IFPRI Discussion Paper 01407

December 2014

Evolving Public Expenditure in Chinese Agriculture

Definition, Pattern, Composition, and Mechanism

Bingxin Yu

Kevin Chen

Yumei Zhang

Haisen Zhang

Development Strategy and Governance Division

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI), established in 1975, provides evidence-based policy solutions to sustainably end hunger and malnutrition and reduce poverty. The institute conducts research, communicates results, optimizes partnerships, and builds capacity to ensure sustainable food production, promote healthy food systems, improve markets and trade, transform agriculture, build resilience, and strengthen institutions and governance. Gender is considered in all of the institute's work. IFPRI collaborates with partners around the world, including development implementers, public institutions, the private sector, and farmers' organizations, to ensure that local, national, regional, and global food policies are based on evidence. IFPRI is a member of the CGIAR Consortium.

AUTHORS

Bingxin Yu (b.yu@cgiar.org) is a research fellow in the Development Strategy and Governance Division of the International Food Policy Research Institute (IFPRI), Washington, DC.

Kevin Chen (k.chen@cgiar.org) is a senior research fellow in the Development Strategy and Governance Division of IFPRI, Beijing.

Yumei Zhang (zhangyumei2006@126.com) is an associate research fellow in the Agriculture Information Institute of the Chinese Academy of Agricultural Sciences, Beijing.

Haisen Zhang (haisenzhang@hotmail.com) is the director of the Center for International Agricultural Cooperation and Development at the University of International Business and Economics, Beijing.

Contents

Tables

Figures

ABSTRACT

The Chinese economy has recently experienced a rapid and fundamental transformation, and the public expenditure on agriculture has also changed to reflect shifts in policy priorities. This paper reviewed public agricultural expenditure in a comprehensive way using detailed expenditure data at different administrative levels. The paper found that public expenditure for agriculture has increased steadily in China; however, the definition of agricultural spending might not precisely measure resources allocated to agricultural production. Some unique features of Chinese agricultural expenditure are identified, namely high decentralization and substantial intergovernmental transfer. The highly decentralized and hierarchical administrative system caused fragmentation in budget and implementation, resulting in rampant inefficiencies. Government expenditure also exhibits considerable regional disparity. This study recommends improving the fiscal system by rebalancing expenditure with revenues, prioritizing agricultural expenditure, and addressing regional disparities.

Keywords: public expenditure, agriculture, China, decentralization, transfer, regional disparity

JEL code: Q18, Q16, Q10, H50, H54

ACKNOWLEDGMENTS

This paper is undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) led by the International Food Policy Research Institute (IFPRI). Funding support for this study was provided by the Asian Development Bank (ADB) technical assistance (PATA 7306: People's Republic of China: Policy Study on Government Public Expenditure in Agricultural Production) and the National Natural Science Foundation of China (NSFC)-CGIAR International Cooperation Project 71261140371.

1. INTRODUCTION

The Chinese economy has experienced a rapid and fundamental transformation. Between 1980 and 2012, the gross domestic product (GDP) has expanded by 21 times and the GDP per capita grew at 9 percent annually. On the other hand, the demographic structure also shifted dramatically due to urbanization, an aging population, and massive migration. During this period of fast growth, China has transformed from an agriculture-based economy to one based on manufacturing and services, and the share of agriculture in economy, employment, and trade declined steadily.

It has been widely recognized that the rapid agricultural growth in the 1980s triggered China's subsequent economic growth and poverty reduction (Fan, Zhang, and Zhang 2004; Montalvo and Ravallion 2010). Since then, the structure of agricultural production has shifted along with China's economic transformation, mainly driven by intensified use of modern inputs like machinery, fertilizer, and irrigation. However, the agricultural sector faces many challenges despite this impressive growth in the course of economic and societal transformation. Swift urbanization and an emerging middle-income class have increased the demand for more nutritious and protein-based diets. China's current agricultural policies and the practice of intensified production are increasingly being tested by many factors on the supply side, including demographic change, biophysical constraints, and external trade conditions.

The strategic importance of national food security and income equality has prompted the Chinese government to modernize its agricultural sector. Public expenditure is one of the most important instruments for the government to implement its development goals. There is rich literature suggesting agricultural expenditure is crucial for economic growth, food security, and poverty reduction in developing economies (Fan and Brzeska 2010, Mogues et al. 2012). Agricultural research and development, rural infrastructure, and education are generally most effective in promoting agricultural growth and alleviating poverty. This paper provides a comprehensive review of public agricultural expenditure, which is urgently needed in the formulation of an effective sector policy and its integration into the planning of the government expenditures system. This study is particularly timely given the recently released policy blueprint, which recognized the fiscal policy as a pillar of governance and gave priorities to establish a modern fiscal system to match the responsibilities of government agencies with their resources.

The paper found that public expenditure for agriculture has increased steadily in China; however, the definition of agricultural spending might not precisely measure resources allocated to agricultural production. Two unique features of Chinese agricultural expenditure are identified, namely high decentralization and substantial intergovernmental transfer. The highly decentralized and hierarchical administrative system caused fragmentation in budget and implementation, resulting in rampant inefficiencies. Agricultural expenditure also exhibits considerable regional disparities.

The paper is organized as follows. Section 2 reviews international evidence on the impact of agricultural spending in growth and poverty reduction and describes China's agricultural policy reform, fiscal system, and budgeting process. Definitions and sources of public agricultural expenditure are presented in Section 3, and Section 4 examines the pattern and characteristics of government expenditure in agriculture and its components at various levels of government. The last section summarizes the findings of this study and proposes strategies for government spending in agriculture.

2. EVOLVING SYSTEM OF PUBLIC EXPENDITURE IN AGRICULTURE IN CHINA

Agricultural reform has triggered and supported China's phenomenal economic growth. Agricultural policy remains a central part of the reform, resulting in a gradual transition from a centrally planned economy toward a market economy (Fan, Zhang, and Zhang 2004; Zhang and Brummer 2011). Increasing agricultural production and ensuring food security have been the principle goals of agricultural policy since the start of the reform. In the early 1980s, the tightly controlled commune system was replaced by the Household Production Responsibility System, followed by the promotion of rural nonagricultural industries, commonly known as township and village enterprises. Gradually, policy priorities shifted to increase agricultural incomes and lower rural–urban inequality. These factors led to a fundamental change in agricultural policy from taxing to supporting agricultural sectors by focusing on various aspects of agricultural and rural development, as demonstrated in the adoption of the strategic documents since 2004. In addition, to expand the coverage of the social safety net and improve social services in rural areas to mitigate rural–urban disparity, many new programs, such as the New Cooperative Medical Scheme (NCMS), Medical Assistance for improved health care, and nine-year compulsory education, were introduced. There are other rural safety net programs, including minimum living stipends and support for disadvantaged households.

