: almost 18 percent per year in constant terms. Natural resources and transfers grew most (27.78 percent), although falling abruptly in 2009 and growing again in 2010. Earmarks and other transfers also grew significantly (24.05 percent), although mainly in 2009 and 2010. Lastly, FONCOMUN fell in 2009 due to the economic slowdown of that year and the adjustments to the base of Peru's VAT that is used for this transfer; but in spite of this fall it grew by 8.8 percent per year in constant terms throughout the series.

With respect to expenditures, since most transfers from natural resources are earmarked to public investment, capital expenditures grew more than current expenditures, at an annual rate of 18.31 percent vs. 11.66 percent for current expenditures in constant terms. Both figures are high, and primary expenditure grew at an annual rate of 14.91 percent in constant terms, which is higher than the figure for total income (14.12 percent), although this growth rate does not capture the accumulated savings of 2007-08.

Table 6.1 – Evolution of fiscal aggregates of LLGG in Peru

Local Government Budget by economic concept (in millons of current Peruvian S./)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average annual growth in constant 2002 S./
I. Current own income	S/. 1,427	S/. 1,437	S/. 1,508	S/. 1,566	S/. 1,733	S/. 1,871	S/. 2,137	S/. 2,288	S/. 2,201	S/. 2,771	S/. 3,367	S/. 3,645	S/. 3,826	8.05%
Local Taxes	S/. 470	S/. 421	S/. 447	S/. 453	S/. 525	S/. 595	S/. 658	S/. 718	S/. 726	S/. 1,093	S/. 1,310	S/. 1,414	S/. 1,601	10.23%
User fees, contributions and other current income	S/. 957	S/. 1,016	S/. 1,062	S/. 1,113	S/. 1,208	S/. 1,276	S/. 1,479	S/. 1,570	S/. 1,475	S/. 1,678	S/. 2,057	S/. 2,231	S/. 2,225	6.78%
II. Capital income	S/. 28	S/. 16	S/. 15	S/. 20	S/. 27	S/. 12	S/. 27	S/. 17	S/. 30	S/. 11	S/. 25	S/. 26	S/. 78	8.42%
III. Total transfers	S/. 1,650	S/. 1,644	S/. 1,827	S/. 1,872	S/. 2,027	S/. 2,599	S/. 3,612	S/. 4,210	S/. 5,770	S/. 9,588	S/. 10,562	S/. 10,993	S/. 12,132	17.53%
Foncomun	S/. 1,118	S/. 1,134	S/. 1,253	S/. 1,279	S/. 1,329	S/. 1,528	S/. 1,729	S/. 1,957	S/. 2,324	S/. 2,758	S/. 3,257	S/. 3,006	S/. 3,257	8.80%
Natural resources and customs	S/. 233	S/. 191	S/. 229	S/. 233	S/. 318	S/. 581	S/. 812	S/. 1,574	S/. 2,553	S/. 5,389	S/. 5,318	S/. 4,175	S/. 4,672	27.78%
Earmarks and other transfers	S/. 299	S/. 319	S/. 345	S/. 360	S/. 380	S/. 490	S/. 1,071	S/. 680	S/. 893	S/. 1,441	S/. 1,986	S/. 3,812	S/. 4,203	24.05%
IV. Total income (I + II + III)	S/. 3,104	S/. 3,097	S/. 3,351	S/. 3,459	S/. 3,787	S/. 4,482	S/. 5,776	S/. 6,516	S/. 8,001	S/. 12,370	S/. 13,954	S/. 14,663	S/. 16,036	14.12%
V. Current expenditure	S/. 1,820	S/. 2,016	S/. 2,085	S/. 2,152	S/. 2,259	S/. 2,613	S/. 3,307	S/. 3,396	S/. 3,732	S/. 4,537	S/. 5,531	S/. 6,261	S/. 7,240	11.66%
Personnel, social and pension contributions	S/. 647	S/. 723	S/. 738	S/. 753	S/. 822	S/. 984	S/. 1,061	S/. 1,152	S/. 1,225	S/. 1,379	S/. 1,544	S/. 1,892	S/. 2,149	10.00%
Goods, services and other current expenditure	S/. 1,173	S/. 1,293	S/. 1,348	S/. 1,399	S/. 1,438	S/. 1,630	S/. 2,246	S/. 2,243	S/. 2,507	S/. 3,159	S/. 3,987	S/. 4,369	S/. 5,091	12.48%
VI. Capital expenditure	S/. 1,268	S/. 1,206	S/. 1,239	S/. 1,216	S/. 1,280	S/. 1,407	S/. 2,064	S/. 2,243	S/. 3,814	S/. 4,278	S/. 7,391	S/. 9,284	S/. 10,091	18.31%
VII. Primary expenditure (V + VI)	S/. 3,088	S/. 3,222	S/. 3,325	S/. 3,368	S/. 3,539	S/. 4,020	S/. 5,371	S/. 5,638	S/. 7,546	S/. 8,815	S/. 12,922	S/. 15,546	S/. 17,330	14.91%
VIII. Primary result (IV - VII)	S/. 16	-S/. 125	S/. 26	S/. 91	S/. 248	S/. 462	S/. 405	S/. 878	S/. 455	S/. 3,555	S/. 1,032	-S/. 882	-S/. 1,295	
IX. Debt interest and charges	S/. 48	S/. 63	S/. 85	S/. 131	S/. 113	S/. 93	S/. 103	S/. 83	S/. 53	S/. 33	S/. 34	S/. 38	S/. 369	17.90%
X. Economic result (VIII - IX)	-S/. 32	-S/. 188	-S/. 59	-S/. 40	S/. 135	S/. 369	S/. 302	S/. 795	S/. 402	S/. 3,522	S/. 998	-S/. 920	-S/. 1,664	
XI. Financing	S/. 300	S/. 438	S/. 423	S/. 443	S/. 305	S/. 456	S/. 722	S/. 877	S/. 1,403	S/. 1,752	S/. 5,468	S/. 6,487	S/. 5,748	31.78%
Balance from previous years	S/. 171	S/. 72	S/. 199	S/. 218	S/. 189	S/. 139	S/. 557	S/. 706	S/. 1,298	S/. 1,525	S/. 5,142	S/. 6,152	S/. 5,503	32.91%
Credit operations	S/. 129	S/. 366	S/. 224	S/. 224	S/. 116	S/. 317	S/. 165	S/. 171	S/. 104	S/. 227	S/. 326	S/. 334	S/. 244	
XII. Debt service	S/. 251	S/. 113	S/. 192	S/. 228	S/. 248	S/. 167	S/. 259	S/. 330	S/. 260	S/. 160	S/. 204	S/. 222	S/. 354	
Principal payment	S/. 251	S/. 113	S/. 192	S/. 228	S/. 248	S/. 167	S/. 259	S/. 330	S/. 260	S/. 160	S/. 204	S/. 222	S/. 354	
XIII. Net financing (XI - XII)	S/. 50	S/. 324	S/. 231	S/. 189	S/. 34	S/. 280	S/. 452	S/. 530	S/. 1,135	S/. 1,587	S/. 5,263	S/. 6,264	S/. 5,394	
XIV. Expected balance for next year (X + XIII)	S/. 18	S/. 136	S/. 172	S/. 148	S/. 169	S/. 649	S/. 754	S/. 1,326	S/. 1,537	S/. 5,109	S/. 6,261	S/. 5,344	S/. 3,730	
XV. Net municipal debt*	S/. 1,172	S/. 1,569	S/. 1,865	S/. 2,299	S/. 2,562	S/. 2,805	S/. 2,807	S/. 2,753	S/. 2,714	S/. 3,025	S/. 3,592	S/. 4,696	S/. 4,314	10.95%
XVI. Net municipal debt as percent of GDP		0.90%	1.00%	1.22%	1.28%	1.31%	1.18%	1.05%	0.90%	0.90%	0.95%	1.20%	0.97%	

* Net municipal debt is total debt minus deferred income and provision for social benefits.

Local Government Budget by economic concept (% of total)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 1998-2010
I. Current income	45.96%	46.40%	45.02%	45.29%	45.76%	41.74%	37.00%	35.12%	27.51%	22.40%	24.13%	24.86%	23.86%	35.77%
Local Taxes	15.14%	13.59%	13.33%	13.11%	13.86%	13.28%	11.39%	11.02%	9.08%	8.83%	9.39%	9.64%	9.98%	11.67%
User fees, contributions and other current income	30.82%	32.80%	31.69%	32.18%	31.90%	28.47%	25.61%	24.10%	18.43%	13.56%	14.74%	15.21%	13.88%	24.11%
II. Capital income	0.90%	0.53%	0.46%	0.58%	0.71%	0.27%	0.47%	0.26%	0.37%	0.09%	0.18%	0.17%	0.49%	0.42%
III. Transfers	53.15%	53.08%	54.53%	54.13%	53.53%	57.98%	62.53%	64.62%	72.12%	77.51%	75.69%	74.97%	75.66%	63.81%
IV. Total income (I + II + III)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
V. Current expenditure	58.93%	62.56%	62.72%	63.90%	63.84%	65.00%	61.57%	60.23%	49.46%	51.47%	42.81%	40.28%	41.77%	55.73%
Personnel, social and pension contributions	20.94%	22.43%	22.18%	22.35%	23.21%	24.47%	19.76%	20.44%	16.24%	15.64%	11.95%	12.17%	12.40%	18.78%
Goods, services and other current expenditure	37.99%	40.13%	40.54%	41.55%	40.62%	40.53%	41.82%	39.79%	33.22%	35.83%	30.85%	28.11%	29.37%	36.95%
VI. Capital expenditure	41.07%	37.44%	37.28%	36.10%	36.16%	35.00%	38.43%	39.77%	50.54%	48.53%	57.19%	59.72%	58.23%	44.27%
VII. Primary expenditure (V + VI)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VIII. Own income/Current expenditure	78.40%	71.29%	72.34%	72.78%	76.71%	71.60%	64.62%	67.39%	58.97%	61.06%	60.87%	58.21%	52.85%	66.70%
IX. Own income/Debt	121.76%	91.57%	80.90%	68.13%	67.64%	66.71%	76.13%	83.11%	81.09%	91.58%	93.73%	77.62%	88.68%	83.74%
X. % of Foncomun for current expenditure	19.55%	27.02%	27.00%	27.23%	28.15%	44.22%	43.23%	46.76%	49.42%	58.29%	55.75%	56.47%	58.69%	41.67%

Source: own elaboration based on information provided by NAO, MEF.

Indeed, as shown in Figure 6.8 above, the evolution of the primary result and the economic result (which includes debt interest and charges) shows that LLGG experienced a large surplus in 2007 and to a lower degree in 2008, which they partially used to finance their deficits in 2009 and 2010. In this regard, the accumulated savings of LLGG, which reached S./ 6,152 million at the start of 2009, are expected to have declined by almost 40 percent to S./ 3,730 million at the start of 2011. Lastly, as shown in lines XV and XVI of Table 6.1, LLGG in general do not have a problem with municipal debt: although it grew 10.66 percent per year in constant terms, it barely grew in terms of GDP, although as mentioned above with reference to the studies of World Bank (2006) and Moron et al (2010), municipal debt is underestimated due to arrears and miss-registration of debt of many LLGG with other public institutions.

The lower pane in Table 6.1 shows the significant increase in the vertical fiscal imbalance of LLGG in Peru, which measures the proportion of transfers in total income. Indeed, the dependency on transfers has grown by more than 20 percentage points, from 53.15 percent to 75.6 percent of total income. On the other hand, capital expenditure has also increased significantly its importance in primary expenditure, from 41.07 percent to 58.23 percent, which is mainly due to the requirement to spend most of the transfers linked to natural resources in public investment. Noteworthy, the capacity of LLGG to finance their current expenditure with their own income has declined substantially (line VIII in lower pane), from 78.4 percent to 52.9 percent, which is indicative that LLGG increasingly need to finance their current expenditure with transfers. Indeed, line X shows that the percentage of FONCOMUN used for current expenditure has increased significantly throughout the series, from 19.55 percent to 58.69 percent. Lastly, the

capacity of LLGG to pay their debt with their own income has also decreased, from 99.12 percent to 74.48 percent (line IX).

These three indicators suggest that LLGG have a higher exposure to changes in transfers, since their capacity to use their own resources to finance current expenditures, which are relatively rigid, is increasingly reduced.

Fiscal response of LLGG to transfers according to their different characteristics

In order to have a more complete picture of the fiscal response of LLGG to transfers, here I consider the different categories of LLGG laid out above. I focus initially on the evolution of total income, disaggregated in own income and transfers; and primary expenditure, with its components of current and capital expenditure, for each category of LLGG, along with the annual average growth of each series in constant 2002 S./.

Table 6.2 shows the evolution of the share of each type of LLGG (PPGG and DDGG) in total income and primary expenditure, along with the annual growth of each series in constant 2002 S./. PPGG increased slightly their share in total own income throughout the period. In turn, DDGG increased substantially their share in total transfers, and in turn in total income. Hence, it should not be a surprise that DDGG have increased their share in current expenditure and especially in capital expenditure. Both for PPGG and DDGG total expenditures have grown more than total income between 1998 and 2010, especially due to the high growth in capital expenditures.

Table 6.2 – Share of LLGG by type in total income and expenditure

Type of LLGG	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual growth in constant 2002 S./
195 Provincial Governments	Own income	45.7%	46.3%	45.6%	44.8%	45.3%	44.5%	47.2%	45.4%	44.2%	46.6%	46.5%	46.5%	49.6%	8.8%
	Total transfers	44.9%	42.6%	42.4%	40.7%	38.6%	38.4%	35.7%	37.7%	35.8%	34.3%	32.2%	33.0%	32.3%	14.4%
	Total income	45.2%	44.3%	43.8%	42.6%	41.7%	40.9%	40.0%	40.4%	38.1%	37.1%	35.7%	36.4%	36.5%	12.1%
	Current expenditure	44.1%	44.0%	42.9%	42.5%	41.7%	39.8%	39.3%	41.4%	42.1%	42.5%	41.4%	40.3%	40.3%	10.8%
	Capital expenditure	48.0%	43.7%	46.0%	44.8%	42.1%	36.1%	37.5%	38.0%	35.6%	31.9%	33.1%	34.6%	35.3%	15.3%
	Primary expenditure	45.7%	43.9%	44.1%	43.3%	41.9%	38.5%	38.6%	40.1%	38.8%	37.4%	36.6%	36.9%	37.4%	13.0%
1639 District Governments	Own income	54.3%	53.7%	54.4%	55.2%	54.7%	55.5%	52.8%	54.6%	55.8%	53.4%	53.5%	53.5%	50.4%	7.4%
	Total transfers	55.1%	57.4%	57.6%	59.3%	61.4%	61.6%	64.3%	62.3%	64.2%	65.7%	67.8%	67.0%	67.7%	19.6%
	Total income	54.8%	55.7%	56.2%	57.4%	58.3%	59.1%	60.0%	59.6%	61.9%	62.9%	64.3%	63.6%	63.5%	15.5%
	Current expenditure	55.9%	56.0%	57.1%	57.5%	58.3%	60.2%	60.7%	58.6%	57.9%	57.5%	58.6%	59.7%	59.7%	12.3%
	Capital expenditure	52.0%	56.3%	54.0%	55.2%	57.9%	63.9%	62.5%	62.0%	64.4%	68.1%	66.9%	65.4%	64.7%	20.5%
	Primary expenditure	54.3%	56.1%	55.9%	56.7%	58.1%	61.5%	61.4%	59.9%	61.2%	62.6%	63.4%	63.1%	62.6%	16.3%

Source: own elaboration based on information by MEF

With respect to the evolution of the share of fiscal aggregates according to need groups, Table 6.3 shows that LLGG with higher needs have increased their share of own income relative to LLGG with medium needs, which is surprising given that LLGG with higher needs tend to be associated with lower fiscal and administrative capacities. Moreover, the average annual growth in primary expenditure is higher for LLGG with high and very high need, although the average annual growth in total income is also higher for them.

Table 6.3 Share of LLGG by need groups in total income and expenditure

Need Group	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual growth in constant 2002 S./
Very high need - 27% of LLGG, 13% of country's population	Own income	2.6%	2.4%	2.4%	3.0%	3.2%	2.9%	2.8%	2.9%	3.5%	3.1%	3.6%	3.4%	3.0%	9.6%
	Total transfers	19.2%	19.4%	19.4%	19.9%	20.0%	19.3%	22.7%	20.8%	20.5%	20.8%	20.2%	20.6%	21.2%	18.5%
	Total income	11.4%	11.4%	11.7%	12.2%	12.2%	12.4%	15.2%	14.5%	15.8%	16.8%	16.2%	16.3%	16.8%	17.9%
	Current expenditure	6.7%	6.6%	7.4%	7.7%	8.1%	8.6%	10.5%	10.1%	10.7%	10.8%	11.6%	11.8%	11.8%	17.2%
	Capital expenditure	17.8%	19.6%	18.4%	19.4%	18.7%	19.4%	21.3%	22.3%	20.9%	22.7%	20.4%	18.5%	19.7%	19.3%
	Primary expenditure	11.2%	11.5%	11.5%	11.9%	12.0%	12.4%	14.6%	15.0%	15.9%	16.6%	16.6%	15.8%	16.4%	18.6%
High need - 32% of LLGG, 18% of country's population	Own income	6.9%	6.6%	6.2%	6.7%	6.8%	7.0%	6.7%	6.4%	7.3%	7.0%	7.5%	7.9%	7.4%	8.8%
	Total transfers	24.3%	25.7%	26.2%	26.8%	25.8%	24.8%	26.6%	28.0%	27.8%	26.0%	27.5%	27.1%	29.6%	19.5%
	Total income	16.1%	16.7%	17.1%	17.5%	17.0%	17.3%	19.1%	20.3%	22.1%	21.8%	22.7%	22.3%	24.2%	18.0%
	Current expenditure	11.1%	11.1%	11.7%	12.1%	12.4%	13.7%	15.0%	14.5%	16.4%	16.1%	16.5%	16.7%	17.2%	15.9%
	Capital expenditure	22.3%	26.1%	25.4%	25.4%	23.6%	25.3%	24.5%	25.6%	27.8%	26.6%	27.2%	27.2%	26.9%	20.2%
	Primary expenditure	15.7%	16.7%	16.8%	16.9%	16.5%	17.8%	18.7%	18.9%	22.2%	21.2%	22.6%	22.9%	22.8%	18.6%
Medium need - 41% of LLGG, 69% of country's population	Own income	90.5%	91.0%	91.4%	90.3%	90.0%	90.1%	90.5%	90.7%	89.2%	89.8%	88.8%	88.7%	89.5%	8.0%
	Total transfers	56.5%	54.9%	54.4%	53.3%	54.2%	55.9%	50.7%	51.2%	51.7%	53.2%	52.3%	52.3%	49.2%	16.2%
	Total income	72.4%	71.9%	71.2%	70.3%	70.8%	70.3%	65.6%	65.2%	62.1%	61.4%	61.2%	61.4%	59.0%	12.2%
	Current expenditure	82.3%	82.2%	81.0%	80.2%	79.4%	77.6%	74.5%	75.5%	72.9%	73.1%	72.0%	71.5%	70.9%	10.3%
	Capital expenditure	59.9%	54.3%	56.2%	55.2%	57.6%	55.2%	54.2%	52.1%	51.2%	50.7%	52.4%	54.3%	53.4%	17.2%
	Primary expenditure	73.1%	71.8%	71.7%	71.2%	71.6%	69.8%	66.7%	66.2%	61.9%	62.3%	60.8%	61.2%	60.7%	13.2%

Source: own elaboration based on information by MEF

Table 6.4 shows the evolution of the share of fiscal aggregates by size groups: noteworthy, the share of own income of LLGG with less than 500 urban houses increases throughout the period. Moreover, the share of smaller LLGG in total income, and in current and especially capital expenditure increases throughout the period, mainly due to higher transfers.

Table 6.4 – Share of LLGG by size groups in total income and expenditure

Size Group	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual growth in constant 2002 S./
Main cities - 14% of LLGG, 67% of country's population	Own income	89.1%	91.3%	91.8%	90.1%	88.7%	90.0%	90.2%	89.2%	87.1%	87.8%	87.1%	85.9%	87.7%	7.9%
	Total transfers	54.9%	52.6%	51.5%	50.1%	49.4%	51.1%	44.9%	45.0%	42.6%	40.9%	41.2%	43.7%	42.3%	15.0%
	Total income	70.9%	70.8%	69.8%	68.5%	67.6%	67.4%	61.9%	60.6%	55.0%	51.4%	52.4%	54.3%	53.3%	11.4%
	Current expenditure	82.5%	82.0%	80.7%	79.9%	78.3%	76.9%	73.2%	74.4%	72.1%	71.1%	69.4%	68.2%	68.1%	9.9%
	Capital expenditure	56.0%	50.5%	53.6%	50.8%	51.5%	47.5%	46.2%	43.6%	41.7%	36.8%	41.1%	44.9%	43.1%	15.8%
	Primary expenditure	71.6%	70.2%	70.6%	69.4%	68.6%	66.6%	62.8%	62.2%	56.7%	54.5%	53.2%	54.3%	53.6%	12.2%
More than 500 houses - 30% of LLGG, 20% of country's population	Own income	8.7%	6.5%	6.4%	7.0%	8.8%	7.6%	7.1%	7.1%	8.7%	8.2%	8.8%	9.4%	8.3%	7.6%
	Total transfers	27.9%	28.8%	28.4%	28.4%	27.2%	26.1%	29.3%	32.3%	33.2%	34.8%	34.2%	33.4%	35.0%	19.8%
	Total income	18.9%	18.3%	18.4%	18.6%	18.6%	18.3%	21.0%	23.4%	26.3%	28.8%	28.0%	27.4%	28.5%	18.1%
	Current expenditure	12.0%	11.9%	12.3%	12.7%	13.6%	14.3%	15.9%	15.5%	17.2%	18.1%	19.2%	20.4%	20.3%	16.7%
	Capital expenditure	28.1%	30.0%	26.7%	27.2%	25.9%	26.6%	27.2%	31.6%	31.9%	33.6%	33.1%	33.1%	34.0%	20.2%
	Primary expenditure	18.6%	18.7%	17.7%	18.0%	18.1%	18.6%	20.3%	21.9%	24.6%	25.6%	27.2%	28.0%	28.3%	19.0%
Less than 500 houses - 56% of LLGG, 13% of country's population	Own income	2.3%	2.2%	1.9%	2.8%	2.5%	2.4%	2.7%	3.7%	4.2%	4.0%	4.1%	4.7%	4.1%	13.5%
	Total transfers	17.2%	18.6%	20.1%	21.4%	23.5%	22.9%	25.7%	22.7%	24.3%	24.4%	24.6%	22.9%	22.7%	20.3%
	Total income	10.2%	10.9%	11.8%	12.9%	13.7%	14.3%	17.1%	16.0%	18.7%	19.8%	19.6%	18.4%	18.2%	19.8%
	Current expenditure	5.6%	6.1%	7.0%	7.4%	8.1%	8.9%	10.8%	10.0%	10.7%	10.7%	11.3%	11.3%	11.6%	18.7%
	Capital expenditure	15.9%	19.5%	19.7%	22.0%	22.5%	25.9%	26.6%	24.8%	26.5%	29.6%	25.7%	22.0%	22.9%	21.9%
	Primary expenditure	9.8%	11.1%	11.7%	12.6%	13.3%	14.8%	16.9%	15.9%	18.6%	19.9%	19.6%	17.7%	18.2%	21.0%

Source: own elaboration based on information by MEF

Table 6.5 presents the evolution of the share of fiscal aggregates of LLGG according to resource groups. The group of LLGG of more resources per capita concentrates only 3 percent of the country's population, but has increased substantially its share in total income (13.5 percent) and primary expenditure (15.6 percent), albeit with high volatility, given that it includes the LLGG that receive largest transfers per capita from natural resources and customs. To a lower degree, this is also the case of LLGG with medium resources. Noteworthy, the share of own income of LLGG with more resources increases relative to the other groups; and the rate of growth of primary expenditure is higher than for total income in all resource groups, which is striking in the case of LLGG with more resources, given the high rate of growth of total income.

Table 6.5 – Share of LLGG by resource groups in total income and expenditure

Resource Group	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual growth in constant 2002 S./
More resources - 11% of LLGG, 3 % of country's population	Own income	2.3%	2.3%	2.1%	3.0%	3.0%	3.0%	3.2%	3.7%	4.7%	4.9%	4.8%	6.2%	4.7%	14.9%
	Total transfers	6.4%	5.1%	4.7%	5.6%	6.5%	6.8%	7.9%	15.9%	20.9%	26.9%	23.1%	17.6%	16.4%	27.2%
	Total income	4.4%	3.8%	3.5%	4.4%	4.9%	5.2%	6.1%	11.6%	16.4%	21.9%	18.6%	14.7%	13.5%	25.2%
	Current expenditure	2.4%	2.6%	2.7%	3.1%	3.5%	3.7%	4.1%	4.3%	5.2%	7.0%	8.3%	8.9%	8.6%	24.2%
	Capital expenditure	7.7%	5.9%	4.9%	6.1%	7.4%	7.9%	8.5%	14.2%	21.8%	25.2%	25.3%	20.8%	20.7%	28.5%
	Primary expenditure	4.6%	3.8%	3.5%	4.2%	4.9%	5.2%	5.8%	8.3%	13.6%	15.8%	18.0%	16.1%	15.6%	27.3%
Medium resources - 25% of LLGG, 14% of country's population	Own income	10.8%	8.4%	8.7%	9.2%	9.1%	8.7%	8.4%	8.9%	8.6%	9.3%	9.6%	10.0%	9.9%	7.2%
	Total transfers	20.9%	20.3%	20.0%	20.6%	20.4%	20.4%	22.7%	24.3%	23.4%	26.2%	25.0%	23.2%	22.3%	18.2%
	Total income	16.2%	14.7%	14.8%	15.4%	15.1%	15.5%	17.3%	18.8%	19.3%	22.4%	21.2%	19.9%	19.3%	15.8%
	Current expenditure	11.6%	11.2%	11.1%	11.8%	12.0%	12.5%	13.1%	13.4%	13.6%	14.2%	15.2%	15.5%	15.6%	14.4%
	Capital expenditure	22.3%	20.0%	20.6%	20.5%	20.3%	20.9%	23.2%	24.8%	25.2%	25.0%	25.8%	23.8%	23.5%	18.8%
	Primary expenditure	16.0%	14.5%	14.6%	14.9%	15.0%	15.5%	17.0%	17.9%	19.5%	19.4%	21.3%	20.5%	20.2%	17.2%
Less resources - 64% of LLGG, 83% of country's population	Own income	86.9%	89.4%	89.2%	87.8%	87.9%	88.3%	88.5%	87.4%	86.7%	85.8%	85.6%	83.8%	85.4%	7.9%
	Total transfers	72.8%	74.6%	75.4%	73.8%	73.1%	72.8%	69.4%	59.8%	55.7%	46.9%	52.0%	59.3%	61.3%	15.9%
	Total income	79.4%	81.5%	81.6%	80.2%	80.0%	79.3%	76.6%	69.6%	64.3%	55.7%	60.2%	65.4%	67.2%	12.5%
	Current expenditure	86.0%	86.2%	86.2%	85.1%	84.4%	83.7%	82.8%	82.3%	81.1%	78.8%	76.5%	75.5%	75.8%	10.5%
	Capital expenditure	70.1%	74.1%	74.5%	73.4%	72.3%	71.2%	68.3%	61.0%	53.0%	49.9%	48.9%	55.3%	55.8%	16.1%
	Primary expenditure	79.4%	81.7%	81.8%	80.9%	80.0%	79.4%	77.2%	73.8%	66.9%	64.8%	60.7%	63.5%	64.2%	12.9%

Source: own elaboration based on information by MEF

Lastly, Table 6.6 presents the evolution of the share of fiscal aggregates by main transfer group. As expected, it shows that LLGG that received mining and gas as main transfer have increased substantially their share in total income. In both cases primary expenditure has eventually caught up with the high growth rate of income. In spite of the growth in transfers, for LLGG that receive mining and gas as main transfer own income has also grown substantially, even higher than for LLGG in which FONCOMUN is the main transfer. Lastly, for LLGG where oil is the main transfer, which relative to mining and gas grows at a lower rate but also has less volatility, there is a relatively higher growth of current expenditure.

Table 6.6 – Share of LLGG by main transfer groups in total income and expenditure

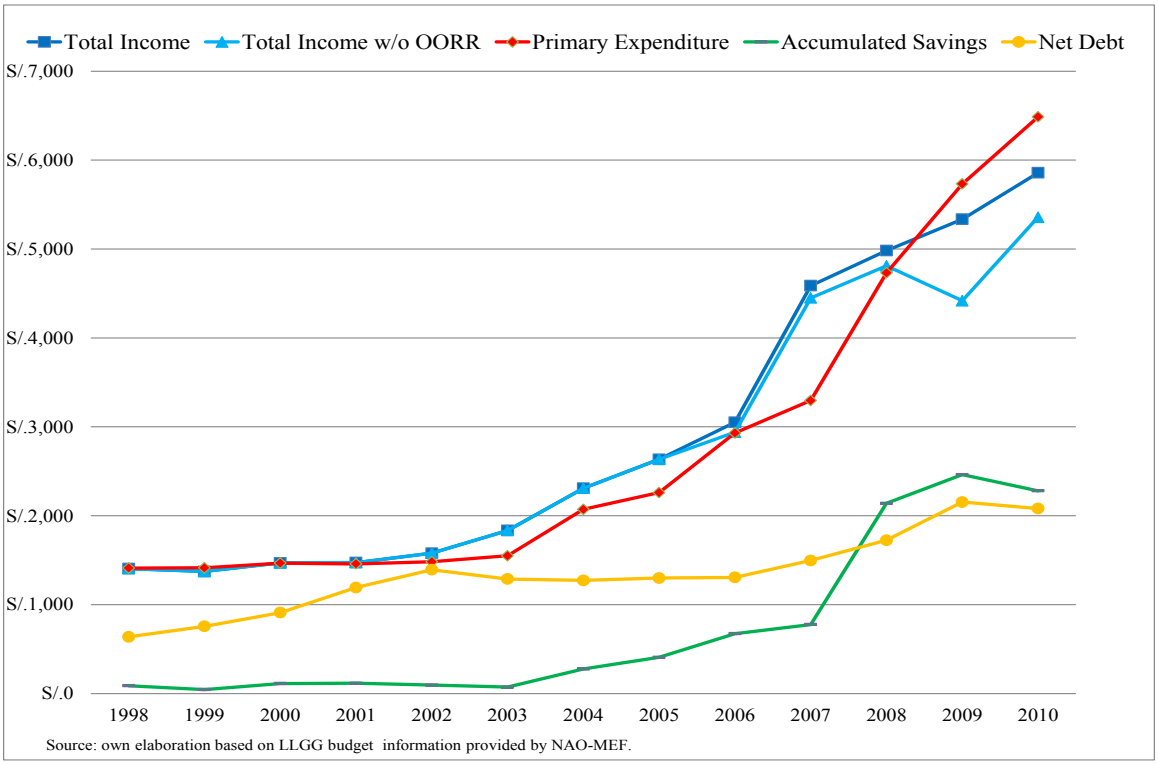
Main transfer	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual growth in constant 2002 S./
Foncomun - 59% of LLGG, 70% of country's population	Own income	78.6%	80.5%	80.6%	79.7%	79.1%	79.3%	80.0%	78.8%	77.2%	77.2%	76.7%	74.6%	76.6%	7.8%
	Total transfers	67.6%	68.3%	67.2%	67.6%	66.5%	64.5%	61.4%	53.2%	48.6%	39.1%	43.1%	49.5%	50.8%	14.8%
	Total income	72.7%	74.0%	73.3%	73.1%	72.4%	70.7%	68.4%	62.3%	56.6%	47.7%	51.3%	55.8%	57.1%	11.8%
	Current expenditure	78.4%	77.9%	77.2%	77.3%	76.7%	74.7%	73.6%	73.7%	71.8%	69.1%	66.6%	65.5%	65.3%	10.0%
	Capital expenditure	65.7%	68.1%	66.5%	67.5%	66.0%	62.6%	59.9%	54.6%	47.0%	41.8%	41.1%	47.3%	46.6%	15.0%
	Primary expenditure	73.1%	74.2%	73.2%	73.8%	72.9%	70.4%	68.4%	66.1%	59.3%	55.8%	52.0%	54.7%	54.4%	12.1%
Mining - 32% of LLGG, 21% of country's population	Own income	11.8%	12.0%	12.4%	13.5%	14.1%	14.0%	13.3%	14.0%	14.8%	15.7%	15.4%	17.5%	16.1%	10.8%
	Total transfers	22.3%	20.6%	20.1%	20.2%	21.3%	22.0%	23.9%	29.6%	35.4%	48.1%	42.0%	36.6%	33.0%	21.4%
	Total income	17.4%	16.6%	16.6%	17.1%	17.9%	18.6%	19.9%	24.1%	29.6%	40.8%	35.6%	31.8%	28.9%	19.0%
	Current expenditure	13.2%	13.5%	14.2%	14.4%	14.8%	15.3%	16.2%	16.0%	16.9%	18.9%	20.9%	22.4%	22.9%	16.9%
	Capital expenditure	23.8%	21.1%	21.4%	21.4%	23.3%	24.7%	27.0%	28.6%	36.3%	44.0%	44.3%	38.9%	40.4%	23.6%
	Primary expenditure	17.6%	16.3%	16.9%	16.9%	17.9%	18.6%	20.3%	21.0%	26.7%	31.1%	34.3%	32.3%	33.1%	21.1%
Gas - 5% of LLGG, 3% of country's population	Own income	0.7%	0.7%	0.7%	0.8%	0.8%	0.8%	0.9%	1.0%	1.3%	1.4%	1.5%	1.6%	1.3%	14.5%
	Total transfers	3.1%	3.1%	3.0%	3.3%	3.0%	2.8%	4.4%	6.9%	6.8%	6.2%	6.8%	6.7%	8.7%	28.0%
	Total income	2.0%	1.9%	1.9%	2.2%	2.0%	1.9%	3.1%	4.8%	5.3%	5.1%	5.5%	5.5%	6.9%	26.6%
	Current expenditure	1.4%	1.4%	1.4%	1.6%	1.6%	1.7%	2.0%	1.9%	2.3%	3.0%	3.3%	3.5%	3.2%	19.6%
	Capital expenditure	2.6%	3.0%	2.8%	2.9%	2.4%	2.8%	3.5%	7.5%	8.4%	7.8%	8.3%	7.5%	7.6%	29.4%
	Primary expenditure	1.9%	2.0%	1.9%	2.1%	1.9%	2.0%	2.6%	4.1%	5.4%	5.3%	6.1%	5.9%	5.8%	26.1%
Oil - 4% of LLGG, 3% of country's population	Own income	4.0%	1.6%	1.4%	1.5%	1.4%	1.4%	1.4%	1.3%	1.5%	1.3%	1.5%	1.4%	1.3%	-1.8%
	Total transfers	4.8%	5.8%	7.5%	6.7%	6.1%	6.5%	6.2%	6.6%	5.9%	4.0%	5.2%	4.3%	4.5%	17.0%
	Total income	4.4%	3.8%	4.7%	4.3%	3.9%	4.3%	4.4%	4.7%	4.6%	3.4%	4.3%	3.6%	3.7%	12.5%
	Current expenditure	2.8%	2.7%	2.8%	2.7%	2.7%	3.2%	3.2%	3.2%	3.4%	3.5%	3.7%	3.4%	3.5%	13.7%
	Capital expenditure	6.1%	5.7%	7.5%	6.7%	5.4%	6.7%	5.8%	6.4%	6.0%	4.4%	4.2%	4.2%	3.6%	13.1%
	Primary expenditure	4.2%	3.8%	4.5%	4.2%	3.7%	4.4%	4.2%	4.5%	4.7%	3.9%	4.0%	3.9%	3.5%	13.4%

Source: own elaboration based on information by MEF

To complement this analysis, Figures 6.9 through 6.23 break down the evolution of fiscal aggregates of LLGG presented in Figure 6.8 (total income, total income without ordinary resources, primary expenditure, accumulated savings and net debt) according to the different categories of municipalities used in this dissertation.

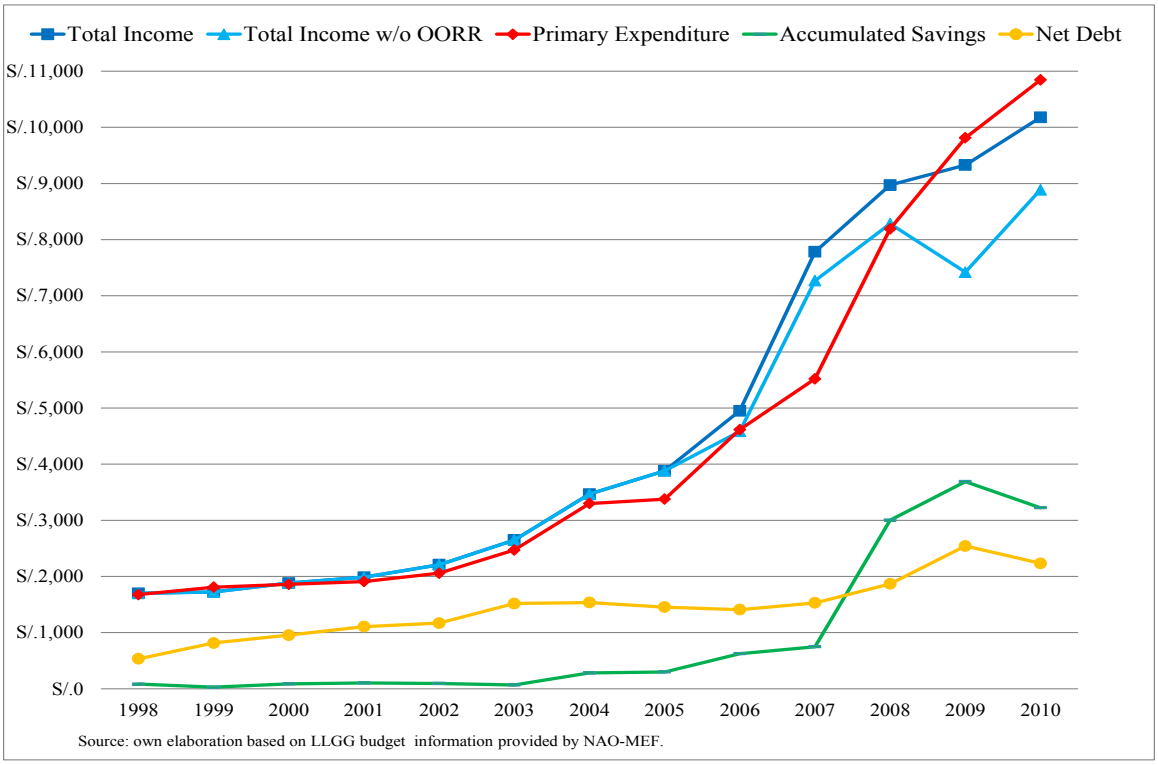
Figures 6.9 and 6.10 present the evolution according to type of LLGG (PPGG and DDGG). Both series have similar features, with PPGG holding a higher proportion of net debt with respect to total income (36 percent for PPGG vs. 22 percent for DDGG).

Figure 6.9 – Fiscal position of Peru's PPGG (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

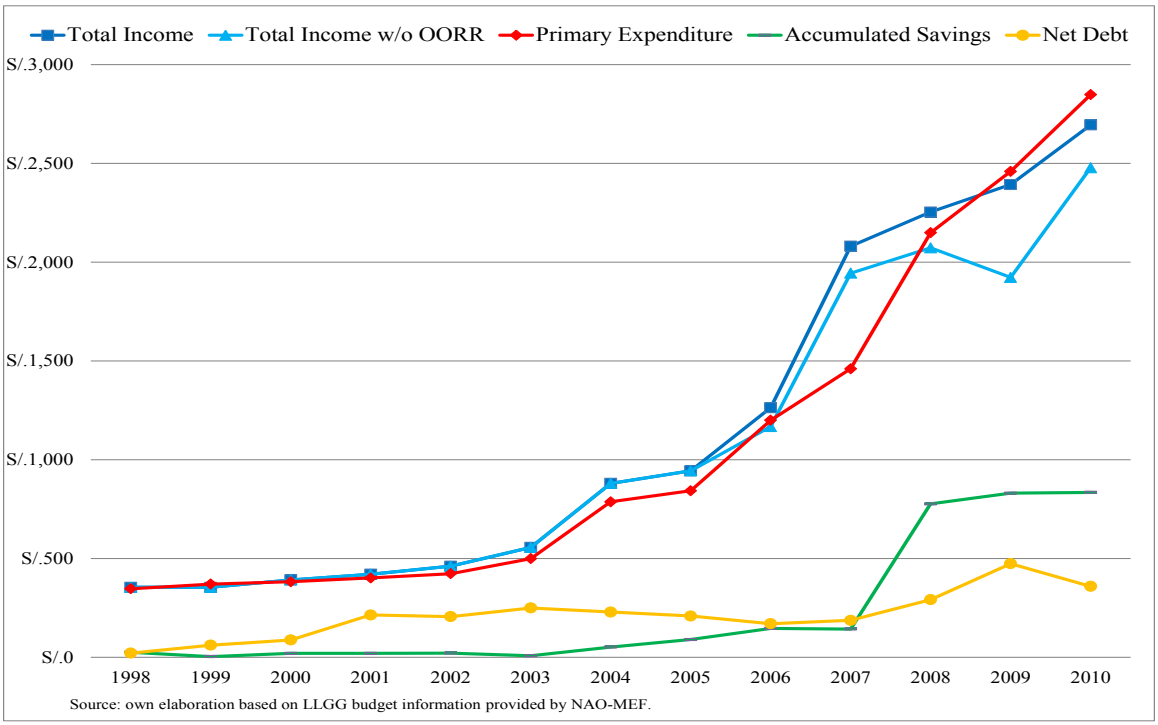
Figure 6.10 – Fiscal position of Peru's DDGG (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

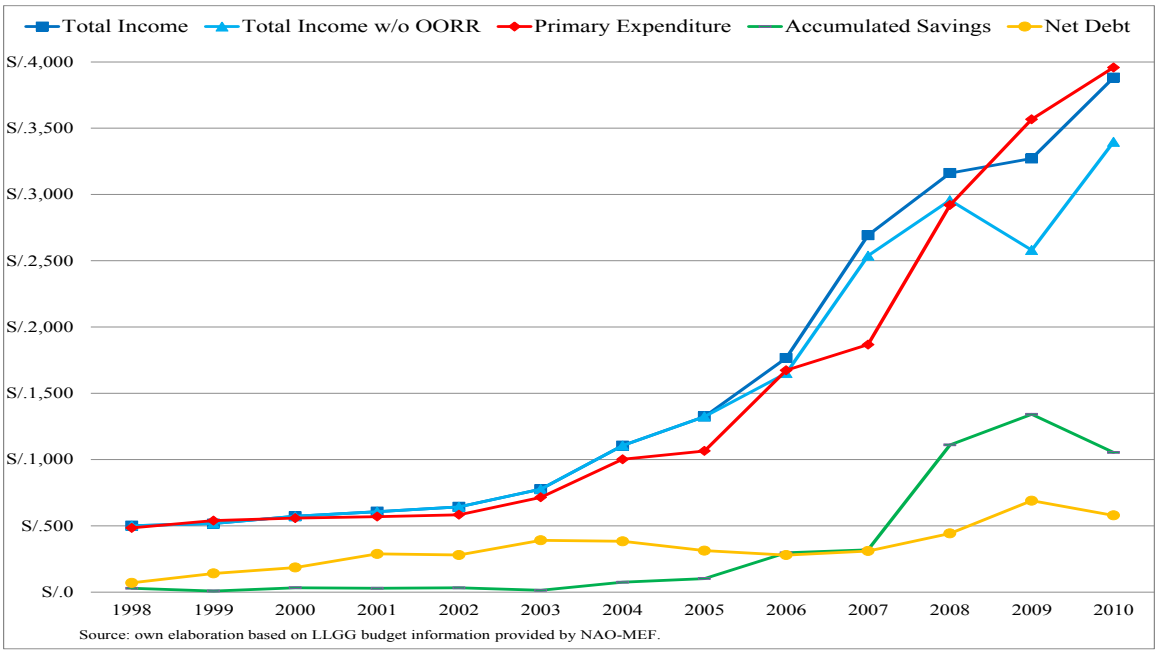
Figures 6.11 through 6.13 present the evolution of aggregates according to needs: LLGG with medium need concentrate most of the debt and the primary deficit in 2010.