The evolution of the agricultural expenditure policy reflects the shifts in policy priorities since the reform. In 1979–1993, agricultural expenditure was slanted toward ensuring the domestic supply of agricultural products through subsidies for productive inputs and the reduction of agricultural tax. However, investment in agricultural infrastructure plummeted due to a shift in focus to nonagricultural development. The level of agricultural expenditure increased steadily during the period of 1994–2002, supported by brisk economic growth. The Rural Tax and Fee Reform (RTFR), started in 2001 and the most important fiscal system reform, was designed to significantly reduce the overall burden on farmers through adjustments to the tax sharing system, fiscal management reform, and other rural fiscal reforms. In early 2006, the long-established agricultural tax was abolished and agricultural subsidies were increased substantially, with the policy objectives of shrinking the rural–urban income gap and encouraging food production to ensure grain self-sufficiency. In recent years, China's expenditure has been increased tremendous to improve rural infrastructure, provide better delivery of social services, and intensify support to the agricultural sector. These initiatives reflect an increasing government commitment to promote rural development and rural–urban equality.

Budgeting Process and Reform

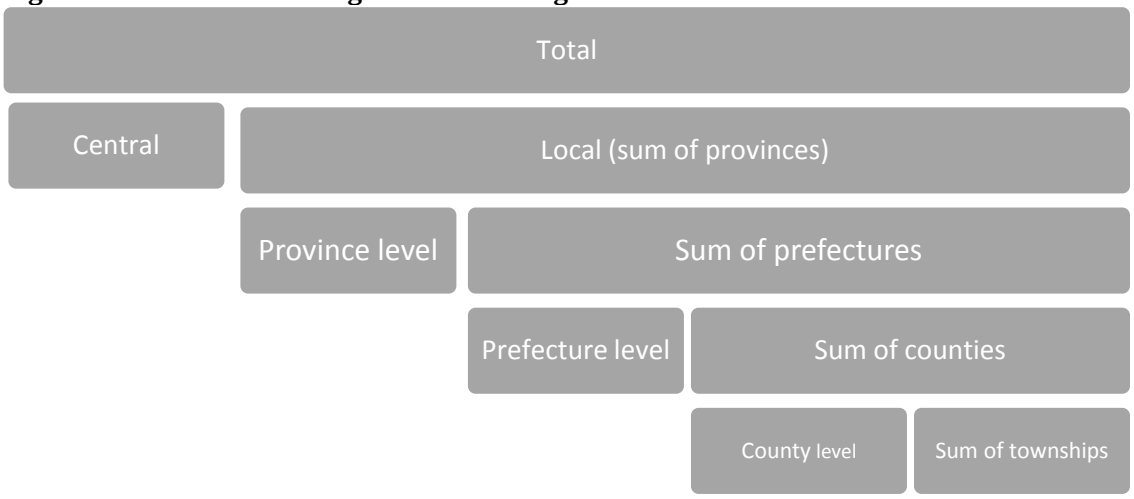
The budget is the key in resource allocation and public management in the public financial management process. A general budget process involves four stages: preparation, review and authorization, execution with adjustment oversight by the legislation, and final reporting and auditing (Deng and Peng 2011). Sometimes the process also includes formulating the national development strategy and policy to guide budget strategies. In China, the budget is first prepared under the overarching five-year national development plan, then reviewed and approved by the People's Congresses after modifications. The budget is executed and all financial transactions and activities are recorded, followed by possible revisions with legislative approval. At the end of the fiscal year (which coincides with the calendar year in China), financial records are consolidated and final accounts of payments and annual reports are audited before being released.

The Chinese national budgeting process involves five nested hierarchical levels of government: central, province, prefecture, county, and township.[1] At each level of the hierarchy, the government runs an independent budget that must be reviewed and approved by the People's Congresses at its corresponding level. From the province level down, the approved budget is submitted to the government one level above. At the township level, the budget includes the budget of administrative agencies and institutions at the township level. At the county level, the overall county budget includes the aggregate budgets of all townships within the county plus the budgets of administrative agencies and institutions at the county level. The same sequential process is repeated at the prefecture and province levels to form a budget of local governments, with each lower level nested within the higher level (Figure 2.1). The local

[1] Village is an informal level of government below the township.

government's budget is combined with the central government's budget to generate a unified national budget. As a result, the national budget of China consists of the budget of the central government and the combination of all the local budgets at various levels. Revenue sharing is arranged in a similar way across different levels (Chan 1996).

Figure 2.1 The structure of government budget in China



Source: Authors' compilation.

Since the introduction of the "reform and opening" policy in the late 1970s, China has adopted a series of budgetary reforms to accommodate the changing role of the state and the control over the budget process. The most prominent one is the 1994 Budget Law, which has fundamentally changed the way revenues and budgets are split between the central and the local governments. The central government receives revenues from custom duties; consumption taxes; taxes on central enterprises, railroads, banks, and insurance companies; and taxes on offshore oil extraction. The revenue base of the local governments consists of business taxes, taxes on local enterprises, real estate taxes, individual income taxes, vehicle taxes, state land sales revenues, and taxes on local land-based resources. The value-added tax is split with central government taking 75 percent and local 25 percent (World Bank 2002). On the expenditure side, the law stipulates that the central government covers national defense and foreign policy, central government administrative costs, large-scale construction projects and infrastructure development, scientific and technical projects, and major higher education institutes. The responsibilities of many social and development functions have to be shouldered by local governments, including social welfare, social services (education, health, culture, sport, and science), local infrastructure, and local government administrative costs.

In addition to the Budget Law, China has implemented other budget reforms, including departmental budget reform in 2000, centralized treasury management in 2001, and the State Procurement Law in 2002 (Ma 2009). A new government financial management information system was introduced in 2000, and a new classification system for revenue and expenditure was implemented in 2007. The broad package of reforms in budget preparation and implementation aims to improve the transparency and accountability of the government and the prioritization of government expenditures.

However, China's budgeting system reform is far from finished due to the pervasive lack of regularity and discipline in the political process and administration. Institutions for a well-controlled budgeting system have yet to be established because the Ministry of Finance essentially controls the budget. This is against a global trend of increasing the role of the legislature in the budgeting process, and leads to criticism for the lack of budgetary transparency and accountability, corruption, and misuse of public resources. Fiscal reforms brought in by the centralization of revenues at the central and provincial levels with fiscal resources are more concentrated at the provincial and central levels, resulting in a lower priority for the rural sectors (World Bank 2002).

3. DATA

Public expenditure, defined as expenditures incurred by government at the central, provincial, and local levels, is one of the most important policy instruments to support the development goals of the country. Public agricultural expenditure (PAE) refers to expenditures incurred by public authorities for the development of the agricultural sector, and covers all the parts of the government's expenditures that are related to agriculture. Hence, a precise assessment of public resources allocated to the agricultural sector hinges on the definition of the agricultural sector.

The Classification of the Functions of Government (COFOG), widely adopted by many countries, groups crops and livestock, along with forestry, fishing, and hunting, in one functional category (IMF 2001). The Food and Agriculture Organization of the United Nations defines agriculture as crops, livestock, aquaculture, and agroforestry, and excludes wild or captured forestry and fishery products (FAO 2012).

In the context of China, four definitions have been widely used to measure PAE: (1) government expenditure that supports agricultural production and the departmental operating costs related to agriculture, forestry, water, and meteorology; (2) government expenditure in agriculture; (3) government expenditure in agriculture, forestry, and water; and (4) government expenditure for "San Nong" (agriculture, rural areas, and farmers). Table 3.1 shows the components included in each definition.

Table 3.1 Components of different definitions of public expenditure in agriculture

Item	Definition 1 (1978–2006)	Definition 2 (1949–2006)	Definition 3 (2007–2011)	Definition 4 (2008–2011)
Agriculture	X	X	X	X
Extension	X	X	X	X
Grain and oil reserve				X
Farm subsidy	X	X	X	X
Local specialization	X	X	X	X
Agricultural co-op	X	X	X	X
Agricultural research and development		X		X
Forestry	X	X	X	X
Water	X	X	X	
Irrigation	X	X	X	X
Rural drinking water	X	X	X	X
Flood and drought	X	X	X	
Meteorology	X	X		
South-to-north water diversion			X	X
Integrated agricultural development	X	X	X	X
Poverty reduction			X	X
Natural resource conservation	X	X	X	
Rural infrastructure		X	X	
Rural welfare		X	X	X
Rural social development				X
Other	X	X	X	X

Source: Authors' compilation.

Note: "X" indicates that the item is included in the definition and a blank cell indicates that the item is excluded from the definition.

Definition 1 and 2, used prior to 2006, were based on a fiscal classification system originally developed by the Soviet Union, with Definition 2 encompassing Definition 1 and thereby entailing a larger statistical scope. The Chinese government adopted a new budget classification system with reference to the United Nations Classification of the Functions of Government (COFOG) in 2007 (Table 3.2). Definition 2 was replaced with Definition 3, resulting in some significant changes in the definition and coverage of PAE agriculture over time and across different contexts.[2]

[Insert Table 3.2 here]

The concept of "*San Nong*" spending (Definition 4) is a popular indicator of government support for the agricultural and rural sectors. It is not a separate budget item and is aggregated from a number of expenditure items across various functions, consisting of expenditures in agricultural production (support for agricultural production, farm subsidy), rural social welfare (health, education, sanitation, and social protection), and grain and oil reserves.

Data on public expenditure in agriculture used in this paper were collected from government expenditure accounts in published government documents, including *China Statistical Yearbook, Finance Yearbook of China*, National Financial Final Accounts, the annual issue of *The Basic Situation of China's Finance* by the Ministry of Finance, provincial *Statistical Yearbooks*, and other government reports. These documents provide expenditure information at different administrative levels. All expenditure data are converted to 2010 constant prices to ensure comparability.

[2] First, Definition 3 includes all expenditures on water, such as dam construction, irrigation, and rural drinking water. This could inflate the PAE because expenditures on irrigation are the only expenditure items that are closely related to agricultural production, accounting for less than one-third of the total water expenditure. Although agriculture benefits from multiple-purpose water-related projects like the construction and maintenance of dams, these projects generally serve nonagricultural purposes as well. Second, some expenditure items were reclassified during the change of coding system, causing changes in the caliber of the PAE measurement. For example, forest protection used to fall under agricultural expenditure but was moved to environmental protection, and meteorology spending went to a new category called "Land, Resources, and Meteorology."

Table 3.2 Government budget and its corresponding government functional classifications and COFOG after 2006

Central government budget category	Government Expenditure Classification		Classification of the Functions of Government (COFOG)		
	Level 1	Level 2	Level 1	Level 2	Level 3
General public services	General public services		General public services		
Financial supervision	Industry, commerce, and finance	Financial affairs	General public services	Executive and legislative organs, financial and fiscal affairs, external affairs	Financial and fiscal affairs
Land and meteorology	General public services	Land resources	General public services	General services	Other general services
	General public services	Meteorology	Economic affairs	General economic, commercial, and labor affairs	General economic and commercial affairs
Interest payment for domestic and foreign debts	General public services	Debt	General public services	Public debt transactions	Public debt transactions
Foreign affairs	Foreign affairs		General public services	Executive and legislative organs, financial and fiscal affairs, external affairs	External affairs
National defense	National defense		Defense		
Public security	Public security		Public order and safety		
Education	Education		Education		
Science and technology	Science and technology		General public services	Basic research	
			General public services	Research and development (R&D) general public services	
			Economic affairs	R&D economic affairs	

Table 3.2 Continued

Central government budget category	Government Expenditure Classification		Classification of the Functions of Government (COFOG)		
	Level 1	**Level 2**	**Level 1**	**Level 2**	**Level 3**
Culture, sport, and media	Culture, sport, and media		Recreation, culture, and religion		
Social safety net and employment	Social safety net and employment		Social protection		
Social insurance fund	Social safety net and employment	Social insurance fund	Social protection		
Post-earthquake recovery and reconstruction	Social safety net and employment	Natural disaster assistance	Social protection	Social protection not classified elsewhere	
Medical and health care	Medical and health care		Health		
Environmental protection	Environmental protection		Environmental protection		
Urban and rural community affairs	Urban and rural community affairs		Housing and community amenities		
Housing security	Urban and rural community affairs	Urban and rural housing	Housing and community amenities	Housing development	
Agriculture, forestry, and water conservancy	Agriculture, forestry, and water conservancy		Economic affairs	Agriculture, forestry, fishing, and hunting	
Transportation	Transportation		Economic affairs	Transport	
Exploration, power, and information	Industry, commerce, and finance		Economic affairs	Fuel and energy	
			Economic affairs	Mining, manufacturing, and construction	
			Economic affairs	Communication	
			Economic affairs	Other industries	

Table 3.2 Continued

Central government budget category	Government Expenditure Classification		Classification of the Functions of Government (COFOG)		
	Level 1	**Level 2**	**Level 1**	**Level 2**	**Level 3**
Commerce and services	Industry, commerce, and finance	Commerce	Economic affairs	Other industries	Distributive trades, storage, and warehousing
Grain and oil reserves	Industry, commerce, and finance	Grain and oil reserves	Economic affairs	Agriculture, forestry, fishing, and hunting	Agriculture
Reserve funds	Other expenses	Reserve funds	General public services	General public services N.E.C.	
Other expenses	Other expenses	Other expenses	General public services	General public services N.E.C.	
Local tax refund	Transfer	Local tax refund	General public services	Transfers of a general character between different levels of government	
Transfer to local government	Transfer	Transfer to local government	General public services	Transfers of a general character between different levels of government	

Source: Authors' compilation.