Figure 6.11 – Fiscal position of LLGG with very high need (in million of S./)



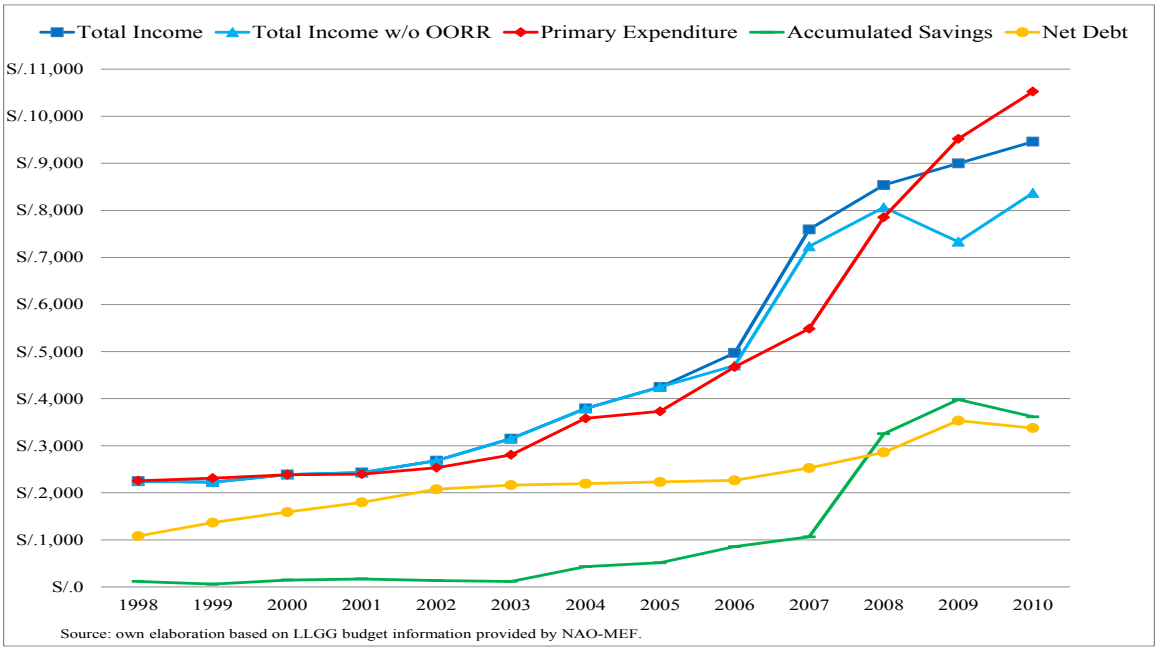
Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.12 – Fiscal position of LLGG with high need (in million S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

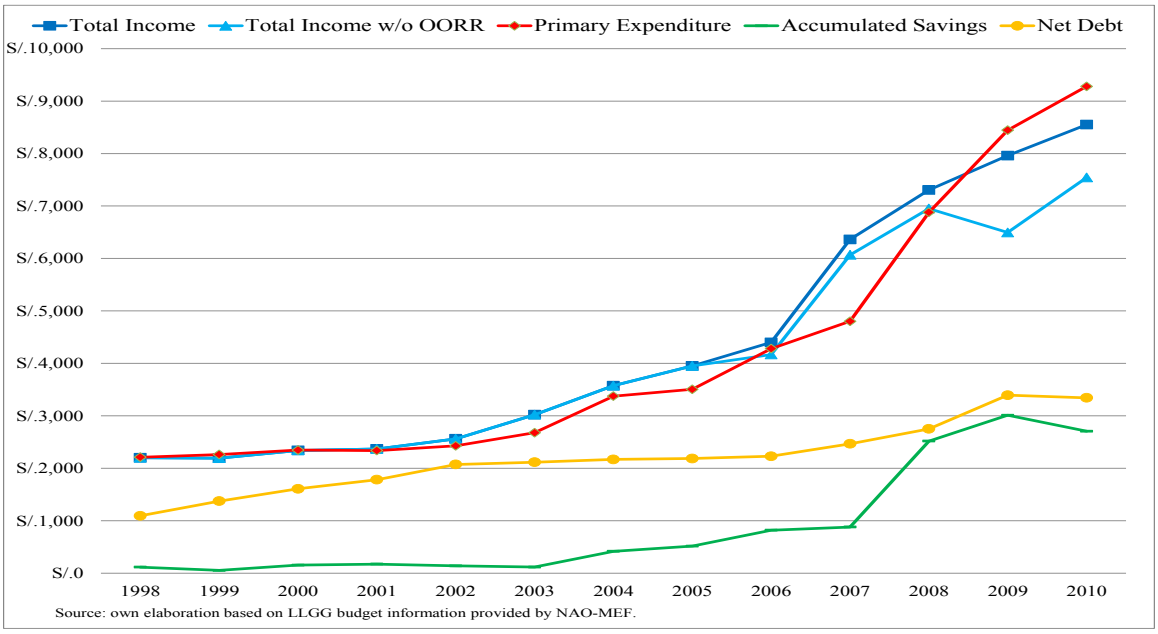
Figure 6.13 – Fiscal position of LLGG with medium need (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

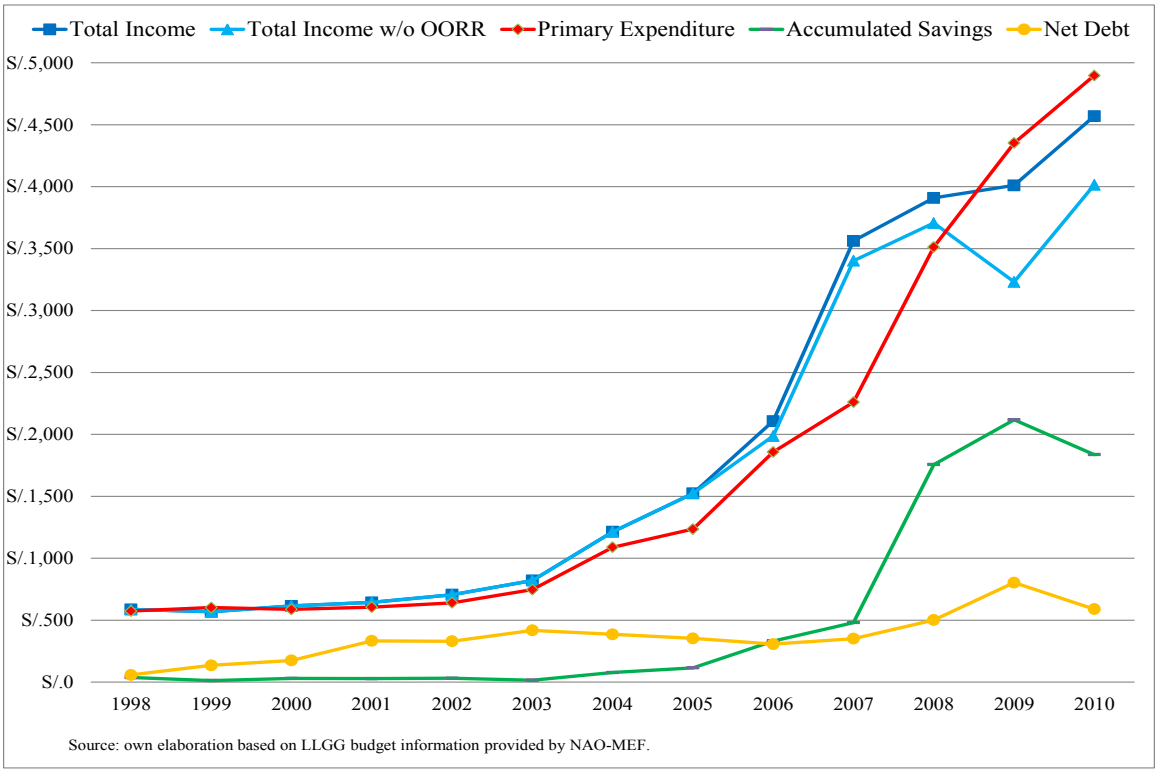
Figures 6.14 through 6.16 show the evolution of fiscal aggregates according to size, with main cities having a higher concentration of debt, and LLGG with more than 500 houses having relatively higher savings.

Figure 6.14 – Fiscal position of LLGG that are main cities (in million of S./)



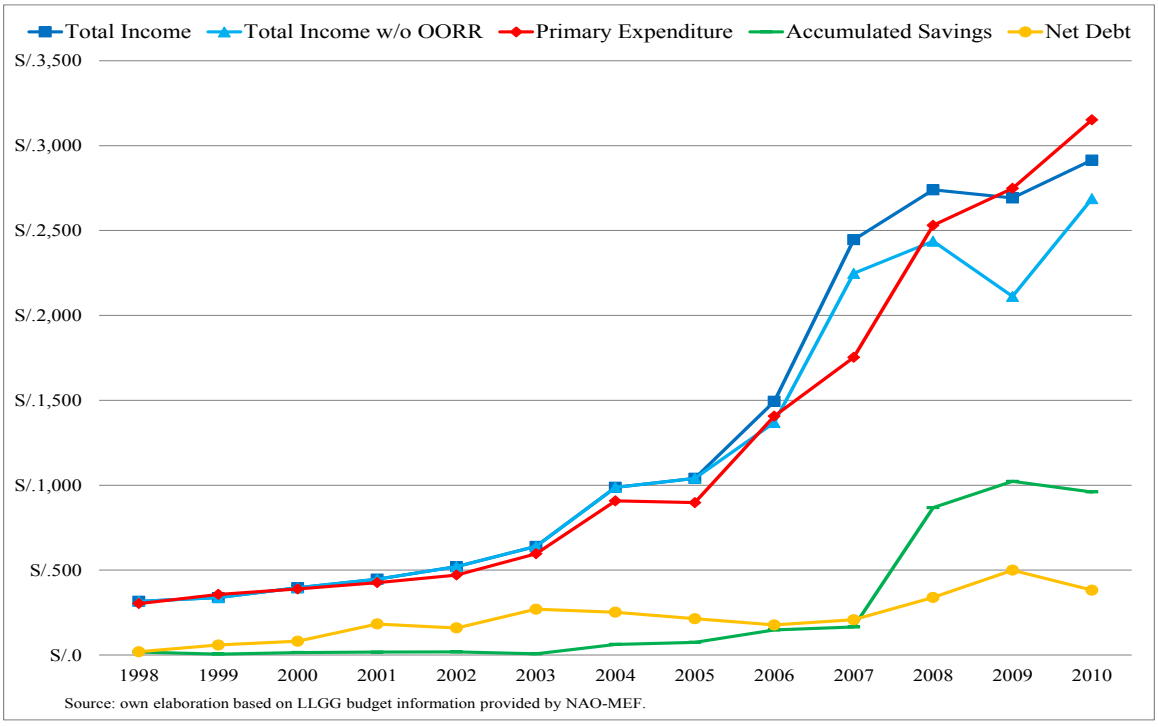
Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.15 – Fiscal position of LLGG with more than 500 houses (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

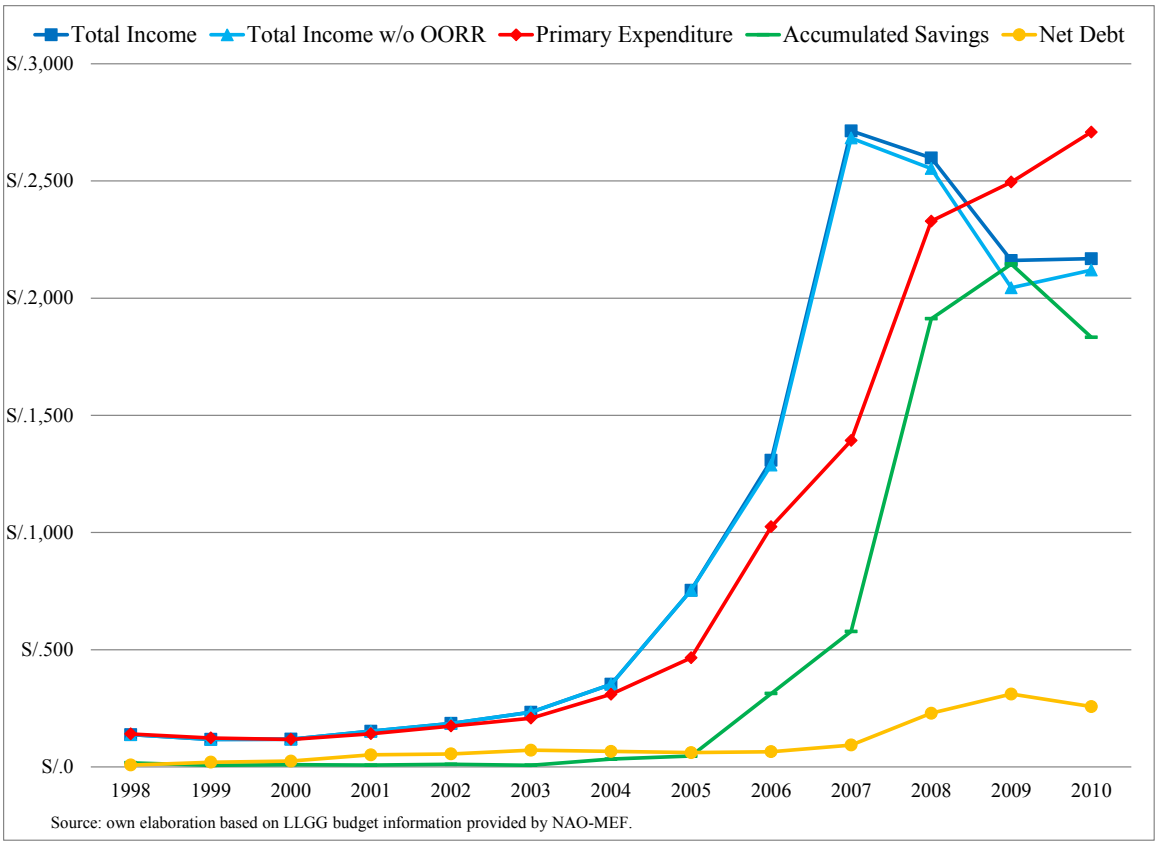
Figure 6.16 – Fiscal position of LLGG with less than 500 houses (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

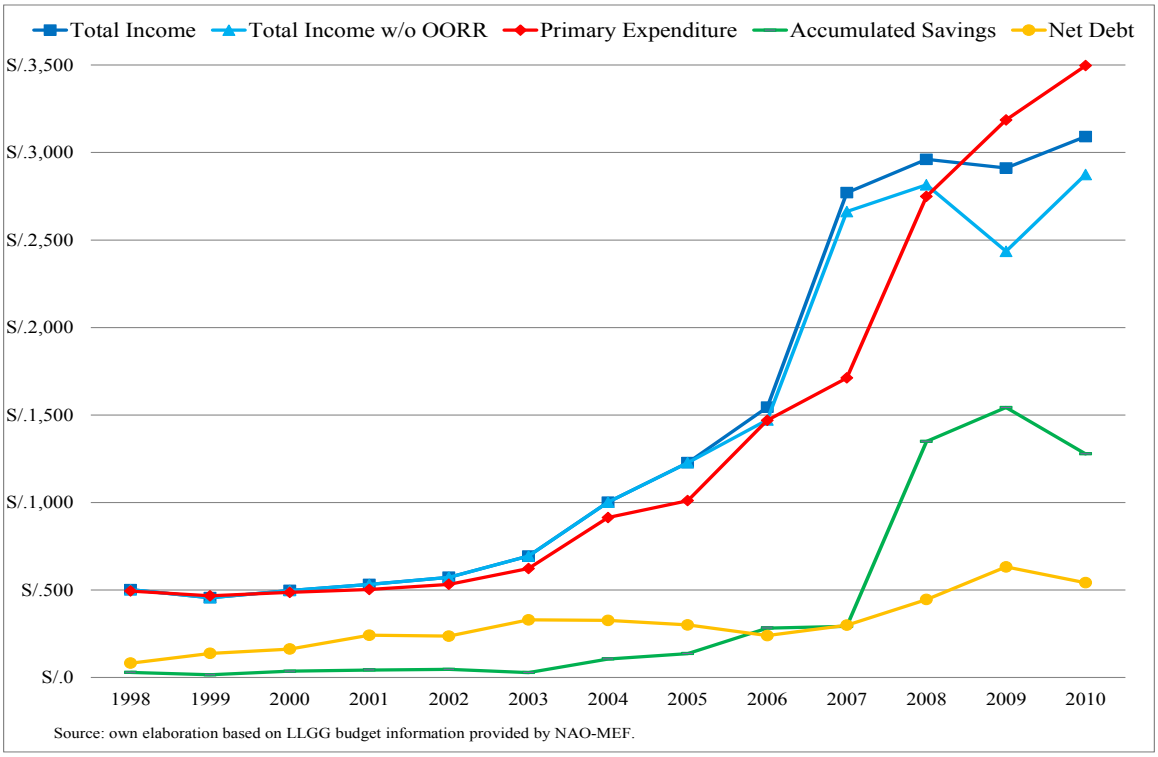
In turn, Figures 6.17 through 6.19 present the evolution of fiscal aggregates according to resources per capita. As expected, LLGG with more and medium resources accumulated most savings through 2008, and especially in 2007, which was the boom year in natural resources transfers, but at the same time show the highest primary deficits in 2009 and 2010 due to the continued increase in expenditures in spite of the significant decline in total income. Noteworthy, these groups of LLGG were able to finance these deficits through accumulated savings, which in the case of LLGG with more resources increased to the point of matching total income in 2009. However, the increase in total expenditure continued unabated and decreased accumulated savings for LLGG with more resources for 2011 in an amount similar to the primary deficit of 2010.

Figure 6.17 – Fiscal position of LLGG with more resources (in million of S./)



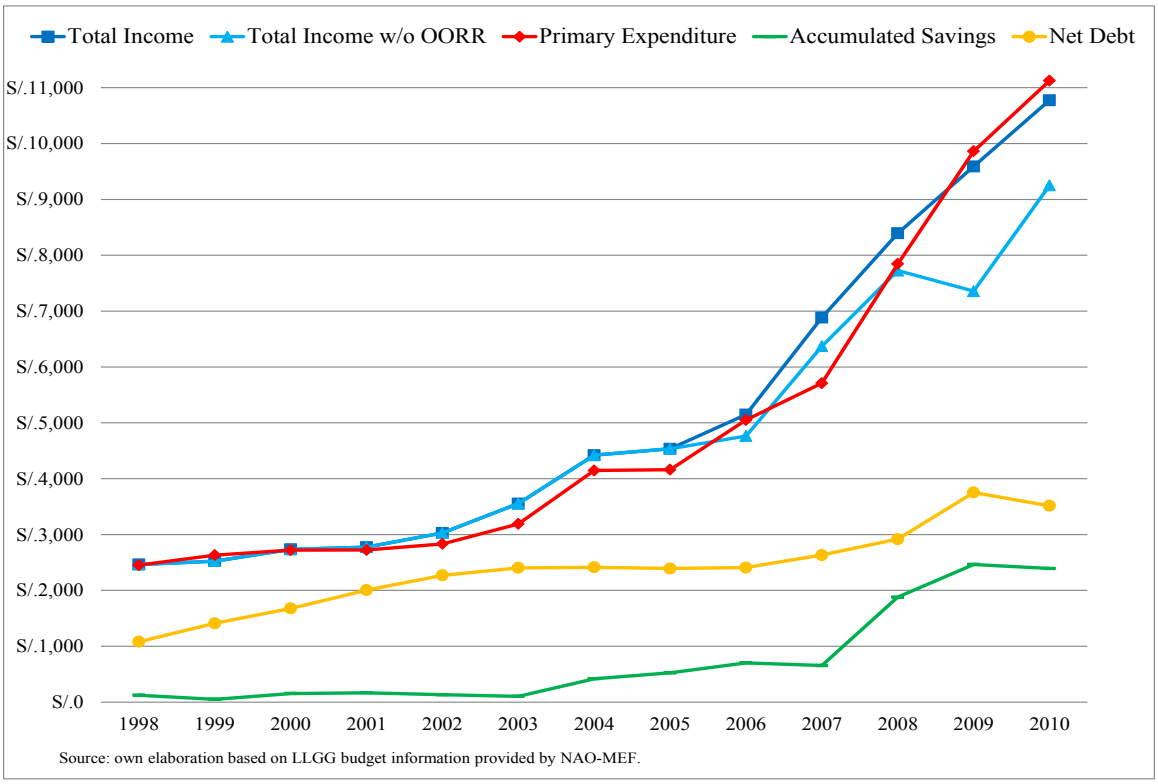
Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.18 – Fiscal position of LLGG with medium resources (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.19 – Fiscal position of LLGG with less resources (in million of S./)

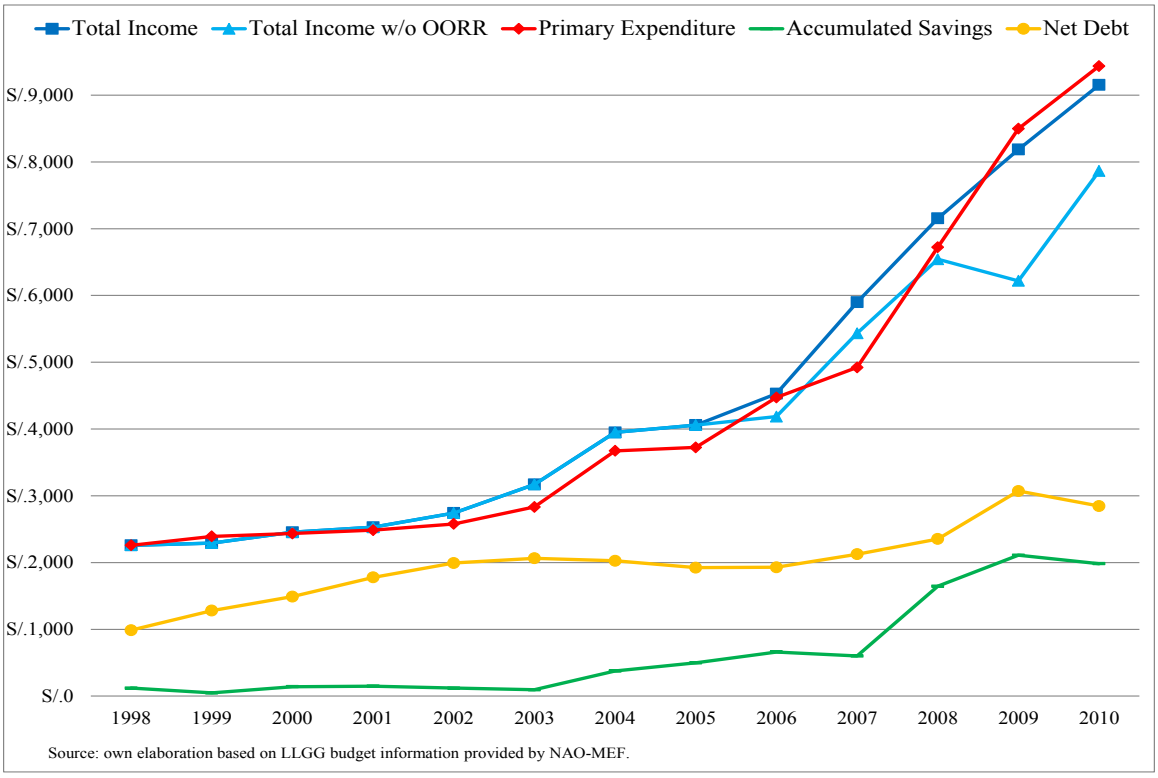


Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Lastly, Figures 6.20 through 6.23 present the evolution of fiscal aggregates according to main transfer: FONCOMUN (6.20), mining (6.21), gas (6.22) and oil (6.23). As can be seen, LLGG with mining as main transfer show the highest volatility of income, and due to the continued increase in expenditures they also show the highest volatility in fiscal result, concentrating in 2007 the largest surplus (65 percent of total surplus) and in 2010 the largest deficit (85 percent of total deficit) among LLGG. Noteworthy, for all categories of LLGG, expenditures continue increasing as income decreases, with municipalities financing their primary deficits through accumulated savings. Indeed, in the case of LLGG where oil is the main transfer, in 2010 the growth in expenditure slowed down as the accumulated savings were not enough to cover a large primary deficit, and private financing is not an easy option for most LLGG in Peru.

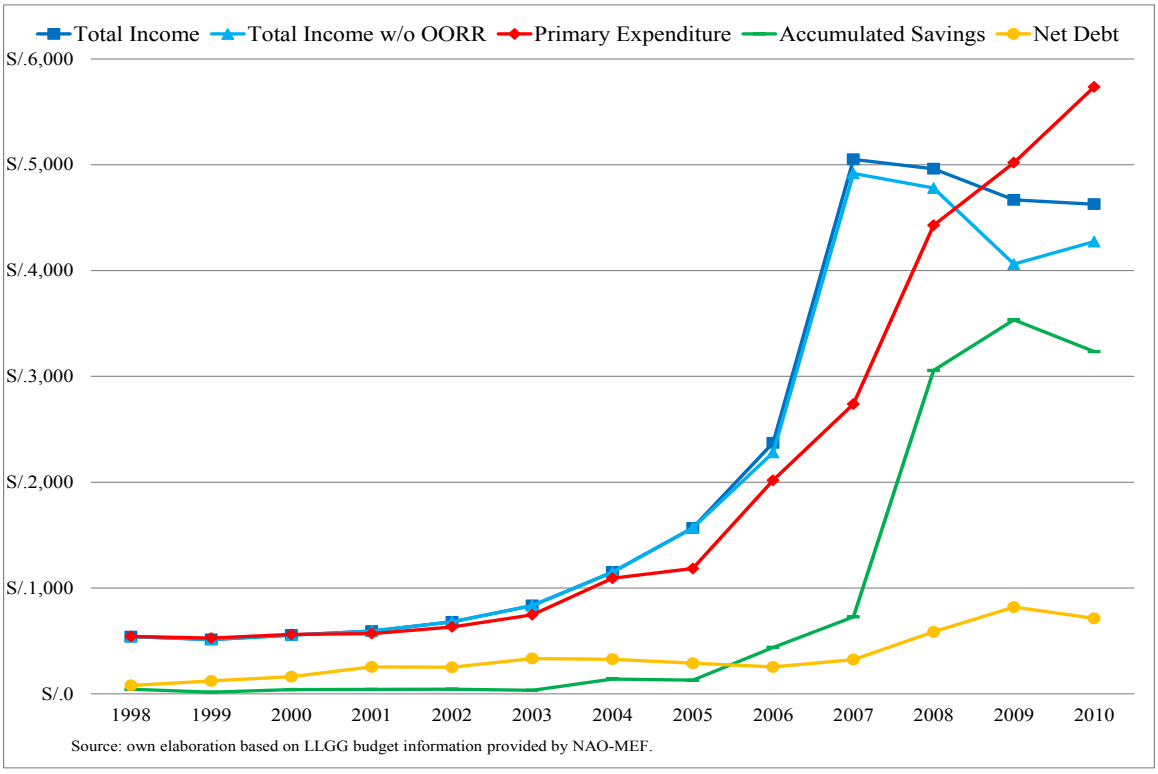
The different timing in the allocation of transfers in the cases of mining, gas and oil help explain the increase in income in 2010 for LLGG where gas and oil is the main transfer, which only occurs in mining LLGG in 2011, since the distribution of the mining canon is based on the tax collection of the previous year.

Figure 6.20 – Fiscal position of FONCOMUN LLGG (in million of S./)



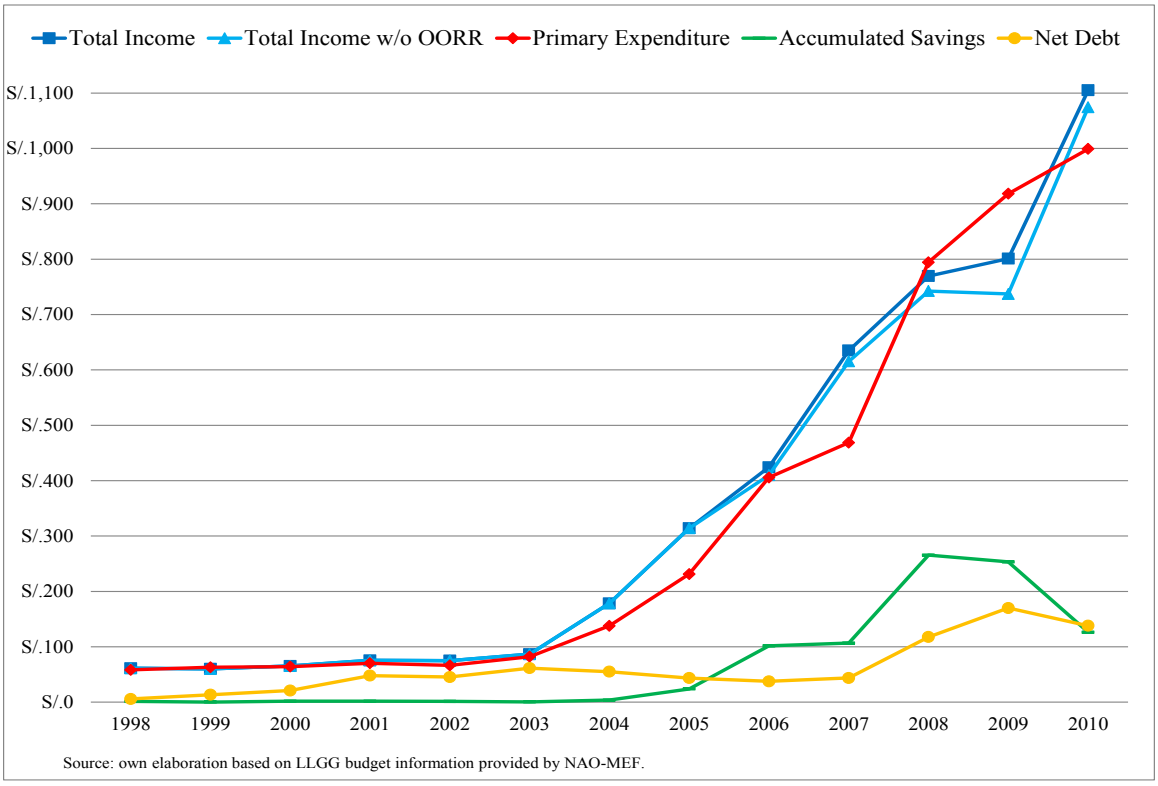
Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.21 – Fiscal position of mining LLGG (in million of S./)



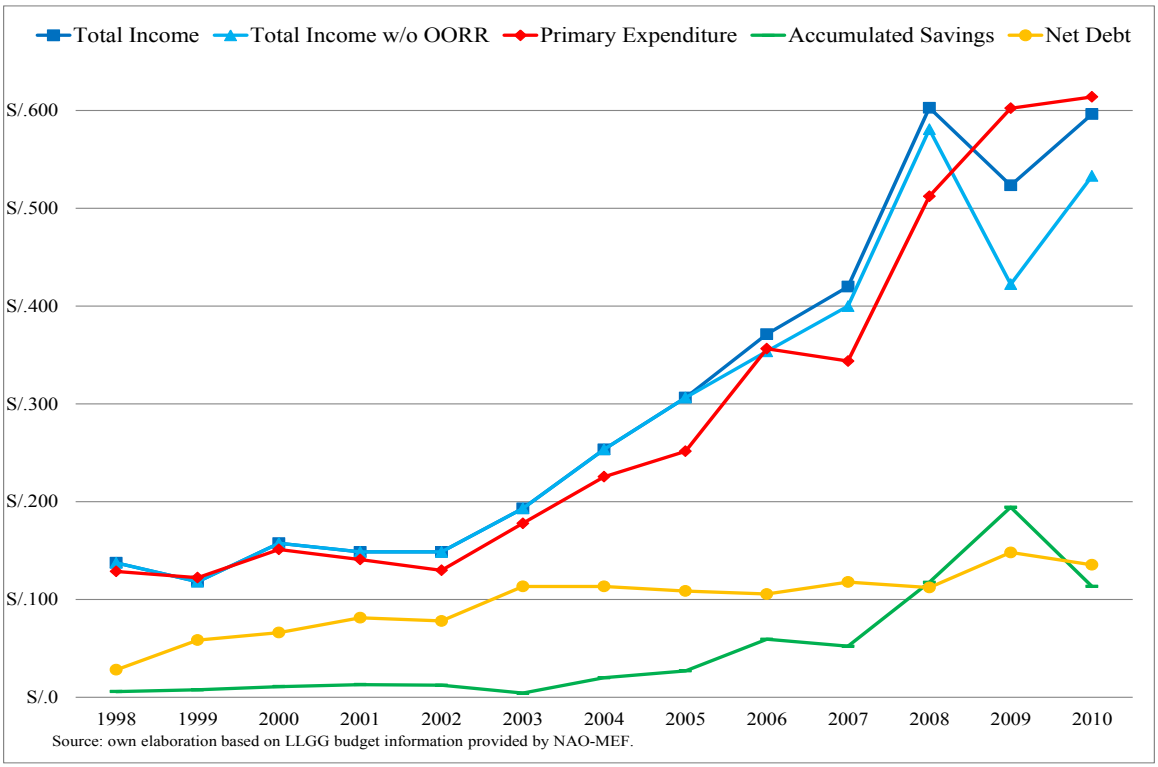
Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.22 – Fiscal position of gas LLGG (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

Figure 6.23 – Fiscal position of oil LLGG (in million of S./)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

In the context of the international economic crisis of 2009 and 2010, a relevant question relates to the distribution among LLGG of the discretionary resources that the central government transferred as "ordinary resources", included in the stimulus package of those years. In particular, I am interested in assessing whether LLGG that had high transfers prior to the crisis (especially stemming from natural resources), which also suffered most from the decline in transfers in 2009 and 2010, received more ordinary resources to compensate for the decline in transfers. If this was the case, it would be suggesting the higher dependency that LLGG are developing to transfers, with the ensuing higher fiscal risk for the central government.

Table 6.7 shows per capita transfers of ordinary resources to the different groups of LLGG (except for the distinction between provincial and district LLGG).

Table 6.7 – Per capita transfer of ordinary resources to groups of LLGG (in constant 2002 S./)

Resource Group	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2006-2010**
More resources	48	90	159	210	39	109
Medium resources	46	75	114	197	46	95
Less resources	31	49	69	147	72	73
Main transfer	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2006-2010**
FONCOMUN	42	69	103	188	73	95
Mining	30	50	80	145	46	70
Gas	22	34	51	91	34	46
Oil	24	31	39	104	52	50
BUN Group	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2006-2010**
Very high need	34	58	80	147	53	74
High need	43	68	101	173	76	92
Medium need	33	55	88	174	56	81
Size Group	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2006-2010**
Main cities	12	14	18	87	60	38
More than 500 houses	23	35	47	137	76	64
Less than 500 houses	50	86	131	202	54	104

Source: own elaboration based on information by NAO-MEF

The classification by resource group shows that LLGG with more resources did receive more ordinary resources per capita in 2009 than the other groups of resources.

However, the growth in ordinary resources between 2008 and 2009 has been lower than for the other groups, and in 2010 ordinary resources per capita declined most in LLGG with more resources.

In turn, the classification by main transfer group displays that the group in which total income without ordinary resources declined proportionally most in 2009, which is LLGG with oil as main transfer, is also the group where ordinary resources increased most during that year and in 2010.

Lastly, the classification by size group in the lower pane of Table 6.7 shows that the main determinant of the distribution of ordinary resources in 2009 and 2010 appears to be population size, since it is in main cities and in LLGG with more than 500 urban houses where per capita transfers grew most in 2009 and 2010, relative to 2008. Since those two groups of LLGG comprise 87 percent of the population, this redistribution policy allows compensating more people on a per capita basis.

To conclude, Table 6.8 shows the economic classification of expenditure of LLGG (current expenditure, CE; capital expenditure, KE; and debt service, DS), stemming from their main sources of income: natural resources and customs; local taxes; and FONCOMUN. In turn, LLGG are classified according to resources and main transfer groups. For natural resources and customs and for local taxes I only present the proportion of these sources of income allocated to current expenditure, since the proportion allocated to debt service in both categories is very small, and the rest of expenditure is capital expenditure. In the case of expenditures stemming from

FONCOMUN resources, I present the three economic categories of expenditures because there is more variability among them.

In terms of LLGG by resource group, in all three groups the proportion of natural resources and customs transfers allocated to current expenditure is small and has increased slightly in recent years, but there is not a large difference among groups. This shows that LLGG tend to comply with the restriction on the use of natural resources and customs for capital expenditure.

In turn, the proportion of local taxes allocated to current expenditure is high, which shows that LLGG try to use most of their own resources to fund current expenditure; again there is not much difference among categories (in the case of LLGG with more resources, the proportion for 2010 is rather low due to an outlier observation; without that outlier the proportion of local taxes allocated to current expenditure increases from 73 percent to 97 percent). Lastly, the proportion of FONCOMUN transfers allocated to current expenditure increases throughout the years, and as one would expect, it increases more for LLGG with more resources, which since 2007 use more than 75 percent of their FONCOMUN funds for current expenditure. Noteworthy, all categories of LLGG used to allocate a sizable proportion of FONCOMUN to debt service, although in recent years that proportion has been reduced.

The classification by main transfer group shows that LLGG with mining, gas and oil as main transfer allocate a higher proportion of local taxes and FONCOMUN to current expenditure, relative to LLGG that have FONCOMUN as main transfer. For LLGG in which oil is the main transfer, LLGG allocate a higher proportion of natural

resources and customs income to current expenditure, mainly because some of them have fewer restrictions on the use of those resources (see Table A1.3 in Annex 1). However, this also increases fiscal risk in the event of reductions in transfers, since current expenditure are politically more difficult to reduce.

Table 6.8 – Share of economic classification of expenditure of LLGG by source of income (classified by resources and main transfer groups)

Resources group	Concept\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 1998-2010
More Resources	CE Nat Res & Customs	4.2%	11.2%	14.6%	19.2%	9.4%	9.8%	11.1%	5.4%	3.9%	10.6%	10.7%	13.9%	14.3%	11.6%
	CE LLGG Taxes	75.1%	51.4%	74.7%	46.7%	77.6%	88.6%	88.2%	87.1%	89.8%	95.9%	98.6%	91.6%	72.9%	81.1%
	CE FONCOMUN	20.9%	29.5%	28.7%	27.4%	27.1%	39.7%	44.0%	52.5%	61.3%	75.8%	79.3%	85.3%	83.2%	58.5%
	KE FONCOMUN	67.1%	65.1%	58.1%	57.8%	57.6%	48.3%	38.8%	31.0%	27.0%	17.8%	15.4%	11.3%	13.9%	32.1%
	DS FONCOMUN	12.0%	5.5%	13.2%	14.9%	15.4%	12.0%	17.2%	16.4%	11.7%	6.4%	5.3%	3.5%	2.9%	9.4%
Medium Resources	CE Nat Res & Customs	6.3%	11.2%	18.0%	19.2%	13.2%	13.4%	8.4%	6.0%	5.5%	7.3%	7.1%	7.9%	10.7%	8.4%
	CE LLGG Taxes	48.7%	69.6%	91.3%	81.1%	93.3%	94.1%	95.1%	93.0%	95.3%	98.1%	88.5%	88.9%	80.6%	85.1%
	CE FONCOMUN	23.2%	30.4%	27.4%	28.5%	29.4%	42.6%	43.5%	48.0%	50.1%	63.8%	62.3%	66.1%	67.6%	51.0%
	KE FONCOMUN	62.8%	63.7%	60.4%	54.9%	53.3%	47.2%	42.0%	39.6%	40.2%	30.4%	32.6%	28.9%	27.8%	40.0%
	DS FONCOMUN	14.0%	5.9%	12.2%	16.7%	17.4%	10.3%	14.5%	12.3%	9.7%	5.8%	5.1%	5.0%	4.6%	9.0%
Less Resources	CE Nat Res & Customs	10.4%	14.2%	15.7%	13.7%	12.5%	17.3%	15.6%	12.5%	10.8%	14.5%	13.0%	12.0%	17.1%	14.3%
	CE LLGG Taxes	85.7%	90.3%	86.1%	81.4%	87.5%	82.4%	82.2%	80.3%	87.5%	91.5%	90.7%	81.0%	84.2%	85.4%
	CE FONCOMUN	18.5%	26.0%	26.8%	26.9%	27.9%	45.1%	43.1%	45.9%	48.4%	55.7%	52.4%	52.0%	54.8%	44.7%
	KE FONCOMUN	65.6%	64.3%	57.7%	49.5%	48.6%	45.1%	42.4%	39.9%	40.6%	39.4%	43.5%	43.0%	39.8%	45.2%
	DS FONCOMUN	15.9%	9.7%	15.5%	23.6%	23.5%	9.9%	14.5%	14.2%	10.9%	5.0%	4.1%	5.0%	5.4%	10.1%
Main transfer group	**Concept\Year**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 1998-2010**
FONCOMUN	CE Nat Res & Customs	8.2%	11.7%	15.4%	13.0%	11.6%	10.0%	7.4%	5.1%	4.7%	7.5%	7.7%	6.9%	16.0%	10.3%
	CE LLGG Taxes	85.7%	90.2%	85.2%	79.7%	87.8%	81.2%	80.9%	79.0%	87.1%	91.5%	90.8%	80.3%	84.0%	84.9%
	CE FONCOMUN	19.2%	25.8%	26.6%	27.0%	28.2%	44.4%	42.4%	44.9%	47.1%	53.4%	49.6%	49.0%	51.6%	43.1%
	KE FONCOMUN	65.9%	65.0%	58.4%	50.7%	49.7%	46.3%	44.3%	41.9%	42.4%	41.8%	46.4%	46.2%	43.1%	47.3%
	DS FONCOMUN	14.9%	9.1%	15.0%	22.3%	22.0%	9.3%	13.3%	13.2%	10.5%	4.8%	4.0%	4.9%	5.4%	9.6%
Mining	CE Nat Res & Customs	3.2%	6.2%	7.5%	12.4%	3.3%	2.2%	2.0%	2.9%	3.7%	6.9%	7.8%	10.4%	11.4%	8.6%
	CE LLGG Taxes	83.9%	82.0%	89.8%	79.8%	89.4%	93.4%	92.6%	91.3%	94.4%	97.2%	94.1%	92.7%	87.3%	90.7%
	CE FONCOMUN	20.5%	28.8%	28.0%	28.2%	28.0%	42.4%	45.0%	49.8%	53.9%	70.3%	70.7%	76.4%	74.8%	54.8%
	KE FONCOMUN	64.3%	65.3%	60.2%	53.9%	53.1%	45.7%	37.8%	34.1%	34.2%	23.7%	24.5%	19.8%	22.5%	35.7%
	DS FONCOMUN	15.2%	6.0%	11.8%	17.9%	19.0%	11.9%	17.2%	16.1%	11.9%	6.0%	4.8%	3.8%	2.7%	9.5%
Gas	CE Nat Res & Customs	11.3%	0.1%	2.4%	0.2%	0.3%	0.8%	0.3%	0.4%	1.3%	10.9%	8.1%	9.8%	9.5%	8.2%
	CE LLGG Taxes	98.5%	94.9%	86.1%	91.1%	89.0%	89.5%	95.2%	98.2%	92.7%	94.8%	93.9%	98.0%	95.7%	94.3%
	CE FONCOMUN	19.7%	25.8%	26.1%	26.6%	28.2%	33.3%	35.4%	43.3%	46.9%	60.9%	66.0%	68.6%	76.6%	50.6%
	KE FONCOMUN	69.8%	67.0%	62.9%	58.1%	52.7%	52.5%	47.2%	40.8%	42.1%	31.8%	27.5%	24.0%	16.7%	38.9%
	DS FONCOMUN	10.6%	7.2%	11.0%	15.3%	19.1%	14.2%	17.4%	15.9%	11.0%	7.3%	6.5%	7.4%	6.6%	10.5%
Oil	CE Nat Res & Customs	19.3%	23.8%	21.6%	22.9%	23.1%	25.3%	21.2%	13.8%	10.2%	17.6%	19.1%	16.4%	22.5%	18.6%
	CE LLGG Taxes	29.4%	41.0%	92.6%	85.7%	90.8%	91.7%	97.0%	93.6%	94.5%	94.7%	91.3%	96.5%	95.2%	74.7%
	CE FONCOMUN	26.0%	40.1%	29.1%	28.6%	27.0%	50.3%	49.6%	64.5%	67.0%	78.9%	76.7%	77.2%	80.2%	61.3%
	KE FONCOMUN	47.4%	47.8%	46.4%	42.1%	43.0%	37.8%	28.1%	19.2%	20.9%	14.2%	16.8%	16.5%	14.7%	25.5%
	DS FONCOMUN	26.6%	12.0%	24.5%	29.3%	30.0%	11.9%	22.2%	16.3%	12.1%	6.9%	6.5%	6.3%	5.1%	13.2%

Source: own elaboration based on information by NAO-MEF

To summarize this section, transfers to LLGG linked to natural resources increased substantially following the canon law of 2001, especially after 2005 due to high tax collection in extractive industries. Grants were particularly large in 2007 due to the

change in the allocation rule of the mining canon, by which the central government transferred to SNG in a single installment 17-months-worth of this transfer in the middle of the budget year. This combined in 2007 with the inexperience of newly elected local authorities in 73 percent of LLGG, to yield a low budget execution rate for that year, which fostered the perception that SNG are incapable at spending their resources.

However, primary expenditure of LLGG increased substantially between 2008 and 2010, to the point of generating primary deficits in 2009 and 2010, which LLGG were able to finance through a combination of accumulated savings from the previous years and discretionary transfers from the central government, in the context of the international financial crisis of 2009.

In turn, although own municipal resources increased across the different classifications of LLGG at a rate comparable to that of the central government, due to the high increase in primary expenditure, and especially current expenditure, LLGG have a higher dependence on transfers to finance their regular expenses.

Hence, LLGG have in general worsened their fiscal position in response to transfers, mainly through the high growth of their primary expenditure between 2007 and 2010, which generated primary deficits in 2009 and 2010. However, this is not a situation that generates an imminent macroeconomic concern for Peru's general government, since municipalities have not increased on aggregate their indebtedness in terms of GDP, and they have been able to finance most of their deficits in 2009 and 2010 through a combination of discretionary transfers from the central government in 2009 and 2010; and accumulated savings, especially from the year 2007. Indeed, the expected

accumulated savings of LLGG in 2011 was still substantial, equivalent to around 87 percent of their accumulated debt in 2010, although 40 percent lower than their peak at the start of 2009.

The description suggests that those LLGG for which transfers grew most and are also highly volatile present the highest fiscal risk. This is the case of LLGG that have mining as main transfer: indeed, this group concentrated most of the surplus in 2007 and most of the deficit in 2010. Related to this, I assessed whether discretionary transfers from the central government included under ordinary resources increased most during 2009 and 2010 in those LLGG that were already receiving large transfers on a per capita basis. In this regard, although transfers per capita under ordinary resources were higher in 2009 in the groups of LLGG with more and medium resources, the rate of growth in 2009 and 2010 was higher for the group of LLGG with less resources, which suggests that discretionary transfers during those years were probably allocated based on criteria such as population, rather than owing to the pressure from LLGG that were already receiving high resources.

Lastly, I found that the groups of LLGG with more and medium resources, and the groups that have natural resources as main transfer (mining, oil and gas), tend to allocate a higher proportion of FONCOMUN to current expenditure relative to the other groups in their respective categories, which increases their dependence on transfers to finance recurrent expenses.

Before I explore in more detail whether transfers generate a fiscal risk through a reduction in the incentive of local authorities to collect own taxes (fiscal sloth) and/or a

high increase in expenditures (flypaper effect), I present an illustrative example of the response of local tax collection and primary expenditure to transfers that serves as background to the analysis that follows.

A tale of two provinces

The provinces of Huari and Dos de Mayo are next to each other in the departments of Ancash and Huánuco, respectively. As can be seen in Table 6.9, they had relatively similar socio-economic indicators in terms of population, urban population and poverty rate in 2007, although the poverty rate by 2009 diminished more rapidly in Huari than in Dos de Mayo.