Note: Religion is classified under "general public service."

4. PATTERN OF PUBLIC EXPENDITURE IN AGRICULTURE IN CHINA

National Expenditure in Agriculture

Instead of an administrative structure, we rearranged expenditure items according to their functions (Table 4.1). Some of the functions are similar to those defined in COFOG, such as education and health, but some are not, including science and technology. Total government expenditure reached $1.7 trillion in 2012 (at 2010 constant prices), with an annual growth rate of 16.2 percent from 2007 to 2012. In 2012, activities directly related to economic affairs represented about 30 percent of the total expenditure, including agriculture, industry and service, science and technology, and transportation. Almost half of the government budget was assigned for social services, such as human capital (health and education), community development (culture and housing), environmental protection, and social protection. Expenditure in both economic affairs and social services more than doubled in five years due to an annual growth rate of more than 20 percent. The share of agriculture in total expenditure increased rapidly, from 6.8 to 9.5 percent, implying a substantial rise in the amount allocated for the agricultural sector.

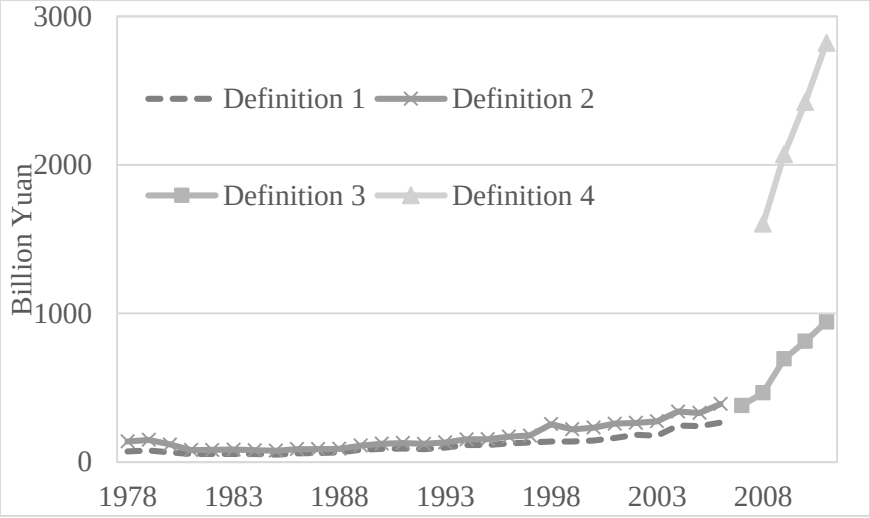
Table 4.1 Structural of national government expenditure in China

Variable	2007	2008	2009	2010	2011	2012	Growth rate (%)	Central in total exp. in 2012 (%)
Total expenditure (billion 2010 USD)	822.2	948.5	1164.3	1327.6	1531.1	1720.5	16.2	14.9
	Share in total expenditure (%)							
General public services	17.1	15.7	12.0	11.9	11.5	11.4	6.7	90.2
Foreign affairs	0.4	0.4	0.3	0.3	0.3	0.3	5.3	99.6
Defense	7.1	6.7	6.5	5.9	5.5	5.3	9.3	96.9
Public security	7.0	6.5	6.2	6.1	5.8	5.6	11.5	16.6
Economic Affairs	22.8	24.4	28.5	28.9	29.7	29.2	22.5	13.9
Agriculture, forestry and water	6.8	7.3	8.8	9.0	9.1	9.5	24.3	4.2
Industry, commerce and finance	8.6	9.9	10.0	10.1	10.2	9.6	18.5	11.3
Science and technology	3.6	3.4	3.6	3.6	3.5	3.5	16.3	49.6
Transport	3.8	3.8	6.1	6.1	6.9	6.5	31.9	10.5
Social services	39.6	40.5	42.1	43.2	45.8	47.5	20.7	4.1
Education	14.3	14.4	13.7	14.0	15.1	16.9	19.5	5.2
Health	4.0	4.4	5.2	5.3	5.9	5.8	25.6	1.0
Culture, sport and media	1.8	1.8	1.8	1.7	1.7	1.8	15.9	8.5
Community affairs	6.5	6.7	6.7	6.7	7.0	7.2	18.3	0.2
Environmental protection	2.0	2.3	2.5	2.7	2.4	2.4	19.6	2.1
Social protection and employment	10.9	10.9	10.0	10.2	10.2	10.0	14.1	4.7
Housing			2.1	2.6	3.5	3.6	36.7	9.2
Other	5.9	6.0	6.5	6.3	5.0	4.2	-6.2	1.5

Source: Authors' compilation from National Finance Final Accounts (MOF various years).

In order to have a historical perspective, PAEs were extended back to 1978 under various definitions mentioned above, and Figure 4.2 compares PAEs under the four definitions over time. Expenditure under Definition 2 is consistently higher than under Definition 1 because the former includes spending on agricultural infrastructure and rural welfare. The adoption of Definition 3 in 2007 slightly increased the expenditure figures, which expanded to include south-to-north water diversion and poverty reduction. Definition 4 was about 27 percent of the total national budget in 2011, far larger than the other definitions of PAE, because it also takes into account expenditures on social services and welfare in rural areas. Due to differences in the components of these definitions, it is impossible to extract a consistent series of PAEs over three decades. Therefore, the discussion of PAE will be mainly based on Definitions 2 and 3 for their similar (but not identical) coverage.

Figure 4.2Different definitions of public expenditure in agriculture in billion Yuan



Source: Authors' compilation from China Statistical Yearbook (NBS various years [b]) and MOF (various years).