Table 6.9 – Selected indicators of Huari and Dos de Mayo

Department	Province	Number of districts	Total population 2007	Average urban population 2007	Average poverty 2007	Average poverty 2009
Ancash	Huari	16	59801	0.40	0.71	0.40
Huanuco	Dos de Mayo	9	46797	0.35	0.79	0.78

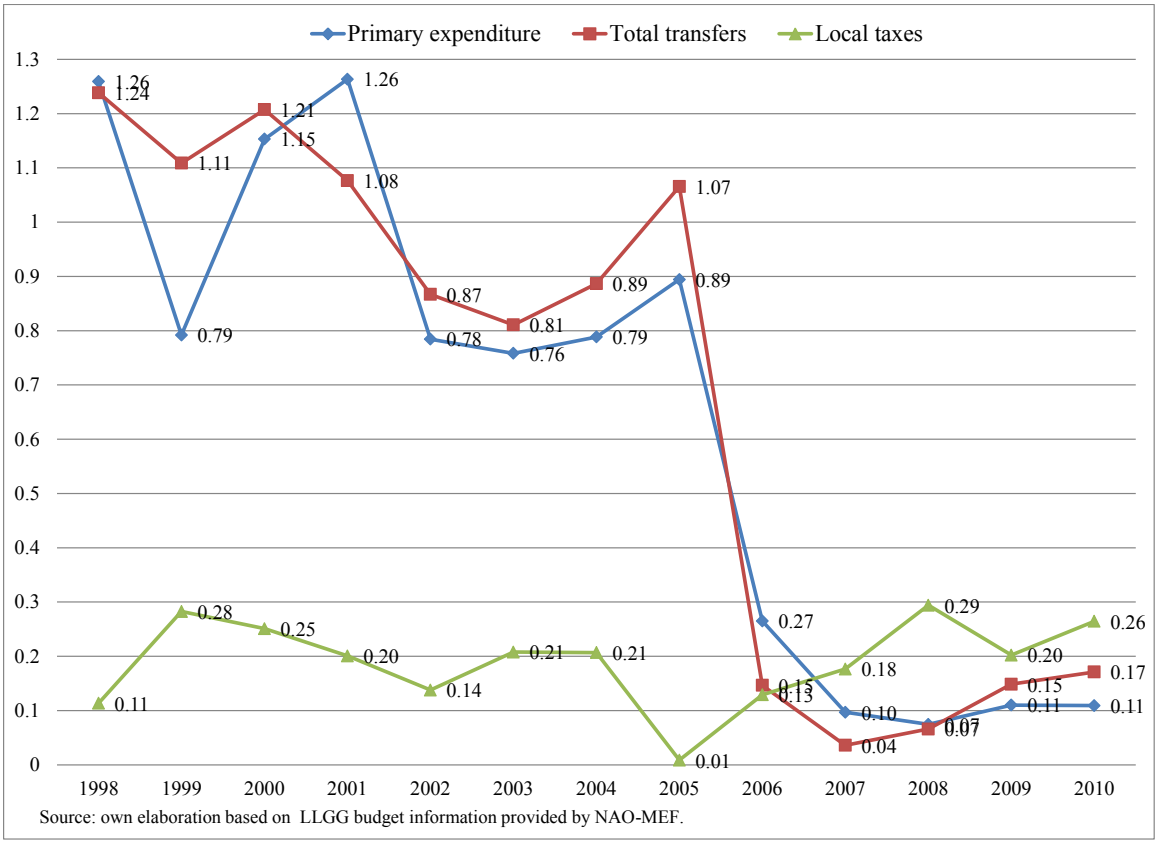
Sources: Census 2007 for population and poverty 2007. Robles (2010) for poverty 2009

These two provinces have one large difference: Huari is home to an important mine, which allowed it to start receiving huge amounts of mining canon since 2006. Indeed, Huari is the third out of Peru's 195 provinces in terms of total transfers per capita between 1998 and 2010, and includes the district of San Marcos, which is the sixth out of Peru's 1834 LLGG in terms of most transfers per capita in that period. On the contrary, Dos de Mayo does not have mine exploitation and is not part of a department that is rich in natural resources; hence, it receives a negligible amount of transfers owing to canon.

What has been the effect of this large increase in transfers in Huari on own revenue and primary expenditure vis-à-vis own revenue and primary expenditure in Dos

de Mayo? The response to this question can give hints about the expected results in the following sections. Figure 6.24 shows the ratio of the average tax collection, total transfers and primary expenditure for all districts of Dos de Mayo relative to all districts of Huari. The large increase in transfers in Huari is captured by the sudden drop in the ratio of total transfers of Dos de Mayo relative to Huari from an average of 1 between 1998 and 2005 (they basically received the same average amount of transfers every year) to an average of 0.11 between 2006 and 2010, with a nadir of 0.04 in 2007, which was the year of the high increase in mining canon.

Figure 6.24 – Ratio of fiscal indicators (Dos de Mayo/Huari)



Source: own elaboration based on LLGG budget information provided by NAO-MEF.

In terms of local tax collection, under the hypothesis of fiscal sloth it is expected that following the large increase in mining canon in Huari that started in 2006, the ratio

of local tax collection of Dos de Mayo to Huari should increase, given that LLGG in Huari should be collecting less taxes relative to Dos de Mayo in response to transfers. It is worth mentioning that the provinces of Dos de Mayo and Huari do not include any main cities, and due to their small population they have low tax collection potential, which helps explain the outlier value of the year 2005, in which tax collection in Dos de Mayo was especially low. This said, the ratio of local tax collection of Dos de Mayo to Huari does not change much after 2006: in 2006 and 2007 the ratio is below the average for the series of 0.2, and the values for 2008 and 2010 increase above the average, but not much differently from previous values in the series. Hence, in this extreme comparison of two neighbor provinces with very different inflow of transfers, there is no evidence of fiscal sloth.

What is the response of primary expenditure to transfers? If Huari did not display a flypaper effect and saved an important proportion of its transfers, the ratio of primary expenditure of Dos de Mayo relative to Huari would decline, but in a smaller proportion than the decline observed in the ratio of transfers between Dos de Mayo relative to Huari. However, as can be seen in Figure 6.24, the ratio of primary expenditure behaves very similarly to the ratio of transfers: whereas the average ratio of primary expenditure between Dos de Mayo and Huari between 1998 and 2005 was 0.96 (similar to the ratio of transfers for that period, which was 1), the same average ratio between 2006 and 2010 was 0.13, again very similar to the ratio of transfers for that period, which was 0.11. Indeed, the ratio of transfers was lower than the ratio of primary expenditure in 2006 and 2007, when transfers grew rapidly, but the relationship reversed in 2009 and 2010, suggesting that LLGG in the province of Huari were on average spending more than the

transfers they received those years. Hence, the response of primary expenditure to transfers in Huari is indicative of a flypaper effect, albeit with a one year lag.

To summarize, the comparison of fiscal indicators in the LLGG of the neighbor provinces of Huari and Dos de Mayo suggests that there is not fiscal sloth, but there is a flypaper effect. Table 6.9 also shows that poverty declined much more in Huari than in Dos de Mayo, which may be due to the high increase in transfers and their use in public investment; however, the study of that link, although important, is beyond the scope of this dissertation. Below I analyze in detail the effect of transfers on LLGG fiscal effort.

Do LLGG reduce their fiscal effort in response to transfers?

Here I evaluate in more detail the fourth question of this dissertation, assessing whether LLGG reduce their fiscal effort in response to transfers. First I will describe the evolution of own revenue collection according to its components and the different categories of LLGG. Following that I will introduce and evaluate econometric models assessing the response of tax collection to transfers.

Descriptive analysis of the evolution of LLGG own revenue collection

As described in Table A1.4 in Annex 1, own resources of LLGG are local taxes; capital income, which is mainly proceeds from the sale of assets; and other own income, which mainly includes user fees, fines, property rents and interests on financial assets, among other. PPGG and DDGG collect property tax and a tax on property sale (except for the city of Lima since 2007, whose provincial government collects the latter tax on behalf of district governments), and a number of user fees and other own income, but

PPGG also collect the motor vehicle tax and user fees for provincial services. In turn, PPGG maintain on average a larger bureaucracy than DDGG, since they have expenditure functions on the provincial capital (as another district) but also over the province at large. For these reasons, in the analysis below, PPGG and DDGG will tend to be analyzed separately.

Table 6.10 shows the evolution of own income of LLGG in Peru between 1998 and 2010, classified according to whether they are a PPGG or DDGG and their type of own income (taxes or other non-tax income; capital income is not included because as shown in Table 6.1 it is negligible), along with the growth of the series during the analyzed time period in constant 2002 Peruvian S./.

Table 6.10 – Own income of LLGG by type groups - As share of total

Type and Size Groups	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000-2010	Annual growth in constant 2002 S./	
195 Provincial Governments	Own income - Share of total LLGG	45.7%	46.3%	45.6%	44.8%	45.3%	44.5%	47.2%	45.4%	44.2%	46.6%	46.5%	46.5%	49.6%	46.0%	Own income	8.8%
	Local taxes - Share of total LLGG	38.0%	39.2%	39.2%	35.4%	38.8%	39.6%	39.7%	38.8%	38.4%	48.3%	49.7%	48.3%	51.8%	41.9%	Local taxes	13.1%
	Other non tax income - Share of total LLGG	48.3%	48.9%	47.9%	48.2%	47.5%	46.5%	49.9%	48.2%	46.4%	45.5%	44.2%	45.3%	47.3%	47.2%	Other non tax income	6.6%
1639 District Governments	Own income - Share of total LLGG	54.3%	53.7%	54.4%	55.2%	54.7%	55.5%	52.8%	54.6%	55.8%	53.4%	53.5%	53.5%	50.4%	54.0%	Own income	7.4%
	Local taxes - Share of total LLGG	62.0%	60.8%	60.8%	64.6%	61.2%	60.4%	60.3%	61.2%	61.6%	51.7%	50.3%	51.7%	48.2%	58.1%	Local taxes	7.9%
	Other non tax income - Share of total LLGG	51.7%	51.1%	52.1%	51.8%	52.5%	53.5%	50.1%	51.8%	53.6%	54.5%	55.8%	54.7%	52.7%	52.8%	Other non tax income	7.0%
Provincial Govts.	Own/total income	47.3%	49.1%	47.3%	48.3%	50.5%	45.7%	44.2%	39.8%	32.3%	28.3%	31.7%	32.0%	33.1%	40.7%		
District Govts.	Own/total income	46.5%	45.2%	44.0%	44.1%	43.6%	39.5%	33.0%	32.4%	25.2%	19.1%	20.2%	21.1%	19.3%	33.3%		

As main features, PPGG concentrate almost half of all own income of LLGG, and their participation has grown since 1998, driven by the high growth in local taxes. Moreover, there is a high concentration of own income in main cities, and this concentration is even higher in the case of taxes. Indeed, that concentration has increased during the past 12 years. Only the province of Lima (including its 42 districts)

concentrated 67 percent of total tax collection of LLGG in 2010, up from 52 percent in 1998; and coupled with the next five provinces and their districts that collect most taxes in Peru, which comprise 42 percent of the country's population, they concentrated 80 percent of total tax collection of LLGG in 2010.

In turn, Table 6.11 is similar to Table 6.10, but classifies LLGG by their size.

Table 6.11 – Own income of LLGG by type groups - As share of total

Type and Size Groups	Values\Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000-2010	Annual growth in constant 2002 S./	
Main cities - 14% of LLGG, 67% of country's population	Own income - Share of total LLGG	89.1%	91.3%	91.8%	90.1%	88.7%	90.0%	90.2%	89.2%	87.1%	87.8%	87.1%	85.9%	87.7%	88.9%	Own income	7.9%
	Local taxes - Share of total LLGG	85.5%	92.8%	94.3%	93.4%	92.6%	94.6%	94.2%	94.2%	94.0%	95.3%	95.3%	95.0%	94.4%	93.5%	Local taxes	11.1%
	Other non tax income - Share of total LLGG	90.9%	91.0%	90.8%	88.8%	86.9%	87.9%	88.4%	87.0%	83.7%	82.9%	81.9%	80.2%	82.8%	86.4%	Other non tax income	6.0%
More than 500 houses - 30% of LLGG, 20% of country's population	Own income - Share of total LLGG	8.7%	6.5%	6.4%	7.0%	8.8%	7.6%	7.1%	7.1%	8.7%	8.2%	8.8%	9.4%	8.3%	7.9%	Own income	7.6%
	Local taxes - Share of total LLGG	11.7%	5.2%	4.6%	4.6%	5.7%	4.6%	4.7%	4.4%	4.8%	3.7%	3.8%	3.8%	3.8%	5.0%	Local taxes	0.5%
	Other non tax income - Share of total LLGG	7.1%	6.9%	7.0%	8.0%	10.1%	8.9%	8.2%	8.3%	10.6%	11.2%	11.9%	12.8%	11.3%	9.4%	Other non tax income	11.0%
Less than 500 houses - 56% of LLGG, 13% of country's population	Own income - Share of total LLGG	2.3%	2.2%	1.9%	2.8%	2.5%	2.4%	2.7%	3.7%	4.2%	4.0%	4.1%	4.7%	4.1%	3.2%	Own income	13.5%
	Local taxes - Share of total LLGG	2.8%	2.0%	1.1%	2.0%	1.7%	0.8%	1.1%	1.4%	1.2%	1.0%	0.9%	1.2%	1.7%	1.5%	Local taxes	5.8%
	Other non tax income - Share of total LLGG	2.0%	2.1%	2.2%	3.2%	2.9%	3.2%	3.4%	4.7%	5.7%	5.9%	6.2%	7.0%	5.9%	4.2%	Other non tax income	16.9%
Main cities	Own/total income	58.9%	60.6%	59.8%	60.4%	60.9%	56.1%	54.6%	52.0%	44.2%	38.4%	40.4%	39.6%	40.0%	51.2%		
More than 500 houses	Own/total income	21.5%	16.7%	15.7%	17.3%	21.9%	17.4%	12.7%	10.8%	9.2%	6.4%	7.6%	8.6%	7.1%	13.3%		
Less than 500 houses	Own/total income	10.4%	9.3%	7.2%	10.1%	8.5%	7.1%	5.9%	8.1%	6.3%	4.5%	5.1%	6.4%	5.4%	7.3%		

Source: own elaboration based on information provided by MEF

As can be seen, the participation of LLGG that are not main cities in own income, and especially in local taxes, is very small. Relative to all LLGG, both for municipalities with more and less than 500 houses, other own non tax income has been increasing, while local taxes have been decreasing. In the case of own non tax income, the increasing participation of smaller LLGG relative to all LLGG is partly explained in recent years by the increase in revenue from interest of financial assets, which is mainly the proceeds from the bank deposits of natural resources and customs transfers. Indeed, as an extreme

case, the district of San Marcos in the province of Huari, department of Ancash, which was analyzed in the previous section, received in 2009 S./ 14.4 million in interest from its bank deposits, which is equivalent to 5.3 times the total income that the district had only four years earlier, in 2005.

In the case of local taxes of smaller LLGG, the average growth in constant terms shown in the last column of Table 6.11 is low, but it is distorted by an unusually high tax collection for two particular LLGG in 1998 (one classified in more than 500 houses and the other in less than 500 houses). If the value for 2010 is compared to that of 1999, the yearly rate of growth in constant terms is a much higher 8.6 percent and 10.1 percent for more and less than 500 houses, respectively. This value is lower than for main cities (11.15 percent), but it is still high.

Lastly, the share of own income in total income decreases for all groups of LLGG, and especially for smaller LLGG; however, this is not due to a low growth in own income of LLGG, which as shown in the last column of Table 6.11 is even higher for LLGG with less than 500 houses than for main cities, but rather due to the high increase in transfers.

To conclude, the aggregate descriptive analysis of own income of LLGG according to whether they are PPGG or DDGG and their size, does not indicate that transfers are generating "fiscal sloth" in LLGG, in the sense that they are decreasing their fiscal effort in response to transfers. It also signals that collection of own resources at the local level, particularly tax collection, is more relevant in PPGG than in DDGG, and especially in main cities, which concentrate most own resources of LLGG.

Table 6.12 below presents the average annual growth of own income and total transfers of PPGG and DDGG in main cities in constant 2002 Peruvian S./, distinguishing among resource groups (more, medium or less resources per capita), and main transfer groups (FONCOMUN, mining, oil or gas canon). Similar to Tables 6.10 and 6.11, it shows the evolution of total own resources, local taxes and other non-tax own income, along with the evolution of total transfers and the number of LLGG in each category. However, the evolution of own resources of LLGG is divided into two periods: 1998 to 2010, and 2005 to 2010, in order to assess the effect on own income of the high growth in transfers, which as shown in Figure 6.1 accentuated and became more volatile after 2005.

As can be seen, there is no descriptive evidence that the growth in transfers is generating "fiscal sloth" in main cities, where own income is most relevant. Among the three PPGG with more resources per capita, which have mining as their main transfer, the average growth of own income decreases and is relatively low following 2005, but this is thoroughly explained by only one PPGG (Ilo), where tax collection stagnated throughout the period; in the other two PPGG (Espinar and Mariscal Nieto) tax collection grew at an annual rate in constant terms of 22.17 percent between 2005 and 2010. Also, in PPGG with medium resources per capita, the yearly growth increases after 2005, and it is not too different among the categories of LLGG.

PPGG with medium resources per capita and mining as their main transfer, including the cases of Cajamarca and Tacna, which are important cities that received large amounts of transfers, have a similar rate of growth of local taxes as PPGG with less resources that have FONCOMUN as their main transfer (excluding the city of Lima). This situation is similar for DDGG (right pane in Table 6.12) and for smaller LLGG

(more and less than 500 houses, not shown in Table 6.12), where as seen in Table 6.11, own resources are much less relevant.

Table 6.12 – Average annual growth of own income of LLGG in main cities (in constant 2002 S./)

Resource Group	Main Transfer	Concept	Provincial Governments		District Governments	
			Avg. growth 1998-2010	Avg. growth 2005-2010	Avg. growth 1998-2010	Avg. growth 2005-2010
More Resources	Mining	Total own income	11.5%	8.3%	16.3%	4.9%
		Local taxes	9.5%	3.1%	4.1%	5.7%
		Other non tax income	16.8%	9.3%	24.9%	4.1%
		Total transfers	16.9%	9.1%	26.4%	18.1%
		Number of LLGG	3		6	
Medium Resources	FONCOMUN	Total own income	8.8%	10.6%		
		Local taxes	8.4%	16.8%		
		Other non tax income	9.9%	8.0%		
		Total transfers	11.1%	10.0%		
		Number of LLGG	6			
	Mining	Total own income	8.5%	11.7%	8.8%	8.7%
		Local taxes	9.9%	11.7%	6.0%	11.1%
		Other non tax income	7.1%	7.6%	9.3%	8.4%
		Total transfers	14.2%	14.9%	21.7%	19.2%
		Number of LLGG	10		11	
	Oil	Total own income	5.1%	8.9%		
		Local taxes	3.2%	8.2%		
		Other non tax income	7.1%	3.7%		
		Total transfers	15.3%	10.1%		
		Number of LLGG	4			
Less Resources	FONCOMUN	Total own income	9.1%	9.8%	6.6%	4.9%
		Local taxes	14.5%	23.8%	9.5%	8.4%
		Local taxes (without Lima)	9.1%	11.7%		
		Other non tax income	5.7%	1.5%	4.8%	2.2%
		Total transfers	12.7%	16.9%	13.8%	21.1%
		Number of LLGG	43		101	
	Mining	Total own income	5.3%	38.8%	8.6%	8.5%
		Local taxes	8.1%	39.5%	8.8%	7.8%
		Other non tax income	2.8%	38.0%	8.6%	9.2%
		Total transfers	21.8%	89.7%	21.9%	34.1%
		Number of LLGG	2		49	
	Gas	Total own income			10.9%	10.9%
		Local taxes			8.4%	8.5%
		Other non tax income			13.2%	12.9%
		Total transfers			22.2%	25.8%
		Number of LLGG			3	
	Oil	Total own income			6.4%	12.6%
		Local taxes			0.3%	30.5%
		Other non tax income			14.9%	6.9%
		Total transfers			18.4%	23.3%
		Number of LLGG			3	

Source: own ellaboration based on information by MEF

Lastly, given that in 2010 the PI&PMM transfer system was introduced, which allocates more resources to LLGG that, among other conditions, improve their tax collection, the results in Table 6.12 may be influenced by higher tax collection in 2010 due to this incentive. Hence, I also conducted the assessment using 2009 as the end year (not shown), and the results were similar to those in Table 6.12.

The descriptive analysis of LLGG own resources suggests that LLGG that received large amount of transfers in recent years do not respond by reducing their own fiscal effort. It also indicates that this analysis is most relevant in Peru's main cities, which concentrate almost all own resources of LLGG. The response of own revenue collection of LLGG to transfers appears counterintuitive: arguably, those municipalities that receive large amounts of transfers do not have incentives to collect their own resources, since they can finance themselves through grants. Part of the answer to this riddle is related to the fact that most of the resources received from mining, gas and oil transfers are earmarked to public investment, which still leaves an incentive to collect own resources in order to finance the current expenditure that is necessary to maintain and operate investment projects, among other expenditures. In the context of the many studies reviewed above about the effect of transfers on local tax effort, these descriptive findings suggest that fiscal sloth is not a problem in LLGG in Peru.

Econometric assessment of the response of local tax collection to transfers

To assess econometrically the effect of transfers on LLGG tax collection I concentrate the analysis on main cities, which is where tax collection is most relevant.

This approach is different from previous research efforts, which did not make use of the different classifications of LLGG analyzed in this dissertation. In turn, the analysis focuses on local tax collection, excluding other own income, which is mainly fees for service, since as shown by Alvarado (2003) the latter is linked to the provision of public services, and hence it is less sensitive to variables such as changes in transfers.

The dataset is a balanced panel between 2001 and 2009. Before 2001 the number of omitted LLGG increases substantially, which in turn reduces the available observations, so that year is used as the baseline. Also, 2001 is the year prior to the effective introduction of the canon law. In turn, in 2010 the PI&PMM transfer scheme was introduced, which rewards through additional transfers improvements in tax collection: arguably, this generates endogeneity due to reverse causality, since improvements in local tax collection increase transfers. Hence, the series that is used in regression analysis ends in 2009.

Given that some of the taxes collected by PPGG and DDGG differ,[21] and the allocation of transfers of FONCOMUN gives more weight to PPGG relative to DDGG (see Table A1.3 in Annex 1) both levels of LLGG are separated in the analysis. Noteworthy, for the group of LLGG assessed in the econometric analysis below the average per capita tax collection of PPGG is higher than for DDGG at the 1 percent significance level, which helps validate this separation.

The variables are presented in per capita terms at 2002 prices, deflating by the consumer price index. Following Mello (2002), the use of per capita variables allows

[21] For example, only PPGG collect the vehicle tax. For the description of own resources of LLGG see Table A1.4 in Annex 1.

reducing the risk of heteroscedasticity stemming from the heterogeneity of Peru´s LLGG. Most studies that evaluate "fiscal sloth" in Peru also transform the variables to per capita terms (see Rabanal and Melgarejo, 2006; Aragon and Gayoso, 2005; and Alvarado, 2003). I use panel data models, evaluating the different effect of transfers on local taxes per capita (fiscal sloth) according to the resources and main transfer groups of LLGG.

The econometric analysis is only carried out for main cities, which as shown above is the group where it is most relevant, since they concentrated in 2010 98 percent of total tax collection for PPGG (S./ 816 million out of a total of S./ 829 million) and 90 percent for DDGG (S./ 695 million out of a total of S./ 772 million). In per capita terms, PPGG that are main cities collected in 2010 approximately seven times more than PPGG with more than 500 houses, and five times more than PPGG with less than 500 houses. In turn, DDGG that are main cities collected in 2010 approximately four times more than DDGG with more and less than 500 houses.

In addition to the fiscal variables, which are local taxes per capita (dependent variable) and total transfers per capita (main explanatory variable of interest), the regression model includes a number of control variables based on the determinants of local tax collection and the available information.

As described by Aguilar and Morales (2005), local tax collection depends on the tax base and fiscal effort. The tax base is related to local production, income and wealth. Local production can be measured by Gross Domestic Product (GDP). However, since GDP in Peru is only disaggregated yearly at the regional level, I will use per capita department GDP between 2001 and 2009 at constant 2002 prices, which precludes

variability among LLGG within each department (in the absence of local GDP data this is also the approach used by Melo, 2002, for Colombia). In turn, local income and wealth can be proxied by the proportion of population living in poverty; again, this indicator in Peru is only available yearly at the regional level, so I will use department poverty between 2001 and 2009.

Fiscal effort depends on local capacity and on the incentives of authorities to collect taxes. Local capacity is linked to the size of the municipality, which in the case of local tax collection is filtered by focusing on the size group of main cities. However, within main cities I also include the projection of population density between 2001 and 2009 as a source of variability, assuming that it is easier to audit payment of local taxes in more densely populated LLGG (see Alvarado, 2003). As a second measure of local capacity I introduce a dummy variable that takes the value of 1 if mayors get reelected, assuming that their longer experience in office enhances their managerial capacity, including their ability to collect local taxes. Lastly, in the nine PPGG that have introduced so far an autonomous Tax Administration Service (SAT, after acronym in Spanish), I include a dummy variable that takes the value of 1 starting the year of the introduction of the Tax Administration Service, under the assumption that it improves the capacity of LLGG to collect taxes.

In turn, the incentives of local authorities to collect taxes may depend on several factors. Here the main variable of interest is the availability of transfers, under the assumption that large increases in transfers should reduce the incentives to increase local tax collection, which is labeled “fiscal sloth”.

Since the mining canon is disbursed in one installment in the middle of the fiscal year, I also use the variable of per capita transfers with a lag, due to the fact that the decision of LLGG to collect taxes may be affected by the previous year's transfers. Given the volatility of transfers in Peru during 2001-2009 (especially transfers linked to natural resources), I also include a variable of "symmetry" in the response of local tax collection to decreases in transfers, which is a dummy variable that takes the value of 1 any year that transfers decrease. The rationale is that if local tax collection is assumed to decrease following large increases in transfers, it is also assumed to increase when transfers fall, in order to maintain the level of spending; this follows the analysis of Gramkhar and Oates (1996) who introduced this variable of symmetry in the context of the estimation of the flypaper effect.

I also include a measure of self-sufficiency of LLGG, meaning the degree that they can finance themselves through their own resources, as the ratio of total own resources over total resources of each municipality (own resources include local taxes, user fees and other local current and capital income). I expect that higher self-sufficiency is related to larger increases in local tax collection, as LLGG need to rely on their own resources to increase their expenditures. Lastly, I include time dummies whenever they are statistically significant to assess in particular the election years (for the analyzed period it is the years 2002 and 2006), assuming that the incentive of mayors to collect taxes decreases in those years, given that there is a political cost in increasing tax auditing.

The source for department GDP, department poverty, population projections and consumer price index (used to deflate nominal variables) is Peru´s National Statistics

Institute (INEI, after its acronym in Spanish). The database of local government elections for years 1998, 2002 and 2006 was provided by Peru´s National Election Jury (JNE after acronym in Spanish). The information about LLGG that have a Tax Administration Service, including the year of creation, is taken from the website of the National Association of Tax Administration Services (ASAT after acronym in Spanish: www.asat.org.pe). Lastly, as previously described, all fiscal variables were provided by Peru´s National Accounting Office at the Ministry of Economics and Finance.

The database is a balanced panel between 2001 and 2009, representing 60 out of 70 PPGG that are main cities (86 percent of total) and 139 out of 179 DDGG that are main cities (78 percent of total). The difference is made up of LLGG that have at least one omitted observation during this time period. Table 6.13 below shows the distribution of main cities according to availability of observations and the different groups of LLGG used in this dissertation. I ran chi square tests of association to assess whether there is any statistically significant difference between PPGG and DDGG that are main cities for which there are complete observations, and PPGG and DDGG that are main cities and have at least one omitted observation, across the three groups presented in Table 6.13: main transfer, resource group and need group. In all cases I found that for main cities, there is not a statistically significant difference between PPGG and DDGG for which there are complete observations and PPGG and DDGG that have at least one omitted observation, at the 10 percent significance level. This means there is not a particular bias in the composition of LLGG that are main cities and display a balanced panel, in terms of main transfer, resource and BUN groups.

Table 6.13 – Distribution of main cities by completeness of observations and groups

Type of LLGG	Available observations	Main Transfer					Resource Group			Need Group			Total
		Foncomun	Mining	Gas	Oil	Other	More resources	Medium resources	Less resources	Very high need	High need	Medium need	
Provincial Governments	At least one omission	7	3					2	8		4	6	10
	Complete	42	12	1	4	1	3	19	38	6	20	34	60
Total PPGG		49	15	1	4	1	3	21	46	6	24	40	70
Chi Square Test of Association		Value: 1.4. Critical value with 4 degrees of freedom at 10% significance level: 7.78					Value: 1.25. Crit value with 2 deg of freedom at 10% signif level: 4.61			Value: 1.84. Crit value with 2 deg of freedom at 10% signif level: 4.61			
District Governments	At least one omission	20	19			1	2	2	36	1	4	35	40
	Complete	82	47	3	3	4	6	9	124	1	8	130	139
Total DDGG		102	66	3	3	5	8	11	160	2	12	165	179
Chi Square Test of Association		Value: 3.8. Critical value with 4 degrees of freedom at 10% significance level: 7.78					Value: 0.14. Crit value with 2 deg of freedom at 10% signif level: 4.61			Value: 1.13. Crit value with 2 deg of freedom at 10% signif level: 4.61			
Total Main Cities		151	81	4	7	6	11	32	206	8	36	205	249

Source: own elaboration based on information from MEF

Aragon and Gayoso (2005) note a potential endogeneity problem due to reverse causality related to the allocation rules of FONCOMUN, which duplicates the weight of rural population in its distribution formula. Indeed, given that rural districts tend to collect less local taxes, mainly because they tend to have a smaller tax base for the property tax, it can be argued that due to their lower local tax collection, they receive more transfers. In this regard, the official classification of LLGG according to size may reduce this potential endogeneity problem, because LLGG are clustered in groups with similar levels of urban/rural population: main cities are urban LLGG; more than 500 houses are semi-rural LLGG; and less than 500 houses are rural LLGG.

Table 6.14 below summarizes the number of LLGG, average and standard deviation of urban population based on Peru´s National Census of 2007. As can be seen, the degree or urban population of LLGG clearly increases with size: the difference in average urban population across size groups is statistically significant in all cases at the 1 percent level, except for the difference between PPGG with more than 500 houses and PPGG with less than 500 houses, for which it is significant at the 5 percent level.

Table 6.14 – Summary statistics of urban population of Peru's LLGG by size group

Size Group\Type of LLGG	195 Provincial Governments			1637 District Governments		
	Average urban pop (2007)	Standard deviation of urban pop	Number of LLGG	Average urban pop (2007)	Standard deviation of urban pop	Number of LLGG
Main Cities	89%	0.12	70	92%	0.12	178
More than 500 urban houses	55%	0.22	115	55%	0.25	440
Less than 500 urban houses	41%	0.16	10	34%	0.25	1019
Total	67%	0.26	195	46%	0.30	1637

Source: own elaboration based on information by INEI

Moreover, within the group of LLGG that are main cities, I also evaluate whether there is any significant difference in terms of urban population among LLGG according to resources and main transfer groups. This is shown in Table 6.15, which presents the average urban population of main cities (PPGG and DDGG) according to resources and main transfer groups, along with the results of the test of difference of means between the different groups. In the case of resource groups, given the small number of observations for more and medium resources, both groups are pooled. For main transfer groups, there are few observations of LLGG that have oil, gas and customs as main transfer, so they are also pooled.

As can be seen, there is no statistically significant difference between resources groups. In the case of main transfer groups, the average urban population for the group of gas/oil/customs LLGG is significantly higher than for the groups of FONCOMUN and mining (in the case of DDGG) and FONCOMUN (in the case of PPGG); however, the difference is not large, and the test is influenced by the small number of observations for the gas/oil/customs group. Hence, analyzing the effect of transfers on fiscal aggregates of each group of LLGG according to size (in the case of local tax collection, only for main cities), allows having relatively homogeneous municipalities in terms of urban population, and consequently in per capita FONCOMUN transfers.

Table 6.15 – Comparison of urban population of main cities by resource and main transfer groups (2007)

	PPGG - Main Cities with complete observations			DDGG - Main Cities with complete observations		
Resource Group	**Mean of Urban Pop**	**StdDev of Urban Pop**	**Number of PPGG**	**Mean of Urban Pop**	**StdDev of Urban Pop**	**Number of DDGG**
More/Medium Resources	0.85	0.15	22	0.92	0.09	14
Less Resources	0.90	0.11	38	0.94	0.11	123
Difference of means test	Z Value (More/Medium-Less Resources): -1.37. P-Value: 0.17			Z Value (More/Medium-Less Resources): -0.66. P-Value: 0.51		
Main Transfer Group	**Mean of Urban Pop**	**StdDev of Urban Pop**	**Number of PPGG**	**Mean of Urban Pop**	**StdDev of Urban Pop**	**Number of DDGG**
Foncomun	0.88	0.13	42	0.93	0.12	79
Gas/Oil/Customs	0.96	0.08	6	0.97	0.03	10
Mining	0.88	0.12	12	0.94	0.09	47
Difference of means test	**Z Value (FONCOMUN - Gas/Oil/Customs): -2.17. P-Value: 0.03**			**Z Value (FONCOMUN - Gas/Oil/Customs): -2.35. P-Value: 0.02**		
	Z Value (FONCOMUN - Mining): -0.06. P-Value: 0.95			Z Value (FONCOMUN - Mining): -0.08. P-Value: 0.94		
	Z Value (Gas/Oil/Customs - Mining): 1.72. P-Value: 0.09			**Z Value (Gas/Oil/Customs - Mining): 2.4. P-Value: 0.02**		

Source: own elaboration based on information by INEI

Since transfers based on natural resources in Peru are allocated on a derivation basis, and in particular 10 percent of the mining canon is allocated directly to the producing LLGG (see Table A1.3 in Appendix 1 for a detailed analysis of the allocation rules of each type of transfer to LLGG), total transfers can be considered in that particular case an exogenous explanatory variable of fiscal variables such as local taxes and expenditures. The argument is that transfers based on natural resources are not correlated with variables that determine local taxes and expenditures, such as poverty or institutional capacity. Instead, these transfers are defined by the "lottery" in natural resources that determines whether minerals and/or hydrocarbons are available in each local of government.

In the case of Peru, since it is a unitary country, regulation that provides incentives to extractive industries is defined by the central government, so it cannot be used by LLGG to compete for investments. Hence, extractive companies have not been strongly influenced in their investment decisions by the characteristics of each particular local government. In those LLGG from where resources are extracted, the case that the natural resource based transfer is exogenous is most clear. However, the allocation formula among the neighboring LLGG in the same province and department of the

producing district, does take into account the criteria of population and BUN. In the case of population, it is a per capita criterion that treats all LLGG alike. But in the case of BUN, similar to the explanation above for FONCOMUN, LLGG with higher BUN tend to collect less tax revenue, since they are poorer and tend to have a lower tax base than wealthier LLGG. Therefore, it can be argued that there is also a problem of endogeneity in this case, since poorer LLGG receive more transfers based on natural resources because they collect less tax revenue.

In this regard, similar to the analysis for FONCOMUN, the classification of LLGG according to size helps to minimize this potential endogeneity problem, because larger municipalities in Peru tend to be associated with lower BUN. Indeed, Table 6.16 shows average BUN for LLGG with complete observations that are main cities. They are classified according to PPGG and DDGG, and within each group according to resources and main transfer groups. As can be seen, there is no difference in average BUN of LLGG among the different groups at the 5 percent significance level. This means that the assessed LLGG are relatively homogeneous in terms of BUN, and each of these groups receives on average similar transfers based on natural resources according to BUN.

Table 6.16 – Comparison of main cities included in regression analysis according to Basic Unmet Needs (BUN, 2007)

	PPGG - Main Cities with complete observations			DDGG - Main Cities with complete observations		
Resource Group	**Mean of BUN**	**StdDev of BUN**	**Number of PPGG**	**Mean of BUN**	**StdDev of BUN**	**Number of DDGG**
More/Medium Resources	0.50	0.18	22	0.47	0.25	14
Less Resources	0.42	0.19	38	0.46	0.28	123
Difference of means test	Z Value (More/Medium-Less Resources): 1.71. P-Value: 0.09			Z Value (More/Medium-Less Resources): 0.09. P-Value: 0.93		
Main Transfer Group	**Mean of BUN**	**StdDev of BUN**	**Number of PPGG**	**Mean of BUN**	**StdDev of BUN**	**Number of DDGG**
Foncomun	0.45	0.19	42	0.44	0.28	79
Gas/Oil/Customs	0.47	0.20	6	0.42	0.32	10
Mining	0.44	0.18	12	0.50	0.25	47
Difference of means test	Z Value (FONCOMUN - Gas/Oil/Customs): -0.23. P-Value: 0.82			Z Value (FONCOMUN - Gas/Oil/Customs): 0.19. P-Value: 0.84		
	Z Value (FONCOMUN - Mining): 0.1. P-Value: 0.92			Z Value (FONCOMUN - Mining): -1.14. P-Value: 0.25		
	Z Value (Gas/Oil/Customs - Mining): 0.27. P-Value: 0.79			Z Value (Gas/Oil/Customs - Mining): -0.7. P-Value: 0.48		

Source: own elaboration based on information by INEI

In turn, Table 6.17 presents descriptive statistics of the variables used in regression analysis of the effect of transfers on LLGG own taxes. The variables for both PPGG and DDGG distinguish the database with complete observations for main cities both with and without Lima. This owes to the fact that the city of Lima, which comprises the Provincial Government and 42 other District Governments, is different from the rest of LLGG that are main cities, not only because it is much larger: it had in 2010 an estimated population of 8.2 million inhabitants, while the second most populated province, which is Callao, had 941,000 inhabitants. But also because since the year 2007 Lima changed its methodology of assessment and collection of the tax on the sale of properties ("alcabala"), which allowed increasing substantially the collection of this tax for all 43 LLGG of Lima: this change did not take place in the rest of LLGG of Peru.

Table 6.17 – Descriptive statistics of variables used in regression analysis of "fiscal sloth" (2001-09)

Variable	Panel	PPGG - n = 60, T = 9, N = 540				PPGG w/o Lima - n = 59, T = 9, N = 531				DDGG - n = 139, T = 9, N = 1251				DDGG w/o Lima - n = 100, T = 9, N = 900			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Taxes per capita (constant 2002 S./)	overall	31.83	83.78	0.51	1095.30	23.58	29.61	0.51	247.99	37.94	96.80	0.00	1132.50	16.57	23.12	0.00	342.67
	between		69.30	1.01	518.74		26.99	1.01	186.56		93.91	0.06	836.91		18.97	0.06	116.50
	within		47.84	-321.24	608.39		12.63	-59.54	157.44		24.62	-183.24	333.53		13.33	-40.58	296.32
Transfers per capita (constant 2002 S./)	overall	243.56	274.68	35.26	2976.19	239.69	273.61	35.26	2976.19	138.48	247.01	0.00	2992.77	169.18	280.78	0.00	2992.77
	between		169.92	72.71	1077.69		168.70	72.71	1077.69		186.03	9.49	1539.09		205.93	46.81	1539.09
	within		216.81	-740.98	2142.05		216.41	-744.84	2138.19		163.18	-1355.41	1738.32		191.85	-1324.71	1769.02
Own income / total income (%)	overall	0.31	0.18	0.02	0.80	0.30	0.17	0.02	0.80	0.38	0.26	0.01	1.00	0.26	0.16	0.01	1.00
	between		0.16	0.03	0.76		0.15	0.03	0.67		0.24	0.05	0.99		0.12	0.05	0.61
	within		0.09	0.03	0.59		0.09	0.02	0.58		0.09	0.07	1.12		0.10	-0.04	1.00
Density (population per square kilometer)	overall	1332.61	3807.16	2.19	25062.50	1107.14	3417.52	2.19	25062.50	4038.50	6440.43	5.82	28337.89	1885.73	4021.60	5.82	21044.72
	between		3832.52	2.56	23505.32		3440.71	2.56	23505.32		6456.29	7.48	27262.91		4037.81	7.48	20830.15
	within		155.84	-334.85	2889.79		140.07	-560.32	2664.32		249.44	2287.22	5746.71		120.00	1051.13	2783.79
Reelection (1 = Reelected, 0 = Not reelected)	overall	0.14	0.34	0.00	1.00	0.13	0.34	0.00	1.00	0.19	0.39	0.00	1.00	0.16	0.37	0.00	1.00
	between		0.21	0.00	0.78		0.21	0.00	0.78		0.22	0.00	0.78		0.21	0.00	0.78
	within		0.27	-0.64	0.80		0.27	-0.65	0.80		0.32	-0.59	0.85		0.31	-0.61	0.83
Department GDP per capita (constant 2002 S./)	overall	7189.60	4806.59	1879.39	33054.87	7103.00	4796.23	1879.39	33054.87	9340.12	4025.24	1879.39	33054.87	8186.34	4102.94	1879.39	33054.87
	between		4390.66	2394.88	24772.76		4376.37	2394.88	24772.76		3554.91	2394.88	24772.76		3580.97	2394.88	24772.76
	within		2027.70	-4880.72	15471.71		2034.77	-4967.31	15385.12		1909.45	-2730.19	17622.23		2030.98	-3883.97	16468.46
Department Poverty Rate (%)	overall	0.51	0.18	0.13	0.90	0.51	0.18	0.13	0.90	0.37	0.16	0.14	0.82	0.41	0.16	0.14	0.82
	between		0.16	0.24	0.85		0.16	0.24	0.85		0.13	0.24	0.73		0.14	0.24	0.73
	within		0.08	0.28	0.72		0.08	0.29	0.72		0.08	0.15	0.57		0.09	0.19	0.61
SAT (1 = SAT, 0 = No SAT)	overall	0.09	0.29	0.00	1.00	0.08	0.27	0.00	1.00								
	between		0.26	0.00	1.00		0.23	0.00	1.00								
	within		0.13	-0.69	0.87		0.13	-0.70	0.85								

Source: own elaboration based on information by MEF, INEI, JNE and ASAT

For these reasons, the city of Lima, including its 43 LLGG, is not included with the rest of LLGG in regression analysis. In terms of total tax collection of LLGG in Peru this is an important omission, since Lima concentrated in 2010 two-thirds of this total.

However, for the purposes of this dissertation Lima is not crucial to assess the effect of large increases of transfers on LLGG tax collection because it receives relatively low transfers per capita, and it does not receive grants from natural resources and customs.

Tables 6.18 and 6.19 present descriptive statistics for the main variables of interest, which are taxes and total transfers per capita in constant 2002 S./, distinguishing PPGG and DDGG according to the classifications that will be compared: resource groups and main transfer groups. Noteworthy, without the city of Lima the number of LLGG is 59 PPGG and 100 DDGG.

Table 6.18 – Descriptive statistics of main variables used in regression analysis by resource groups (2001 to 2009)

Variable	Panel	PPGG, More&Medium Resources, n=22, T=9, N=198				DDGG, More& Medium Resources, n=14, T=9, N=126			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Taxes per capita (constant 2002 S./)	overall	19.04	21.13	0.85	181.89	17.59	17.92	2.43	114.23
	between		15.04	2.24	56.08		16.44	4.86	68.40
	within		15.15	-21.72	152.90		8.25	-16.20	63.42
Transfers per capita (constant 2002 S./)	overall	362.36	393.39	55.58	2976.19	479.03	612.88	0.00	2992.77
	between		210.29	163.12	1077.69		428.93	189.98	1539.09
	within		335.16	-622.17	2260.86		451.02	-1014.85	2078.87
Variable	**Panel**	**PPGG, Less Resources, n=38, T=9, N=342**				**DDGG, Less Resources, n=124, T=9, N=1116**			
		Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Taxes per capita (constant 2002 S./)	overall	39.24	103.38	0.51	1095.30	33.79	71.45	0.00	809.59
	between		85.88	1.01	518.74		67.92	0.06	627.19
	within		59.03	-313.83	615.80		22.93	-187.38	313.54
Transfers per capita (constant 2002 S./)	overall	174.78	130.06	35.26	945.41	96.93	101.13	6.84	1398.28
	between		87.71	72.71	471.70		56.94	9.49	352.88
	within		96.97	-94.87	760.47		83.71	-160.89	1236.87
Variable	**Panel**	**PPGG, Less Resources w/o Lima, n=37, T=9, N=333**				**DDGG, Less Resources w/o Lima, n=86, T=9, N=774**			
		Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Taxes per capita (constant 2002 S./)	overall	26.28	33.40	0.51	247.99	16.41	23.86	0.00	342.67
	between		31.96	1.01	186.56		19.43	0.06	116.50
	within		10.89	-56.84	95.47		13.99	-40.75	296.16
Transfers per capita (constant 2002 S./)	overall	166.75	115.63	35.26	840.78	118.73	112.91	24.31	1398.28
	between		73.43	72.71	407.54		53.56	46.81	352.88
	within		90.04	-97.97	752.45		99.55	-139.09	1258.68

Source: own elaboration based on information by MEF and INEI

Table 6.19 – Descriptive statistics of main variables used in regression analysis by main transfer groups (2001 to 2009)

Variable	Panel	PPGG, Mining, n=12, T=9, N=108				DDGG, Mining, n=47, T=9, N=423			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Taxes per capita (constant 2002 S./)	overall	23.87	25.11	1.57	181.89	22.33	25.06	0.19	261.52
	between		17.01	3.42	56.08		22.20	2.61	116.50
	within		19.04	-16.89	157.72		12.02	-34.83	167.36
Transfers per capita (constant 2002 S./)	overall	421.88	493.66	55.58	2976.19	202.75	314.94	0.00	2992.77
	between		257.77	218.54	1077.69		208.98	52.68	1392.93
	within		426.88	-562.65	2320.38		237.37	-1077.30	1802.60
Variable	**Panel**	**PPGG, Other Nat Res, n=6, T=9, N=54**				**DDGG, Other Nat Res, n=10, T=9, N=90**			
		Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Taxes per capita (constant 2002 S./)	overall	27.13	18.58	4.97	97.50	21.41	21.73	0.52	114.23
	between		15.17	12.82	54.68		21.22	2.23	68.40
	within		12.25	4.60	96.85		7.89	-12.38	67.24
Transfers per capita (constant 2002 S./)	overall	271.95	231.35	35.26	1162.56	284.46	501.45	30.52	2709.60
	between		146.09	103.93	512.07		442.43	109.26	1539.09
	within		188.15	-121.42	922.43		270.74	-1209.42	1454.98
Variable	**Panel**	**PPGG, FONCOMUN, n=42, T=9, N=378**				**DDGG, FONCOMUN, n=82, T=9, N=738**			
		Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Taxes per capita (constant 2002 S./)	overall	34.78	98.89	0.51	1095.30	48.90	123.21	0.00	1132.50
	between		82.31	1.01	518.74		120.00	0.06	836.91
	within		56.11	-318.29	611.34		30.62	-172.28	344.49
Transfers per capita (constant 2002 S./)	overall	188.55	137.56	46.22	945.41	83.83	91.43	6.84	1298.60
	between		92.72	72.71	471.70		66.01	9.49	522.38
	within		102.51	-81.10	774.25		63.64	-87.06	1160.81
Variable	**Panel**	**PPGG, FONCOMUN w/o Lima, n=41, T=9, N=369**				**DDGG, FONCOMUN w/o Lima, n=43, T=9, N=387**			
		Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Taxes per capita (constant 2002 S./)	overall	22.98	32.06	0.51	247.99	9.15	18.76	0.00	342.67
	between		30.75	1.01	186.56		10.61	0.06	62.92
	within		10.14	-60.14	92.17		15.55	-39.30	288.90
Transfers per capita (constant 2002 S./)	overall	181.64	126.40	46.22	840.78	105.66	93.93	30.31	1298.60
	between		82.21	72.71	419.05		40.42	46.81	221.82
	within		96.78	-84.82	767.34		84.98	-65.23	1182.64

Source: own elaboration based on information by MEF and INEI

Before introducing the regression model I present below scatter plots of the main variables of interest (local taxes and total transfers per capita), for the LLGG that will be tested for fiscal sloth: main cities with complete observations between 2001 and 2009, excluding Lima.[22] Figures 6.25 through 6.27 show the scatter plots for all PPGG that are main cities, PPGG that are main cities with more and medium resources, and PPGG that are main cities with less resources, respectively. As can be seen, in the three cases the correlation between transfers and local taxes per capita is positive, and for more and medium resources the slope of the trend line is flatter mainly due to a few outliers.

[22] The general source of this information is NAO-MEF for fiscal information and INEI for population projections.

Figure 6.25 – Main cities PPGG – 2001 to 2009 (59 LLGG)

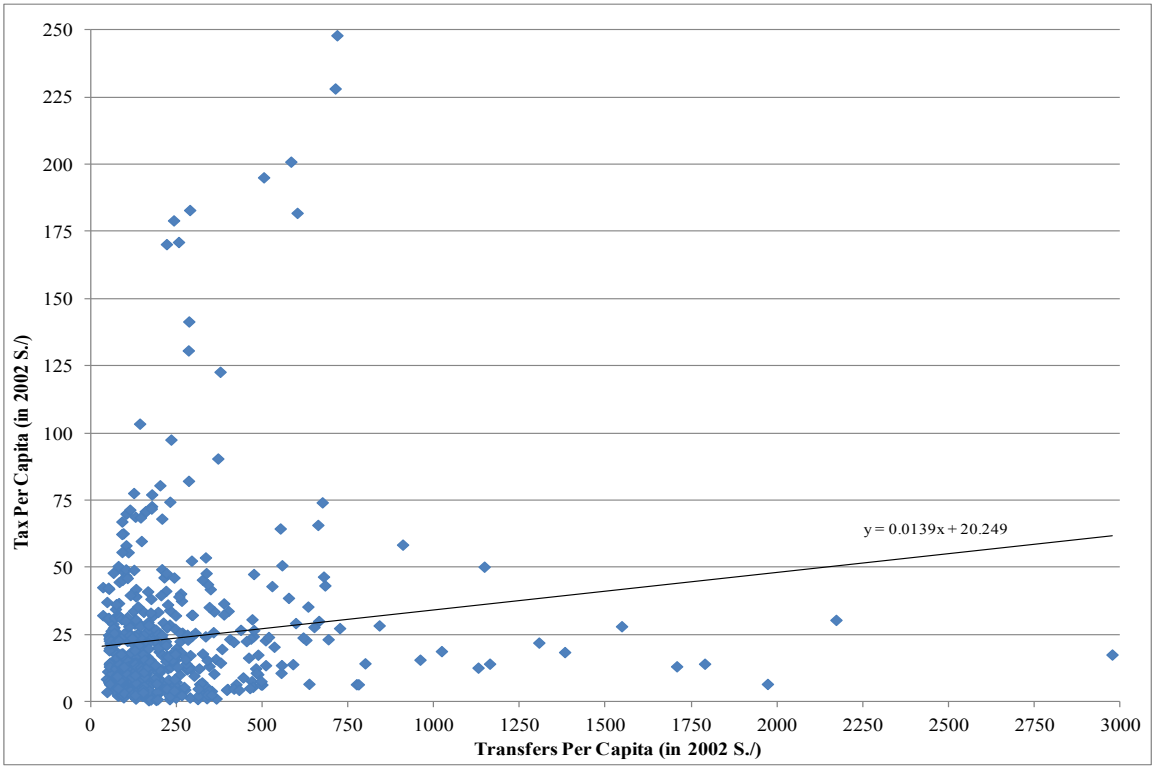


Figure 6.26 –Main cities PPGG with more and medium resources – 2001 to 2009 (22 LLGG)

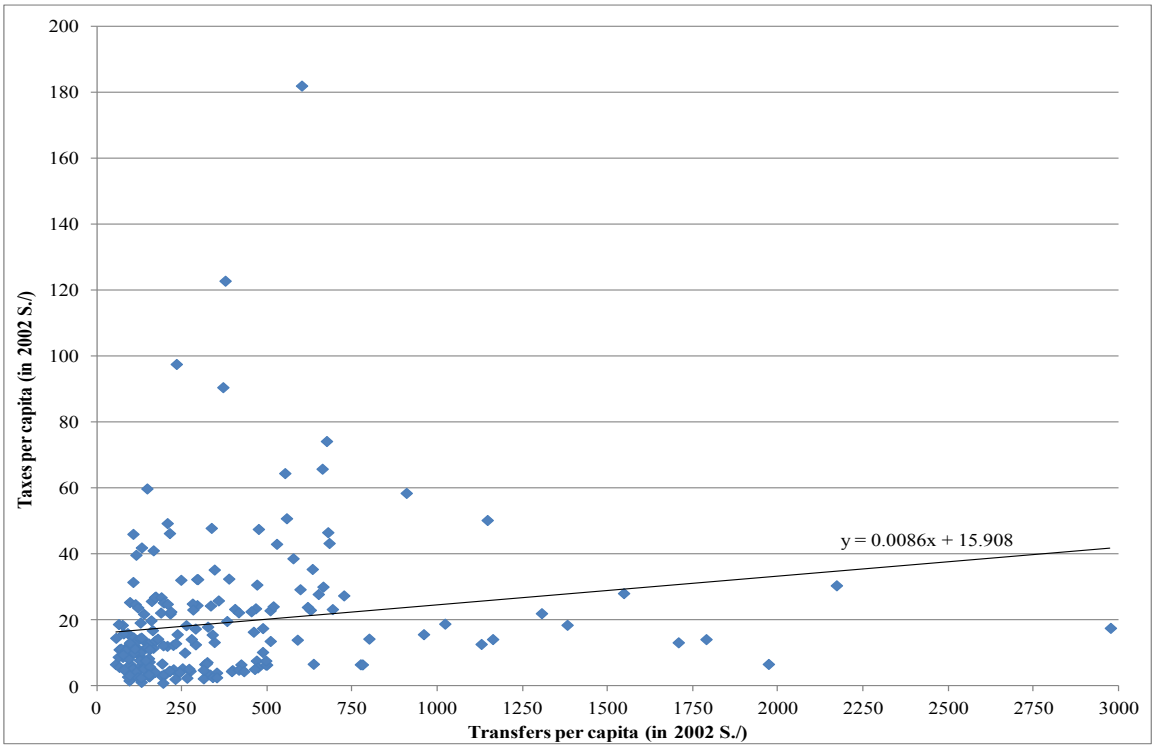
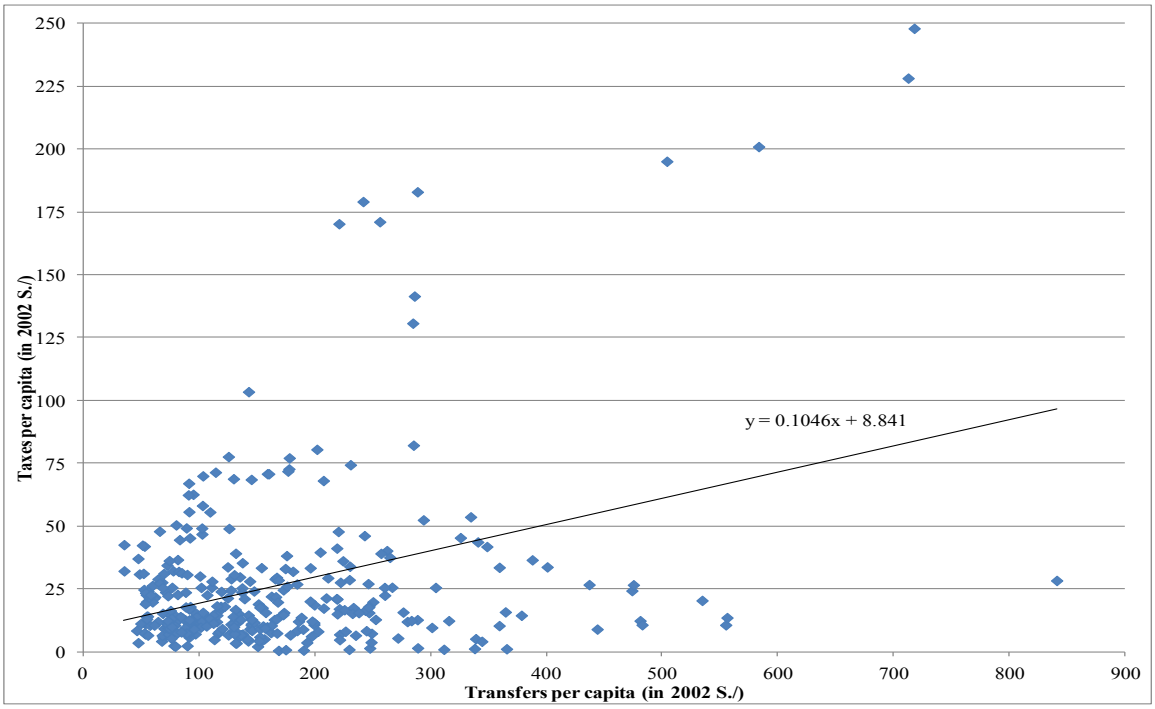


Figure 6.27 – Main cities PPGG with less resources – 2001 to 2009 (37 LLGG)



In turn, Figures 6.28 through 6.30 present PPGG according to main transfer group: FONCOMUN, mining and gas/oil/customs. In the case of mining and FONCOMUN groups the relationship is positive and again flatter for mining mainly due to a few outliers with very high transfers per capita. On the other hand, for oil/gas/customs group the relationship is negative, but with few observations.

Figure 6.28 – Main cities PPGG with FONCOMUN as main transfer – 2001 to 2009 (41 LLGG)

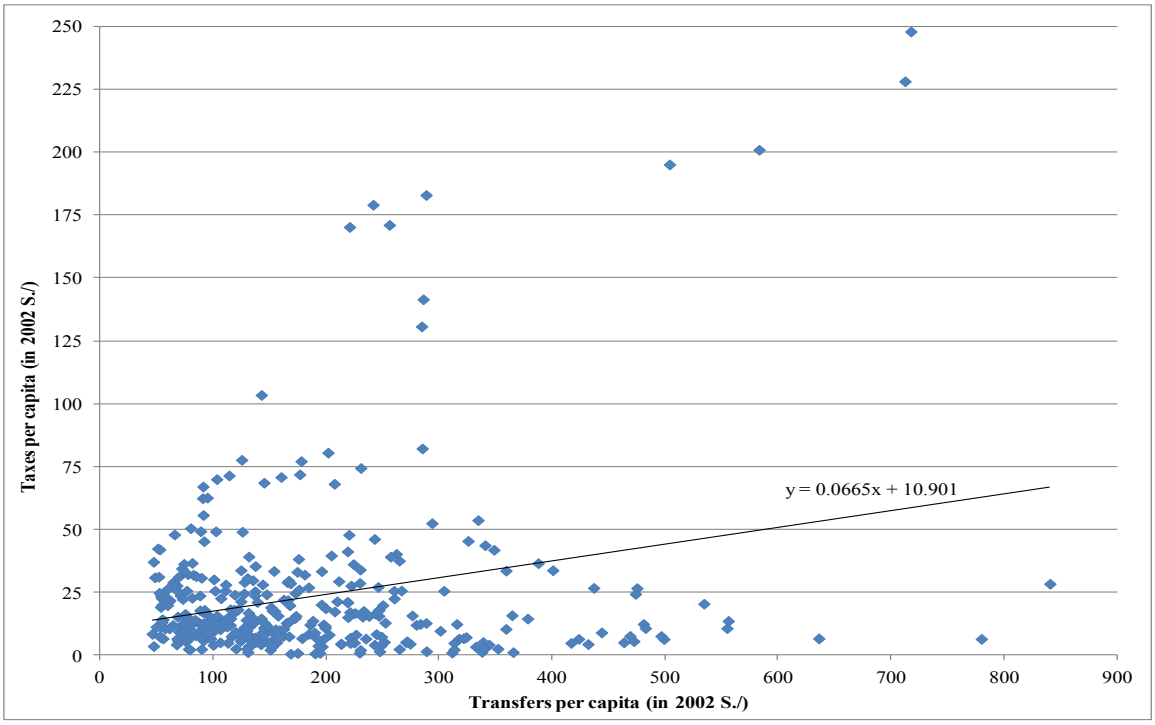


Figure 6.29 – Main cities PPGG with mining as main transfer – 2001 to 2009 (12 LLGG)

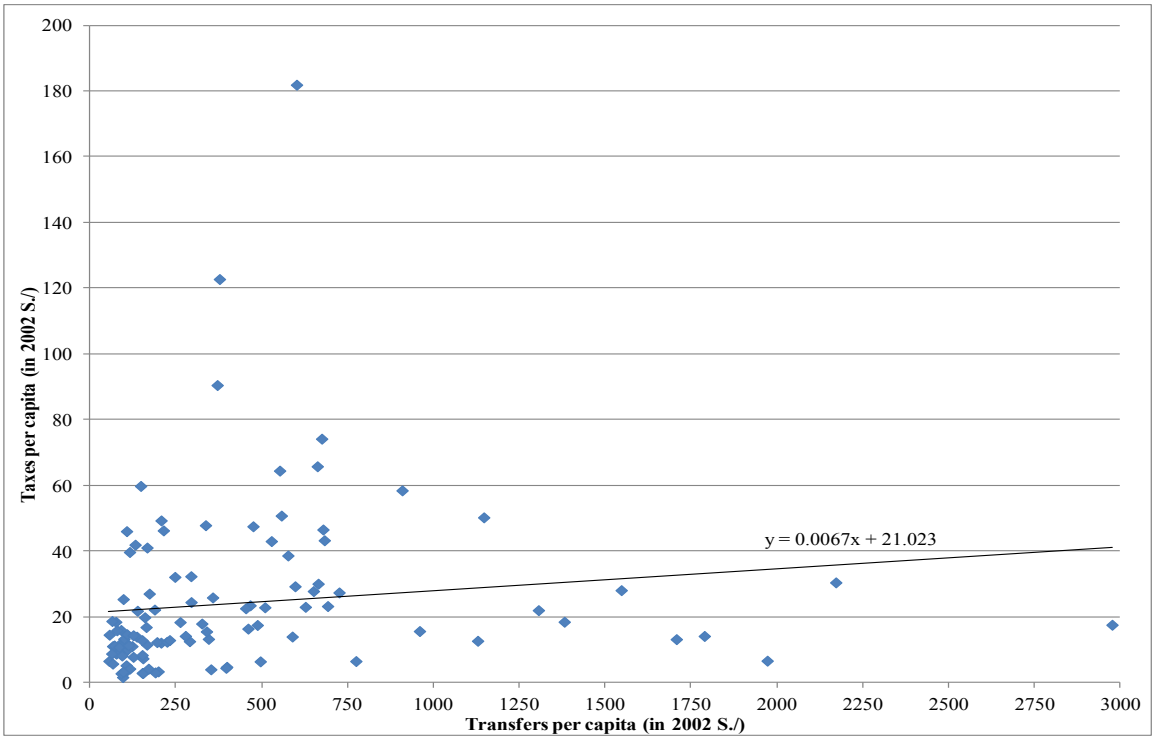
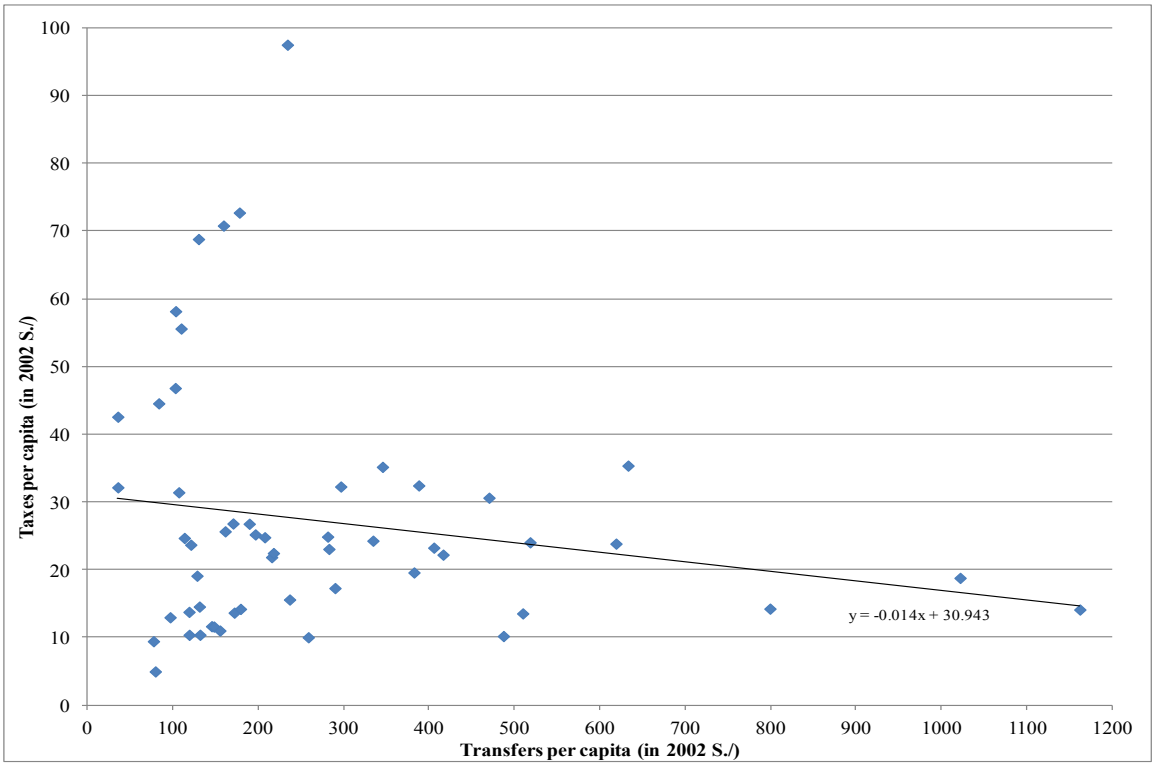


Figure 6.30 – Main cities PPGG with oil/gas/customs as main transfer – 2001 to 2009 (6 LLGG)



Figures 6.31 through 6.33 show the scatter plots for all DDGG that are main cities, DDGG that are main cities with more and medium resources, and DDGG that are main cities with less resources, respectively. Similar to PPGG, in the three cases the correlation between transfers and local taxes per capita is positive, and for DDGG with less resources the slope of the trend line is steeper than for more and medium resources, although in the latter case with relatively few observations.

Figure 6.31 – Main cities DDGG – 2001 to 2009 (100 LLGG)

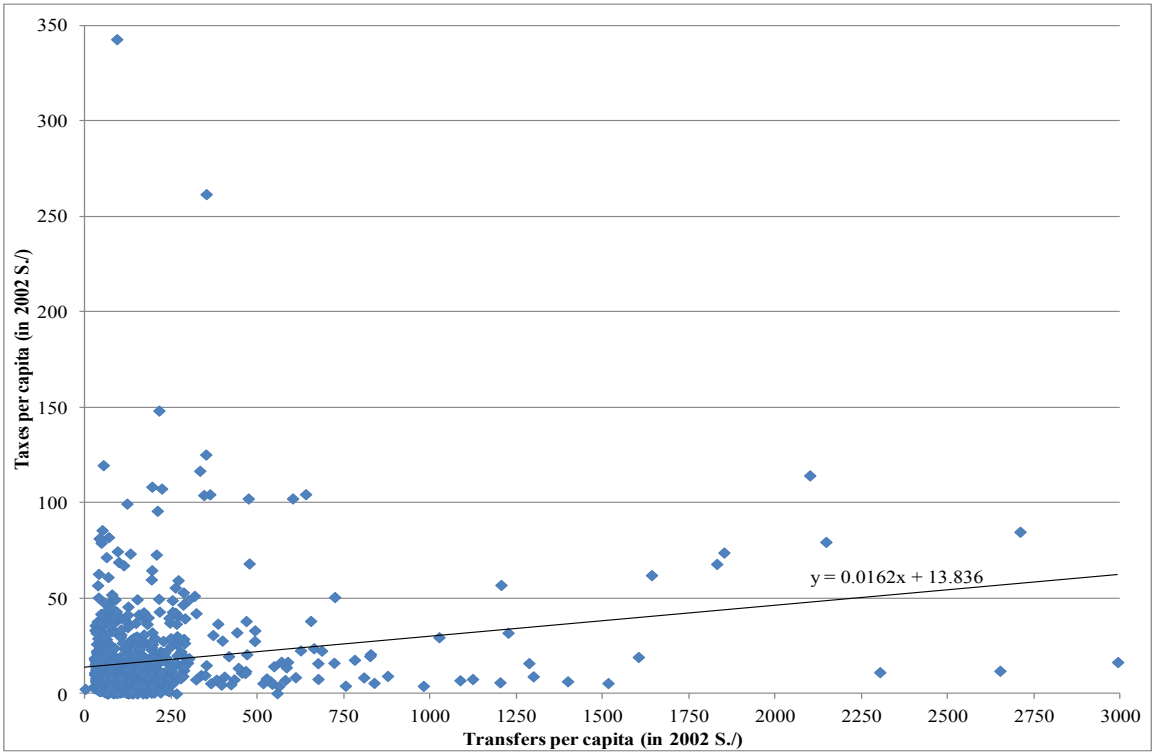


Figure 6.32 – Main cities DDGG with more and medium resources – 2001 to 2009 (14 LLGG)

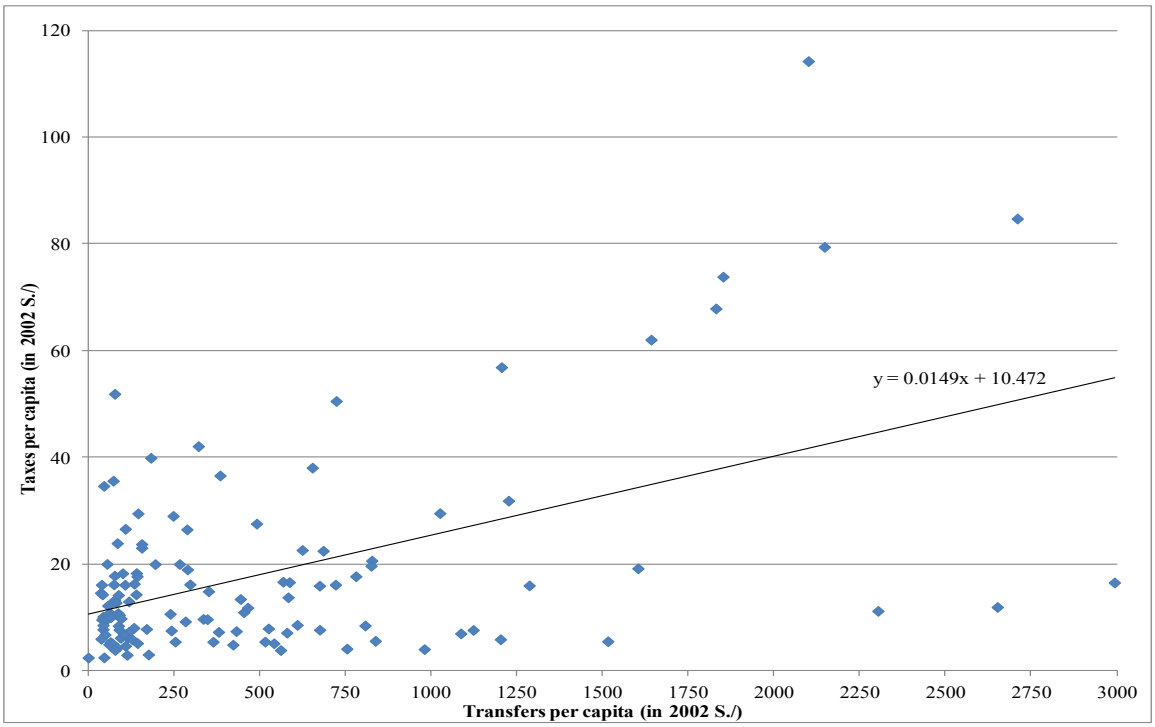
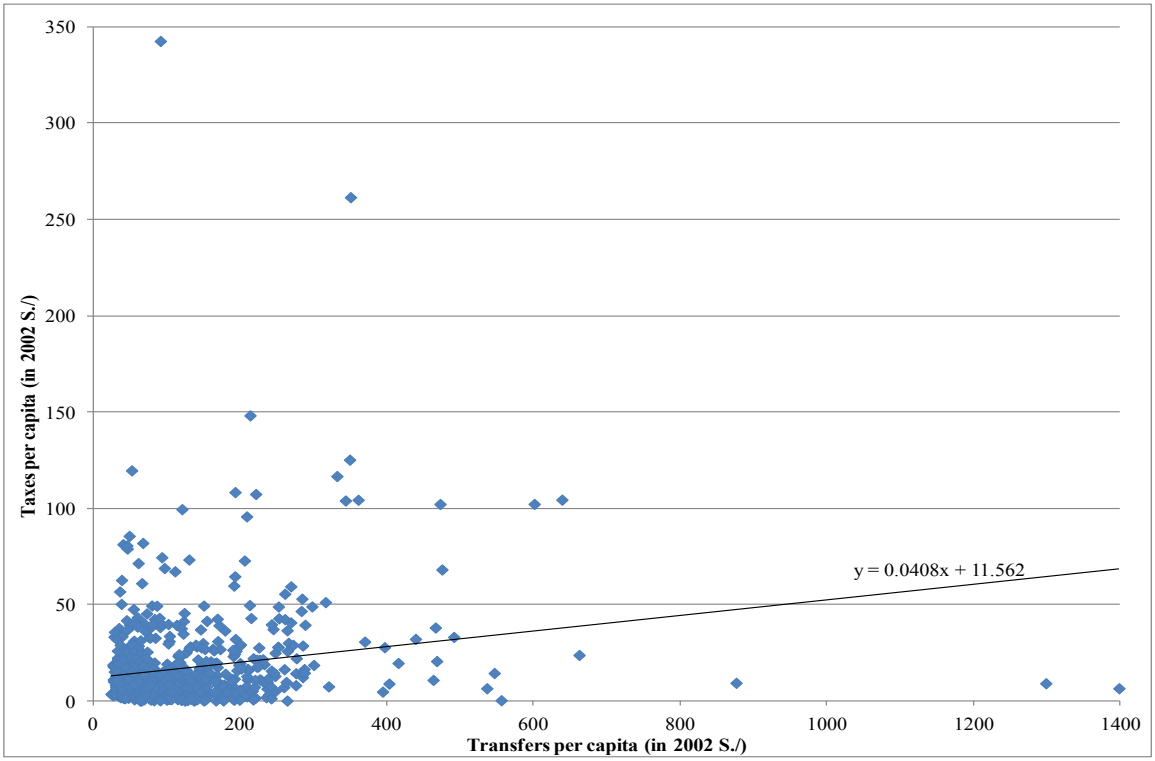


Figure 6.33 – Main cities DDGG with less resources – 2001 to 2009 (86 LLGG)



To conclude, Figures 6.34 through 6.36 show DDGG according to main transfer group: FONCOMUN, mining and gas/oil/customs. Different to PPGG, in the case of FONCOMUN and mining groups there is not a clear relationship between transfers and local taxes per capita, while for oil/gas/customs the relationship is clearly positive, although similar to the case of PPGG, there are relatively few observations.

Figure 6.34 – Main cities DDGG with FONCOMUN as main transfer – 2001 to 2009 (43 LLGG)

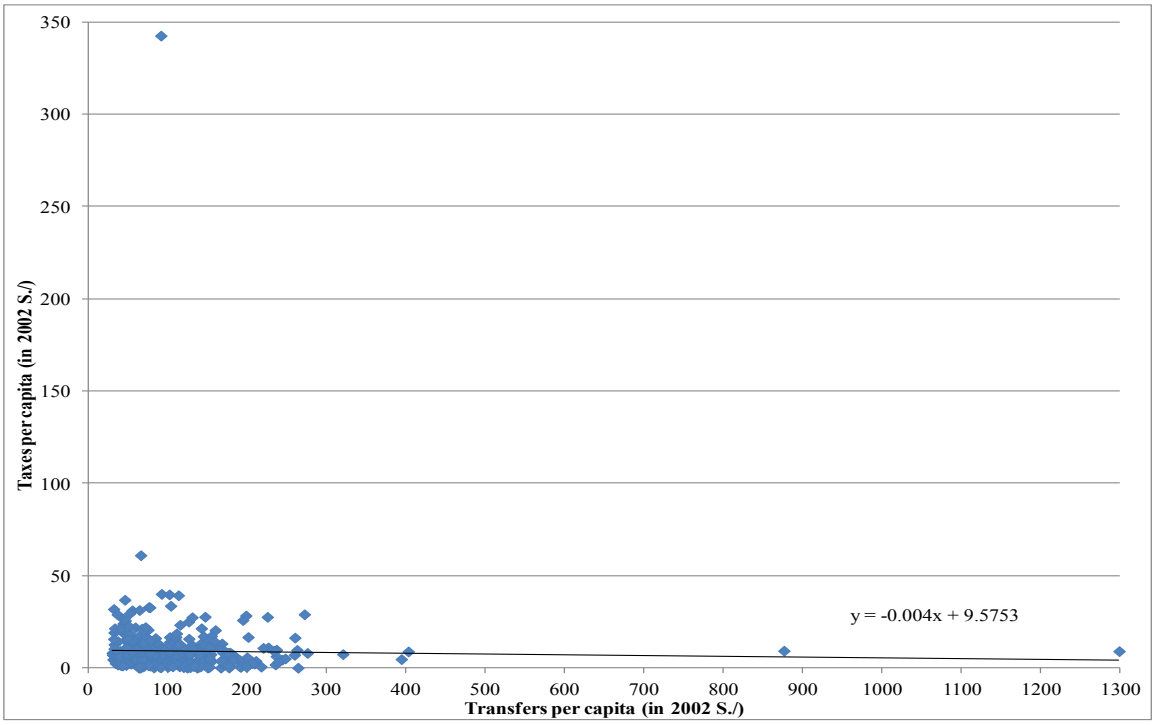


Figure 6.35 – Main cities DDGG with mining as main transfer – 2001 to 2009 (47 LLGG)

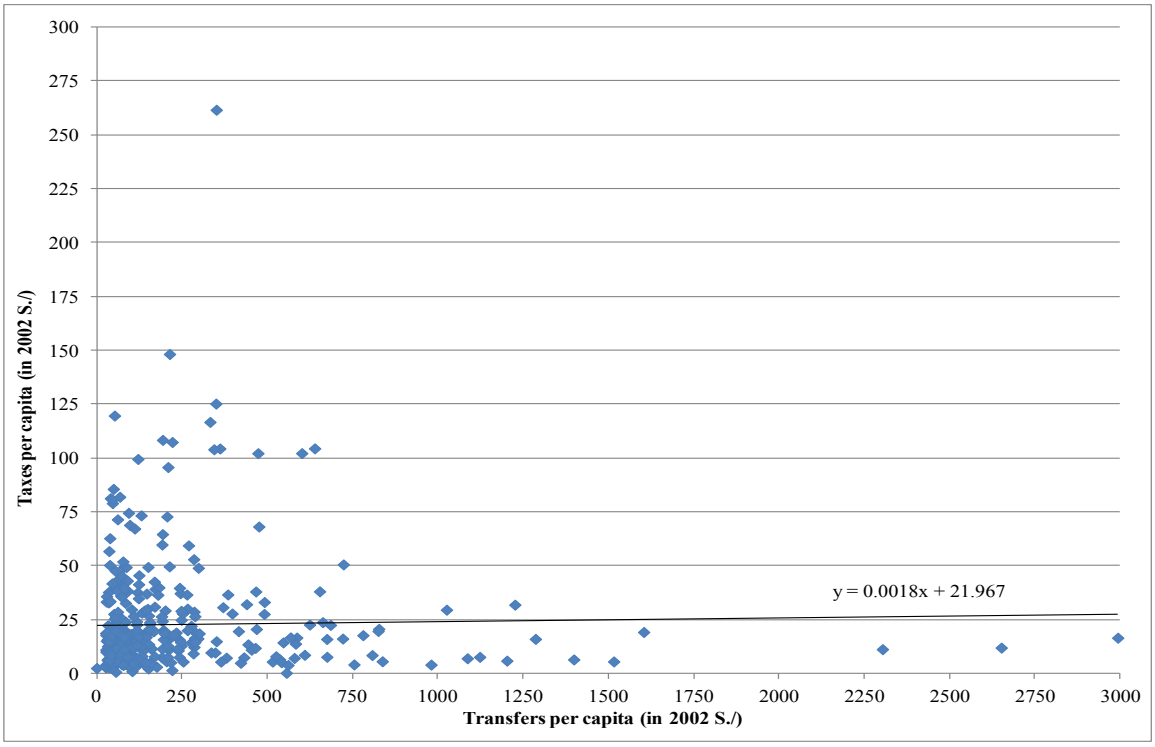
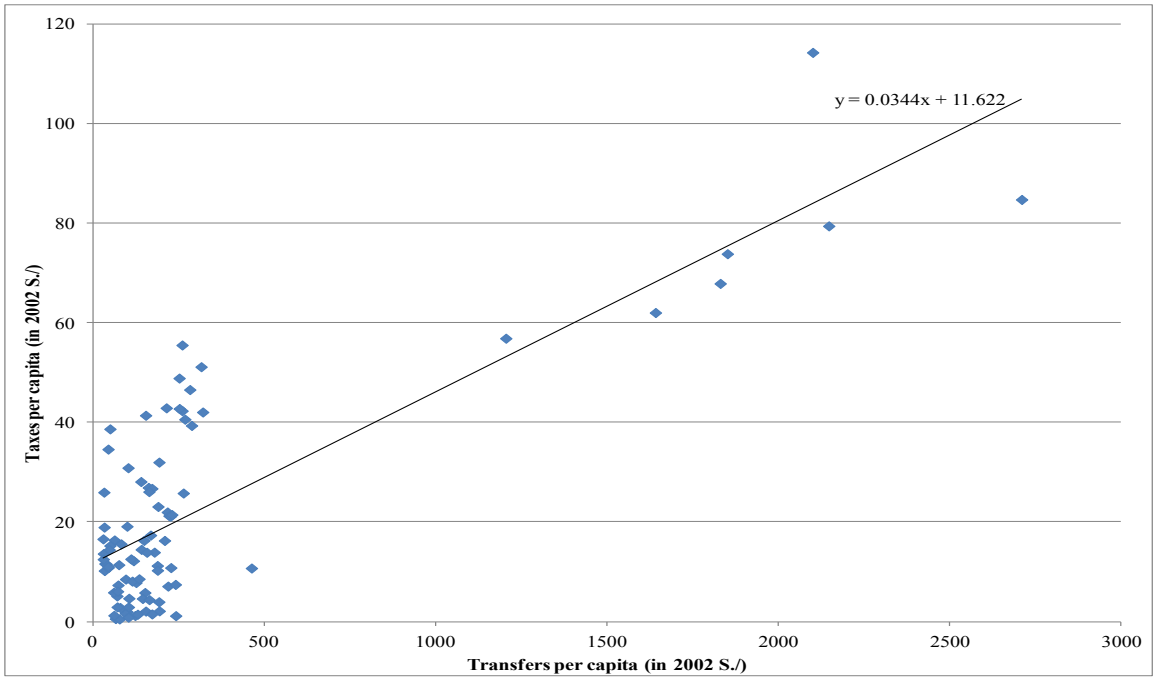


Figure 6.36 – Main cities DDGG with oil/gas/customs as main transfer – 2001 to 2009 (10 LLGG)



Regression model

In order to assess the effect of transfers on LLGG tax collection I use the following benchmark panel data model presented in equation (1):

$$TAX/CAP_{it} = (\alpha + u_i) + \beta_1 TT_{it} + \beta_2 DGDP/C_{jt} + \beta_3 DP_{jt} + \beta_4 DEN_{it} + \beta_5 REELECT_{it} + \beta_6 OI/TI_{it} + \beta_7 SAT_{it} + e_{it} \quad (1)$$

As mentioned above, the database is a balanced panel between 2001 and 2009, analyzed separately for PPGG (59) and DDGG (100) that are main cities. TAX/CAP is local tax collection per capita and TT is total transfers per capita for each LLGG in constant 2002 S./; DGDP/C is department GDP per capita in constant 2002 S./; DP is the department proportion of the population in poverty; DEN is the population density of each LLGG; SAT (Tax Administration Service, using the term in Spanish) is a dummy

that takes the value of 1 every year following the creation of a SAT (it only applies to PPGG); REELECT is a dummy variable that takes the value of 1 every year after a LLGG mayor gets reelected; and Own Income/Total Income (OI/TI) is own income as percent of total income in each LLGG. The subscript (t) refers to time, (i) captures municipal variability and (j) departmental variability for DGDP/C and DP.

The main variable of interest is TT, which is also evaluated according to resource groups (equation (2), more and medium resources are grouped together due to few observations); and according to main transfer groups (equation (3), "other fragmentary resources" also groups together oil, gas and custom transfers due to few observations).

I include two more specifications in order to test the effect of the variable of symmetry (equation (4)) introduced by Gramkhar and Oates (1996), where SYMMETRY is a dummy that takes the value of 1 when total transfers per capita fall with respect to the previous year. And the effect of lagged transfers on LLGG tax collection (equation (5)), where (TR-1) is total transfers per capita of the previous year in constant 2002 S./.

$$TAX/CAP_{it} = (\alpha + u_i) + \beta_1(TT)_{it} + \beta_2 DEPTGDP_{jt} + \beta_3 DEPTPOV_{jt} + \beta_4 DEN_{it} + \beta_5 REELECT_{it} + \beta_6 OI/TI_{it} + \beta_7 SAT_{it} + \beta_8 SYMMETRY_{it} + e_{it} \quad (4)$$

$$TAX/CAP_{it} = (\alpha + u_i) + \beta_1(TT)_{it} + \beta_2(TT\text{-}1)_{it} + \beta_3 DEPTGDP_{jt} + \beta_4 DEPTPOV_{jt} + \beta_5 DEN_{it} + \beta_6 REELECT_{it} + \beta_7 OI/TI_{it} + \beta_7 SAT_{it} + e_{it} \quad (5)$$

Equations (6) and (7) also test the effect of lagged transfers on LLGG tax collection, according to resources and main transfer groups. Each model is initially tested using the more efficient random effect regression, and then compared to the fixed effect regression using the Hausman test to assess whether the estimators are significantly

different, in which case I use fixed effects. Although not shown, I also test and correct each regression for heteroskedasticity and serial correlation using panel corrected standard errors (PCSE) regressions, finding similar results to those described below, though in the case of PPGG some of the coefficients for the transfer variables have higher statistical significance. I also include time fixed effects as year dummy variables, labeled "time dummies", whenever the year dummies are jointly statistically significant.

A potential endogeneity concern related to subnational taxes that are highly correlated with economic activity, such as the sales tax, is that both the dependent variable (own tax collection of LLGG) and one of the explanatory variables (gross domestic product) are simultaneously determined. In the case of LLGG in Peru, however, there is not a sales tax, and the main source of own taxes is the property tax, which is relatively inelastic to the economic cycle, hence reducing this risk of endogeneity.

Table 6.20 shows all regression results for PPGG and DDGG, which for TT tend to conform to the scatter plot figures presented above. The effect of TT on LLGG tax collection (equation (1) for PPGG and DDGG), is positive for PPGG and DDGG, and higher for DDGG, although not statistically significant for PPGG. The higher coefficient for DDGG is consistent with the scatter plots in Figures 6.25 and 6.31; it is partly explained by the fact that DDGG are on average more dependent on transfers than PPGG: this means that those DDGG that receive transfers from natural resources, which are mostly earmarked to public investment, have a stronger incentive to increase own resources to fund current expenditure to operate and maintain public investment, since their own resources are on average lower than for PPGG.

Table 6.20 – Results of "fiscal sloth" models (main cities w/o Lima) – 2001 to 2009

Provincial Governments (PPGG) - Benchmark model				PPGG - Transfers with one-year lag				District Governments (DDGG)			DDGG - Transfers with one-year lag			
Dependent Variable: Tax/Cap				Dependent Variable: Tax/Cap				Dependent Variable: Tax/Cap			Dependent Variable: Tax/Cap			
Variable	(1) Fixed[1]	(2) Fixed	(3) Fixed	(4) Fixed	(5) Fixed	(6) Fixed	(7) Fixed	(1) Random[2]	(2) Fixed	(3) Random	(4) Fixed	(5) Fixed	(6) Fixed	(7) Fixed
Total Transfers (TT)	0.0007			0.0021	0.0009			0.0113			0.0107	0.0085		
	(0.0036)			(0.0038)	(0.0044)			(0.0029)**			(0.0031)**	(0.0047)*		
TT-1					0.0025							0.0032		
					(0.0039)							(0.0049)		
More & Medium Resources (M&MR)		0.0011				0.0015			0.0113				0.0068	
		(0.0037)				(0.0044)			(0.0032)**				(0.006)	
M&MR-1						0.0073							0.0057	
						(0.0037)**							(0.0057)	
Less Resources (LR)		0.0095				0.0107			0.0184				0.0156	
		(0.0109)				(0.0133)			(0.0062)**				(0.0071)**	
LR-1						0.0286							0.0273	
						(0.0153)*							(0.0121)**	
Mining (MIN)			0.0024				0.0026			0.0033				0.0108
			(0.0037)				(0.0045)			(0.0034)				(0.0055)**
MIN-1							0.0017							-0.0052
							(0.004)							(0.0059)
Other Fragmentary Resources (OFR)			-0.0151				-0.0097			0.0289				-0.0022
			(0.0088)*				(0.0198)			(0.0045)**				(0.0141)
OFR-1							-0.0085							0.0202
							(0.0207)							(0.0113)*
FONCOMUN			-0.013				-0.0037			-0.0057				0.0240
			(0.0096)				(0.0127)			(0.0084)				(0.0116)**
FONCOMUN-1							-0.0139							-0.1241
							(0.016)							(0.0285)**
Department GDP/Capita (DGDP/C)	0.0008	0.0009	0.0006	0.0005	0.0006	0.0008	0.0003	0.0014	0.0012	0.0017	0.0016	0.0015	0.0014	0.0005
	(0.0004)*	(0.0004)**	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0003)**	(0.0004)**	(0.0003)**	(0.0003)**	(0.0004)**	(0.0004)**	(0.0005)
Department Poverty (DP)	-12.78	-12.99	-11.25	-16.49	-18.42	-42.13	-14.35	2.01	-17.19	5.18	9.71	8.40	-10.65	5.85
	(11.26)	-11.27	(11.27)	(12.86)	(13.03)	(9.64)**	(13.24)	(8.06)	(7.80)**	(7.77)	(8.94)	(8.97)	(9.48)	(13.61)
Density (DEN)	-0.0257	-0.0244	-0.0277	-0.0187	-0.0187	-0.0137	-0.0217	0.0003	0.005	0.0001	0.0002	0.0002	0.0048	-0.0012
	(0.0035)**	(0.0038)**	(0.0037)**	(0.0042)**	(0.0042)**	(0.0045)**	(0.0046)**	(0.0003)	(0.004)	(0.0003)	(0.0004)	(0.0004)	(0.0048)	(0.0049)
SAT	5.16	5.17	4.48	3.74	3.66	4.48	2.94							
	(3.82)	(3.82)	(3.82)	(4.22)	(4.22)	(4.22)	(4.22)							
Reelection (REELECT)	-3.49	-3.41	-3.48	-3.84	-3.74	-3.29	-3.73	0.95	1.32	0.57	-0.04	-0.04	0.67	-0.83
	(1.93)*	(1.94)*	(1.93)*	(2.02)*	(2.02)*	(2.02)	(2.02)*	(1.54)	(1.57)	(1.53)	(1.61)	(1.61)	(1.66)	(1.64)
Own income/Total income (OI/TI)	16.90	19.84	15.18	13.56	15.03	19.46	15.86	63.25	54.67	62.69	79.53	77.63	71.64	74.52
	(10.49)	(11.04)*	(10.62)	(11.21)	(11.07)	(10.72)*	(11.33)	(5.37)**	(5.95)**	(5.26)**	(6.22)**	(6.26)**	(7.07)**	(7.12)**
Symmetry				1.63							-2.30			
				(1.60)							(1.36)*			
R-Squared within	0.328	0.3291	0.3359	0.2664	0.2653	0.2481	0.277	0.328	0.1231	0.1536	0.1582	0.1554	0.1514	0.1921
R-Squared between	0.6039	0.5961	0.6132	0.5945	0.59	0.4887	0.6046	0.6039	0.1842	0.5437	0.5161	0.5182	0.2341	0.3521
R-Squared overall	0.4622	0.4539	0.4716	0.471	0.4674	0.3733	0.4836	0.4622	0.1462	0.4106	0.3961	0.3961	0.1893	0.2994
Observations	531 (59*9)	531 (59*9)	531 (59*9)	472 (59*8)	472 (59*8)	472 (59*8)	472 (59*8)	900 (100*9)	900 (100*9)	900 (100*9)	800 (100*8)	800 (100*8)	800 (100*8)	800 (100*8)
Time dummies	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes

[1] Fixed Effects GLS Panel Regressions. [2] Random Effects GLS Panel Regressions. Choice of model based on Hausman test at 10% significance level. Inclusion of time dummies based on joint significance at 10% level

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

This indicates that for DDGG, each additional S./ 1 of transfers increases tax collection in S./ 0.01 (in constant terms). In the case of the models that include the SYMMETRY variable (equation (4) for PPGG and DDGG), this variable is only significant and negative at the 10 percent level for DDGG, which indicates that tax collection falls on average S./ 2.3 when transfers fall. Lastly, for models that include the lagged transfer (equation (5) for PPGG and DDGG), this variable is not significant.