Regardless of definition, it is clear that China's PAE expanded rapidly in the 2000s. PAE grew by 10.9 percent per year in 2003–2006 (Definition 2), and by 24.3 percent in 2007–2012 (Definition 3), far exceeding the growth rate of total government expenditure over the same period. Agriculture, along with transport and health, observed remarkable development, and this growth far outpaces the expenditures in many other functions, such as research or industry and commerce.

The growth of Chinese PAE accelerated, especially after 2007, outpacing other major developing economies in Asia (IFPRI 2013). Even after the size of the country is taken into consideration, the growth of agricultural expenditure in China is very impressive because per capita agricultural expenditure has risen steadily since the 1990s, and China has surpassed many countries in the region. The Chinese government continues to prioritize the improvement of agricultural productivity and the promotion of rural development. Since 2000, China's agricultural spending is high relative to the size of its agricultural sector, ranked top among its developing peers. Agriculture is a mainstay in public expenditure, and each year about 8 to 9 percent of the total government budget is allocated to agriculture, a high ratio when compared with the rest of developing Asia. Despite the rapid increase and its sheer size, agricultural spending in China is still quite low when compared with developed economies in the region. Per capita agricultural expenditure was about $57 in 2010 (at 2005 constant prices), far below the level of developed Asian countries, such as Japan ($126) and Korea ($226) (IFPRI 2013).

Within Definition 3, agricultural expenditure is grouped according to line ministries, departments, and agencies, namely, agriculture, forestry, water management, poverty reduction, agricultural comprehensive development, rural reform, and other agricultural expenditures. Expenditures in agriculture and water management are the two major PAE categories, accounting for 42 and 27 percent of total agricultural expenditure in 2012, respectively. The rapid increase of PAE can be partly attributed to the explosive surge in water management spending, which saw large amounts of capital investment for infrastructure construction.

Expenditure directly related to agricultural production, including extension, agricultural infrastructure (land, irrigation, and drought), and sector development, together made up about 16 percent of PAE (Table 4.2). Around $30.3 billion, one-fifth of the government expenditure in agriculture, forestry, and water, was allocated to subsidies, and more than half of the subsidy was for agricultural inputs, seed, and machinery. Since the implementation of agricultural subsidies in 2004, the amount of agricultural subsidy climbed exponentially in 2004–2008, but has stabilized since 2009, suggesting that the government has started to recognize the inefficiency of direct subsidies for farmers and is tapering down resources allocated to farm subsidies.

Table 4.2 Structure of agricultural expenditure

Variable	2010	2011	2012	Central in total exp. in 2012 (%)
Agriculture, forestry and water (billion 2010 Yuan)	813.0	942.8	1107.3	4.2
Share in PAE (%)				
Extension and pest control	4.9	4.2	4.0	4.2
Agricultural infrastructure	7.2	8.2	8.2	1.4
Irrigation	3.8	4.6	4.9	0.4
Drought	0.3	0.6	0.3	0.4
Land improvement	3.1	2.9	3.0	3.2
Sector development	5.1	3.3	3.4	0.9
Subsidies	20.8	19.9	20.0	2.1
Input subsidy	14.4	12.5	12.9	1.2
Subsidies to rural government	3.2	2.8	2.6	0.0
Rural infrastructure and service	13.6	14.2	14.1	2.1
Rural relief	1.5	1.7	1.5	69.7
Resource conservation	0.8	1.7	1.6	3.2
Forestry	8.2	8.8	8.5	3.8
Multipurpose water management	19.7	19.3	19.9	4.4
General services	18.1	18.6	18.8	4.9

Source: Authors' compilation from National Finance Final Accounts (MOF various years).
Note: PAE stands for public agricultural expenditure.

About 5 percent of PAE was used for irrigation. This is in sharp contrast with other multipurpose water management projects, such as south-to-north water diversion and construction and maintenance of dams, which constitute about 20 percent of PAE. As one of the most important types of agricultural infrastructure, irrigation spending used to enjoy a modest growth of 5 percent per year while expenditure for water management declined from 1996 to 2007 (Ministry of Water Resources various years). This growth was dwarfed by a skyrocketing expansion in 2008–10, when expenditures for water management and irrigation almost doubled within three years as part of the stimulus package in response to the financial crisis. This growth rate tapered to 25 to 30 percent in 2010–12.

However, it is important to note that PAE under Definition 3 is not an accurate measurement of government expenditure in agriculture. First, irrigation expenditure is a small part of total expenditure used for water resource management, so clearly there is an overestimate of irrigation-related expenditures. Instead of irrigation and rural water supply, all water management activities are counted as expenditure used for agriculture. Additionally, about 14 percent of PAE under Definition 3 was dedicated to expenditures not directly related to agricultural production but contribute to rural access to services and living conditions, such as rural roads, fuel, and sanitation. On the other hand, there are other expenditures associated with rural development that are not captured under the current definition of PAE, such as agricultural research and development, which falls under "science and technology."

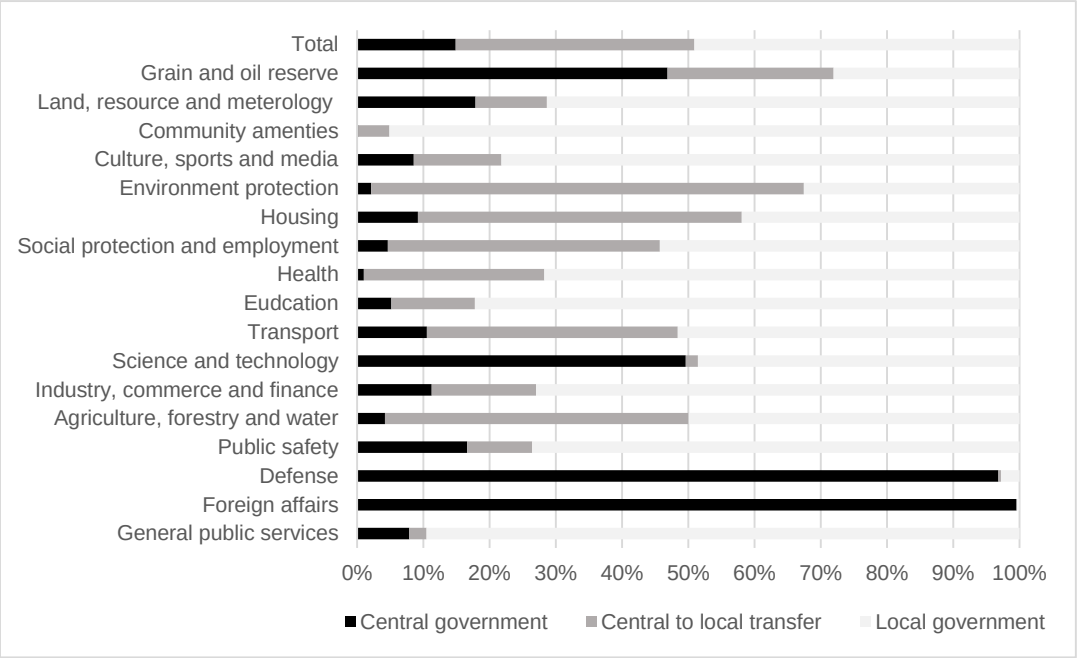
Decentralization of Expenditures

Fiscal decentralization has some virtues, including economic efficiency from local knowledge and strong incentives for local governments to promote economic development and growth to expand their tax bases. This is especially relevant for economies in transition from central planning to market driven (Jin, Qian, and Weingast 2005). On the other hand, decentralization may lead to allocative distortions and regional inequality if not well designed.