The regressions that evaluate the effect of transfers according to resource groups show a positive and significant effect of transfers on tax collection only for DDGG (at the 5 percent level), with a higher coefficient for DDGG with less resources relative to more and medium resources (equation (2) for PPGG and DDGG in Table 6.20). In the case of the specification that includes the lagged transfer variable according to resource groups (equation (6) for PPGG and DDGG), the lagged variable for PPGG is positive and significant for LLGG with more and medium resources, as well as less resources, with a higher coefficient in the latter case; and it is positive and significant for DDGG with less resources, with a coefficient that is similar to that for PPGG.

For the regressions according to main transfer group (model (3) for PPGG and DDGG in Table 6.20), in the case of PPGG only "Other Fragmentary Resources" (OFR) is significant at the 10 percent level and negative, while for DDGG it is also the only significant variable at the 5 percent level, although it is positive. The negative sign of Other Fragmentary Resources for PPGG is consistent with Figure 6.30 and suggests some evidence of fiscal sloth, which can be partly explained by the fact that LLGG that receive oil as main transfer have less restrictions on the use of grants and less volatility of transfers, and consequently have less incentive to collect own taxes to maintain and

operate public investment. Moreover, PPGG already collect more own resources on average than DDGG, so they have less incentives to continue increasing own resources, which helps explain why the sign for DDGG is positive. However, it should also be noted that in both cases there are relatively few observations: 6 PPGG, of which 4 have oil as main transfer; and 10 DDGG of which 3 have oil as main transfer, which may bias the results.

With respect to the lagged variables (model (7) for PPGG and DDGG), only DDGG show significant coefficients: mining transfers are positive and significant at the 5 percent level, the lagged variable of Other Fragmentary Resources is positive and significant at the 10 percent level; and the FONCOMUN variable is positive and significant at the 5 percent level for the contemporaneous variable, and negative and significant at the 5 percent level for the lagged variable.

For the control variables, DGDP/C has the expected positive sign, although it is significant at the 5 percent level only for DDGG (except for model (7)), while for PPGG it is only significant at the 10 percent level for model (1) and at the 5 percent level for model (2). The absence of a measure of gross domestic product at the local level of government probably means that the coefficient of department gross domestic product per capita is biased downwards for LLGG that have mining as main transfer, since in most of them economic activity has been booming; and it is biased upwards for LLGG that have FONCOMUN as main transfer, in which economic activity has been on average less buoyant.

Department Poverty is mostly not significant across specifications, while Density is surprisingly negative and significant at the 5 percent level for PPGG. The Tax Administration Service (SAT) variable has the expected positive sign, although it is not statistically significant, and the REELECT variable is negative and significant at the 10 percent level for PPGG. The variable Own Income/Total Income is positive and significant at the 5 percent level for DDGG, which indicates that as DDGG improve their fiscal autonomy they tend to increase their tax collection in constant per capita terms. Lastly, although not shown in Table 6.20, in most models the time-dummies are jointly statistically significant at the 5 percent level for both PPGG and DDGG. In both cases, the years 2007 to 2009 have higher coefficients with higher statistical significance than the years 2002 through 2006, which suggests an improvement in the capacity of LLGG, on average, to collect own taxes.

Hence, after evaluating the effect of transfers on tax collection of LLGG that are main cities (without Lima), which is where it matters most in terms of total tax collection of municipalities in Peru, I did not find evidence that transfers stimulate lower tax collection. On the contrary, in the case of DDGG, transfers stimulate *higher* tax collection, especially in DDGG that are main cities and receive less resources.

For PPGG, transfers only stimulate lower tax collection in LLGG that receive Other Fragmentary Resources as their main transfer, which is partly related to the fact that LLGG that receive oil as main transfer have less restrictions on the use of grants and less volatility of transfers, and consequently have less incentive to collect own taxes to maintain and operate public investment; in this case, however, there may also be a bias due to few observations (only 6 PPGG). Noteworthy, the effect is the opposite for DDGG

that receive Other Fragmentary Resources as their main transfer, which is partly related to the fact that own resources of DDGG is lower than for PPGG, and hence they have an incentive to increase own resources.

The lagged transfer variable is not consistent across specifications, and the SYMMETRY variable is only significant and negative for DDGG, suggesting that tax collection decreases symmetrically with transfers for that group of LLGG.

To conclude, both the descriptive and econometric assessment of the response of own revenue collection to transfers confirm that there is no evidence of fiscal sloth in Peru: LLGG do not appear to decrease their fiscal effort in response to transfers. The analysis allowed narrowing the discussion to the group of municipalities where own resources matter most, which is main cities, comparing LLGG that received large transfers to those that did not.

In the context of the many studies on this topic in Peru, fiscal sloth is not a relevant problem to macroeconomic stability: first, the resources at stake are a relatively small proportion of total income of LLGG; and second, municipalities do not decrease their tax effort in response to transfers. This behavior of LLGG can be partially explained by the fact that transfers linked to natural resources are mostly earmarked to public investment, so municipalities have the incentive to collect own revenue in order to obtain resources for current expenditure; indeed, as supporting evidence of this claim, Table 6.8 in the previous section shows that most own taxes across categories of LLGG are allocated to current expenditure. Noteworthy, the stimulation of LLGG own revenue

collection is an important goal of the decentralization process. However, the evidence shows that transfers are not reducing fiscal effort in Peruvian municipalities.

As described in Chapter 4, the effect of transfers on LLGG own revenue collection has been thoroughly studied in Peru. I turn next to the fifth question of this dissertation, evaluating the effect of transfers on municipal expenditures through an estimation of the flypaper effect. This is a topic that has been relatively ignored in the literature review on Peru, and as suggested by the descriptive findings in the previous section, it appears promising in assessing the effect of transfers on macroeconomic stability.

Effect of transfers on LLGG expenditures

To assess econometrically the answer to question 5 of this dissertation, whether LLGG in Peru increased substantially their expenditure in response to transfers, exhibiting a flypaper effect, I use a version of the flypaper effect model similar to that used in previous studies (see for example Melo, 2002, for the case of Colombia).

Descriptive statistics

As discussed in Chapter 2, the flypaper effect allows assessing the responsiveness of expenditures to transfers, and its comparison to the effect of income on expenditures, with income proxied by gross domestic product. For the purposes of this dissertation, it is of particular interest to compare the responsiveness of expenditures to transfers across the different categories of LLGG introduced above, and especially according to resource and main transfer groups.

Similar to the analysis of fiscal sloth, the dataset is a balanced panel between 2001 and 2009. I exclude the year 2010 because that is the first full year for which the transfer "FONIPREL" included as part of its criteria to reward investment proposals the degree of budget execution of SNG: when FONIPREL rates public investment proposals it gives extra points to the SNG that executes a higher proportion of its budget (see Table A1.3 in Annex 1).[23] Similar to the PI & PMM case analyzed above with reference to the response of own taxes to transfers, this can arguably create an endogeneity problem due to reverse causality, since SNG may receive more transfers because they increase their expenditures.

To assess the effect of transfers on LLGG expenditures I include all LLGG for which I have complete observations between 2001 and 2009, which yields 1201 LLGG (65.5 percent of a total of 1834 LLGG): 156 PPGG (80 percent of a total of 195 PPGG), and 1045 DDGG (63.8 percent of a total of 1639 DDGG). In most regressions I distinguish between PPGG and DDGG, since they have some different functions of government and sources of income.[24] PPGG have on average larger current expenditure per capita (statistically significant at the 1 percent significance level), while DDGG have on average higher capital expenditure per capita (statistically significant at the 5 percent significance level).

[23] This particular criterion was introduced during the second semester of 2009, but arguably it was too late during the budget execution of that year to have an effect on the decisions of subnational authorities.

[24] For the different sources of income between PPGG and DDGG see Table A1.4 in Annex 1. According to the Municipal Organic Law (Law 17.972 of May, 2003) the expenditure functions of LLGG include broad responsibilities in the fields of urban development; health, water and sanitation; transit and public transportation; education, culture, sports and recreation; commercialization of goods and service; social programs; citizen security; promotion of local development; and other functions that are not exclusive of other levels of government. PPGG tend to have some specific functions for the whole province, and expenditure responsibilities are broad with respect to public investment.

In turn, PPGG receive on average higher FONCOMUN transfers per capita at the 1 percent significance level, which do not have conditions on their use; and they collect on average higher own resources per capita than DDGG, at the 1 percent significance level, while DDGG receive higher earmarks and other resources per capita, at the 5 percent significance level. Lastly, and as will be shown below when describing LLGG according to resources and main transfer groups, PPGG and DDGG present large differences in average expenditures and transfers per capita in constant terms across most categories. For these reasons, I separate PPGG and DDGG in the analysis below.

In Tables 6.21 and 6.22 I evaluate whether there is any significant association among the different categories of LLGG used in this dissertation and the degree of completeness of the database, distinguishing between provincial and district governments.

Table 6.21 – Tests of association for PPGG of completeness of data by municipal classifications

Category	Classification by Resources			Classification by Size			Classification by Needs		
	More Resources	Medium Resources	Less Resources	Main Cities	More than 500 houses	Less than 500 houses	Very high need	High need	Medium need
Complete	10	42	104	60	90	6	48	68	40
Omitted	2	8	29	10	25	4	17	12	10
Total	12	50	133	70	115	10	65	80	50
Complete - Exp Value	10	40	106	56	92	8	52	64	40
Omitted - Exp Value	2	10	27	14	23	2	13	16	10
Chi Value	Chi Value: 0.85. Critical Value at 10% sign. level with 2 degrees of freedom: 4.61			Chi Value: 4.15. Critical Value at 10% sign. level with 2 degrees of freedom: 4.61			Chi Value: 2.79. Critical Value at 10% sign. level with 2 degrees of freedom: 4.61		

Category	Classification by Main Transfer						Total	Fraction
	FONCOMUN	Mining	Oil	Gas	Custom	FOCAM		
Complete	109	35	9	1	1	1	156	80%
Omitted	31	8					39	20%
Total	140	43	9	1	1	1	195	100%
Complete - Exp Value	112	34.4	7.2	0.8	0.8	0.8		
Omitted - Exp Value	28	8.6	1.8	0.2	0.2	0.2		
Chi Value	Chi Value: 3.45. Critical Value at 10% sign. level with 5 degrees of freedom: 9.24							

Source: own elaboration based on information by NAO-MEF.

In the case of provincial governments (Table 6.21), there is no particular association at the 10 percent significance level between omitted LLGG and the different categories of LLGG used in this dissertation.

For district governments (Table 6.22), however, there is association between omitted LLGG and the classifications by size, needs and main transfers, although there is no association by resources.

Table 6.22 - Tests of association for DDGG of completeness of data by municipal classifications

Category	Classification by Resources			Classification by Size			Classification by Needs			
	More Resources	Medium Resources	Less Resources	Main Cities	More than 500 houses	Less than 500 houses	Very high need	High need	Medium need	
Complete	121	252	673	139	294	612	270	299	477	
Omitted	76	148	369	40	146	408	159	209	225	
Total	197	400	1042	179	440	1020	429	508	702	
Complete - Exp Value	126	255	665	114	281	651	274	324	448	
Omitted - Exp Value	71	145	377	65	159	369	155	184	254	
Chi Value	Chi Value: 0.87. Critical Value at 10% sign. level with 2 degrees of freedom: 4.61			**Chi Value: 22.99**. Critical Value at 1% sign. level with 2 degrees of freedom: 9.21			**Chi Value: 10.74**. Critical Value at 1% sign. level with 2 degrees of freedom: 9.21			

Category	Classification by Main Transfer								Total	Fraction
	FONCOMUN	Mining	Oil	Gas	Custom	FOCAM	Hydroenerg	Fishing		
Complete	613	301	42	71	6	7	4	1	1045	64%
Omitted	326	239	14	13	1	1			594	36%
Total	939	540	56	84	7	8	4	1	1639	100%
Complete - Exp Value	599	344	36	54	4	5	3	1		
Omitted - Exp Value	340	196	20	30	3	3	1	0		
Chi Value	**Chi Value: 40.96**. Critical Value at 1% sign level with 7 degrees of freedom: 18.48									

Source: own elaboration based on information by NAO-MEF.

In the classification by size in Table 6.22, there are relatively more omitted DDGG that have less than 500 houses than would be expected if there was no association, and relatively less omitted DDGG that are main cities: this is to be expected, since larger DDGG tend to have higher capacity to report their fiscal information. According to needs, there are relatively more omitted DDGG with high needs, and relatively less omitted DDGG with medium needs. Lastly, according to main transfer, there are relatively more omitted DDGG that have mining as main transfer, and relatively

less omitted DDGG that have gas, oil and FONCOMUN as main transfer. Notwithstanding these associations, there is a relatively large number of complete observations in each category for DDGG, which reduces the risk of bias in the results.

The main interest of this section is to assess econometrically the different effect of transfers on primary expenditures according to the classifications of LLGG by resources and main transfer groups, and distinguishing between PPGG and DDGG. This allows evaluating whether there is a flypaper effect for the different classifications of LLGG, and also whether there is a significant difference in the response of expenditures to transfers in LLGG with more and/or medium resources vis-à-vis LLGG with less resources; and in LLGG in which the main transfer stems from natural resources vis-à-vis LLGG in which the main transfer is FONCOMUN.

Different to the analysis for own local taxes, the argument of endogeneity due to reverse causality posed by Aragon and Gayoso (2005) does not necessarily hold in the case of the response of expenditures to transfers. Indeed, the FONCOMUN transfer allocates more resources to LLGG that are rural, and hence have a lower tax potential. However, the tax potential of LLGG does not necessarily affect their propensity to spend out of transfers. For this reason, I separately pool together all PPGG and DDGG in the regression analysis presented below, regardless of their size and needs.

It can still be argued that the allocation rules of the main transfers in Peru, which include rural population (FONCOMUN) and also BUN (in the case of canon) in its criteria, are also important determinants of the ability to spend of LLGG. This argument may also create an endogeneity problem due to reverse causality, since the transfers that a

LLGG receives may be determined by its capacity to spend, which in turn may be associated to its urban population (part of the criteria of the FONCOMUN transfer) and needs (part of the criteria of transfers based on natural resources). Hence, following the analysis of the previous section, I also estimate the econometric models distinguishing LLGG according to urban population (proxied by size groups) and needs (BUN groups).

More importantly, I take advantage of the allocation rule of mining transfers, by which 10 percent of its distribution goes directly to the LLGG in which the mining production takes place: as previously discussed, this is arguably an exogenous transfer, since it is only related to whether a LLGG possesses a mining exploitation. In this regard, I estimate separate regressions distinguishing LLGG that are mining producers, for which most transfers come from mining and hence have clear exogenous nature.

With respect to the regression model, the main variable of interest is the effect of total transfers on primary expenditure of LLGG. Control variables include other determinants of expenditures of LLGG frequently used in the literature that evaluates the flypaper effect, for which there is panel data available in Peru. The most important is GDP as a proxy for income: according to the "equivalence theorem" of the median-voter model presented in Chapter 2, this variable is supposed to have a positive effect on expenditure of a similar size as the response to transfers; the violation of this condition originates the empirical anomaly labeled the "flypaper effect", by which the response of expenditures to transfers tends to be higher than for income. The series of GDP is only available at the department level, which precludes intra-department variation.

The other control variables used in the regression model are: 1. Poverty rate, which is also only available at the department level; its effect is expected to be positive, since poorer LLGG have more needs, and hence more propensity to spend; 2. Density, whose effect is expected to be ambiguous: less densely populated LLGG have higher expenditure needs, while more densely populated LLGG tend to be urban, with higher institutional capacities; 3. Reelection of the mayor is expected to be positive, since local authorities that are reelected have more experience, which may allow them to improve execution of expenditures; and 4. Own income/Total Income is also expected to be ambiguous: on one hand, more autonomous LLGG tend to have higher institutional capacities to execute expenditures, but on the other hand, less autonomous LLGG that receive windfall transfers may have "fiscal illusion" (Rodden, 2003) due to the low marginal cost of increasing funds that come from the national government, which may prompt them to increase expenditures.

Similar to the estimation for the revenue models, I include the transfer variables with a lag, and following Gramkhar and Oates (1996) and Melo (2002), I introduce a symmetry variable to assess the reaction of expenditures when transfers fall. The source for all these variables is the same as described in the revenue section. Expenditures, transfers and GDP are also expressed in constant, per capita terms, using 2002 prices.

As mentioned in the literature review, Bailey and Connolly (1998) analyze a number of estimation problems that have been found in relation to the measurement of the flypaper effect. First, some studies fail to acknowledge the existence of matching grants, which induce a substitution effect on the part of the recipient SNG, stimulating higher expenditures. In the case of Peru there is one transfer system that requires co-

financing, FONIPREL, which was introduced during 2008 (included under "earmarks and other transfers" in Figure 1.1); however, the co-financing required by most LLGG is relatively low (see rules of FONIPREL in Table A1.3 in Annex 1), representing only around 0.66 percent of total expenditures of LLGG on average in 2008-09, which is why it is not considered here a significant stimulus of municipal expenditure. Second, Becker (1996) shows that the functional form can lead to different results of the flypaper effect: indeed, a linear specification may inflate the response of expenditures to transfers if the true functional form is not linear. In this regard, I estimate the regression models using both a linear and a logarithmic specification to evaluate the robustness of results to different specifications. And third, some model specifications include irrelevant variables and/or fail to include relevant variables: the regression models presented below include all the variables for which there is an available official series in Peru, and each variable has an underlying explanation for its inclusion.

Table 6.23 presents descriptive statistics of the variables used in the benchmark model of the response of expenditures of LLGG to transfers. As mentioned above, both primary expenditure and transfers per capita are similar for PPGG and DDGG, but they have different composition. In turn, PPGG have more fiscal autonomy, measured by own income/total income, which is higher on average than for DDGG at the 1 percent significance level. Majors of DDGG get reelected more often, since the reelection variable is higher than for PPGG at the 1 percent significance level.

Although not shown in Table 6.23, average total income per capita in constant terms for PPGG during 2001-09 has been S/. 489, while for DDGG it has been S/. 451, which is not much higher than primary expenditure per capita (S/. 417 and S/. 404,

respectively), in spite of the large increase in transfers of the last few years in Peru. Moreover, this average difference is reduced by 45 percent and 43 percent for PPGG and DDGG, respectively, if the year 2010 is added.

Table 6.23 – Descriptive statistics of variables used in regression analysis of response of expenditure to transfers – 2001 to 2009

Variable	Panel	PPGG - n = 156, T = 9, N = 1404				DDGG - n = 1045, T = 9, N = 9405			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	417	710	62	15505	404	648	5	18296
	between		488	108	5492		456	66	6443
	within		517	-4530	10431		461	-5859	12257
Transfers per capita (constant 2002 S./)	overall	413	1170	35	30408	402	848	0	31390
	between		766	73	9373		575	9	10801
	within		887	-8611	21449		623	-10286	20992
Own income / total income (%)	overall	0.20	0.16	-0.03	0.80	0.13	0.17	-0.04	1.00
	between		0.14	0.02	0.76		0.16	0.00	0.99
	within		0.08	-0.08	0.75		0.07	-0.36	0.89
Density (population per square kilometer)	overall	542	2442	0	25063	566	2714	0	28338
	between		2447	0	23505		2714	0	27263
	within		97	-1125	2099		91	-1185	2275
Reelection (1 = Reelected, 0 = Not reelected)	overall	0.11	0.31	0.00	1.00	0.18	0.38	0.00	1.00
	between		0.19	0.00	0.78		0.22	0.00	0.78
	within		0.25	-0.67	0.77		0.32	-0.60	0.84
Department GDP per capita (constant 2002 S./)	overall	6580	4326	1879	33055	6715	3991	1879	33055
	between		3921	2395	24773		3617	2395	24773
	within		1853	-5490	14862		1690	-5356	14997
Department Poverty Rate (%)	overall	0.55	0.18	0.13	0.90	0.54	0.19	0.13	0.90
	between		0.16	0.24	0.85		0.17	0.24	0.85
	within		0.08	0.33	0.76		0.08	0.31	0.75

Source: own elaboration based on information by NAO-MEF, INEI and JNE

Moreover, Table 6.24 presents descriptive statistics of the main variables of interest, which are primary expenditure and transfers per capita in constant 2002 S./, distinguishing between the different categories of resource and main transfer groups. For the classification by resource groups, more resources and medium resources are pooled together due to lack of sufficient observations for PPGG; while for the classification by main transfer groups, other fragmentary resources pools together gas, oil, hydro-energy, FOCAM, fishing and customs transfers, also due to insufficient observations for PPGG.

Table 6.24 Descriptive statistics of main variables used in regression analysis by resource and main transfer groups - 2001 to 2009

Variable	Panel	PPGG - More&Medium Resources, n=52, T=9, N=468				DDGG - More&Medium Resources, n=372, T=9, N=3348			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	572	1120	69	15505	698	991	5	18296
	between		762	157	5492		649	140	6443
	within		826	-4376	10585		750	-5565	12551
Transfers per capita (constant 2002 S./)	overall	636	1960	56	30408	726	1340	0	31390
	between		1274	163	9373		860	190	10801
	within		1499	-8388	21671		1028	-9962	21315
Variable	**Panel**	**PPGG - Less Resources, n=104, T=9, N=936**				**DDGG - Less Resources, n=673, T=9, N=6057**			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	340	335	62	4326	241	188	11	3375
	between		230	108	1740		127	66	1446
	within		244	-502	3620		139	-297	2582
Transfers per capita (constant 2002 S./)	overall	302	316	35	4272	223	184	0	3283
	between		202	73	1189		120	9	873
	within		243	-600	3471		139	-371	2633
Variable	**Panel**	**PPGG - Mining, n=35, T=9, N=315**				**DDGG - Mining, n=301, T=9, N=2709**			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	666	1332	82	15505	554	1039	5	18296
	between		890	207	5492		681	66	6443
	within		1000	-4281	10679		785	-5709	12407
Transfers per capita (constant 2002 S./)	overall	769	2367	56	30408	595	1463	0	31390
	between		1526	219	9373		951	53	10801
	within		1826	-8255	21805		1112	-10093	21185
Variable	**Panel**	**PPGG - FONCOMUN, n=109, T=9, N=981**				**DDGG - FONCOMUN, n=614, T=9, N=5518**			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	330	325	62	4326	321	345	11	4620
	between		223	108	1740		288	68	3485
	within		237	-513	3609		189	-687	2662
Transfers per capita (constant 2002 S./)	overall	294	300	46	4272	300	309	0	3495
	between		192	73	1189		251	9	2073
	within		231	-608	3463		180	-949	2710
Variable	**Panel**	**PPGG - Other frag res, n=12, T=9, N=108**				**DDGG - Other frag res, n=131, T=9, N=1179**			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Primary expenditure per capita (constant 2002 S./)	overall	489	428	81	1951	446	485	40	3936
	between		375	181	1526		349	108	2258
	within		229	17	1334		338	-1224	3119
Transfers per capita (constant 2002 S./)	overall	458	438	35	1990	438	483	31	5394
	between		397	104	1560		360	109	2894
	within		214	-18	1304		324	-1898	2938

Source: own elaboration based on information by NAO-MEF

Table 6.24 shows that primary expenditure per capita in constant terms is lower on average than transfers only for “more and medium resources”, in the classification by resources, and “mining”, in the classification by main transfer, but again not by a large difference, while it is higher for the rest of the categories.

Before conducting the regression analysis and similar to the analysis of the previous section, I present below scatter plots of the main variables of interest (transfers

and primary expenditure per capita in constant S/. 2002), distinguishing between PPGG and DDGG, and among the different categories according to resources and main transfer groups. Figures 6.37 and 6.38 present the scatter plots for all PPGG and DDGG for which there is complete information during 2001-2009, respectively. As can be seen, a few outliers explain the high values of both axes. In either case the relationship is positive, as shown by the simple regression between both variables, and it would be closer to one had it not been by the outliers, especially in the case of PPGG.

Figure 6.37 – Transfers and primary expenditure per capita of PPGG – 2001 to 2009

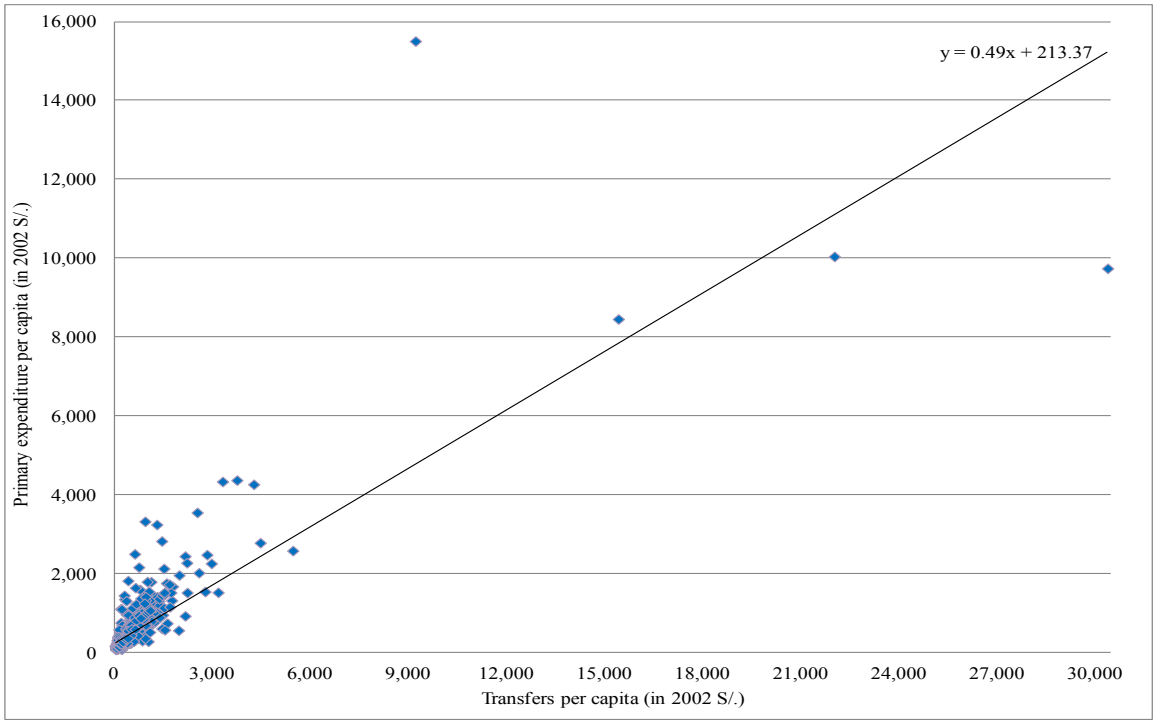
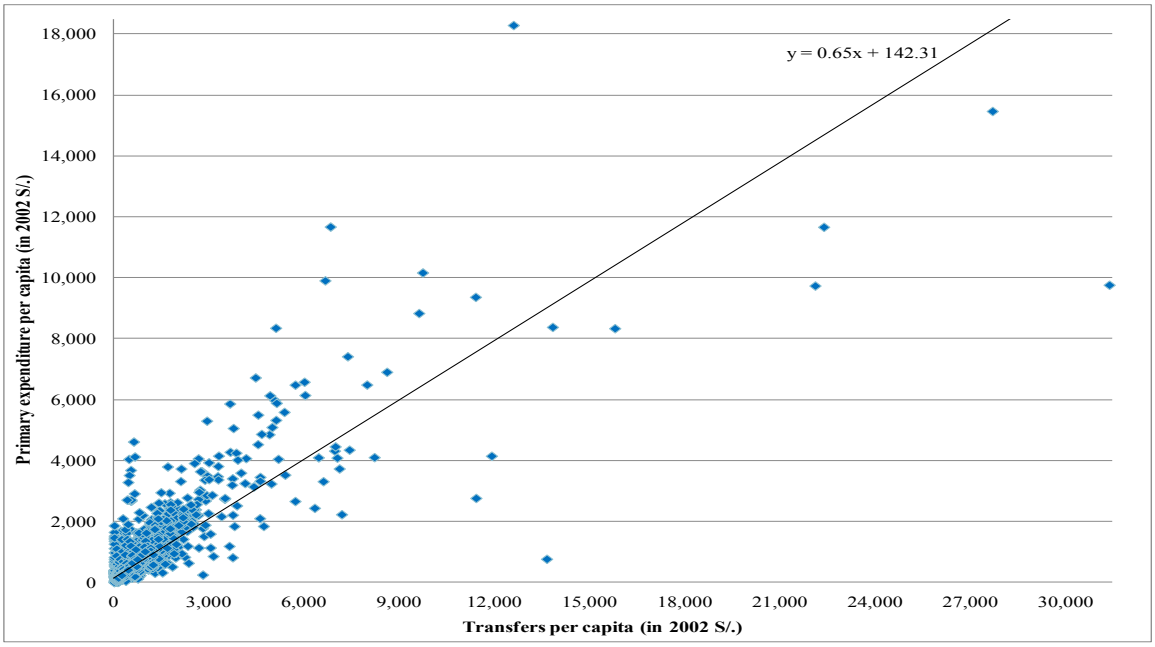


Figure 6.38 - Transfers and primary expenditure per capita of DDGG – 2001 to 2009



Figures 6.39 and 6.40 display the scatter plot of PPGG and DDGG with more & medium resources, with a lower coefficient for PPGG.

Figure 6.39 - Transfers and primary expenditure per capita of PPGG with more and medium resources – 2001 to 2009

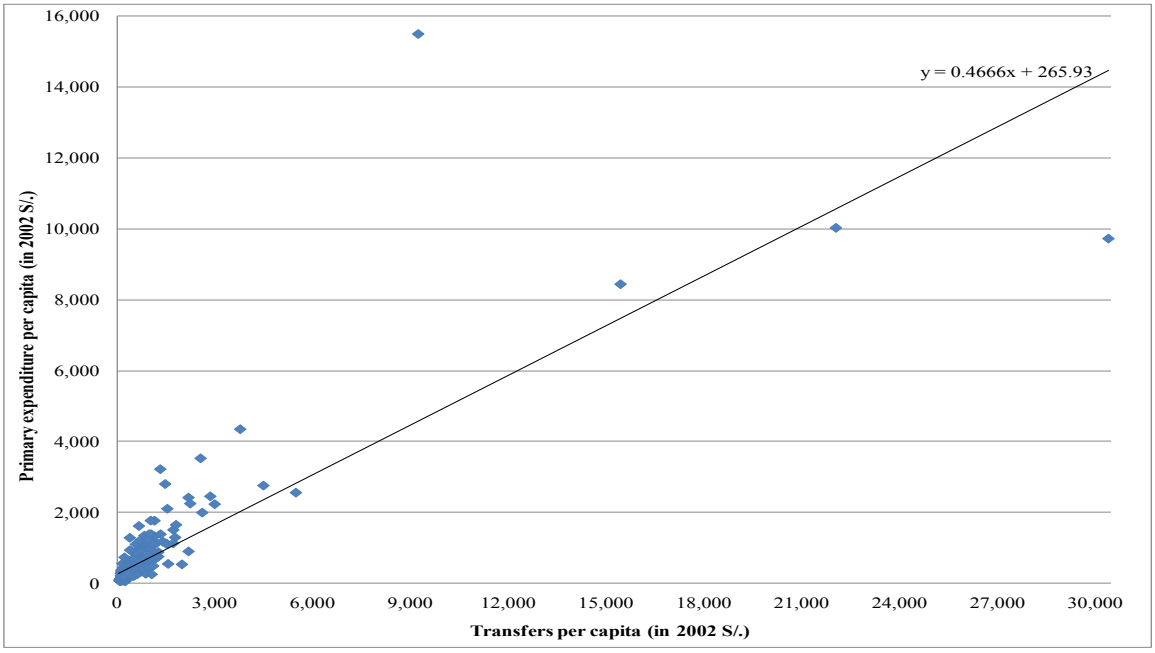
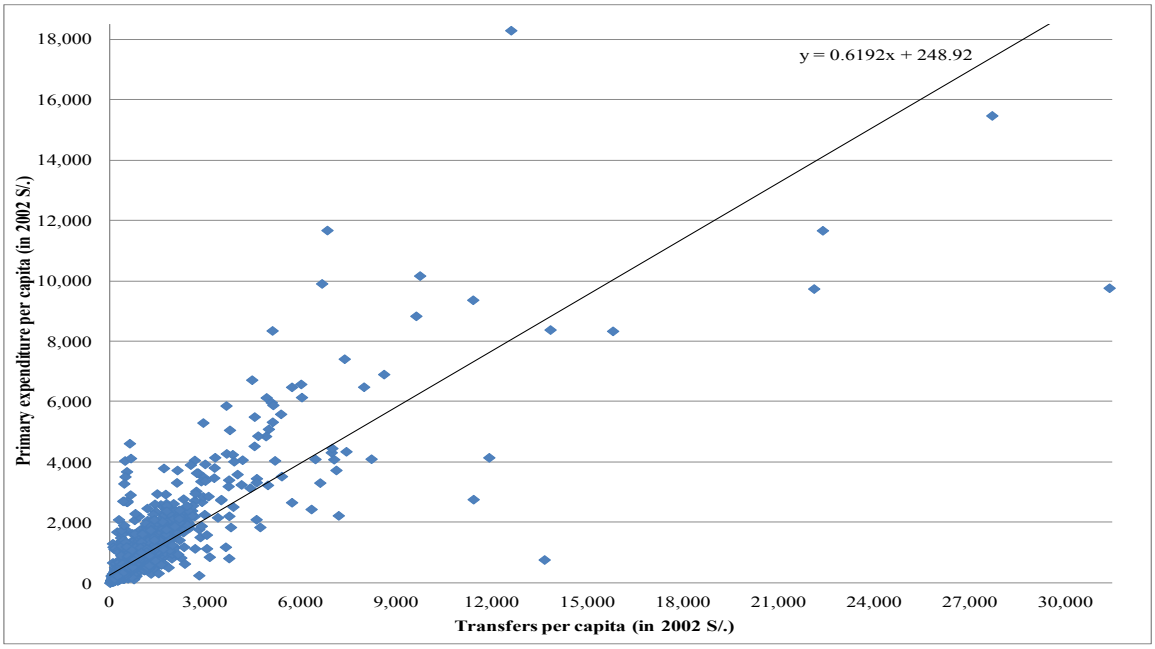


Figure 6.40 – Transfers and primary expenditure per capita of DDGG with more and medium resources – 2001 to 2009



Figures 6.41 and 6.42 present PPGG and DDGG with less resources, respectively. In these cases both coefficients are more similar and closer to one, reinforcing the observation that the lower coefficient of the previous figures is only due to a few outliers.

Figure 6.41 - Transfers and primary expenditure per capita of PPGG with less resources – 2001 to 2009

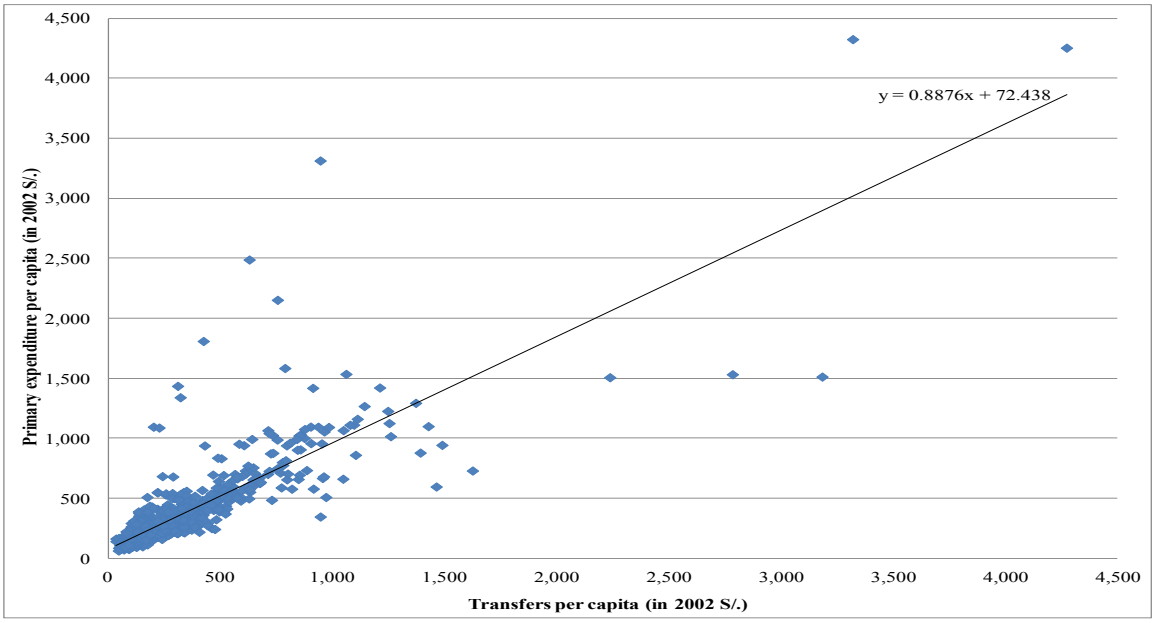
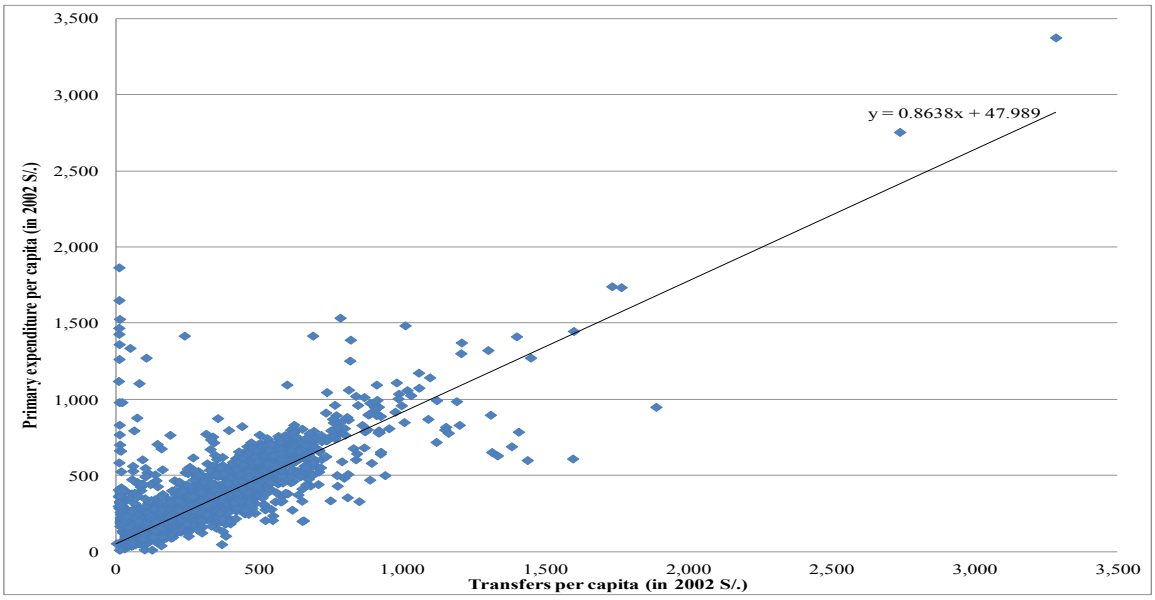


Figure 6.42 - Transfers and primary expenditure per capita of DDGG with less resources – 2001 to 2009



In turn, the classification of mining as main transfer in Figures 6.43 and 6.44 shows that this is the main source of outliers for both PPGG and DDGG, respectively.

Figure 6.43 - Transfers and primary expenditure per capita of PPGG with mining as main transfer – 2001 to 2009

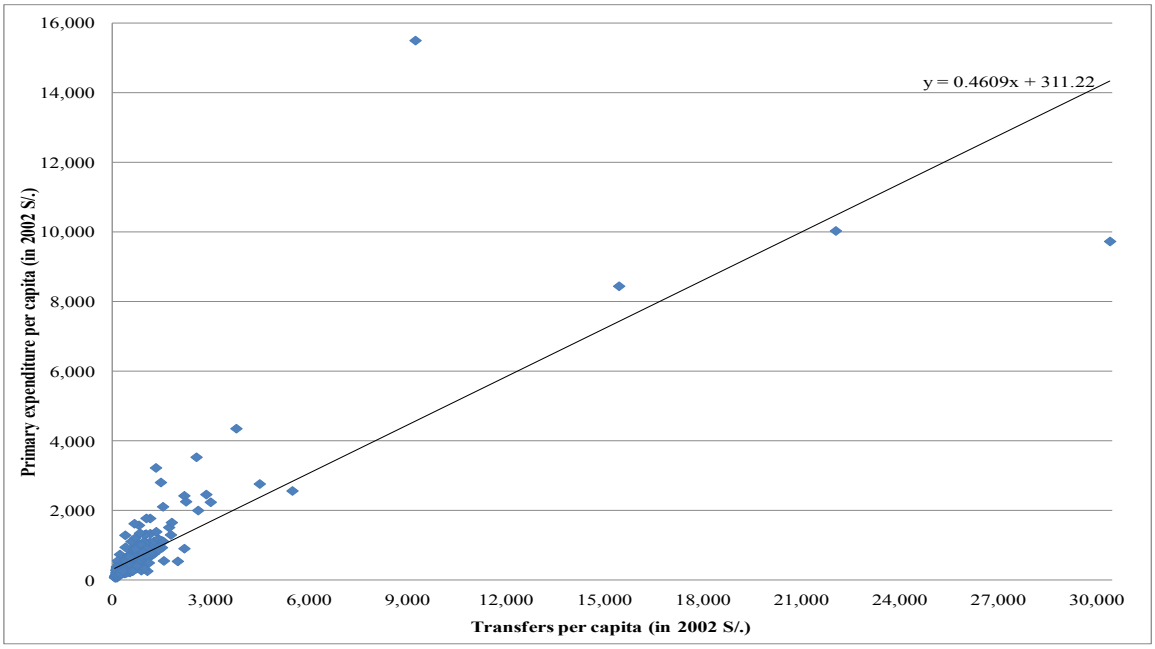
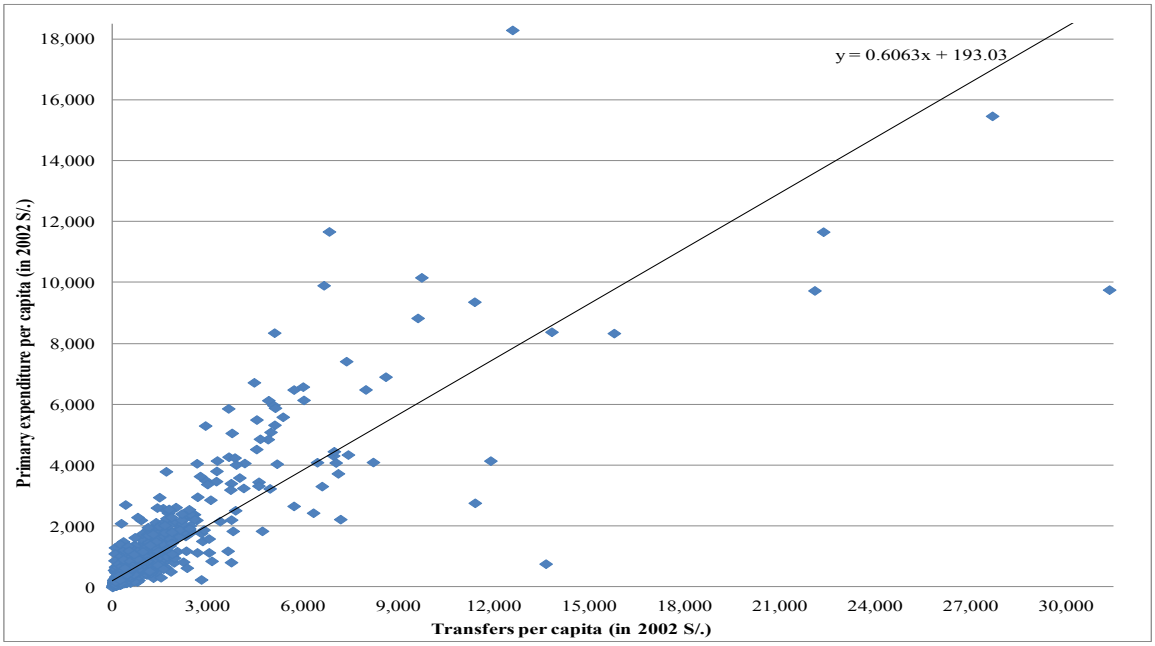


Figure 6.44 - Transfers and primary expenditure per capita of DDGG with mining as main transfer – 2001 to 2009



Figures 6.45 and 6.46 present the classification of FONCOMUN as main transfer for PPGG and DDGG, respectively; and figures 6.47 and 6.48 show the classification of

other fragmentary resources as main transfer for PPGG and DDGG, respectively. For both classifications, the coefficient between transfers and primary expenditure per capita is much closer to one.

Figure 6.45 - Transfers and primary expenditure per capita of PPGG with FONCOMUN as main transfer – 2001 to 2009

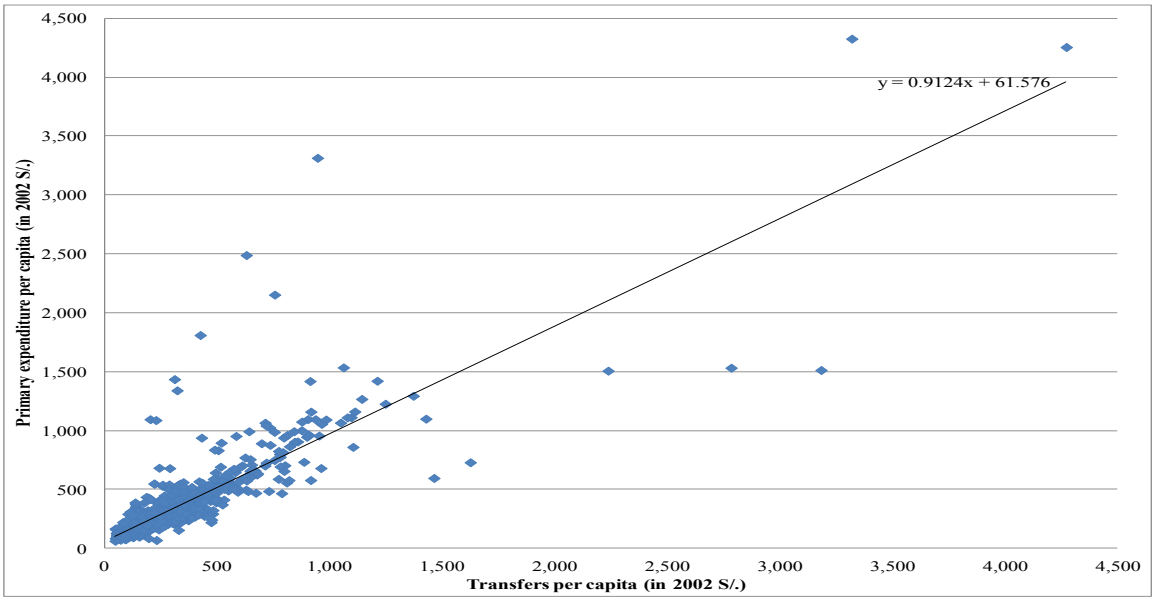


Figure 6.46 - Transfers and primary expenditure per capita of DDGG with FONCOMUN as main transfer – 2001 to 2009

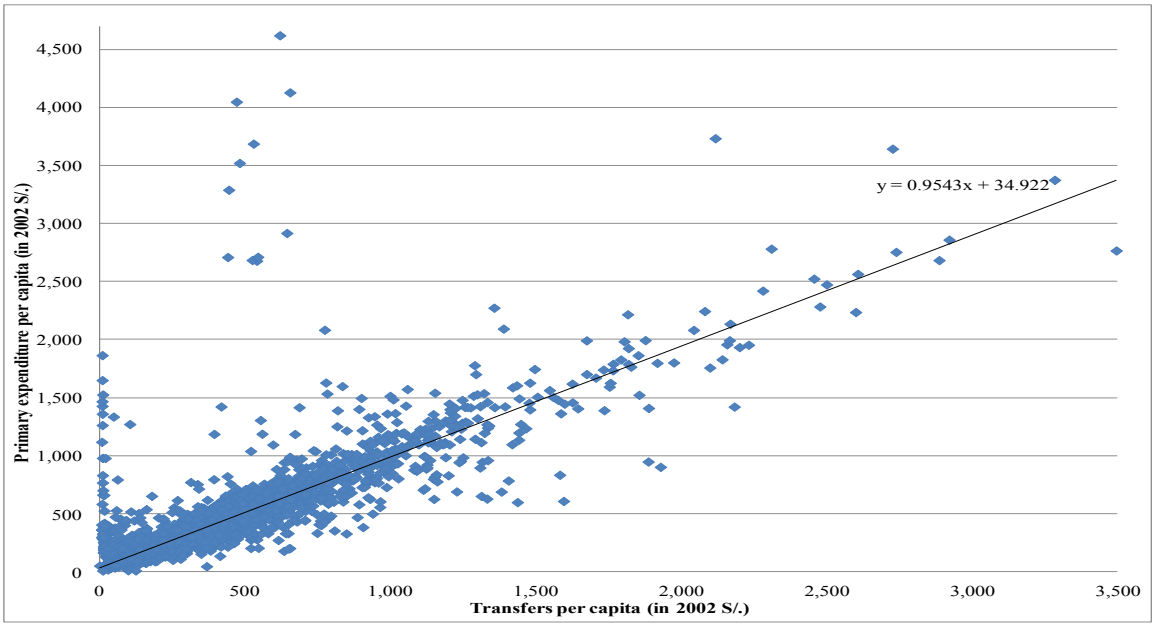


Figure 6.47 - Transfers and primary expenditure per capita of PPGG with other fragmentary resources as main transfer – 2001 to 2009

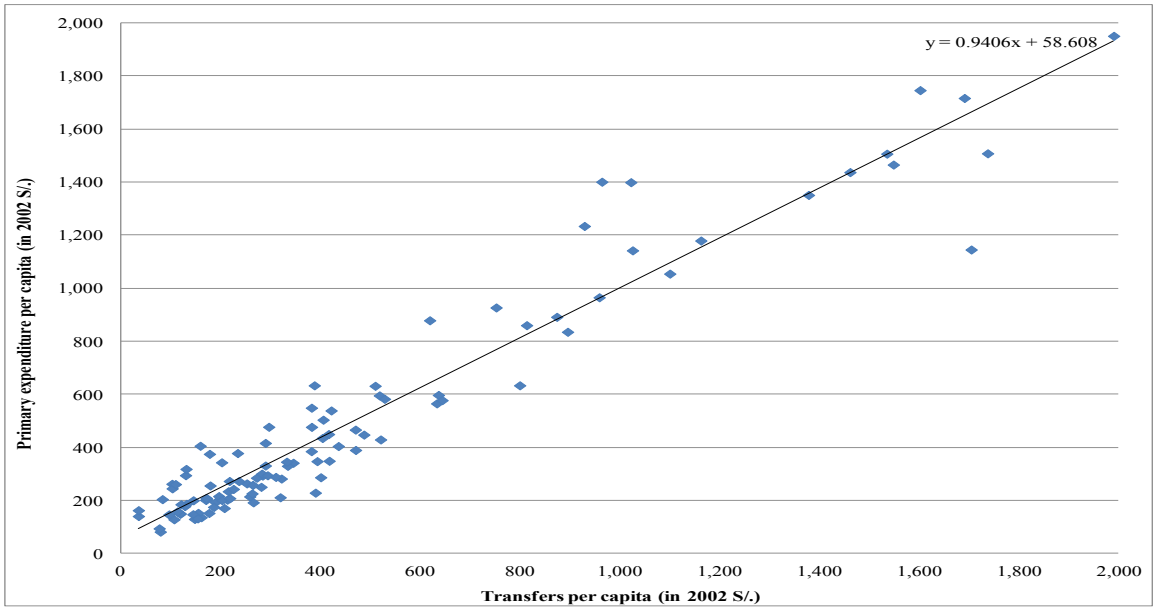
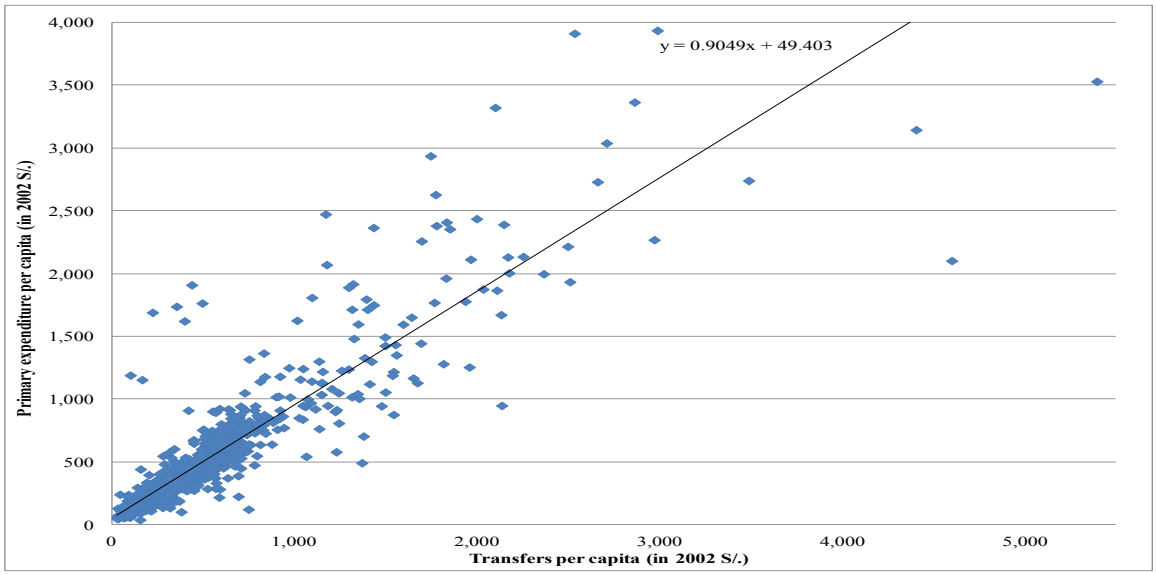


Figure 6.48 - Transfers and primary expenditure per capita of DDGG with other fragmentary resources as main transfer – 2001 to 2009



Noteworthy, the relatively low dispersion around the linear trend-line across figures suggests that the true functional specification of the relationship between transfers and

primary expenditure is likely to be linear. Hence, I will report most results below using the linear specification, which also has an easy interpretation.

Regression model

To assess econometrically the effect of transfers on LLGG primary expenditure I use the following panel data benchmark model:

$$PRIMEXP/CAP_{it} = (\alpha + u_i) + \beta_1 TT_{it} + \beta_2 DGDP/C_{jt} + \beta_3 DP_{jt} + \beta_4 DEN_{it} + \beta_5 REELECT_{it} + \beta_6 OI/TI_{it} + e_{it} \quad (1)$$

As mentioned above, the database is a balanced panel between 2001 and 2009, analyzed initially for all LLGG (1201), and in the rest of regressions separately for PPGG (156) and DDGG (1045). PRIMEXP/CAP is primary expenditure per capita, and the rest of the variables are the same as those introduced for the analysis of the effect of transfers on local tax collection. The coefficient β_1 denotes the average change in primary expenditure in response to the change in S/. 1 in transfers in per capita 2002 S/., while the coefficient β_2 denotes the average change in primary expenditure in response to the change in S/. 1 in department gross domestic product (DGDP) in per capita 2002 S/. A flypaper effect exists as long as $\beta_1 > \beta_2$.

I also assess a logarithmic model to evaluate the robustness of results to different functional forms:

$$LN\,(PRIMEXP/CAP_{it}) = (\alpha + u_i) + \beta_1 LN(TT_{it}) + \beta_2 LN(DGDP/C_{jt}) + \beta_3 DP_{jt} + \beta_4 DEN_{it} + \beta_5 REELECT_{it} + \beta_6 OI/TI_{it} + e_{it} \quad (2)$$

In this case, the coefficient β_1 denotes the elasticity of primary expenditure to transfers in per capita constant 2002 S/., or equivalently, the percentage change in primary expenditure in response to a 1 percent change in transfers; while β_2 denotes the elasticity of primary expenditure to DGDP/C in per capita constant 2002 S/. Similar to the linear case, a flypaper effect exists when $\beta_1 > \beta_2$.

In both specifications, my interest is twofold: 1. To have a measure of the reaction of primary expenditure to transfers; and 2. To compare this measure to the effect of income on primary expenditure, to assess the existence of the apparent "irrationality" of LLGG under the assumptions of the median-voter model, which is the flypaper effect.

Similar to the analysis for LLGG own taxes, each model is initially tested using the more efficient random effect regression, and then compared to the fixed effect regression through the Hausman test, in order to assess whether the estimators are significantly different, in which case I use the more robust fixed effect regression. Although not shown, I also test and correct each regression for heteroskedasticity and serial correlation using panel corrected standard errors (PCSE) regressions, with similar results to those described below for the coefficients with the effect of transfers on primary expenditure using the logarithmic specification, although for the linear specification the coefficients using PCSE tend to be somewhat smaller, but consistent with the findings that are summarized below. I also include time fixed effects as year dummy variables, labeled "time dummies", whenever the year dummies are jointly statistically significant.

Table 6.25 shows the results for the basic benchmark model. Equation (1) presents all LLGG combined; equation (2) separates between PPGG and DDGG using the database of all LLGG; equations (3) and (4) test separately for PPGG and DDGG, respectively, while equations (5) through (8) repeat this analysis using the logarithmic specification.

For both the linear and logarithmic specification, the main variable of interest, which is the effect of transfers on primary expenditure vis-à-vis the effect of income on primary expenditure, shows in all cases a flypaper effect.

The coefficients for total transfers in the different specifications of the linear case are within the range of values of the studies reviewed by Bailey and Connolly (1998), which are between 0.25 and 1. In turn, the coefficients for income, estimated by department gross domestic product per capita, are somewhat lower than those reviewed by Bailey and Connolly (1998), which are between 0.05 and 0.1, especially for PPGG. However, it is important to note that the absence of a measure of gross domestic product at the local level probably means that the coefficient of department gross domestic product per capita is biased downwards for those LLGG whose economic activity has been booming, which may include municipalities that have mining and gas as main transfer; and is biased upwards for LLGG in which economic activity has been less buoyant, such as many of those that have FONCOMUN as main transfer. This means that the flypaper effect is probably smaller than reported here in LLGG that have mining and gas as main transfer; and higher for those LLGG that have FONCOMUN as main transfer.

In the linear specification, for equation (1) in Table 6.25, the coefficient for Total Transfers (TT) means that a S./ 1 increase in transfers per capita in constant 2002 S./ expands on average primary expenditure per capita in S/. 0.54, while a S/. 1 increase in department gross domestic product per capita in constant 2002 S./ expands on average primary expenditure per capita in S./ 0.03. Similar to what is shown in Figures 6.37 and 6.38, the coefficient for DDGG is higher than for PPGG across equations (2) to (4).

In the logarithmic case, for equation (5) in Table 6.25, a 1 percent increase in total transfers per capita in constant 2002 S./ expands on average primary expenditure per capita in 0.87 percent, while the coefficient for department gross domestic product per capita is not statistically significant. Similar to the linear case, the values of the coefficients for DDGG are higher than for PPGG, although the range is smaller.

Table 6.25 – Results of expenditure regression models – Benchmark model

	All LLGG		PPGG	DDGG		All LLGG		PPGG	DDGG
Dependent Variable: Prim Exp/Cap					Dependent Variable: LN(Prim Exp/Cap)				
Variable	(1) Random[1]	(2) Random	(3) Random	(4) Random	Variable	(5) Fixed[2]	(6) Fixed	(7) Fixed	(8) Fixed
Total Transfers (TT)	0.5351		0.4604	0.5666	LN (TT)	0.8664		0.8328	0.8676
	(0.0042)**		(0.0094)**	(0.0047)**		(0.0065)**		(0.0211)**	(0.0069)**
PPGG		0.4384			LN (PPGG)		0.8591		
		(0.0079)**					(0.012)**		
DDGG		0.5671			LN (DDGG)		0.8666		
		(0.0047)**					(0.0065)**		
Department GDP/Capita	0.0292	0.0277	0.0196	0.029	LN (DGDP/C)	0.0042	0.0048	-0.1592	0.0382
	(0.0016)**	(0.0016)**	(0.0034)**	(0.0017)**		0.0265	0.0266	(0.0596)**	0.0292
Department Poverty (DP)	272.91	260.99	101.86	281.69	DP	0.1259	0.1263	0.0183	0.1474
	(35.58)**	(35.13)**	(87.98)	(37.61)**		(0.0455)**	(0.0455)**	(0.1044)	(0.0498)**
Density (DEN)	-0.0143	-0.0137	0.022	-0.0183	DEN	-0.00003	-0.00003	0.00002	-0.00004
	(0.002)**	(0.002)**	(0.0049)**	(0.0021)**		(0.00002)	(0.00002)	(0.00005)	(0.00002)*
Reelection (REELECT)	15.40	15.47	101.27	10.30	REELECT	0.0186	0.0185	0.0181	0.0195
	(9.29)*	(9.2012)*	(34.88)**	9.32		(0.0068)**	(0.0068)**	(0.02)	(0.0073)**
Own income/Total income (OI/TI)	322.21	331.63	14.02	372.37	OI/TI	1.5293	1.5245	1.5988	1.5208
	(29.47)**	(29.11)**	(84.53)	(30.99)**		(0.0319)**	(0.0325)**	(0.0953)**	(0.0347)**
R-Squared within	0.6396	0.6458	0.5719	0.6616	R-Squared within	0.8933	0.8933	0.8963	0.894
R-Squared between	0.8684	0.8722	0.9286	0.869	R-Squared between	0.8629	0.8618	0.9453	0.8471
R-Squared averall	0.7397	0.7452	0.7154	0.7545	R-Squared averall	0.877	0.8764	0.9154	0.8689
Observations	10809 (1201*9)	10809 (1201*9)	1404 (156*9)	9405 (1045*9)	Observations	10809 (1201*9)	10809 (1201*9)	1404 (156*9)	9405 (1045*9)
Time dummies	Yes	Yes	Yes	Yes	Time dummies	Yes	Yes	Yes	Yes

[1] Random Effects GLS Panel Regressions. [2] Fixed Effects GLS Panel Regressions. Choice of regression model is based on significance of Hausman test.

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

To compare the linear and logarithmic specification and following Melo (2002) I estimate the point elasticity of the linear case by multiplying the coefficient on total transfers (β_1) to the ratio of average transfers to average primary expenditure ((dPrim Exp/dTT) x (Avg. TT/Avg. Prim Exp)). In the case of equation (1) in Table 6.25, the calculation is 0.5351 x (404/406), which yields 0.53. Noteworthy, in all four equations of the linear specification the point elasticity of the coefficients on transfers is lower than for the logarithmic case, in which the elasticity is given by β_1.

In turn, the point elasticity of income, measured by department gross domestic product per capita (β_2), in the linear specification is similarly calculated as ((dPrim Exp/dDGDP/C) x (Avg. DGDP/C/Avg. Prim Exp)). In equation (1) in Table 6.25 the estimation is 0.0292 x (6,697/406), which yields 0.48. This value is lower than the point elasticity of transfers, but the difference is much smaller than in the logarithmic specification. In all four equations the point elasticity of transfers is higher than that of income, except for the coefficient for PPGG in equation (2), in which the point elasticity of income is slightly higher (0.4368 vs. 0.4339 for the point elasticity of transfers); in that particular case it means that a 1 percent increase in department gross domestic product per capita yields a slightly higher expansion of primary expenditure per capita in constant 2002 S/. than a 1 percent increase in total transfers.

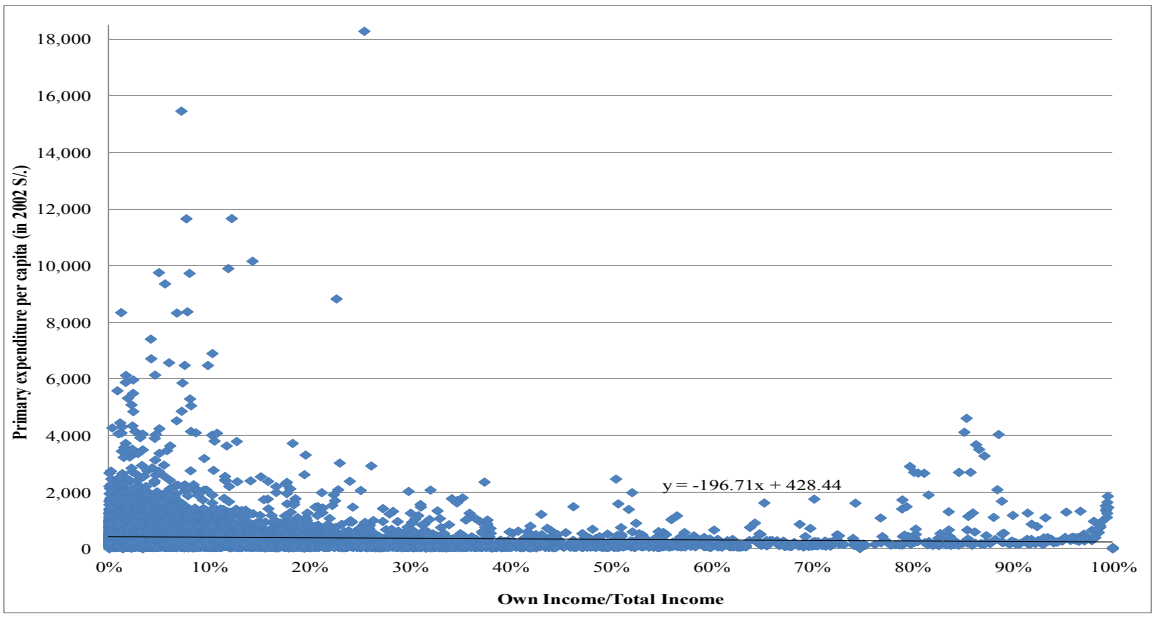
In the logarithmic specifications the coefficients for department gross domestic product per capita are small and not significant in three of the four equations, and in the case of PPGG (equation (7)) it is significant at the 5 percent level but *negative*, suggesting that a 1 percent increase in DGDP/C *decreases* primary expenditure per capita by 0.16 percent. Hence, the flypaper effect is systematically higher for the logarithmic

specification. However, as mentioned above, the absence of a reliable measure of gross domestic product at the municipal level means that the flypaper effect is probable smaller than reported here for LLGG in which gross domestic product has been booming, which may include those that have mining and gas as main transfer, and higher for those LLGG in which the economic activity has been less buoyant, such as many of those that have FONCOMUN as main transfer.

With respect to the control variables, department poverty is positive and statistically significant for all LLGG combined and for DDGG, but not significant for PPGG; these results are consistent for the logarithmic specification. LLGG density shows a positive and statistically significant coefficient for PPGG, but negative and statistically significant for DDGG (in both cases at the 5 percent level), although this is not consistent in the logarithmic specification (except for DDGG, which is also negative at the 10 percent significance level). Reelection is positive and significant at the 5 percent level only for PPGG, although for the logarithmic specification it is only positive and significant at the 5 percent level for DDGG. Lastly, fiscal autonomy, measured by the fraction of own income over total income, is positive and significant for DDGG in both the linear and logarithmic specifications (equation (4)), which suggests that DDGG increase their propensity to spend as they become more autonomous; this can be considered partly contradictory with the coefficient on poverty, since poorer LLGG tend to have less autonomy; and it is a surprising finding considering that the scatter plot between Own Income/Total Income and Primary Expenditure/Capita yields a negative relationship (see Figure 6.49 below). It is likely to be related to the higher institutional

capacities of more autonomous LLGG, which allows them to rapidly spend the transfers they receive.

Figure 6.49 – OI/TI and primary expenditure per capita in constant 2002 S/. of DDGG – 2001 to 2009



In all equations in Table 6.25 I tested for the joint significance of the time-dummies, and I included them whenever I rejected the null-hypothesis that they are jointly equal to 0 (this occurred in all equations). In this regard, the individual value and statistical significance of each of the time-dummies allows assessing in which years the growth in primary expenditure is most significant. This is presented in Table 6.26 below, which shows the value of each of the time dummies in equations (1) and (5) of Table 6.25. Noteworthy, these values are similar across the rest of equations of Table 6.25. As can be seen, the first years of new mandates of LLGG mayors, which are 2003 and 2007, have relatively small coefficients, and in the case of 2007 they are not statistically significant either in the linear and logarithmic specifications. Moreover, the years 2006, 2008 and 2009 the coefficient is increasingly larger and statistically significant at the 5

percent level, which is evidence that after their first year in office, local government administrations, which have low reelection rates, learn to spend. Surprisingly the year 2005 has a low and statistically insignificant coefficient: this can be partly explained by the fact that that year was still prior to the large boom in natural resources-based transfers; and it may also be related to the regional elections in 16 departments in October, 2005 to decide on the creation of "macro-regions" (see section above on "key features of fiscal decentralization in Peru"), which arguably increased local uncertainty and reduced attention to fiscal management.

Table 6.26 – Time-dummies of equations (1) and (5) of Table 6.23

Time-dummy		2002	2003	2004	2005	2006	2007	2008	2009
Equation (1) - Linear	Coefficient	10.91	22.44	59.03	14.51	85.28	21.33	187.94	278.62
	Standard Error	(12.44)	(12.54)*	(12.72)**	(12.68)	(13.01)**	(13.68)	(13.91)**	(14.06)**
Equation (5) - Log-linear	Coefficient	0.0068	0.0303	0.0832	0.0132	0.1459	0.0073	0.1933	0.3054
	Standard Error	(0.0084)	(0.0088)**	(0.0102)**	(0.0108)	(0.0133)**	(0.0159)	(0.0173)**	(0.0182)**
Standard errors in parenthesis. * 10 % significance level. ** 5% significance level									

Table 6.27 shows the results of separate regressions models for all PPGG and DDGG, distinguishing by resource groups (equations (1), (2), (5) and (6)) and main transfer groups (equations (3), (4), (7) and (8)). In the linear specification and for PPGG (equation (1) in Table 6.27), the coefficient for PPGG with less resources is higher than for PPGG with more and medium resources, while the opposite is true for the logarithmic specification (equation (5)). In turn, for DDGG the coefficient for more and medium resources is higher than for less resources in both the linear and logarithmic specification (equations (2) and (6), respectively): the latter result is surprising considering that LLGG with more and medium resources are transferred much more funds, which makes it harder for them to execute them.

With respect to the classification by main transfer and in the linear case, both PPGG and DDGG show that those LLGG that have mining as main transfer present a lower coefficient than the other categories (Other Fragmentary Resources and FONCOMUN), which in turn helps explain the relatively low value of coefficients across equations of the linear specification in Table 6.25 above, which appears to be influenced by LLGG that have mining as main transfer. In the logarithmic specification, however, the coefficient of PPGG and DDGG with FONCOMUN as main transfer is lower than for mining. Similar to the results in Table 6.25, the coefficients for transfers in the logarithmic specification are systematically higher than in the linear case, and the range of values across coefficients is smaller.

Table 6.27 – Results by resources and main transfer groups – 2001 to 2009

	PPGG	DDGG	PPGG	DDGG		PPGG	DDGG	PPGG	DDGG
Dependent Variable: Prim Exp/Cap					Dependent Variable: LN (Prim Exp/Cap)				
Variable	(1) Random[1]	(2) Random	(3) Random	(4) Fixed[2]	Variable	(5) Fixed	(6) Fixed	(7) Fixed	(8) Fixed
More & Medium Resources (M&MR)	0.4595	0.5666			LN (M&MR)	0.8376	0.8811		
	(0.0093)**	(0.0046)**				(0.0212)**	(0.0071)**		
Less Resources (LR)	0.6506	0.5038			LN (LR)	0.7914	0.8253		
	(0.0381)**	(0.0252)**				(0.0267)**	(0.009)**		
Mining (MIN)			0.4565	0.5080	LN (MIN)			0.8336	0.8673
			(0.0091)**	(0.0053)**				(0.0215)**	(0.0072)**
Other Fragmentary Resources (OFR)			0.8487	0.7704	LN (OFR)			0.8437	0.9322
			(0.0612)**	(0.0265)**				(0.0387)**	(0.0113)**
FONCOMUN			0.7515	0.6556	LN (FONCOMUN)			0.8150	0.8394
			(0.0405)**	(0.0246)**				(0.0273)**	(0.0096)**
Department GDP/Capita	0.01968	0.02820	0.02541	0.04347	LN (DGDP/C)	-0.19427	-0.02223	-0.16913	-0.04692
	(0.0033)**	(0.0018)**	(0.0033)**	(0.0023)**		(0.0612)**	(0.0303)	(0.0611)**	(0.0309)
Department Poverty (DP)	33.81	288.86	108.03	103.31	DP	0.0472	0.1480	0.0398	0.1364
	86.61	(37.69)**	86.06	68.43		(0.1048)	(0.0497)**	(0.1063)	(0.0498)**
Density	0.0194	-0.0181	0.0164	-0.0634	Density	0.00002	-0.00004	0.00002	-0.00004
	(0.0048)**	(0.0021)**	(0.0047)**	(0.0322)**		(0.00005)	(0.00002)	(0.00005)	(0.00002)*
Reelection	97.17	9.53	93.77	6.01	Reelection	0.0201	0.0173	0.0174	0.0178
	(34.38)**	9.33	(33.66)**	9.90		(0.0199)	(0.0072)**	(0.02)	(0.0072)**
Own income/Total income (OI/TI)	35.21	367.84	142.32	537.35	OI/TI	1.5653	1.4933	1.5916	1.5265
	(82.44)	(31.03)**	81.29	(44.81)**		(0.096)**	(0.0348)**	(0.0955)**	(0.0346)**
R-Squared within	0.5769	0.6615	0.5809	0.6616	R-Squared within	0.8968	0.8946	0.8964	0.8948
R-Squared between	0.9330	0.8697	0.946	0.869	R-Squared between	0.9102	0.8399	0.9504	0.7727
R-Squared averall	0.7206	0.7549	0.7308	0.7545	R-Squared averall	0.901	0.8611	0.9193	0.8265
Observations	1404 (156*9)	9405 (1045*9)	1404 (156*9)	9405 (1045*9)	Observations	1404 (156*9)	9405 (1045*9)	1404 (156*9)	9405 (1045*9)
Time dummies	Yes	Yes	Yes	Yes	Time dummies	Yes	Yes	Yes	Yes

[1] Random Effects GLS Panel Regressions. [2] Fixed Effects GLS Panel Regressions. Choice of regression model is based on significance of Hausman test.

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

There is a flypaper effect for all equations across specifications, and the point elasticity of transfers in the linear specification is higher than for department gross domestic product per capita for all coefficients in the case of PPGG (equations (1) and (3) of Table 6.27). For DDGG the point elasticity of transfers is higher than for department gross domestic product per capita for LLGG with more and medium resources, and in municipalities that have Other Fragmentary Resources as main transfer (equations (2) and (4) of Table 6.27, respectively).

In equations (3) and (4) of Table 6.27, the lower value of the coefficient for LLGG that have mining as main transfer is related not only to the size but also to the timing of the distribution of transfers, since as described above mining transfers are distributed since 2007 in one single installment in June, which gives LLGG little time to execute those funds within the same fiscal year. Hence, taking into account the findings of the descriptive assessment of question 3 of this dissertation, it is to be expected that the primary expenditure of LLGG that have mining as main transfer, which are also many of the LLGG that have more and medium resources, should react with a lag to the surge in transfers. This expectation is tested in Table 6.28, which shows the different equations presented in Tables 6.25 and 6.27 but including a one year lag in transfers, meaning that the transfers of a given year explain primary expenditure of the following year.

Table 6.28 – Results including a one year lag of transfers – 2001 to 2009

	PPGG	DDGG	PPGG	DDGG	PPGG	DDGG		PPGG	DDGG	PPGG	DDGG	PPGG	DDGG
	Dependent Variable: Prim Exp/Cap							Dependent Variable: LN (Prim Exp/Cap)					
Variable	(1) Random[1]	(2) Random	(3) Random	(4) Fixed[2]	(5) Random	(6) Fixed	Variable	(7) Random	(8) Fixed	(9) Random	(10) Fixed	(11) Fixed	(12) Fixed
Total Transfers (TT)	0.1759	0.2280					LN (TT)	0.6497	0.7456				
	(0.0131)**	(0.0059)**						(0.0196)**	(0.0085)**				
TT-1	0.3431	0.4318					LN (TT-1)	0.3206	0.2013				
	(0.0132)**	(0.0059)**						(0.019)**	(0.0077)**				
More & Medium Resources (M&MR)			0.1540	0.1824			LN (M&MR)			0.5853	0.6915		
			(0.0129)**	(0.0061)**						(0.0247)**	(0.0114)**		
M&MR-1			0.3596	0.4413			LN (M&MR-1)			0.3834	0.2477		
			(0.0129)**	(0.0058)**						(0.0241)**	(0.0101)**		
Less Resources (LR)			0.6540	0.6525			LN (LR)			0.7246	0.7869		
			(0.0616)**	(0.0284)**						(0.0262)**	(0.0106)**		
LR-1			0.0324	0.0809			LN (LR-1)			0.2403	0.1637		
			(0.0824)	(0.0374)**						(0.0264)**	(0.011)**		
Mining (MIN)					0.1576	0.1648	LN (MIN)					0.5575	0.6833
					(0.0127)**	(0.006)**						(0.0301)**	(0.0114)**
MIN-1					0.3638	0.4518	LN (MIN-1)					0.3612	0.2458
					(0.0128)**	(0.0058)**						(0.0259)**	(0.0103)**
Other Fragmentary Resources (OFR)					0.6723	0.4933	LN (OFR)					0.6964	0.8315
					(0.1794)**	(0.0383)**						(0.0756)**	(0.0232)**
OFR-1					0.2121	0.3729	LN (OFR-1)					0.2700	0.1965
					(0.1862)	(0.0374)**						(0.0749)**	(0.021)**
FONCOMUN					0.7212	0.6918	LN (FONCOMUN)					0.7398	0.7982
					(0.0652)**	(0.0233)**						(0.0317)**	(0.0111)**
FONCOMUN-1					0.0930	0.1002	LN (FONCOMUN-1)					0.2541	0.1613
					(0.0905)	(0.0276)**						(0.0342)**	(0.0117)**
Department GDP/Capita (DGDP/C)	0.0211	0.0314	0.0214	0.0501	0.0268	0.0514	LN (DGDP/C)	-0.0309	0.0051	-0.0263	0.0515	-0.0519	-0.0266
	(0.0033)**	(0.0016)**	(0.0032)**	(0.0027)**	(0.0029)**	(0.0026)**		(0.0170)*	(0.0317)*	(0.0185)	(0.0328)	(0.0632)*	(0.0338)
Department Poverty (DP)	121.51	286.91	41.60	161.60	100.69	62.95	DP	-0.0253	0.1020	-0.0198	0.1006	-0.1301	0.0484
	(85.75)	(34.93)**	(84.66)	(60.87)*	(77.93)	(60.29)		(0.0516)	(0.0547)*	(0.0518)	(0.0546)*	(0.111)	(0.055)
Density	0.0248	-0.0157	0.0207	-0.0573	0.0180	-0.0470	Density	0.00001	-0.00001	0.00001	-0.00001	0.00005	-0.00001
	(0.0051)**	(0.0021)**	(0.0051)**	(0.0303)	(0.0044)**	(0.0297)		(0.000003)**	(0.00003)	(0.000003)**	(0.00003)	(0.00005)	(0.00003)
Reelection	84.94	-8.37	82.38	-8.02	77.76	-11.47	Reelection	0.0016	0.0134	0.0025	0.0131	0.0117	0.0117
	(30.79)**	(7.77)	(29.88)**	(8.12)	(28.45)**	(7.95)		(0.0161)	(0.0072)*	(0.016)	(0.0072)*	(0.0191)	(0.0072)
Own income/Total income (OI/TI)	-40.83	283.85	11.76	410.31	111.94	396.66	OI/TI	1.49	1.46	1.50	1.47	1.51	1.45
	(84.93)	(29.62)**	(82.85)	(40.45)**	(76.09)	(39.51)**		(0.0535)**	(0.038)**	(0.0538)**	(0.0381)**	(0.0943)**	(0.0377)**
R-Squared within	0.711	0.7859	0.7299	0.7952	0.7349	0.8034	R-Squared within	0.9064	0.8871	0.9079	0.8879	0.9098	0.8892
R-Squared between	0.9306	0.8885	0.9384	0.8049	0.9505	0.8425	R-Squared between	0.9807	0.8879	0.9807	0.8857	0.8239	0.8204
R-Squared averall	0.811	0.8368	0.824	0.8004	0.8342	0.8242	R-Squared averall	0.947	0.8874	0.9477	0.8866	0.8618	0.8464
Observations	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	Observations	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Time dummies	Yes	Yes	Yes	Yes	Yes	Yes

[1] Random Effects GLS Panel Regressions. [2] Fixed Effects GLS Panel Regressions. Choice of regression model is based on significance of Hausman test.

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

For equations (5) and (6) of Table 6.28, which evaluate the linear specification for PPGG and DDGG, respectively, according to main transfer group, only mining transfers with a lag has a higher coefficient than the contemporaneous variable. In turn, this helps explain that PPGG and DDGG with more and medium resources (equations (3) and (4), respectively) and all PPGG and DDGG (equations (1) and (2), respectively), show a higher coefficient for the lagged variable than for the contemporaneous one. In turn, the difference between the contemporaneous and the lagged variable for Other Fragmentary Resources (equations (5) and (6)) is smaller than for FONCOMUN, especially for DDGG.

In the logarithmic case all equations show that the contemporaneous variable has a higher coefficient than the lagged variable, but LLGG that have mining as main transfer present the smallest difference in the value of the coefficient between the lagged and the contemporaneous variable, and this difference is smaller for PPGG than for DDGG. These results confirm that those LLGG that receive large mining transfers do increase significantly their expenditures, but with a lag.

Lastly, most equations present a flypaper effect, with the exception of the lagged variable of less resources for PPGG (equation (3)), which in turn is related to the lagged variable of FONCOMUN for PPGG (equation (5)): in both cases the coefficients are not statistically significant at the 10 percent level. In turn, for the linear specification the point elasticity of transfers is lower than that of DGDP/C for all coefficients for DDGG (equations (2), (4) and (6)); while it is higher for PPGG only for the lagged variable of more and medium resources (equation (3)), the contemporaneous variable of less

resources (equation (4)), and the contemporaneous variables of OFR and FONCOMUN (equation (6)).

Although not shown in Table 6.28, I also tested equations (1) and (2) (linear case), and (7) and (8) (logarithmic case) including one year lag of department gross domestic product per capita. For the linear case, the coefficients for transfers are similar to those shown in equations (1) and (2) in Table 6.28, although for department gross domestic product per capita the coefficient of the lagged variable is higher and statistically significant both for PPGG and DDGG (coefficient of 0.02 and 0.029, respectively), than the contemporaneous variable, which is not significant. For the logarithmic case, again the coefficients for transfers are similar to those shown in equations (7) and (8) in Table 6.28, while for department gross domestic product per capita the coefficient of the lagged variable is more negative and statistically significant for PPGG (coefficient of -0.19, significant at the 10% level) than the contemporaneous variable, which is not significant; while the lagged variable is positive and statistically significant for DDGG (coefficient of 0.07, significant at the 10% level), whereas the contemporaneous variable is not statistically significant. Hence, in all these cases the flypaper effect persists, although the lagged variable of department gross domestic product per capita tends to have a higher and more statistically significant coefficient than the contemporaneous variable.

Table 6.29 evaluates the test of symmetry proposed by Gramkhar and Oates (1996), to assess whether expenditures of LLGG behave symmetrically to changes in transfers. This is done separately for all PPGG and DDGG (equations (1), (2), (7) and (8), respectively), and distinguishing the measure of symmetry according to resources

(equations (3), (4), (9) and (10)) and main transfer groups (equations (5), (6), (11) and (12)). Noteworthy, the distribution of observations of the symmetry dummy variable is similar for both PPGG and DDGG to the distribution of LLGG across main transfer groups, which means there is not a particular bias of this variable for a given group.

For the linear case, table 6.29 shows that according to main transfer group only LLGG that have mining as main transfer have a positive and significant coefficient of symmetry at the 5 percent level, with PPGG having a higher coefficient than DDGG. This means than in LLGG that have mining as main transfer, when transfers fall expenditures increase on average by S./ 332 and S./ 228 in per capita 2002 S./ for PPGG and DDGG, respectively.

Similar to the analysis with lagged variables, the sign and statistical significance of the symmetry variable for LLGG that have mining as main transfer is extended to municipalities with more and medium resources (equations (3) and (4)), and to all LLGG (equations (1) and (2)), although with a coefficient for the symmetry variable that reduces its size as the degree of aggregation of LLGG increases, and with PPGG having a higher coefficient than DDGG. Again, the explanation is related to the high growth of mining transfers and their timing, by which LLGG that receive mining transfers in the middle of a given year carry them partially over to the following year, when their transfers may fall, which is what occurred between 2007 and 2009.

For the logarithmic specification the results are similar, although the symmetry variable is also positive and statistically significant for LLGG that have less resources (equations (9) and (10)), that have FONCOMUN as main transfer (equations (11) and

(12)), and that have Other Fragmentary Resources as main transfer in the case of DDGG (equation (12)), although in all cases the coefficients in these equations are smaller than for LLGG that have more and medium resources and that have mining as main transfer (equations (9) through (12)). In the case of equation (11), the coefficient for PPGG that have mining as main transfer denotes that when transfer fall, PPGG increase their primary expenditure per capita by 16.91 percent in constant 2002 S/.

Lastly, although there is a flypaper effect across equations, in the linear specification the point elasticity of transfers is lower than for department gross domestic product per capita in all equations for DDGG (equations (2), (4) and (6)), and higher for PPGG in equations (1) and (3).

Table 6.29 – Results including the variable of symmetry – 2001 to 2009

	PPGG	DDGG	PPGG	DDGG	PPGG	DDGG		PPGG	DDGG	PPGG	DDGG	PPGG	DDGG
Dependent Variable: Prim Exp/Cap							Dependent Variable: LN (Prim Exp/Cap)						
Variable	(1) Random[1]	(2) Fixed[2]	(3) Random	(4) Fixed	(5) Fixed	(6) Fixed	Variable	(7) Fixed	(8) Fixed	(9) Random	(10) Fixed	(11) Fixed	(12) Fixed
Total Transfers (TT)	0.4642	0.5037	0.4614	0.5031	0.3515	0.5018	LN (TT)	0.8345	0.9133	0.8336	0.8771	0.8299	0.8758
	(0.0098)**	(0.0058)**	(0.0097)**	(0.0057)**	(0.0123)**	(0.0057)**		(0.0218)**	(0.0059)**	(0.0218)**	(0.0075)**	(0.0218)**	(0.0075)**
Symmetry	82.59	74.02					Symmetry	0.0923	0.0931				
	(30.73)**	(8.98)**						(0.0138)**	(0.0062)**				
Symmetry More & Medium Resources (M&MR)			233.93	196.74			Symmetry M&MR			0.1366	0.1293		
			(44.63)**	(13.69)**						(0.0214)**	(0.0096)**		
Symmetry Less Resources (LR)			-6.05	2.42			Symmetry LR			0.0677	0.0599		
			(35.96)	(10.77)						(0.0165)**	(0.0076)**		
Symmetry Mining (MIN)					331.94	228.25	Symmetry MIN					0.1691	0.1564
					(52.9)**	(14.82)**						(0.0238)**	(0.0104)**
Symmetry Other Fragmentary Resources (OFR)					-63.20	9.04	Symmetry OFR					0.0642	0.0660
					(94.02)	(24.79)						(0.042)	(0.0173)**
Symmetry FONCOMUN					-21.01	5.55	Symmetry FONCOMUN					0.0606	0.0519
					(36.82)	(11.14)						(0.0166)**	(0.0079)**
Department GDP/Capita (DGDP/C)	0.0191	0.0426	0.0178	0.0426	0.0302	0.0431	LN (DGDP/C)	-0.1977	0.0321	-0.1898	0.0062	-0.1833	0.0159
	(0.0035)**	(0.0035)**	(0.0035)**	(0.0035)**	(0.0097)**	(0.0035)**		(0.0655)**	(0.015)**	(0.0653)**	(0.0326)	(0.0652)**	(0.0326)
Department Poverty (DP)	106.01	197.84	137.00	208.91	472.93	268.59	DP	0.0631	0.1278	0.0604	0.1837	0.0890	0.2087
	(92.39)	(81.05)**	(92.17)	(80.3)**	(252.94)*	(80.48)**		(0.1156)	(0.0382)**	(0.1152)	(0.0563)**	(0.1151)	(0.0564)**
Density	0.0242	-0.0692	0.0248	-0.0705	-0.2411	-0.0718	Density	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0054)**	(0.0403)*	(0.0053)**	(0.034)*	(0.121)**	(0.0399)*		(0.00005)	(0.000002)**	(0.00005)	(0.00003)	(0.00005)	(0.00003)
Reelection	97.68	7.07	99.64	5.49	70.10	5.13	Reelection	0.0207	0.0184	0.0231	0.0192	0.0195	0.0188
	(36.49)**	(10.79)	(36.24)**	(10.69)	(44.75)	(10.67)		(0.0204)	(0.0072)**	(0.0203)	(0.0074)**	(0.0203)	(0.0074)**
Own income/Total income (OI/TI)	-15.81	513.47	29.42	509.84	289.65	504.86	OI/TI	1.53	1.70	1.54	1.50	1.53	1.50
	(93.28)	(53.65)**	(93.3)	(53.15)**	(196.33)	(53.05)**		(0.101)**	(0.0321)**	(0.1006)**	(0.0391)**	(0.1003)**	(0.039)**
R-Squared within	0.5363	0.6366	0.5441	0.6434	0.562	0.6448	R-Squared within	0.8958	0.8791	0.8965	0.8802	0.8973	0.8809
R-Squared between	0.9344	0.7727	0.9336	0.7725	0.1529	0.7514	R-Squared between	0.9256	0.9194	0.9321	0.8782	0.9357	0.8752
R-Squared averall	0.7144	0.7094	0.7193	0.7126	0.2545	0.702	R-Squared averall	0.9071	0.9017	0.9109	0.879	0.9129	0.8775
Observations	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	Observations	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Time dummies	Yes	Yes	Yes	Yes	Yes	Yes

[1] Random Effects GLS Panel Regressions. [2] Fixed Effects GLS Panel Regressions. Choice of regression model is based on significance of Hausman test.

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

To conclude, I present in Table 6.30 the response of primary expenditure per capita in constant 2002 S/. to total transfers in those PPGG and DDGG that are mining producers (a total of 12 PPGG and 77 DDGG, equations (1), (2), (9) and (10), respectively). As discussed in the previous section, this allows assessing the regression model for a variable that, in the case of LLGG that are mining producers, has a strong argument of exogeneity. I also compare to the rest of LLGG (equations (3), (4), (11) and (12)), and assess the effect of one year lag (equations (5), (6), (13) and (14)), and the symmetry variable (equations (7), (8), (15) and (16)).

In this regard and as would be expected, between 2001 and 2009 most transfers received by mining producers are linked to natural resources, which is mainly mining canon: 83 percent of total transfers for DDGG that are mining producers have this source vis-à-vis 38 percent for the rest of DDGG; and 66 percent of total transfers for PPGG that are mining producers have this source vis-à-vis 29 percent for the rest of PPGG.

For the linear specification, the coefficient of mining producers is higher for PPGG than for DDGG (equations (1) and (2), respectively), although this can be influenced by the small sample size (12 PPGG). Similar to the comparison between LLGG whose main transfer is mining and the other main transfer groups presented in equations (4) of Table 6.27, the coefficient of mining producers is smaller than for the rest of LLGG for DDGG (equation (4) of Table 6.30), although it is slightly higher for PPGG (equation (3)), which can again be influenced by the small sample size.

As expected, the effect of the lagged variable for mining producers is very strong for both PPGG and DDGG (equations (5) and (6)), to the point that the contemporaneous

variable is not statistically significant for PPGG. For the rest of LLGG, the lagged variable is also very important because they include LLGG that are not mining producers but still receive large transfers related to mining; indeed, the lagged coefficient for the rest of LLGG is higher than the contemporaneous coefficient for PPGG. Lastly, the variable of symmetry is much larger for mining producers vis-à-vis the rest of LLGG (equations (7) and (8)), especially for DDGG.