There is no optimal level of fiscal decentralization in economic theory (World Bank 2007a). On average, the share of the central government in total budgetary expenditure is 86 percent for developing countries, 34 percent for industrialized countries, and more than half for large economies (Shah 2004; Jin, Qian, and Weingast 2005). The Chinese fiscal system is highly decentralized in its organizational structure, and local governments account for the overwhelming majority of the national budget. The share of the central government in national expenditure is remarkably lower in China, dropped steadily from around 30 percent in the early 2000s to 15 percent in 2012.

China stands out as an outlier because the local governments' responsibilities go beyond education and health care, and also include the provision of social security and unemployment insurance. Figure 4.3 illustrates tremendous variations in the level of expenditure decentralization at different levels of government by function. Foreign affairs and defense are almost exclusively the responsibility of central government (Table 4.1). In contrast, local government is responsible for many vital functions like public safety, economic development, provision of social services, and social welfare. Agricultural development is largely managed by local government, as only 4 percent of PAE was apportioned to the central government. Almost all functions within the agricultural sector are supported by local government, except for rural relief to help cope with natural disasters (Table 4.2).

Figure 4.3 Level of decentralization by function, 2012



Source: Authors' calculation from National Finance Final Accounts (MOF 2013).

Local expenditure is the sum of expenditures at the provincial level, which also exhibits similar decentralization because province expenditure consists of provincial-level government expenditure and the sum of expenditures at the prefecture level. This hierarchical decentralization process is repeated at lower administrative levels of county and township. The actual allocation across different levels of government varies depending on many factors, such as urbanization and industrialization, as well as demographic composition. In the five municipalities that are largely urbanized like Beijing and Shanghai, more than one-third of total expenditure was kept at the municipality level of government, whereas the share of sub-provincial spending is much lower in many less urbanized provinces (Table 4.3, column 1).

Table 4.3 Expenditure by province, 2007–2012 average

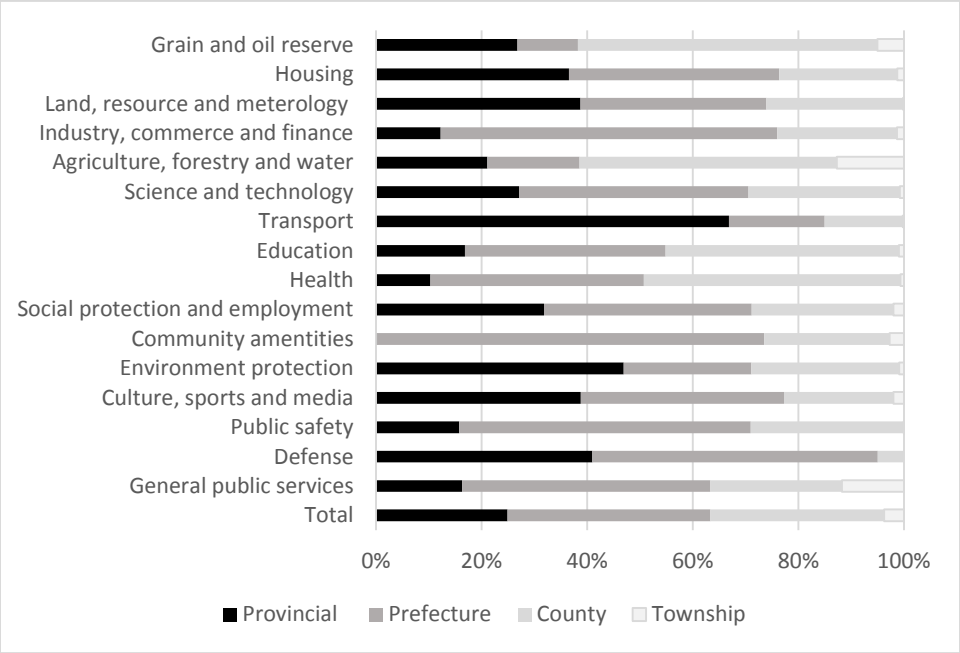
Province	Province level government in province expenditure (%)	Province budgetary revenue / expenditure (%)	Transfer from central government in grand province expenditure (%)	Transfer from central government in province level government revenue	Transfer to lower government in grand province level expenditure
Beijing	50.3	1.0		11.6	21.6
Tianjin	45.8	1.3	17.8	31.4	9.8
Hebei	19.3	2.0	43.1	74.9	64.6
Shanxi	26.3	1.9		66.7	49.1
Inner Mongolia	16.8	2.2	33.6	73.7	64.1
Liaoning	15.7	1.6	34.1	65.3	57.5
Jilin	25.3	2.8	55.6	74.3	62.8
Heilongjiang	28.4	2.8	57.2	73.3	49.4
Shanghai	37.7	1.1	13.9	25.6	27.8
Jiangsu	18.5	1.2			
Zhejiang	11.1	1.2	21.6	44.2	62.2
Anhui	20.1	1.3	51.4	79.2	66.8
Fujian	17.1	1.4	27.7	60.3	51.4
Jiangxi	18.0	2.3			
Shandong	13.3	1.4	29.1	74.0	
Henan	17.8	2.4	54.7	54.0	
Hubei	16.3	1.7		74.2	70.8
Hunan	19.6	2.4	52.1	76.7	62.9
Guangdong	11.3	1.2	7.9	32.1	46.2
Guangxi	23.5	2.5	53.0	79.7	65.5
Hainan	32.6	2.4	47.9	67.1	50.8
Chongqing	31.7	1.8	44.4	56.0	44.9
Sichuan	15.6	2.5	53.2	75.6	36.1
Guizhou	25.1	3.0	64.0	85.9	65.0
Yunnan	21.1	2.6	54.1	75.7	69.2
Tibet	62.9	14.0	79.3		
Shaanxi	30.8	2.3	47.8	69.3	53.3
Gansu	22.6	3.9	73.2		
Qinghai	38.7	5.9	67.8	54.3	
Ningxia	31.1	1.9		71.7	51.1
Xinjiang	29.5	3.1			

Source: Authors' calculation from Province Bureau of Finance (MOF various years).