For the logarithmic specification the lagged variable for PPGG that are mining producers (equation (13)) is the only equation in which the lagged variable has a higher value than the contemporaneous variable, which is consistent with the high value of the lagged variable found for the equivalent linear specification (equation (5)).

To conclude, the point elasticity of transfers for PPGG in the linear specification is higher than for department gross domestic product per capita for the coefficients of transfers in equations (1) and (3); and for the coefficients of lagged variables of equation (5). In turn, for DDGG the point elasticity of transfers is higher than for department gross domestic product per capita for both coefficients of transfers in equation (4), for the contemporaneous coefficient of rest of LLGG and the lagged variables for both mining producers and rest of LLGG in equation (6); and for both coefficients of transfers in equation (8).

Table 6.30 - Results for mining producers vis-à-vis the rest of LLGG – 2001 to 2009

	PPGG	DDGG	PPGG	DDGG	PPGG	DDGG	PPGG	DDGG		PPGG	DDGG	PPGG	DDGG	PPGG	DDGG	PPGG	DDGG
Dependent Variable: Prim Exp/Cap									Dependent Variable: LN (Prim Exp/Cap)								
Variable	(1) Random[1]	(2) Fixed[2]	(3) Random	(4) Fixed	(5) Random	(6) Random	(7) Fixed	(8) Random	Variable	(9) Random	(10) Fixed	(11) Fixed	(12) Fixed	(13) Fixed	(14) Fixed	(15) Fixed	(16) Fixed
Mining Producers	0.7620	0.4339	0.4797	0.4649	-0.0317	0.1437	0.4295	0.5094	LN (Mining Producers)	0.8368	0.7894	0.7805	0.8371	0.3931	0.5569	0.7621	0.8949
	(0.0916)**	(0.0169)**	(0.0626)**	(0.0055)**	(0.0913)	(0.0062)**	(0.0973)**	(0.0048)**		(0.0759)**	(0.0252)**	(0.027)**	(0.0095)**	(0.0435)**	(0.0187)**	(0.0283)**	(0.0064)**
Rest of LLGG			0.4600	0.7260	0.1795	0.4893	0.3536	0.8258	LN (Rest of LLGG)			0.8504	0.8799	0.6917	0.7792	0.8575	0.9193
			(0.0094)**	(0.0102)**	(0.0131)**	(0.0095)**	(0.0123)**	(0.0081)**				(0.0218)**	(0.0074)**	(0.0251)**	(0.0088)**	(0.0225)**	(0.006)**
Mining Producers-1					0.6803	0.4549			LN (Mining Producers-1)					0.4604	0.3342		
					(0.0963)**	(0.0063)**								(0.0393)**	(0.0174)**		
Rest of LLGG-1					0.3380	0.4308			LN (Rest of LLGG-1)					0.2585	0.1894		
					(0.0132)**	(0.0098)**								(0.0228)**	(0.0083)**		
Symmetry Mining Producers							212.48	446.36	Symmetry Mining Producers							0.2230	0.2275
							(91.77)**	(25.61)**								(0.0407)**	(0.0198)**
Symmetry Rest of LLGG							62.14	60.98	Symmetry Rest of LLGG							0.0851	0.0825
							(31.97)*	(8.71)**								(0.0142)**	(0.0064)**
DGDP/C	0.0155	0.0598	0.0191	0.0263	0.0192	0.0181	0.0272	0.0156	LN (DGDP/C)	0.1275	-0.0921	-0.1371	0.0310	-0.0868	0.0028	-0.1684	0.0446
	(0.0055)**	(0.0206)**	(0.0039)**	(0.0029)**	(0.0037)**	(0.0014)**	(0.0105)**	(0.0015)**		(0.089)	(0.1292)	(0.0599)**	(0.0292)	(0.061)	(0.0315)	(0.0651)**	(0.015)**
DP	536.60	472.87	95.46	71.79	91.98	129.23	367.95	147.03	DP	0.5891	0.2981	0.0332	0.1389	-0.0621	0.0897	0.0722	0.1266
	(278.68)*	(835.9)	(90.57)	(66.51)	(88.04)	(30.09)**	(256.77)	(33.22)**		(0.2867)**	(0.2899)	(0.1042)	(0.0498)**	(0.1071)	(0.0543)*	(0.1144)	(0.038)**
Density	-0.0187	-16.8100	0.0219	-0.0508	0.0251	-0.0123	-0.2317	-0.0137	Density	-0.00002	-0.00764	0.00003	-0.00004	0.00004	-0.00002	0.00004	0.00001
	(0.0251)	(13.29)	(0.0049)**	(0.0313)	(0.0052)**	(0.0017)**	(0.1228)*	(0.0018)**		(0.00003)	(0.0047)	(0.00005)	(0.00002)*	(0.00005)	(0.00003)	(0.00005)	(0.000002)**
Reelection	29.75	46.13	101.68	12.72	86.44	-4.18	83.81	10.35	Reelection	0.0915	0.0415	0.0131	0.0201	0.0029	0.0136	0.0169	0.0182
	(75.9706)	(98.73)	(34.93)**	(9.65)	(30.72)**	(6.97)	(45.41)*	(8.98)		(0.0627)	(0.0346)	(0.02)	(0.0072)**	(0.0189)	(0.0072)*	(0.0203)	(0.0071)**
OI/TI	595.89	1024.44	14.83	500.16	-50.98	395.94	306.67	456.69	OI/TI	2.02	1.72	1.59	1.52	1.47	1.44	1.52	1.71
	(242)**	(315.45)**	(84.74)	(43.63)**	(85.15)	(25.76)**	(200.83)	(29.49)**		(0.2748)**	(0.1163)**	(0.095)**	(0.0349)**	(0.0932)**	(0.0376)**	(0.1)**	(0.032)**
R-Squared within	0.7398	0.6501	0.5720	0.6849	0.7152	0.8226	0.5492	0.6654	R-Squared within	0.9255	0.9102	0.8971	0.8942	0.9114	0.8893	0.8981	0.8802
R-Squared	0.9319	0.2227	0.9286	0.8450	0.9298	0.9235	0.1638	0.9287	R-Squared	0.9483	0.4395	0.8921	0.8372	0.8679	0.8502	0.8423	0.9206
R-Squared averall	0.7904	0.2814	0.7154	0.7625	0.8127	0.8740	0.2649	0.7978	R-Squared averall	0.9281	0.5888	0.8919	0.8637	0.8870	0.8657	0.8667	0.9028
Observations	108 (12*9)	693 (77*9)	1404 (156*9)	9405 (1045*9)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)	Observations	108 (12*9)	693 (77*9)	1404 (156*9)	9405 (1045*9)	1248 (156*8)	8360 (1045*8)	1248 (156*8)	8360 (1045*8)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[1] Random Effects GLS Panel Regressions. [2] Fixed Effects GLS Panel Regressions. Choice of regression model is based on significance of Hausman test.

Standard errors in parenthesis. * 10 % significance level. ** 5% significance level

Noteworthy, across the different specifications in Tables 6.27 through 6.30 the results for the control variables tend to be similar to those of the models described in Table 6.25.

To summarize, using a linear and a logarithmic specification, the econometric analysis shows the existence of a flypaper effect for PPGG and DDGG in all regressions models in Tables 6.25 and 6.27 to 6.30 above, confirming the high propensity of LLGG to spend out of transfers presented in the descriptive analysis. The flypaper effect tends to be higher for LLGG that do not have mining as their main transfer, especially in the linear specification. For LLGG that have mining as main transfer the flypaper effect tends to be stronger with a one-year lag in transfers, which is mainly due to the high value of transfers following 2005 and the timing of the mining transfer, which since 2007 occurs in the middle of the fiscal year.

This also helps explain why the coefficient of symmetry has a higher coefficient and is only statistically significant (in the case of the linear specification) for LLGG that have mining as main transfer. The high propensity to spend out of transfers and its manifestation through a flypaper effect is also confirmed in the regressions that only assess the effect of transfers in mining producers, in which the argument of exogeneity of the transfer variable is strongest.

The time dummies in Table 6.26 confirm the lower spending capacity on average of LLGG in 2007, which is associated to the renewal of local authorities in most municipalities; along with the high increase in expenditures in 2008 and 2009 as the

municipal teams gain more experience and start executing the surge in transfers, especially in LLGG that have mining as main transfer.

The comparison between functional specifications shows the robustness of the flypaper effect. However, the logarithmic specification is consistently higher than the linear case; this contradicts the findings in Becker (1996), who uses a simulation to show that if the true form of the functional specification is not linear, a linear specification may be biased towards inflating the value of the transfer coefficients. There are two main arguments to explain this contradiction. (1) As shown in Figures 6.37 through 6.48, the relatively small volatility around the linear trend-line of the scatter plots of the relationship between transfers and primary expenditure supports the case that the true functional form is linear. And (2), LLGG in Peru tend to be highly dependent of transfers; this means that increases in expenditure need to rely mostly on transfers, which leads to expect a relatively high elasticity of expenditure to transfers; this is supported by the fact that the effect of transfers on primary expenditure tends to be higher for DDGG than for PPGG, since the former have less fiscal autonomy and hence are more dependent on transfers. In turn, the logarithmic transformation of the linear values reduces the volatility of outliers, which are mostly observations from LLGG that have "mining" as main transfer, increasing the value of the estimates of the effect of transfers on expenditure in the logarithmic estimation. This is depicted in Figures 6.50 and 6.51 below, which reproduce Figures 6.37 and 6.38, showing the scatter plots of the relationship between transfers and primary expenditure for PPGG and DDGG, respectively, using their logarithmic values.

Figure 6.50 –Transfers and primary expenditure per capita of PPGG in logarithmic form – 2001 to 2009

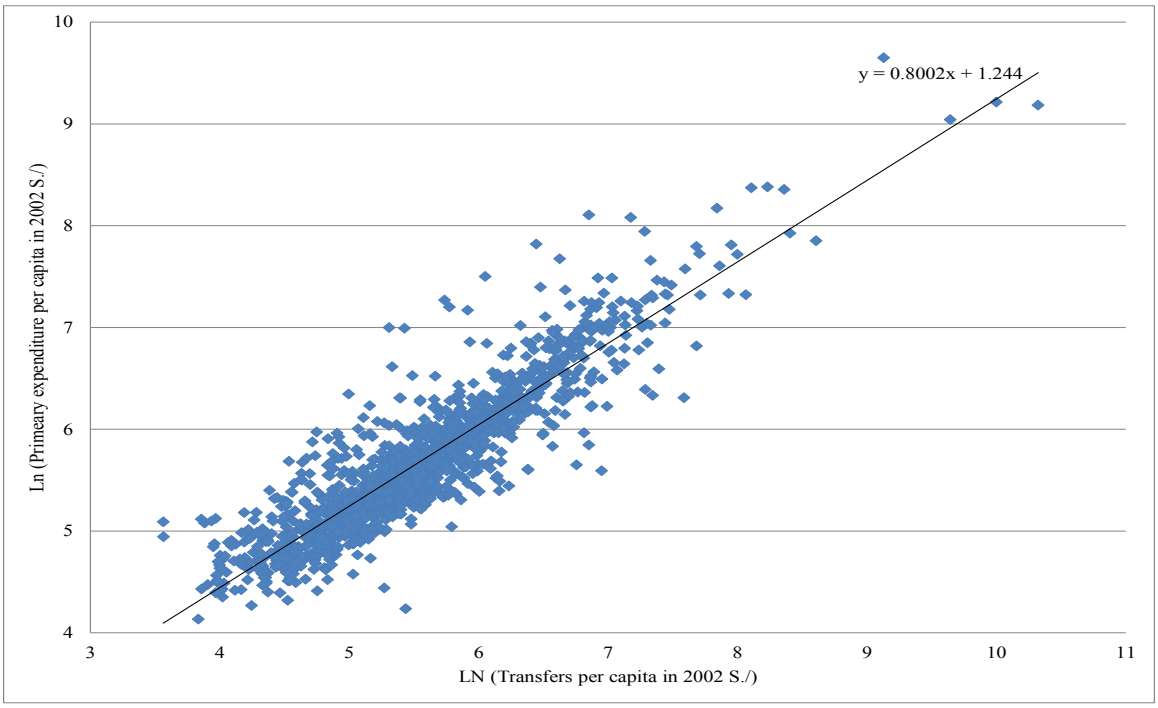
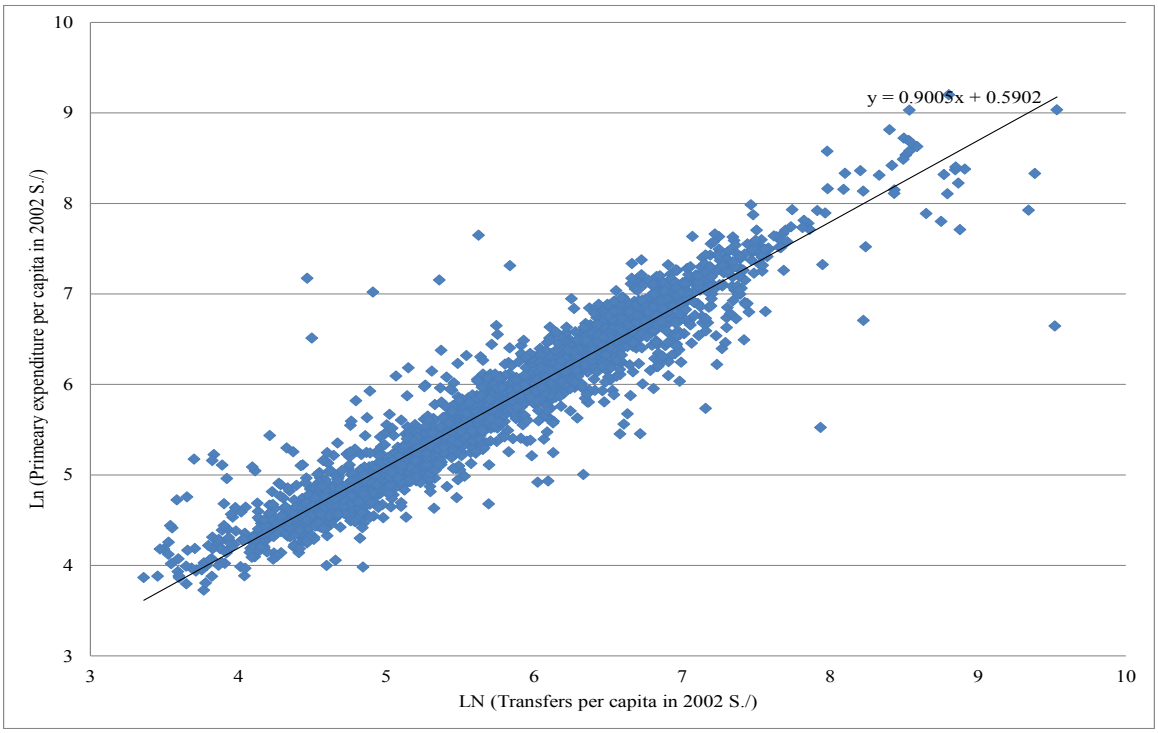


Figure 6.51 – Transfers and primary expenditure per capita of DDGG in logarithmic form – 2001 to 2009



In the linear specification, the point elasticity of transfers tends to be higher than for income, especially for PPGG. However, the absence of an official series of income at the municipal level precludes the analysis of intra-department variability of GDP, which limits the findings of the effect of income on expenditure, both for the linear and the logarithmic specifications, and in turn of the flypaper effect. This said, both the linear and the logarithmic specifications do show the high propensity of LLGG to spend their transfers, which poses a fiscal risk for Peru's central government.

Although not presented in tables below, I tested several variants of the benchmark model of equation (1) in Table 6.25 for all LLGG (PPGG and DDGG combined) opening the variable "other fragmentary resources" into its main components, which are "oil", "gas" and "rest of fragmentary resources". In this regard, LLGG that have gas as main transfer present the highest coefficient of the effect of transfers on primary expenditure for the fixed effects linear specification (0.77), followed by FONCOMUN (0.63), oil (0.54) and mining (0.46); rest of fragmentary resources is not statistically significant.

I also tested variants that included a one-year lag of these variables, finding for the fixed effects linear specification that, similar to the mining case, the lagged gas variable of the effect of transfers on primary expenditure also has a higher and statistically significant coefficient than the contemporaneous variable (0.5 vs. 0.39, respectively), although the difference is smaller than for the mining case (0.42 vs. 0.15, respectively). This is related to the fact that gas transfers have also grown significantly following 2005. Lastly, I tested specifications that included a symmetry variable for each

of the main transfer groups, and similar to the results above only the mining symmetry variable is positive and statistically significant.

I also evaluated other variants of the benchmark model separately for all PPGG and DDGG by need and size. In the case of needs, for both PPGG and DDGG the effect of transfers on primary expenditure increases with BUN: in the case of PPGG, the coefficients of the fixed effects linear specification are 0.36, 0.65 and 0.59 for medium, high and very high need, respectively; while for DDGG the coefficients were 0.49, 0.56 and 0.66, respectively. This shows that the flypaper effect increases as LLGG are poorer, precisely because they have more development needs, a point noted by Espinoza (2008) and suggested for Peru by Loayza, Rigolini and Calvo (2011).

In the classification according to size, for PPGG the coefficients are somewhat similar for main cities and the rest of PPGG (the categories of more and less than 500 urban houses are pooled together due to few observations): 0.48 and 0.46, respectively, for the random effects linear specification; while for DDGG, the values are 0.66, 0.5 and 0.64 for main cities, more than 500 urban houses and less than 500 urban houses, respectively, using a fixed effects linear specification. These values do not provide clear indication of a different flypaper effect by size of LLGG, other than a lower value for the group of more than 500 urban houses.

In turn, I estimated the benchmark model separately for PPGG and DDGG, and also separately by each category of need and size, with similar results to those presented in Table 6.25.

To conclude, I estimated variants of the benchmark model using alternatively as dependent variable "primary result" and "net debt" for all LLGG combined. For the effect of transfers on primary result, most regressions do not yield statistically significant coefficients. Only the random effects linear specification with a one year lag of transfers presents a statistically significant value for the mining transfer: 0.024 for the contemporaneous variable and -0.025 for the one year lag, both significant at the 5 percent level. This is consistent with the description in Figure 6.21: many LLGG that had mining as main transfer had a surplus in boom years (especially 2007), which they partially spent when transfers declined (2008 and 2009), generating a deficit during those years.

In the case of net debt, the effect of transfers for all LLGG is slightly positive and statistically significant at the 10 percent level, with a coefficient of 0.003 for the random effects linear specification. LLGG with less resources have a higher coefficient than LLGG with more and medium resources for the random effects linear specification (0.017 vs. 0.003, at the 5 percent and 10 percent significance level, respectively), while according to main transfer group FONCOMUN is the variable with highest coefficient and significance level (0.02, at the 5 percent significance level). Hence, transfers have a mild positive effect on net debt of LLGG, and especially in those LLGG that have FONCOMUN as main transfer. This is consistent with the fact that only large cities in Peru (especially Lima) are able to obtain debt in Peru, and many of them receive FONCOMUN as main transfer.

Chapter 7: Conclusions, policy implications and recommendations

Conclusions

The motivation for this dissertation is the high increase in fiscal transfers to LLGG in Peru with loosely defined expenditure responsibilities between 2001 and 2010, especially those linked to natural resources, and its effects from the standpoint of macroeconomic stability, understood as the emergence of fiscal risks. In this regard, it builds on the vast international literature on the links between decentralization and macroeconomic stability, with particular reference to the flypaper effect and the allocation among levels of government of the fiscal rent from the extraction of natural resources.

For the case of Peru no previous study has made a comprehensive assessment of this topic, considering the implications of the surge in transfers in terms of the size and composition of the general government, along with the fiscal decisions of LLGG in response to transfers, especially in terms of own revenue collection and expenditure. Previous studies on Peru focused on the response of own revenue collection to transfers, with inconclusive results and without analyzing this relationship where it matters most in terms of LLGG tax collection, which is in main cities. In turn, there are no recent studies on the response of local expenditure to transfers from the standpoint of macroeconomic stability, through a formal assessment of the flypaper effect.

Here I conducted a thorough descriptive analysis of the evolution of local government finances between 2001 and 2010, making use of different classifications of

LLGG according to their heterogeneity, which allows identifying the fiscal risk of different groups of municipalities and informs the strategy for regression analysis.

The main findings for Peru indicate that, although the surge in transfers is not an immediate threat to macroeconomic stability, the response of LLGG conforms to the international experience, in the sense that they have been increasing substantially their expenditure, which in other countries such as Argentina, Brazil and Colombia in the late 1990s put fiscal pressure on the central government to maintain the flow of transfers, and eventually contributed to episodes of macroeconomic instability.

In particular, due to the high increase in transfers to LLGG and their high increase in expenditures, the share of Peru's central government in the primary expenditure of the general government has decreased between 2001 and 2010 from 74 percent to 58 percent, mainly at the expense of LLGG, and to a lower degree RRGG (Figure 6.3). This is largely explained by the fact that most tax collection from extractive industries, which is the tax source with highest growth and volatility in Peru during last decade, is automatically transferred to SNG, especially to LLGG. In terms of the composition of expenditure by economic classification, the participation of the central government has declined in both current and capital expenditure; RRGG have increased slightly their participation in current expenditure and substantially in capital expenditure; while LLGG have increased substantially their participation in both current and capital expenditure.

Alternatively, the analysis shows that due to the increase in transfers, especially those linked to natural resources, the central government reduced its control of tax collection between 2003 and 2010 from 74 percent to 65 percent (Figure 6.2), which is a

measure of the reduction in the fiscal space it faced by 2010 to conduct counter-cyclical fiscal policy.

In turn, the increase in transfers has contributed to augment the size of the primary expenditure of the general government relative to GDP to 17.9 percent of GDP by 2010, which was 1.7 percentage points higher than the average value between 2001 and 2010. Of this increase, 75 percent is explained by the higher participation of LLGG, and 25 percent by RRGG. This is mainly due to the increase in public investment of SNG due to the surge in transfers linked to natural resources, which are mostly earmarked to capital expenditure. This increase in the size of Peru's general government did not worsen Peru's fiscal position in terms of higher deficits and/or debt, which was mainly thanks to the public savings accumulated between 2006 and 2008.

A more detailed descriptive analysis of the evolution of municipal finances shows that the increase in transfers was particularly large in 2007, owing to a change in the allocation rule of the mining canon, by which the central government transferred to SNG in a single installment 17 months-worth of this transfer in the middle of the budget year, which occurred in a period of high commodity prices. This combined with the inexperience of newly elected local authorities in 73 percent of LLGG, to yield a low budget execution rate for 2007, which fostered the perception that SNG are inefficient at spending their resources. However, primary expenditure of LLGG increased substantially between 2008 and 2010, to the point of generating primary deficits in 2009 and 2010, which LLGG were able to finance through a combination of accumulated savings from the previous years and discretionary transfers from the central government, in the context of the international financial crisis of 2009.

Although own municipal resources increased across the different classifications of LLGG at a rate comparable to that of the central government, due to the high increase in primary expenditure, including current expenditure, LLGG have a higher dependence on transfers to finance their regular expenses. Hence, LLGG have in aggregate worsened their fiscal position in response to transfers, mainly through the high growth of their primary expenditure in 2008-2010, which generated primary deficits in 2009 and 2010. However, this is not a situation that generates a significant fiscal risk for Peru's general government, since municipalities have not increased in aggregate their indebtedness in terms of GDP, and they have been able to finance most of their deficits in 2009 and 2010 through a combination of discretionary transfers from the central government in 2009 and 2010; and accumulated savings, especially from the year 2007. Indeed, the expected aggregate accumulated savings of LLGG in 2011 was still substantial, equivalent to around 87 percent of their aggregate accumulated debt in 2010, although 40 percent lower than their peak at the start of 2009.

The descriptive analysis suggests that those LLGG were transfers grew most and were also highly volatile present the highest fiscal risk. This is the case of LLGG that have mining as main transfer: indeed, this group concentrated most of the surplus of all LLGG in 2007 and most of the deficit in 2010. Related to this point, I assessed whether discretionary transfers from the central government included under ordinary resources increased most during 2009 and 2010 in those LLGG that were already receiving large transfers on a per capita basis: in this regard, although transfers per capita under ordinary resources were higher in 2009 in the groups of LLGG with more and medium resources, the rate of growth in 2009 and 2010 was higher for the group of LLGG with less

resources, which suggests that discretionary transfers during those years were allocated based on criteria such as population, rather than owing to the pressure from LLGG that were already receiving high resources. Lastly, I found that the groups of LLGG with more and medium resources, and the groups that have natural resources as main transfer (mining, oil and gas), tend to allocate a higher proportion of FONCOMUN to current expenditure relative to other groups, which increases their dependence on transfers.

Next I analyzed in depth the effect of transfers on LLGG own resources, concentrating on Peru's main cities, in which the analysis is most relevant since they concentrate almost all own municipal resources: the descriptive analysis showed that LLGG that received large amount of transfers did not respond by reducing their own fiscal effort. I also evaluated econometrically the effect of transfers on tax collection of Peru's main cities, again confirming that there is not fiscal sloth. On the contrary, in the case of DDGG, transfers stimulate *higher* tax collection, both for DDGG with more and less resources per capita. This phenomenon is related to the fact that since canon is mostly earmarked for public investment, LLGG have an incentive to collect own taxes in order to finance their current expenditure.

To conclude I estimated econometrically the response of expenditures to transfers, through an assessment of the flypaper effect. I found the existence of a flypaper effect for LLGG in Peru across groups of municipalities and functional specifications (linear and logarithmic), confirming the high propensity of LLGG to spend out of transfers presented in the descriptive analysis. The flypaper effect tends to be higher for LLGG that do not have mining as their main transfer, especially in the linear specification. For LLGG that have mining as main transfer the flypaper effect tends to be stronger with a one-year lag

in transfers, which is mainly due to the high value of transfers following 2005 and the timing of the mining transfer, which since 2007 occurs in the middle of the fiscal year.

This also helps explain why the coefficient of symmetry introduced in the regression analysis, which assesses whether primary expenditure increases and declines symmetrically with transfers, has a higher coefficient and is only statistically significant (in the case of the linear specification) for LLGG that have mining as main transfer. The high propensity to spend out of transfers and its manifestation through a flypaper effect is also confirmed in the regressions that only assess the effect of transfers in LLGG that are mining producers, in which the argument of exogeneity of transfers is strongest.

The time dummies in Table 6.26 confirm the lower spending capacity on average of LLGG in 2007, which is associated to the renovation of local authorities in most municipalities. They also show the high increase in expenditures in 2008 and 2009, as the municipal teams gain more experience and start executing the surge in transfers, especially in LLGG that have mining as main transfer.

The comparison between functional specifications shows the robustness of the flypaper effect, with the logarithmic case being consistently higher and oscillating within a smaller range of values than the linear case. In the linear specification, the point elasticity of the response of expenditure to transfers tends to be higher than for GDP, especially for PPGG. However, the absence of an official series of GDP at the municipal level precludes the analysis of intra-department variability of GDP, which limits the findings of the effect of income on expenditure, and in turn of the flypaper effect.

I also tested several other models, finding that LLGG that have gas as main transfer present the highest coefficient of the effect of transfers on primary expenditure for the linear specification; and similar to LLGG that have mining as main transfer, the lagged variable also has a higher significant coefficient than the contemporaneous variable (although the difference between the lagged and contemporaneous variable is smaller than for the mining case), which is related to the fact that gas transfers have also grown substantially following 2005. Moreover, the coefficient measuring the effect of transfers on LLGG expenditure increases with poverty, measured by BUN, both for PPGG and DDGG, which highlights that LLGG with higher needs tend to spend more out of transfers, in spite of the fact that they tend to have lower institutional capacity.

Policy implications and recommendations

The case of Peru provides lessons to improve its decentralization process and informs other countries that are evaluating to share the fiscal revenue from the extraction of natural resources among levels of government.

The reduction in the fiscal space of the central government to conduct counter-cyclical fiscal policy means that the national authorities may be forced to establish more aggressive targets of public savings in good economic times, in order to have fiscal room to maneuver when the economy slows down. In turn, this more aggressive savings targets may detract public resources to address nationally determined policy goals, including the possibility of increasing discretionary transfers to SNG in the event of economic downturns and/or recessions. Moreover, it demands the central government to coordinate fiscal policy with multiple SNG at the regional and local level: this coordination may create political frictions without guarantee that the fiscal policy goals are achieved.

The decision of how much of this revenue should be allocated to SNG is intrinsically political. However, this dissertation illustrates for the case of Peru the consequences of sharing a high proportion of this rapidly growing and volatile fiscal revenue from the standpoint of macroeconomic stability. It should be noted that the source of this growth in transfers is relatively new, given that the boom in commodity prices took place during the last decade, but the consequences are a reminder of the vast literature on the "soft budget constraint" and the fiscal risks linked to the decentralization processes that materialized in countries such as Argentina, Brazil and Colombia during the decade of 1990.

With respect to the flypaper effect, the analysis of the case of Peru highlights the importance of assessing not only the theoretical models that explain this apparent "anomaly", but also its consequences in terms of macroeconomic stability. In this regard and as shown in Chapter 4, the expectation in much of Peru's policy debate is that SNG should immediately spend all their transfers, mainly because in most RRGG and LLGG development needs are very high. Against this background, the prediction of the median-voter model that SNG should treat surges in transfers as equivalent to surges in private income is regarded in Peru's policy debate as an anomaly itself, and many analysts and policy-makers indirectly treat the flypaper effect as something desirable. Hence, the assessment conducted in this dissertation of the consequences of the flypaper effect in Peru in terms of the emergence of fiscal risks is important to inform the policy debate and highlight its potential threat in terms of macroeconomic stability.

The above discussion needs to be framed within the question of whether the surge in transfers is temporary or permanent. The expectation that SNG should immediately

spend all their transfer proceeds is more understandable under the assumption that the increase is permanent. However, in the case of transfers linked to extractive industries the assumption that the increase is permanent should be treated with caution, considering the high volatility observed in 2008-2010 and the fact that the revenue source depends on an exhaustible resource. Hence, it is advisable that transfers linked to extractive industries be regarded as temporary, and SNG should not be expected to spend them immediately but rather save part of them for periods in which transfers fall.

In terms of the literature and international experience on sharing fiscal revenue from extractive industries among levels of government, the case of Peru provides important lessons. First, it shows that once a large proportion of this revenue is shared with SNG, it is politically very difficult to take it away, which calls for prudence in the initial allocation.

Second, from a political economy standpoint and as discussed in Chapter 4, the reform of the Canon Law in Peru in July 2001, which increased substantially the participation of SNG in the fiscal revenue from the extraction of natural resources, took place only 17 days before the end of the transitional Presidency of Valentín Paniagua, as a combination of a relatively weak Presidency, following the strong rule of the Fujimori Administration; increased political demand for decentralization, as part of a more open democratic environment; and the fact that the Constitution of 1993 gave SNG the right to participate in the fiscal revenue from natural resources. The combination of these factors provided a window of opportunity that was seized by advocates of decentralization, and shows the importance of having a strong and prepared Executive Branch, with the

participation of well-informed authorities from the Ministry of Economics and Finance, to discuss and inform the consequences of this type of decisions.

Third, within the distinction included in World Bank (2010) between "oil economies" and "economies with oil", relative to the contribution of the extractive sector to the economy, the case of Peru highlights the time inconsistency at the moment of defining the legal framework that shares fiscal revenue from natural resources among levels of government. The Canon Law was enacted when Peru was an "economy with oil", and only later in the decade and due to the surge in commodity prices it became an "oil economy", having to grapple with the consequences of sharing a large fraction of the fiscal revenue from natural resources with SNG. At the time of the reform, this demands a projection of the stream of expected fiscal revenue, including sensitivity analysis that takes into consideration the available historical data and well-informed forecasts, although back then it was difficult to foresee the period of high prices that started in 2003, which after a brief respite in 2009, has resumed since 2010. Indeed, had the prices been in 2001 at the average level of the last decade, the decisions regarding the share of SNG in the canon might have been different.

Although not assessed in this dissertation, it is also important to analyze the implications of high and volatile transfers linked to natural resources from the standpoint of efficiency and equity. With respect to the former, a key concern refers to the quality of expenditure in SNG in which outlays grow rapidly, without adequate monitoring from the central government. In this regard, CIUP (2009) shows using data for the year 2007 that in a representative sample of SNG, 81.1 percent of evaluated projects of RRGG had major observations and/or did not comply with the requirements of Peru's National

Public Investment System (SNIP in Spanish), while this figure climbed to 92.8 percent for projects of LLGG. These are alarming figures that suggest that investment projects at the subnational level, which are mostly financed through transfers, are not complying with the requirements for approving projects with high social return.

Moreover, there is plenty of anecdotal evidence about the high incidence of corruption in SNG that receive large transfers linked to natural resources; this is partly fostered by the fact that public officers at the regional and local level have low salaries.

Lastly, in recent years there has been a proliferation of protests in Peru by local communities against private projects linked to extractive industries, which suggests that canon funds are not being effective in compensating for the environmental and social costs created by this type of projects; this partly owes to the fact that the legislation on the use of canon does not require its use on mitigating these costs, and there is inadequate monitoring from the central government on the use of canon funds.

In terms of equity, as shown in Government of Peru (2011) the allocation of transfers linked to natural resources among levels of government tends to be regressive: the 5 departments with most transfers of this sort have on average 35 percent of poverty, while the 9 departments with least transfers have on average 49 percent of poverty. This situation not only raises important questions about the fairness of Peru's decentralization process, but also puts pressure on the central government to compensate SNG that do not receive large transfers linked to natural resources. Moreover, as suggested by the flypaper effect, it also puts pressure to maintain and/or increase transfers to those SNG that are already receiving large transfers, which on average have less poverty than those SNG that

receive less transfers. These risks emerge in a context in which transfers have already grown significantly and have reduced the fiscal space of the central government to conduct counter-cyclical fiscal policy.

Looking forward in terms of policy recommendations, as mentioned above Peru´s policy debate is centered on the importance of increasing expenditure at the subnational level. This is clearly relevant considering the high development needs of most SNG. However, this dissertation highlights the fiscal risks stemming from the flypaper effect, which are relatively neglected in the policy debate, but need to be considered within the discussion of the fiscal consequences of the growth in transfers of the last decade.

Grappling with these fiscal consequences requires improving the fiscal space of the central government to conduct counter-cyclical fiscal policy. In Peru this was recently improved in 2011 through an increase in the taxation of mining, with the extra revenue entirely allocated to the central government. However, this puts additional pressure on the private sector.

It is also important to stimulate own resources of SNG, partly in order to reduce the pressure on the central government to increase transfers, especially when the latter fall. As shown in this dissertation, in Peru LLGG do not display fiscal sloth, but tax collection of municipalities is nonetheless low. Tackling this issue requires reforms that strengthen the tax rates and bases of LLGG, and finding mechanisms to improve coordination among the numerous municipalities in Peru, in order to generate economies of scale in tax collection.

In turn, the high growth of expenditure of LLGG can create fiscal risks to the central government that have to be dealt with. An important step is to tackle MEF's contradictory requirements on municipalities: on one hand, the fiscal rules put a tight limit on the growth of consumption expenditure, which is not complied with by most LLGG.[25] On the other hand, transfer systems such as FONIPREL reward a high budget execution of the investment budget, which often requires LLGG to break the fiscal rule that refers to consumption expenditure, given that the latter is necessary to operate the newly developed public investment.

This contradiction calls for consistency among the policy instruments used by MEF to monitor the fiscal performance of SNG. In this regard, the different classifications of LLGG used in this dissertation, most of them already being used by MEF, can help to sort SNG according to their fiscal risk. The classification by size contributes to identify risks stemming from high indebtedness in LLGG that are main cities; indeed, as described in Chapters 3, 4 and 6, most public debt at the local level is concentrated in large metropolitan areas, which due to their size increases the moral hazard of potential financial bailouts from the central government. Most of this debt is linked to long-standing obligations with central government public institutions, such as the national tax agency, social security and public health. A concerted path towards streamlining these debts can reduce fiscal risks and allow LLGG that are main cities to obtain debt from private creditors within a fiscally responsible framework.

[25] In 2009 73.3 percent of LLGG did not comply with the fiscal rule referred to the annual growth in consumption expenditure in real terms. See Table 4.1.

With respect to the high growth in expenditures, the classifications of LLGG by resources and main transfer, the latter introduced in this dissertation, helps to identify those municipalities whose fiscal behavior requires closer monitoring and control from MEF. In this regard, LLGG that have mining and gas canon as main transfer require special attention due to the high growth and volatility of these revenue sources.

In turn, the timing rules by which the mining canon is transferred to SNG during the budget year should be reconsidered, in order to allow for better forecasting during budget preparation and phase out financial transfers throughout the year in order to give time to subnational authorities to incorporate these resources into their planning.

Related to the last point, the main yardstick by which the budget execution performance of SNG is judged should not be the Institutional Modified Budget (PIM) inclusive of accumulated savings, which stimulates local authorities to spend all their available funds immediately. Instead, a better measure of execution performance is the comparison to the effective budget expenditure execution of a given period to the available resources for that period, excluding accumulated savings. This measure of execution performance would have allowed focusing on the primary deficits of most LLGG in 2009 and 2010, instead of their inability to spend all their available resources.

To conclude, in terms of policy recommendations for Peru´s decentralization process, it is important to simplify the multitude of current transfer schemes, associating them whenever possible with the expenditure responsibilities of SNG. There is the perception in Peru´s policy debate that increasing transfers, including those without

clearly associated expenditure responsibilities, contributes to the decentralization process; this view does not give appropriate consideration to the problems related to the soft budget constraints and the "addiction to transfers" that is displayed by SNG in Peru and throughout the world. Hence, there is scope to improve the understanding and communication of the fiscal risks related to the surge in transfers of the last decade.

Although the canon law is politically very difficult to reform, from an efficiency standpoint there is space to improve monitoring and technical assistance on the use of canon, in order to increase the social return from investment projects at the subnational level. It is also important to assess whether canon funds are being used to mitigate environmental and social externalities related to extractive industries. In case they are not, it is possible to consider some degree of earmarking of its use towards public investment that contributes to mitigate these externalities. However, it is best to negotiate with SNG the establishment of such a type of earmarking, and provide monitoring and technical assistance from the central government to make sure that the funds are effectively used to mitigate the externalities inflicted by extractive industries.

It is also important to improve the distributional equity of the transfer system, but within the current envelope of fiscal resources that are already being transferred to SNG, since the allocation of additional resources would reduce even more the fiscal space of the central government to conduct counter-cyclical fiscal policy.

As mentioned above, it is also important to foster fiscal autonomy at the subnational level, improving to the extent possible the "tax handles" of both local and regional governments. In terms of expenditure responsibilities it is necessary to improve

the definition of functions by level of government, assessing and allocating the necessary resources to fulfill them.

To conclude, it is central to strengthen the leadership of Peru´s decentralization process, with active involvement of MEF and Peru´s Ministerial Council Presidency (PCM in Spanish) in the technical and political aspects, respectively, in consultation with Congress and the organizations that represent SNG. In this regard, the establishment in 2010 of Peru´s Multi-Sector Commission for Fiscal Decentralization, integrated by representatives of the national government and SNG organizations, is a positive step that needs to be complemented with a clear roadmap of policy reforms.

Annex 1 – Reference tables

Table A1.1 – Annual inflation and exchange rate series for Peru – 1998 - 2010

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Series average
Annual Inflation	7.25%	3.47%	3.76%	1.98%	0.19%	2.26%	3.66%	1.62%	2.00%	1.78%	5.79%	2.94%	2.08%	2.98%
Average yearly exchange rate (Peruvian S./ per US dollar)	2.93	3.38	3.49	3.51	3.52	3.48	3.41	3.30	3.27	3.13	2.93	3.01	2.83	3.25

Source: BCRP (Peru's Central Bank)

Table A1.2 – Summary of main legal framework of Peru's current decentralization process (until December 2010)

Canon Law (Law No. 27506 of July, 2001, and successive modifications). As mentioned in the introduction, it essentially increases from 20 to 50 percent the participation of SNG in the taxes paid by companies that exploit natural resources. This law was enacted on July 10, 2001, only 18 days before the end of the term of Transitional President Valentín Paniagua, who was President of Congress when President Fujimori resigned in November 2000, and was selected by Congress as Transitional President of Peru to guarantee the transparency of the new general elections that would choose Alejandro Toledo as President. Although this law predates the National Accord and is usually not included in the legal framework of the decentralization process, it has significantly increased the allocation of funds to SNG (see more on this law in Table A-II below).
Constitutional Reform on decentralization (Law No. 27680 of March, 2002). It introduces decentralization as a permanent and compulsory State policy, which is also a democratic way of organization, and which has as its main goal the integral development of the country. In this context it creates "Regional Governments" (RRGG) as the regional or intermediate level of government (the equivalent to the States in the United States), elected by popular vote in the geographic space of the 24 historic departments of Peru and the Constitutional Province of Callao. The RRGG replaced what were until then the Transitory Counsels of Regional Administration (CTAR, after their name in Spanish), which had been functioning in each department since 1992 as deconcentrated units of the central government that executed all regional expenditures. It also introduces "Regions" as another intermediate level of

government, which is to be created by means of a referendum through the integration of two or more neighboring departments. To date no region has been created (more on this below).
Bases of decentralization Law (Law No. 27783 of July, 2002). It develops the newly introduced Constitutional chapter on decentralization mentioned in the previous paragraph, including the goals and principles of the process. These conform to some of the good practices of fiscal decentralization, such as clear definition of functions among levels of government; transparency, predictability and neutrality of transfers, the latter being the avoidance of transfer of resources without associated expenditure responsibilities; and fiscal responsibility by SNG. It also regulates the formation of regions, sets the basic functions of each level of government and relationships among them, including the shared functions among levels of government, along with a roadmap of the next steps in the decentralization process. Finally, it creates the "National Council for Decentralization" (NCD) as a National agency with Ministerial rank, overseen by representatives from the local, regional and national levels of government, which would lead the implementation of the roadmap of the process.
Organic Law of Regional Governments (Law No. 27867 of November, 2002). It defines the characteristics and functions of RRGG; the exhaustive list of their 185 exclusive functions, along with guidelines for their progressive annual transfer through an accreditation process to be later defined (Law No. 28273, more on this below). It mentions that a Fiscal Decentralization Law would be proposed within the following six months, which would include the roadmap for the transfer of taxes to RRGG within an integral tax reform. The law also includes mechanisms for regional coordination, as part of the process for the creation of regions. a broad list of shared functions among levels of government.
Organic Law of Local Governments (Law No. 27972 of May, 2003). This updates the characteristics and functions of LLGG in the context of the decentralization process initiated in 2001. Similar to the law for RRGG, it states the exclusive and shared functions of the two levels of LLGG: provincial governments, which are comprised of a number of districts and have functions both over the provincial capital (acting as another district) and the rest of the province; and district governments, which only have functions over their district. The law also mentions the existence of "populated centers" as a third more decentralized level of local government, but there are only 8 such centers formally recognized in Peru. It also gives a special status to the Municipality of Lima and to LLGG in international borders. The law states that transfers to LLGG would be doubled between 2004 and 2008, from 6 to 12 percent of the budget of the public sector. It also includes a fiscal rule, by which debt payments of LLGG cannot exceed 30 percent of the income of the previous year; and it mentions that when the budget and financial management of LLGG seriously compromises the macroeconomic stability of the country, the central government can adopt extraordinary economic and financial measures. Lastly, the law includes as municipal income the transfers from FONCOMUN and Canon, and sets a minimum amount of FONCOMUN for each LLGG.
Fiscal Decentralization Decree-Law (Decree-Law No. 955 of February, 2004). It details the steps for the transfer of sources of income to RRGG upon the formation of regions; and introduces all fiscal rules for SNG, along with requirements to ensure fiscal

transparency and responsibility. The decree mentions that upon the formation of any region, it would receive 50 percent of national taxes collected in that region, including Value Added Tax, selective consumption and personal income tax. Each region would receive additional income if they adopt tax administration measures in coordination with the tax administration agency that increases their collection. However, the transferred taxes substitute the transfers that RRGG were already receiving, and they cannot receive more taxes than those necessary to comply with the transferred functions. With respect to fiscal rules, the decree clarifies the concept and methodology to calculate the 9 fiscal rules that apply to SNG. It also includes a transition period in 2006 and 2007 to comply with these rules. All RRGG and selected LLGG to be defined between MEF and NCD should also begin conducting multiannual fiscal reports in coherence with the National Multiannual Macroeconomic Framework.
Accreditation System Law (Law No. 28273 of June, 2004). It defines the system of accreditation to certify the capacities of SNG (especially RRGG) to exercise the functions and programs transferred to them as part of the decentralization system. It also creates an information system to track progress in decentralized public management, and the procedures to certify the functioning of Coordination Groups of RRGG and their progress towards the creation of regions. For small municipalities, it includes a requirement of execution of at least 80 percent of their budget to be able to receive the new functions.
Incentives for the integration and formation of regions Law (Law No. 28274 of June, 2004). It provides the guidelines for the formation of regions, as the union of two or more RRGG. This possibility was also extended to the provinces and districts. Those RRGG that want to create a region should first elaborate a pre investment document with the technical analysis that justifies the social returns of creating a region. The law also expands on the incentives for the formation of regions, including additional transfers, preference for international loans, increased fiscal space for internal credits, and procurement incentives for businesses located in the RRGG to be integrated.
Source: Congress of Peru

Table A1.3 – Description of transfer systems to LLGG in Peru (until December 2010)

Municipal Compensation Fund: FONCOMUN – Equalization transfer		
Transfer	**Source and use of funds, legal base and main changes**	**Distribution rule**
FONCOMUN	**Source of funds**: -Municipal promotion tax (2 percentage points of Value Added Tax). Approximate Weight: 93.75 percent -Gasoline tax (8 percent of gasoline production or import). Approx. Weight: 6.12 percent	**Minimum base**: Every LLGG receives at least 8 tax units per month (S./ 28,400 or US$ 9,600 in 2009). **Timing of distribution**: Funds are automatically distributed monthly. **Distribution rule**: Until 2009 inclusive, two-step

	-Recreational ship tax (5 percent of value of recreational ships). Approx. Weight: 0.13 percent **Restrictions on use of funds**: -Public investment (until 01-2002); no restrictions (since 01-2002) **Legal base and main changes**: -Included in the Constitution of 1993 (Art. 196, Num. 5) -Legislative Decree (LD) 776-1993, "Municipal Tax Law". States characteristics of FONCOMUN: sources of funds, distribution criteria and use of funds for public investment. Supreme Decree (SD) 06-1994: regulates operation of FONCOMUN. -Law 27630-2002. Lifts restriction on use of funds for public investment -LD 952-2004. Defines minimum transfer per LLGG. Mentions that allocation criteria among LLGG will consider territory, own income and use of transfer for investment; also authorizes to subtract from FONCOMUN the devolutions for excess or incorrect payments of the municipal promotion tax. These last two changes did not go into effect until 2010. -Law 29332-2009. Creates the Plan of Incentives for the Improvement in Municipal Management, which intends to improve municipal tax collection and execution of public investment. The Plan is funded by the devolutions for excess or incorrect payments of the municipal promotion tax, which start to be subtracted from FONCOMUN starting in 2010. -Supreme Decree (SD) 060-2010. Incorporates the new criteria for distribution of FONCOMUN stated in LD	allocation process: 1.Index among the country's 195 provinces, considering population and infant mortality 2.20 percent to provincial government; remaining 80 percent to all districts of province (including provincial government as another district): -For Lima and Callao, basic unmet needs: population, adult illiteracy, households with children out of school, without water, sewage, public lighting, improvised construction and 3 or more people per room -Rest of country: rural population (x 2) and urban population (x 1) Since 2010, three-step allocation criteria: 1.Index among the country's 195 provinces, considering population, water, hygiene and electricity service provision 2.20 percent to provincial government; remaining 80 percent to all districts of province, considering: -85 percent weight, for Lima and Callao, index of basic unmet needs, considering population, inadequate housing, lack of water and hygiene, children out of school, poverty. For rest of country, index of rural population (x 2) and urban population (x 1) -5 percent weight, index of territorial extension of each district within each province; -10 percent weight, index of municipal management: considers with equal weight the yearly increase in own income collection and the fraction of FONCOMUN resources used for public investment,

	952-2010.	weighing in turn each district within its province. 3.Every district receives at least 8 tax units and at least the same as it received in 2009. The above formula applies to the total funds available after complying with this minimum requirement.
Natural resources and customs (fragmentary transfers): Canon (mining, gas, fishing, forestry and hydro-energy); Oil canon and over-canon; Mining perquisite; FOCAM perquisite; and participation in custom rent		
Canon (mining, gas, fishing, forestry and hydro-energy)	**Sources of funds**. Since July 2001 (Canon Law). It began distribution in June 2002: -Mining canon: 50 percent of corporate income tax for making use of mineral metallic and non-metallic resources (until 2001 it was 20 percent) -Gas canon: 50 percent of corporate income tax, 50 percent of perquisite and 50 percent of 50 percent of State participation in gas service contracts. -Fishing canon: 50 percent of corporate income tax and fishing permits paid for commercial extraction of fish in large scale. -Forestry canon: 50 percent of payments of permits and authorizations for use of forestry resources. -Hydro-energy canon: 50 percent of corporate income tax for use of hydrological resources; later changed to all energy resources. **Restrictions on use of funds**: -Until June 2005 all canon had to be used for public investment projects (PIP), and since August 2004 30 percent of canon has to be used for productive investment for sustainable development of the communities where the natural resource is exploited. -Since June 2005 SNG can use up to 20 percent for maintenance of infrastructure and selection processes	**Timing of distribution**: -All canon transfers that depend on corporate income tax (mining, hydro-energy and part of gas and fishing) are distributed in 12 equal monthly installments starting in June, transferring the tax collection of the previous year, which is determined by the National tax administration agency in March. For mining canon, starting in 2007 all the transfer is made in one payment in June; the first transfer that year was equivalent to five pending months of 2005 and all 2006. -Gas perquisite, which is most of the gas canon, is paid monthly. -Forestry canon was transferred quarterly in 2002. Both forestry and fishing permits are transferred every semester since 2003. **Distribution rule**: The distribution envisaged in the Canon Law began in January 2002. Until February 2004 it followed the following criteria: 1.20 percent among LLGG in the province/s where the resource is exploited, according to rural population (x2) and urban population (x1). 2.60 percent among LLGG of the department/s where the resource is exploited, according to

	for PIP. Since January 2006 this 20 percent also includes up to 5 percent for pre-investment studies. Since January 2007 the 5 percent for pre-investment studies is in addition to the 20 percent for maintenance and selection processes. Since May 2009 and in the context of the economic crisis, it allows using until the end of 2010 up to 50 percent of canon for maintenance. **Legal base and main changes**: -Precedent: Legislative Decree 708-1991. States that starting in 1992 the percentage of corporate income tax of mining companies to be redistributed to the regions shall be 20 percent. -Constitution of 1993 (Art. 77, 2nd paragraph). "It corresponds to the respective jurisdictions, conforming to law, to receive an adequate participation in the total income and rent obtained by the State in the exploitation of natural resources in the form of canon". -Law No. 27506-2001 "Canon Law". Regulates Art. 77 of the Constitution, defining the natural resources whose exploitation generate canon, along with its distribution to SNG. Modified by Law No. 28077-2003, 28422-2004 and 29281-2008. -SD 005-2002. Regulates the canon law. Modified by SD 115-2003, 029-2004, 187-2004 and 044-2009. -Law No. 28562-2005 "Supplementary budget". Budget Laws 2006 to 2010. Emergency Decree (ED) 060-2009: They gradually lift the restriction on the use of canon for public investment.	population density (inhabitants/sq. Km). 3.20 percent for regional government/s where the resource is exploited. From February 2004 until December 2004: 1.10 percent for the district/s where the resource is exploited. If the resource is exploited in more than one district, it is shared equally. 2.25 percent for LLGG of the province where the resource is exploited excluding the district/s where resource is exploited. The distribution among the LLGG is based on population x proportion of population with at least one basic unmet need (BUN). BUN considers inadequate housing, lack of water or hygiene service, households with children out of school and with high economic dependence. 3.40 percent for LLGG of the department where the resource is exploited excluding the province/s where the resource is exploited. The distribution among LLGG is based on population and BUN. 4.25 percent for RRGG where resource is exploited, which in turn allocates 20 percent to the regional public university for research in science and technology for regional development. Lastly, since January 2005: 1.10 percent for the district/s where the resource is exploited. If the resource is exploited in more than one district, it is equally shared. 2.25 percent for LLGG of the province where the resource is exploited. The distribution among LLGG based on population and index of BUN. 3.40 percent for LLGG of the department where the

		resource is exploited. Distribution among LLGG is based on population and index of BUN. 4.25 percent for the regional government where the resource is exploited; the RRGG allocates in turn 20 percent to regional public universities for research in regional development.
Oil canon and over-canon	**Sources of funds**. Oil canon and over-canon are the first natural resource-based transfers that have been established. Different to the Canon Law they are specific to each of four departments of Peru (Loreto, Ucayali, Piura and Tumbes) and the district of Puerto Inca, department of Huánuco. -In all five cases the oil canon is defined as 10 percent of total oil production value ("ad-valorem") of each jurisdiction. -The over-canon is an extra levy of 2.5 percent of oil production value in Loreto and Ucayali, and 2.5 percent of participation in the rent from oil produced from oil exploitation in Piura and Tumbes (district of Puerto Inca does not have over-canon). -These sources of funds have been unchanged since June 1998. Both oil canon and over-canon exist until the resource is exhausted. **Restrictions on use of funds**. -For Piura and Tumbes, until July 2004 SNG could use 20 percent in current expenditure and 80 percent in public investment. Starting in July 2004 they had to use 100 percent on public investment. Since June 2005 SNG can use up to 20 percent of canon for maintenance of infrastructure and selection processes for PIP. Since January 2006 this 20 percent also includes up to 5	**Timing of distribution**. Monthly based on estimates by PERUPETRO. **Distribution rule**. -Oil canon and over-canon for Loreto and Ucayali since 1994: 1.52 percent for Regional Government where resource is extracted; 2. 40 percent for LLGG where resource is extracted. Distributed among LLGG by population (70 percent), territorial extension (10 percent), provincial capital (15 percent) and population with more than 100 inhabitants (5 percent). 3.5 percent for Amazonian National University. 4.3 percent for Peruvian Amazon Research Institute. -Oil canon for Ucayali since January 2007: 1.20 percent for Regional Government. 2.10 percent for Local Government/s where resource is exploited. 3.20 percent for LLGG of the province where resource is exploited: first according to production, and then following the compound indicator of population and BUN. 4.40 percent for LLGG of the department where resource is exploited: according to compound indicator of population and BUN.

	percent for pre-investment studies. Since January 2007 the 5 percent for pre-investment studies is in addition to the 20 percent for maintenance and selection processes, and SNG can also use over-canon. Since May 2009 and in the context of the economic crisis, it allows using until the end of 2010 up to 50 percent of canon for maintenance. -For Loreto, Ucayali and the district of Puerto Inca are less stringent: transfers should be used for the execution of plans and investment programs to promote integral socio-economic development. **Legal base and main changes**: -Loreto: Law 21678 of November 1976 creates the oil canon for 10 years, later modified until resource is exhausted (Law 23538-1982). Law 23350-1981 creates oil over-canon in Ucayali. Law 24300-1985 defines first distribution criteria among SNG for both departments. ED 027-1998 creates oil canon for Ucayali and oil over-canon for Loreto. Law 28699-2006 sets oil canon distribution criteria for canon in Ucayali; S.D. 206-2006 regulates this law in Ucayali. -Piura and Tumbes: Law 23630-1983 creates oil canon until resource is exhausted. Also sets the same distribution criteria among SNG for both departments. Law 23871-1984 creates oil over-canon. Laws 27763-2002, 28277-2004 and 29345-2009 change distribution criteria. SD 138-2009 regulates these laws. -Law No. 28562-2005 "Supplementary budget". Budget Laws 2006 to 2010. ED 060-2009: They gradually lift the restriction on the use of canon and over-canon for public investment.	5.5 percent equally among national public universities in the department. 6.3 percent equally among national technological institutes. 7.2 percent for Peruvian Amazon Research Institute. -Oil canon and over-canon in Piura and Tumbes. From June 1983 until December 2002: 1.60 percent for Regional Government where resource is extracted. 2.40 percent equally among provincial governments in proportion to the value of production of each department. -From January 2003 until April 2009, canon and over-canon: 1.20 percent for Regional Government where resource is extracted. 2.20 percent for LLGG of the province where resource is exploited: distributed among districts according to population and production. 3.50 percent for LLGG of the department where resource is extracted: first equally among provinces; within each province, according to population, poverty, pollution and BUN. 4.5 percent for national universities. 5.5 percent for Superior Technological and Pedagogical Institutes. -Since April 2009, one change of canon in Piura: 20 percent for LLGG where resource is located has a two-step allocation: 1. Distribution among provinces according to production levels; 2. Among districts of each province using compound indicator of

		population and BUN. Rest of distribution does not change. -Since April 2009, one change of canon in Tumbes: 20 percent for LLGG where resources if extracted is allocated to regional government, which receives 40 percent of transfers. Rest of distribution does not change. -Since April 2009, one change of over-canon in Piura and Tumbes: 20 percent for LLGG where resource is extracted is now allocated to LLGG of the department, which have 70 percent of total allocation, following same distribution as before. Rest of distribution does not change.
Mining perquisite	**Sources of funds**. 100 percent of payment for exploitation of metallic and non-metallic minerals. Based on international value of mineral concentrate or equivalent. Calculated by owner of mine; audited by National tax collection agency. Three tranches of payments depending on net value of concentrate sales (value of sales minus fees, indirect taxes, insurance, freight, storage and international trade costs), : -Up to US$60 million of net value of concentrate sales: 1 percent. -Between US$60 and 120 million: 2 percent. -More than US$120 million: 3 percent. Minerals with no internationally prices pay 1 percent, regardless of volume. **Restrictions on use of funds**. -Funds need to be used on productive public investment that articulates mining with local economic development.	**Timing of distribution**. Determined and distributed monthly based on payments made by mining companies. **Distribution rule**. 1.20 percent for district/s where the natural resource is exploited. 2.20 percent to LLGG of the province/s where the resource is exploited based on compound index of population and BUN. 3.40 percent to LLGG of the department/s where the resource is exploited based on compound index of population and BUN. 4.15 percent to regional government/s where the resource is exploited. 5.5 percent to national universities of the department where the resource is exploited. -Funds collected due to sanctions for delays or non-compliance with payments are allocated following the

	-50 percent of the 20 percent allocated to the district/s where the resource is exploited needs to be invested in the communities next to the mine. -Since January 2006, SNG can use up to 20 percent of the perquisite for maintenance of infrastructure and selection processes for PIP, which includes up to 5 percent for pre-investment studies. Since January 2007 the 5 percent for pre-investment studies is in addition to the 20 percent for maintenance and selection processes. Since May 2009 and due to the crisis, it allows using until 2010 up to 50 percent for maintenance. **Legal base and main changes**: -Law 28588-2004 creates the mining perquisite. Modified by Law 23823-2004. -SD 157-2004 regulates mining perquisite. Modified by SD 018-2005. -Budget Laws 2006 to 2010 and ED 060-2009 gradually lift the restriction on the use of canon and over-canon for public investment.	same criteria described above.
FOCAM perquisite (Fund for Socioeconomic Development of Camisea)	**Sources of funds**. FOCAM is established for the sustainable development of the departments through which the hydrocarbon pipeline of lots 88 and 56 (Camisea Project) goes through. It is funded by 25 percent of the gas perquisite for both lots, after the deductions for the payment of the gas canon. The share for the department of Ucayali is an additional 2.5 percent of the gas perquisite. **Restrictions on use of funds**. -Funds should be used for PIP and economic and social infrastructure. This last category allows maintenance, pre investment and development studies, training and	**Timing of distribution**. FOCAM perquisite began to be distributed in April 2005. Distribution indexes are determined annually. Transfers are made monthly. **Distribution rule**. -For departments of Ayacucho, Huancavelica, Ica and Lima (excluding Metropolitan Lima and Callao): 1.30 percent for regional government, using compound index of population and BUN, and length of pipeline in each RRGG. 2.30 percent for provincial governments, using compound index of population and BUN. 3.15 percent for district governments through which

	technical assistance, and environmental and ecological preservation. -In the case of Ucayali transfers should be used for PIP included in the planning instruments of SNG. At least 20 percent of them should favor native communities and sustainable environment. **Legal base and main changes**. -Law 28451-2004 creates FOCAM perquisite. Law 28622-2005 modifies FOCAM to incorporate department of Ucayali. -SD 042-2005 regulates FOCAM. Modified by SD 065-2005 and SD 185-2005.	the pipeline goes through, using compound index of population and BUN, and length of pipeline in each LLGG. 4.15 percent for rest of district governments using compound index of population and BUN. 5.10 percent equally among public universities. -For department of Ucayali: 1.60 percent for LLGG of province of Atalaya. 2.10 percent for LLGG of province of Portillo. 3.10 percent for LLGG of province of Padre Abad. 4.3 percent for LLGG of province of Purus. 5.13 percent for Regional Government. 6.4 percent equally among public universities of the department. Distribution among district governments of each province is determined as the simple average of the relative participation of surface and BUN, the latter weighted by population.
Participation in custom rent	**Source of funds**. 2 percent of the rent collected by each of the country's customs through import operations. **Restrictions on use of funds**. No restrictions on the use of funds. Only the Province of Callao has to allocate 10 percent of the transfer for an "Education Fund", of which 20 percent should be used for infrastructure and equipment of public schools, with emphasis on information technology. **Legal base and main changes**. -DL 776-1993 "Municipal tax law", establishes the transfer. Updated by Law 27613-2001 of "Participation in custom rent". Modified by Law 27783-2002 "Decentralization Bases Law", and Law 28543 that	**Timing of distribution**. Transfers are made monthly. **Distribution rule**. -LLGG participate of the 2 percent collected within the province where the customs agency is located. 1.40 percent proportional to the total population of each district. 2. 10 percent proportional to the territorial extension of each district. 3.50 percent proportional to the number of LLGG. -For the province of Callao: 1.Until December 2001, allocated to the TCRA of El Callao. 2.Between January 2002 and June 2005, 80 percent

	modifies the latter.	to TCRA (in 2002) and regional government (since 2003) of El Callao, including 10 percent of total transfers for an Education Fund; 20 percent to LLGG. 3.Since June 2005, 10 percent for an Education Fund, and the remaining 90 percent is allocated 50 percent for the Regional Government of El Callao and 50 percent following the rule of the rest of LLGG as described above.

Earmarks and other transfers: Glass of milk; social programs; FONIPREL; PI and PMM; other current and capital transfers; current and capital ordinary resources for LLGG

-**Glass of milk**. Established in 1985, it is one of the first transfers that were established for LLGG. It has coverage in all LLGG, and it is earmarked to provide a daily ration of food to vulnerable population. The distribution is based on vulnerable population (children, pregnant women and seniors), which is first weighted by BUN and malnutrition indicators, and later by the differential cost of the ration in each department. This provides an index that is multiplied by the program´s budget.

-**Social programs**. The current decentralization process entailed the gradual transfer between 2003 and 2007 of 4 main social programs to LLGG:

1. **Road infrastructure** – Ministry of Transportation and Communications (MTC). Earmarked for routine secondary road maintenance by provincial and/or district LLGG. This function used to be performed by an Agency of the MTC (Rural Provias).
2. **Complementary food programs** – Ministry of Women and Social Development. Earmarked for food provision. It includes subsidies for cafeterias at shelters, complementary food, senior population at risk, and food and nutrition for patients with tuberculosis.
3. **Social and productive infrastructure** – Fund for Cooperation for Social Development (FONCODES), Ministry of Women and Social Development. Earmarked for small projects identified by LLGG in social, productive and economic infrastructure to generate economic opportunities for low-income population through development of productive and investment capacities.

-**Investment Fund for Regional and Local Investment** (**FONIPREL** in Spanish). Competitive fund introduced in 2008 whose goal is to co-finance pre investment studies and PIP geared towards reducing development gaps in the provision of services and basic infrastructure, with the highest possible impact in the reduction of poverty and extreme poverty in the country. SNG present

pre investment studies and PIP that compete in each of FONIPREL's calls. There have been 5 calls since the start of the Fund. In turn, SNG are clustered into three different groups according to their BUN (very high need, high need and middle need); and into three other different groups according to the "determined resources" they receive (more resources, medium resources and low resources); determined resources are FONCOMUN, and natural resources and canon transfers. The groups according to BUN define the regional, provincial and district governments that compete with each other for funds in each of FONIPREL's calls. In turn, the groups according to determined resources, combined with the groups according to BUN, define the amount of co-financing given by the Fund, which ranges from 50 percent (more resources) to 98 percent (low resources with very high need). Since 2009, the criteria that is used to evaluate each proposal to the Fund is (weight among brackets): quality (50 percent); additional funds from SNG (15 percent); municipal man-community or regional articulation, which are joint proposals by two or more LLGG or RRGG (15 percent); international border zone (5 percent); priority according to classification of needs and resources (10 percent); and degree of financial execution of public investment budget (5 percent). Most of the resources are allocated to LLGG. In order to stimulate inclusiveness and compensation among SNG, more resources are allocated to SNG with high/very high need and medium/low transfers of determined resources. Once projects are selected in each call, funds are transferred according to the progress of the LLGG in the execution of their pre-investment studies and PIP.

-**Plan of Incentives for the Improvement in Municipal Management (PI) and Program for Municipal Modernization (PMM)**. The PI and PMM were introduced in 2010 with the goal of boosting reforms by LLGG that contribute to achieve growth and sustainable development of the local economy and improve its management, in the context of the decentralization process and improvement of competitiveness. The main goal is to stimulate LLGG to modernize and make progress to a results approach to public management. Both mechanisms allocate funds according to the achievement of a number of targets that need to be accomplished by LLGG, which are geared towards achieving financial self-sustainability (increase tax collection); reducing chronic infant malnutrition; improving public services and infrastructure; and streamlining local procedures. The targets change according to the characteristics of each municipality; in this regard, LLGG have been classified into three groups according to their size: main cities, which for the PMM are divided in turn between larger cities (type A) and rest of cities (type B); LLGG that are not main cities with more than 500 houses; and LLGG with less than 500 houses (the PI also uses the classification of needs using BUN of FONIPREL). For 2010 the allocation for PI and PMM is of S./ 700 and S./ 600 million, respectively. Starting in 2011, however, the funds for the PI are determined by the detractions from the Municipal Promotion Tax that serves as the base for the FONCOMUN transfer; and for the PMM the funds are updated every year in the budget law (PMM is a program that lasts until 2013). For the PI, the total possible allocation per LLGG is determined following the rules of the FONCOMUN, while for the PMM it is proportional to the population of each LLGG. If all targets are accomplished, the LLGG gets the maximum possible amount; otherwise, it gets a proportion according to the number of targets accomplished. The undisbursed funds are allocated to those LLGG within each

category that accomplished all targets. The targets are evaluated in March and September, with the funds transferred thereafter. Similar to FONCOMUN, there are no restrictions on the use of funds for the PI, while for the PMM the transfers need to be used in the activities and projects of the targets of the program. -**Other current and capital transfers**. Until 2005 it included the "Glass of Milk" transfer and the social programs described above. Currently it includes other transfers that tend to be earmarked to current or capital functions/projects. The most significant ones in terms of amounts are transfers from municipal enterprises; transfers from RRGG and other national funds; donations by individuals and corporations; and donations by bilateral and multilateral organizations. -**Current and capital ordinary resources for LLGG**. Since 2006, the municipal budgets do not register this transfer as an income, but only report it as expenditure. Hence, it needs to be included as another transfer in the income statements for an adequate accounting of municipal finances. It includes since 2006 the "Glass of Milk" transfer and the social programs described above. In 2009, and to a lower degree in 2010, this transfer increased significantly because the national government authorized, in the context of the international financial crisis, additional discretional transfers to LLGG earmarked to social programs. The most important functions financed by these transfers are sanitation, urban and rural transport, social assistance, basic education, urban development, management and financial intermediation, and irrigation.
Source: MEF and Congress of Peru

Table A1.4 – Own resources of LLGG in Peru

Own current resources of LLGG
Municipal taxes
1. Property tax (predial). Annual district tax whose base is a fraction of the value of the property. The tax rate and value of the base is established by the central government, while the local government is in charge of tax administration. The tax rate is progressive increasing with the value of the property from 0.2 percent to 1 percent of the total value. There are a number of exemptions to properties that serve a religious, educational and/or public function, as well as national monuments, among other. 5 percent of the tax collection should be allocated to develop and maintain the local cadastre, as well as to tax administration functions. 3 per 1000 of the tax collection should be transferred to the National Ministry of Housing to conduct official valuations of property.
2. Property transfer tax (Alcabala). It taxes the transfer of properties. The tax base is the value of the transfer, which cannot be less than the reported self-assessment of the value of the property. It is paid by the buyer of a property, and the tax rate is 3 percent of

the value of the transfer, with a fixed monetary exemption. There are additional exemptions for transfers due to death and/or inheritance, as well as for religious, educational and/or public properties, among other. The tax is for the district government, except in those provincial governments that have a Municipal Investment Fund (only Lima has one), in which case the provincial government collects the tax, with 50 percent allocated back to the corresponding district government and 50 percent allocated to the Municipal Investment Fund.

3. Vehicle property tax (patrimonio vehicular). Annual provincial tax whose base is a fraction of the value of vehicles not older than three years. The base is the value of the vehicle, with reference values established annually by MEF, and the rate is 1 percent of the total value. There are exemptions for public agencies, public transportation international governments, educational and religious entities, among other.

Other taxes. Tax on gambling (20 percent of the price and 12 percent for horse races), with 60 percent of the proceeds accruing for the provincial government and 40 percent for the district government. Tax on lotteries and games (10 percent of the price; it is a district tax). Tax on non-sport events (15 percent for most shows and 10 percent for movies, it is a district tax).

Contributions and municipal fees for service

1. Contribution for public works. Based on the estimated benefit to neighbors of municipal public works. The fee should never exceed the value of the public work.
2. Fees for public service. Based on the estimated cost of the provision of a municipal service; includes garbage collection, green areas, traffic and other infractions and public surveillance, among other.
3. Fees for administrative services or rights. Based on the cost of administrative procedures and the use or yield of municipal property and assets.
4. Fees for opening a commercial business. One-time fee for opening a new commercial, industrial or services establishment.
5. Fees for vehicle parking. Fees for parking in commercial areas with high traffic volume.
6. Public transport fee. Provincial fee for provision of public transportation services.

Other fees may be authorized by national law. The value of fees should not exceed the value of the provision of the corresponding good or service.

Source: Ordered text of the Municipal Tax Law (Supreme Decree 156-2004).

Annex 2 – Compatibility of LLGG fiscal database with international standards

The fiscal database of LLGG was provided by MEF's National Accounting Office (NAO), which is the official and most reliable national source of municipal government budget information, since it is based on a thorough audit of the information provided by LLGG and its compatibility with other sources such as Peru's IFAS. To assess the fiscal position of LLGG it is necessary to use the economic classification of the budget, which divides income and expenditure according to their current or capital nature, allowing an evaluation of the fiscal result with its corresponding financial sources.

Until 2009 Peru's national accounting rules for the economic classification of the budget of LLGG did not fully conform to international standards such as IMF's Government Finance Statistics Manual (GFSM). Following a reform in 2008, since 2009 these rules are much closer to IMF's GFSM, although they are still not fully compatible.

In order to make Peru's fiscal database compatible with IMF's GFSM and hence having an adequate assessment of the fiscal position of LLGG I used the document published by MEF (2006), "Public finance manual for regional and local governments", which provides a step by step guide of the necessary transformation to the income, expenditure and financing accounts in order to arrive at an economic classification of the budget that is compatible with IMF's GFSM.

In turn, for years prior to 2009 a few income and expenditure accounts are transformed to make them compatible with the new accounting standards that began to be enforced that year. The source that was used to make this transformation is the list of

equivalences in the budget classification of income and expenditure published by MEF's General Directorate of Public Budgeting (DGPP after its name in Spanish, see MEF, 2008). Most of these transformations could only be made in specific accounts of income and expenditure between 2001 and 2008, since prior to 2001 the available database of LLGG is not disaggregated.

It is important to highlight the analysis that was made for three important accounts of LLGG public finances. First, accumulated savings of LLGG grew at a high rate in 2008, especially due to the large increase in transfers of mining canon of 2007 (see Figure 6.8). In this dissertation, accumulated savings are not included in the current or capital income budget of LLGG, since following the classification by MEF's NAO they are a source of finance of municipalities. This is different from the presentation of the Institutional Modified Budget (PIM in Spanish), which is used by Peru's DGPP to track yearly budget execution, and includes accumulated savings as another source of income of municipalities. This inclusion, in turn, inflates the available budget of LLGG, especially those that receive large transfers from natural resources, giving the impression that they are inefficient in expenditure execution, since they tend to execute a smaller fraction of the total available budget vis-à-vis most other LLGG that did not receive large transfers from natural resources; even though, as shown in this dissertation, the growth in expenditure displayed by LLGG that received large transfers is much higher than for the rest of LLGG. Hence, in the database that is used here, and similar to the classification used by MEF's NAO, total income of LLGG in a given year reflects all the funds they collected and/or received in that year, exclusive of accumulated savings, which are presented separately as a source of finance.

Second, according to the database of Peru's NAO, ordinary resources transferred from the central government to LLGG are presented since 2006 as expenditures but not as a source of income. Hence, without correction the database presents a fiscal result of LLGG that is worse than their true fiscal position, especially in 2009 and 2010, in which the central government increased substantially its transfers of ordinary resources to LLGG following the international financial crisis of those years (see Figure 6.8 above). Therefore, as a result of interviews with officers from Peru's DGPP and NAO I confirmed the need to include all the expenditure account of ordinary resources as a source of income, in order to reflect the true fiscal position of LLGG, with the following adjustment: subtract from each provincial government the income account of "transfers to local governments", which includes the income that provincial governments receive due to "Program of feeding complement" and "Provincial transport institutes"; this account is already included in the income budget of PPGG, so including it again through the addition of the expenditure account of ordinary resources would entail double accounting. Noteworthy, the income account of "transfers to local governments" is only 1.7 percent of total ordinary resources.

Third and last, the information for debt of LLGG also comes from MEF's NAO, but there are some minor discrepancies in the number of LLGG that report the information of this stock vis-à-vis the number of LLGG that report the information of budget flows (see Table 3.2). Moreover, the information presented in this dissertation shows net debt, following the regulation of the Fiscal Decentralization Legislative Decree N° 955, which states that for the assessment of fiscal rules municipal debt should be evaluated excluding the accounts of differed income and provision for social benefits.

Bibliography

Aguilar, G. and Morales, R. (2005). "Intergovernmental transfers, tax effort and activity levels". Working Document No. 144. Institute of Peruvian Studies.

Ahmad, E. Albino-War, M. and Singh, R. (2005). "Subnational public financial management: institutions and macroeconomic considerations". IMF Working Paper WP/05/108.

Ahmad, E. and García Escribano, M. (2006). "Fiscal decentralization and public subnational financial management in Peru". IMF Working Paper WP/06/120.

Ahmad, E. and Mottu, E. (2002). "Oil revenue assignments: country experiences and issues". IMF Working Paper WP/02/203.

Ahmad, E. and Searle, R. (2005). "On the implementation of transfers to subnational governments". IMF Working Paper WP/05/130.

Alvarado, B. (2003). "Analysis of the effects and uses of intergovernmental transfers". Research team: B. Alvarado (main researcher), B. Rivera, J. Porras and A. Vigil. Research center of Universidad del Pacífico, Lima, Peru. Prepared for the Economic and Social Research Consortium of Peru.

Aragon, F. (2009). "Flypaper effect and costly tax collection". Department of Economics. London School of Economics and Political Science.

Aragon, F. and Casas, C. (2008). "Local governments' capacity and performance: evidence from Peruvian municipalities". Number 2008/06. CAF Working Paper. December 2008.

Aragon, F. and Gayoso, V. (2005). "Intergovernmental transfers and fiscal effort in Peruvian local governments". Mimeo. Universidad del Pacífico, Peru.

Arzaghi, M. and Henderson, J. V. (2005). "Why countries are fiscally decentralizing". Journal of Public Economics 89 (2005) 1157-1189.

Bahl, R. (2002). "Revenue sharing in petroleum states". Oil, Gas, Mining and Chemicals Department of the WBG and ESMAP. Workshop on Petroleum Revenue Management. Washington, DC, October 23-24, 2002.

Bahl, R. and Martínez-Vazquez, J. (2006). "Sequencing fiscal decentralization". Andrew Young School of Policy Studies, Georgia State University. WB Policy Research WP 3914.

Bailey, S. and Connolly, S. (1998). "The flypaper effect: identifying areas for further research". Public Choice, 95: 335-361.

Baskaran, T. (2009). "Fiscal decentralization and fiscal policy: An economic analysis". Dissertation submitted to the Faculty of Economics and Social Studies at the University of Heidelberg. June, 2009.

BCRP (2008). "Inflation Report: May 2008 – Current situation and macroeconomic projections". Peru's Central Reserve Bank.

Beasley, T., Faguet, J. P. and Tommasi, M. (2003). "Synoptic guide to decentralization". Decentralization task force, Initiative for policy dialogue, Columbia University.

Becker, E. (1996). "The illusion of fiscal illusion: unsticking the flypaper effect". Public Choice, 86: 85-102.

Bird, R. M. (1999). "Transfers and incentives in intergovernmental relations". World Bank Institute.

Bordignon, M. (2000). "Problems of soft-budget constraints in inter-governmental relations: the case of Italy". Research network working paper #R-398, IADB.

Braun, M. and Llach, L. (2008). "Establishing and evaluating fiscal results: a methodology". Prepared for IADB's project: Decentralization and sub-national fiscal outcomes.

Brennan, G. and Buchanan, J. M. (1980). "The power to tax: analytical foundations of a fiscal constitution". Cambridge University Press, New York.

Brosio, G. (2003). "Oil revenue and fiscal federalism". Chapter 10 of Fiscal policy formulation and implementation in oil-producing countries. IMF, 2003.

Brosio, G. and Jimenez, J. P. (2010). "The inter-governmental assignment of revenue from natural resources: a difficult balance between centripetal and centrifugal tendencies". Preliminary version for comments, ECLAC.

CAF (2010). "Local development: towards a new prominence of cities and regions". Report of Economics and Development (RED). Andean Corporation of Development (CAF). Caracas, Venezuela, June 2010.

Canavire-Bacarreza, G., Martínez-Vásquez, J. and Sepúlveda, C. (2011). "Sub-national revenue mobilization in Peru". International Studies Program. Georgia State University. Prepared for IADB.

Carranza, L. and Tuesta, D. (2003). "Considerations for fiscal decentralization: guidelines for the Peruvian experience". Central Reserve Bank of Peru. Economic Studies Number 12, December 2004. Lima, Peru.

Casas, C. (2006). "Progress and perspectives of the decentralization process in Peru". Universidad del Pacifico – CIES, Lima, Peru.

Chaparro, J., Smart, M., and Zapata, J. (2004). "Intergovernmental transfers and municipal finance in Colombia". International Tax Program Paper 0403. Institute for International Business. Joseph L. Rotman School of Management. University of Toronto.

Chernick, H. A. (1979). "An economic model of the distribution of project grants". In P. Mieszowski and W. H. Oakland, *Fiscal federalism and grants-in-aid*. Washington, DC: The Urban Institute.

CIUP (2009). "Evaluation of approvals granted during 2007 within the framework of Peru's National Public Investment System (SNIP) by the national, regional and local

governments". Research Center of Universidad del Pacífico (CIUP in Spanish). Lima, Peru, April 2009.

De la Cruz, R. (2005). "Descentralization in Perú: a Nation in search of local development". Analysis and reform proposals. IADB, Washington, DC.

De Mello, L. (2000). "Fiscal decentralization and intergovernmental fiscal relations: a cross-country analysis". World Development. Vol. 28, No. 2, pp. 365-380.

Defensoría del Pueblo (2009). "Towards decentralization at the service of people: recommendations around the process of transfer of competences towards regional governments". People's Advocate Series, Report No. 141, March, 2009, Lima, Peru.

DIE (2009). "Municipal Tax Administration in the context of Peru's decentralization process: Tax Administration Services". German Institute for Development (Deutsches Institute für Entwicklungspolitik), Bonn, Germany, April, 2009.

ECLAC (2009). "Intergovernmental fiscal relations and subnational finances in the context of the crisis". Prepared by J. P. Jimenez and A. Podesta for the conference "Public Policies in the context of the global crisis: present problems and future challenges". Santiago de Chile, September 29 and 30, 2009, ECLAC.

Espinoza, S. (2008). "On revenue sharing and budgetary behavior: assessing the determinants of subnational financial behavior and their impact on the creation of a decentralized tax system in Mexico". Ph.D. dissertation in Public Affairs at Indiana University, Bloomington, Indiana.

Finot, I. (2001). "Decentralization in Latin America: theory and practice". Public management series No. 12. LAC Institute for social and economic planning. ECLAC.

Flores, A. (2005). "Municipal system, overcoming poverty and urban shortcomings in Peru". Development and environment series No. 120. Sustainable development and human establishments division. Economic Commission for Latin America and the Caribbean (ECLAC). Santiago, Chile.

Gamkhar, S. and Shah, A. (2007). "The impact of intergovernmental fiscal transfers: a synthesis of the conceptual and empirical literature". Chapter 8 in "Intergovernmental fiscal transfers – Principles and practice". Edited by Robin Broadway and Anwar Shah, Public Sector Governance and Accountability Series, The World Bank.

Government of Peru (2011). "Pre-electoral report – Administration 2006-2011". Prepared by Peru's Ministerial Council Presidency (PCM in Spanish) and Ministry of Economics and Finance (MEF) in compliance with Art. 35 of Law of Transparency and Access to Public Information (Law No. 27806), January, 2011, Lima, Peru.

GPC (2008). "Oversight of extractive industries". National Report No. 7. Grupo Propuesta Ciudadana (Citizen Proposal Group). Prepared by E. Baca, N. Quiñones and G. Avila. March 2008, Lima, Peru.

GPC (2011). "Oversight of extractive industries". National Report No. 13. Grupo Propuesta Ciudadana (Citizen Proposal Group). Prepared by E. Baca, G. Avila and N. Roncal. May 2011, Lima, Peru.

Gramkhar, S. and Oates, W. (1997). "Asymmetries in the response to increases and decreases in inter-governmental grants: some empirical findings". National Tax Journal, Vol. XLIX, No. 4, pp. 501-512.

Hamilton, J. (1986). "The flypaper effect and the deadweight loss from taxation". Journal of Urban Economics, 1986, *19* (2), 148-155.

Herrera, P. (2008). "Peru: Towards a system of inter-governmental transfers with horizontal equity criteria". Pontificia Universidad Católica del Peru. January, 2008.

Herrera, P. and Francke, P. (2007). "Analysis of the efficiency of municipal expenditure and its determinants". Pontificia Universidad Católica del Peru. July, 2007.

Heyndels, B. and Van Driessche, F. (2002). "How municipalities react to budgetary windfalls". Economics of Governance (2002): 3 – 211-226.

Hines, J. and Thaler, R. (1995). "Anomalies: The Flypaper Effect". Journal of Economic Perspectives 9 (4): 217-26.

Huanqui, S. (2010). "The failure of subsidiarity in the presence of structural deficiencies in local governments – Analysis of the efficiency of Local Government in the context of decentralization". Dissertation of MSc in Public Policy and Administration submitted to the Department of Government, London School of Economics and Political Science.

IADB (1997). "Economic and social progress report (IPES): Latin America after a decade of reform". 1997 IPES Report. Inter American Development Bank (IADB). Washington, DC.

IADB (2001). "Subnational development strategy". Sustainable development department. Social programs division, IADB, Washington, DC.

IADB (2008). "All that glitters may not be gold: Assessing Latin America's recent macroeconomic performance". Research Department. IADB, April, 2008.

IMF (1997). "Fiscal Federalism in Theory and Practice". Ter-Minassian, Editor.

IMF (2001). "Government Finance Statistics Manual 2001". IMF, Washington, DC.

IMF (2004). "Peru: Report on the Observance of Standards and Codes (ROSC) – Fiscal Transparency Module". IMF Country Report No. 04/109.

IMF (2007). "Peru: Staff report for the 2006 Article IV consultation and request for stand-by arrangement". January 4, 2007.

IMF (2008). "Peru: Second Review Under the Stand-By Arrangement". January, 2008.

Kornai, J. (1979). "Resource-constrained versus demand-constrained systems". Econometrica 47, 801-819.

Leyton, J. and Revilla, J. (2008). "Municipal debt in Metropolitan Lima: preventing a problem". Economic Research Seminar, First Semester 2008, Department of Economics, Universidad del Pacífico, Lima, Peru.

Liu, L. (2008). "Creating a regulatory framework for managing subnational borrowing". World Bank Institute, 2008, World Bank, Washington, DC.

Llempén, Z. and Velázquez, A. (2009). "Are transfers positive for municipal revenue collection?" Impact of inter-governmental transfers on own income of district municipalities. Economic Research II, First semester 2009. Economic Department, Universidad del Pacífico, Lima, Peru.

Loayza, N. Rigolini, J. and Calvo-González, O. (2011). "More than you can handle: Decentralization and spending ability of Peruvian municipalities". Policy Research Working Paper 5763. The World Bank, August, 2011.

Ma, J. (2002). "Monitoring fiscal risks in subnational governments: selected country experiences". Chapter 18 in "Government at risk – Contingent liabilities and fiscal risk", Polackova Brixi and Schick, editors, World Bank and Oxford University Press.

Mc Lure, C. Jr. (2003). "The assignment of oil-tax revenue". Chapter 8 of Fiscal policy formulation and implementation in oil-producing countries. IMF, 2003.

MEF (2006). "Public finance manual for regional and local governments". General Direction for Economic and Social Affairs, MEF, Lima, Peru.

MEF (2008). "Budget management system – Budget classification of income and expenditure – Equivalencies". General Direction of Public Budget, MEF, Lima, Peru.

MEF (2010). "Fund for promotion of regional and local public investment (FONIPREL) – Bases of the competition for co-financing of public investment projects and pre investment studies". 2010 Competition of FONIPREL, January 2010, MEF, Lima, Peru.

Melo, L. (2002). "The flypaper effect under different institutional contexts: the Colombian case". Public Choice, Vol. 111, No. 3/4 (June 2002), pp. 317-345.

Mendoza, W. (2008). "Macroeconomics of fiscal decentralization". Presentation made by W. Mendoza for the XI Decentralized Public Audience for the departments of La Libertad, Ancash and Cajamarca, May 23rd, 2008.

Monge, C., Portocarrero, L., Viale, C. and Garcia, R. (2008). "Natural resources and social conflict in XXI Century Peru". In Peru Today, No. 14, Center of Studies and Promotion of Development (DESCO), Lima, Peru, December 2008.

Morgandi, M. (2008). "Extractive industries revenues distribution at the sub-national level. The experience in seven recourse-rich countries". Prepared for Revenue Watch Institute, New York. June, 2008.

Moron, E. (2010). "Decentralization and fiscal performance at the sub-national level: the case of Peru". E. Moron, main researcher, with Z. Llempen and C. Seminario. Prepared for the IADB in coordination with Peru's MEF.

Musgrave, R. (1959). "The theory of public finance: a study in public economy". Mc-Graw-Hill.

Niskanen, W. A. Jr. (1971). "Bureaucracy and representative government". Chicago: Aldine-Atherton.

Oates, W. (1972). "Fiscal Federalism". New York: Harcourt-Brace.

Oates, W. (1999). "An essay on fiscal federalism". Journal of Economic Literature, Vol. XXXVII (September 1999), pp. 1120-1149.

Oates, W. (2005). “Towards a second-generation theory of fiscal federalism”. International Tax and Public Finance, 12, pp. 349-373.

Oates, W. (2008). “On the evolution of fiscal federalism: theory and institutions”. National Tax Journal. Vol. LXI, No. 2. June, 2008, pp. 313-334.

Panizza, U. (1999). “On the determinants of fiscal decentralization: theory and evidence”. Journal of Public Economics 74, 97-139.

Parry, T. (2007). “The role of fiscal transparency in sustaining growth and stability in Latin America”. IMF Working Paper WB/07/220.

Polastri, R. and Rojas, F. (2006). “Decentralization”. In Peru: the opportunity for a different country. World Bank, Country Office in Lima, Peru.

Pro Decentralization (2009). “Challenges of regional integration – Quick field evaluation 2009”. Prepared by E. Alvites and V. Bermudez, USAID, Peru.

Pro Decentralization (2010). “Map of policies and laws of decentralization by July 31, 2010.” Prepared by E. Alvites, V. Bermudez, C. Tello and D. Villaverde, USAID, Peru.

PRODES (2007). “Decentralization process: balance and agenda by September 2007”. Pro Decentralization program, United States Agency for International Development (USAID), Peru.

Prud’homme, R. (1995). “The dangers of decentralization”. The World Bank Research Observer, vol. 10, no. 2 (August 1995), pp. 201-20.

Rabanal, J. P. and Melgarejo, K. (2006). “Peru: tax effort or fiscal sloth of local governments? 1999-2004”. WD 03/2006. General Directorate of Economic and Social Affairs. MEF.

Rego, G. (2002). “Transfers and their effects on expenditures. An approximation”. In Revista Galega de Economia, junio, vol. 11, nro. 001. Universidade de Santiago de Compostela.

Reinhart, C. Rogoff, K. and Savastano, M. (2003). “Debt Intollerance”. NBER Working Paper No. 9908. August 2003.

Robles, M. (2010). “Poverty Atlas of Peru, 2007-2009”. IADB and Consortium of Social and Economic Research, Lima, Peru.

Rodden, J. (2002). “The dilemma of fiscal federalism: grants and fiscal performance around the world”. American Journal of Political Science, Vol. 46, No. 3, July 2002, Pp 670-687.

Rodden, J. (2003). “Reviving Leviathan: Fiscal Federalism and the Growth of Government”. International Organization 57, Fall 2003, pp. 695-729.

Rodden, J. and Wibbels, E. (2002). “Beyond the fiction of federalism: Macroeconomic management in multi-tier systems”. World Politics, Vol. 54, July 2002, Pp. 494-531.

Rodden, J. Eskeland, G, and Litvack, J. (2001). “Introduction and overview”. Chapter 1 of Fiscal Decentralization and the Challenge of Hard Budget Constraints. Edited by J. Rodden, G. Eskeland and J. Litvack. Cambridge, MA: The MIT Press, 2003.

Rühling, M. (2008). "Substitution effect through fiscal transfers?! Incidence of the Peruvian Property Tax". PhD Dissertation in Political Science. University of Potsdam, Germany.

Singh, R. and Plekhanov, A. (2005). "How should subnational government borrowing be regulated? Some cross-country empirical evidence". IMF Working Paper WP/05/54.

Stein, E. (1998). "Fiscal decentralization and government size in Latin America". Working paper # 368. Office of the Chief Economist. IADB.

Stock, J. and Watson, M. (2003). "Introduction to Econometrics". Pearson Education, Inc., Boston, Massachusetts.

Tanzi. V. (2002). "Pitfalls on the road to fiscal decentralization". Carnegie Endowment for International Peace. Number 19. April, 2001.

Ter-Minassian, T. (1997a). "Intergovernmental fiscal relations in a macroeconomic perspective: an overview". Chapter 1 of IMF (1997): "Federalism in theory and practice".

Ter-Minassian, T. (1997b). "Decentralization and macroeconomic management". IMF Working Paper. WP/97/155.

UNDP (2006). "Human Development Report Peru 2006: Towards decentralization with citizenship". UNDP Peru Office.

UNDP (2008). "Decentralization data – thematic version". Human Development Series No. 13. UNDP Notebooks. UNDP Peru Office.

Vega, J. (2008). "Analysis of Peru's fiscal decentralization process". Final Report. Pontificia Universidad Católica de Perú. Prepared for the Economic and Social Research Consortium of Peru.

Vegh, C. and Vuletin, G. (2011). "Unsticking the flypaper effect using distortionary taxation". Working paper.

Vigneault, M. (2005). "Inter-governmental fiscal relations and the soft budget constraint problem". Department of Economics, Bishop's University. Working paper 2005 (2). IIGR, Queen's University.

World Bank (1999). "Beyond the center: decentralizing the State". S. Burki, W. Dillinger and G. Perry. Pre-publication conference edition. World Bank, Washington, DC.

World Bank (2000). "Concept of fiscal decentralization and worldwide overview". WBI's Intergovernmental fiscal relations and local financial management program, Wold Bank, Washington, DC.

World Bank (2006). "Peru: Challenges of municipal debt. Causes and corrective proposals". Report No. 35607-PE. World Bank, Washington, DC.

World Bank (2010). "Conference report: World Bank conference on oil and gas in federal systems". Washington DC, March 3-4, 2010.