Figures 4.4a–d present the breakdown at the provincial and lower levels in four provinces. Heilongjiang, Henan, and Anhui are major grain-producing provinces and Guizhou is a lagging province where agriculture remains the main source of livelihood for most of the poor. The prefecture- and county-level governments are the major receivers of local government expenditure, together accounting for 70–80 percent of the total province expenditure. This pattern of decentralization corroborates with the findings of Wong (2007) and Deng and Peng (2011). Clearly, sub-provincial-level government is the key player in promoting agriculture development. This is especially the case for county-level government, which represents 50–70 percent of the total province PAE.

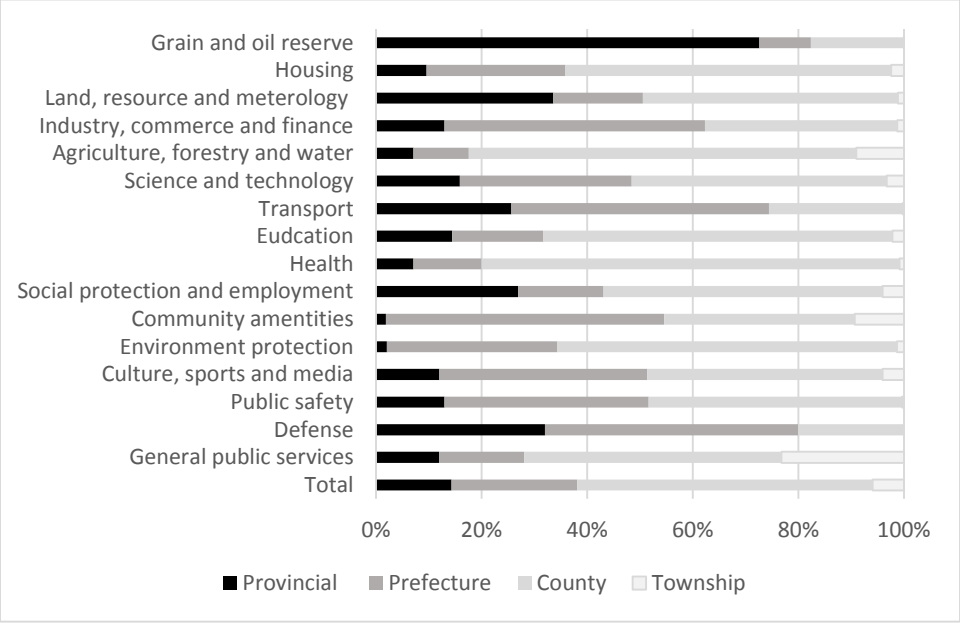
In addition, county governments shoulder heavy expenditure burdens for the provision of essential public goods such as health, education, social services, and welfare, and ensure public safety (Figures 4.4a–d). In most countries, the central or federal government usually provides for health and social security, but in China local governments are responsible for nearly all expenditures in social services, such as education, health, culture, and social security. Local governments also play a vital role in promoting economic growth. As a result, half to three-quarters of local government expenditures are devoted to social and economic services, especially at county and township levels (World Bank 2007a).

Figure 4.4a Level of decentralization by function in Heilongjiang province, 2012



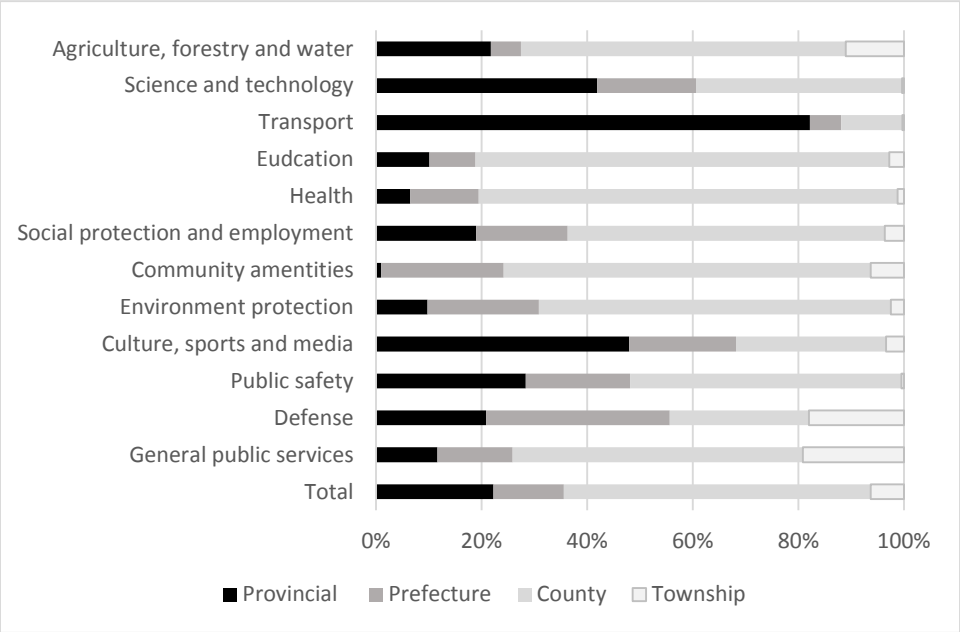
Source: Authors' calculation from Heilongjiang Statistical Yearbook (Heilongjiang Bureau of Statistics and Heilongjiang Survey Office of the National Bureau of Statistics 2013).

Figure 4.4b Level of decentralization by function in Henan province, 2012



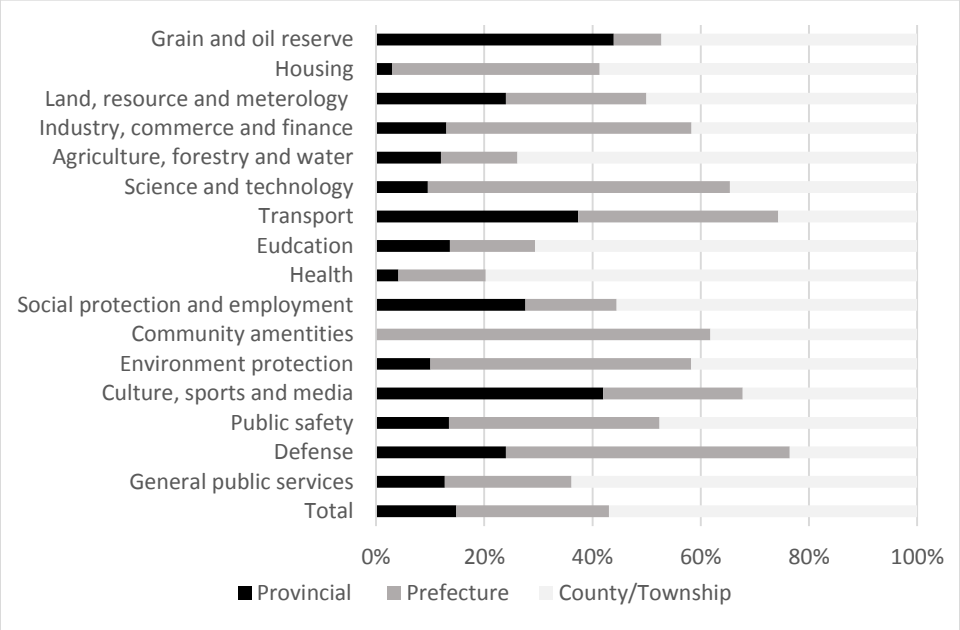
Source: Authors' calculation from Henan Statistical Yearbook (Henan Bureau of Statistics and Henan Survey Office of the National Bureau of Statistics 2013).

Figure 4.4c Level of decentralization by function in Guizhou province, 2012



Source: Authors' calculation from Guizhou Statistical Yearbook (Guizhou Bureau of Statistics and Guizhou Survey Office of the National Bureau of Statistics 2013).

Figure 4.4d Level of decentralization by function in Anhui province, 2012



Source: Authors' calculation from Anhui Statistical Yearbook (Anhui Bureau of Statistics and Anhui Survey Office of the National Statistics Bureau 2013).

Take Anhui province as a case study, where provincial-level government received about 15 percent of the overall provincial budget, and the rest went to lower administrative levels of prefecture, which also consists of nested expenditures at county and township levels (Table 4.4). In 2012, more than half of the overall prefecture-level expenditure was distributed to county governments, one-third to prefecture-level government, and 16 percent to lower districts (usually urban areas close to the prefecture's administrative center).

Table 4.4 Expenditure at sub-provincial level in Anhui province, 2012

			Economic affairs			Social service				
Share in total expenditure (%)	**General public services**	**Public security**	**Agriculture, forestry and water**	**Industry, commerce and finance**	**Trans -port**	**Education**	**Health**	**Social protection and employment**	**Community affairs**	**Housing**
Anhui total	12.1	3.8	10.9	6.1	6.0	18.1	8.1	11.6	8.8	6.3
Provincial level	11.3	3.4	8.8	7.0	15.1	16.6	2.2	21.5	0.1	1.3
Prefecture total	12.2	3.8	11.2	5.9	4.4	18.4	9.1	9.9	10.3	7.1
Prefecture level	10.3	5.2	5.5	8.7	7.9	10.2	4.6	6.9	19.2	8.5
District	13.4	2.4	10.5	4.3	1.5	25.7	9.0	11.5	7.9	8.2
County total	13.1	3.4	15.2	4.6	3.1	21.5	12.0	11.2	5.3	5.9
Lu'an Prefecture	12.7	4.3	16.8	4.3	4.8	23.1	10.5	9.3	3.5	5.4
Prefecture level	11.6	11.1	10.2	6.5	11.0	11.5	4.2	4.1	11.6	7.2
District	12.5	1.6	15.6	3.9	4.8	27.0	13.1	11.4	1.3	5.2
County total	13.1	3.4	18.9	3.9	3.2	24.7	11.2	9.9	2.1	5.1
Shou	9.6	3.1	22.8	3.3	2.3	24.3	12.4	10.6	1.0	5.4
Huoqiu	17.8	2.8	17.6	5.0	2.8	25.8	10.9	9.1	1.6	4.2
Shucheng	10.8	3.7	18.5	3.6	3.9	24.3	12.5	11.3	1.8	4.9
Jinzhai	12.4	3.9	17.3	3.1	4.5	26.8	10.2	9.6	1.5	6.1
Huoshan	12.6	4.1	18.0	4.0	3.6	20.7	9.5	8.9	6.4	5.5
Wuhu Prefecture	6.7	2.8	7.3	6.7	4.7	16.3	6.6	8.8	11.8	12.5
Prefecture level	3.5	2.9	5.3	6.0	7.6	9.4	4.0	5.7	12.1	17.0
District	8.5	2.4	3.1	6.1	1.0	24.1	3.7	8.8	19.0	9.1
County total	9.5	3.0	11.4	7.7	3.0	20.6	10.8	12.4	8.3	9.0
Wuhu	8.0	2.8	11.4	9.6	2.8	12.7	8.8	9.9	18.9	10.9
Fanchang	12.6	2.7	9.2	14.0	1.9	10.9	11.0	10.7	9.1	12.3
Nanling	10.0	4.0	15.4	4.6	7.2	21.3	10.3	13.3	4.6	5.1
Wuwei	8.1	2.7	10.7	3.8	1.7	32.1	12.2	14.7	2.5	7.8

Source: Authors' calculation from Anhui Statistical Yearbook (Anhui Bureau of Statistics and Anhui Survey Office of the National Statistics Bureau 2013).

We further inspect the distribution of public expenditure by functions in Lu'an and Wuhu prefectures in the province. On average, Lu'an prefecture spent 27 percent of the total prefecture expenditure on activities related to economic development, mainly in agriculture growth. Fifty-three percent of the prefecture expenditure was used for the development of human capital and social welfare, of which education and health together account for about one-third of the total expenditure. Another 10 percent of the total expenditure went to social protection. The outlay by functions is similar in Wuhu prefecture, where 57 percent of the total expenditure was assigned to the social sector and 25 percent to economic activities. Instead of focusing mainly on human development, other components of the social sector like community development and housing also take considerable funds (24 percent of the total expenditure). In both prefectures, the share of agriculture in the total expenditure tends to be higher at the county level than at the prefecture level. The same pattern holds for education, health, and social protection, highlighting the heavy fiscal burden of grassroots government in the provision of public services.

This decentralization assigns a disproportionately large share of the responsibilities for subnational governments with limited revenue bases, especially at the county and township levels. For example, social services like education and health are concentrated at the lower levels, although central administration would yield spillover effects for the whole society (Shen, Jin, and Zou 2012).

Substantial Transfers

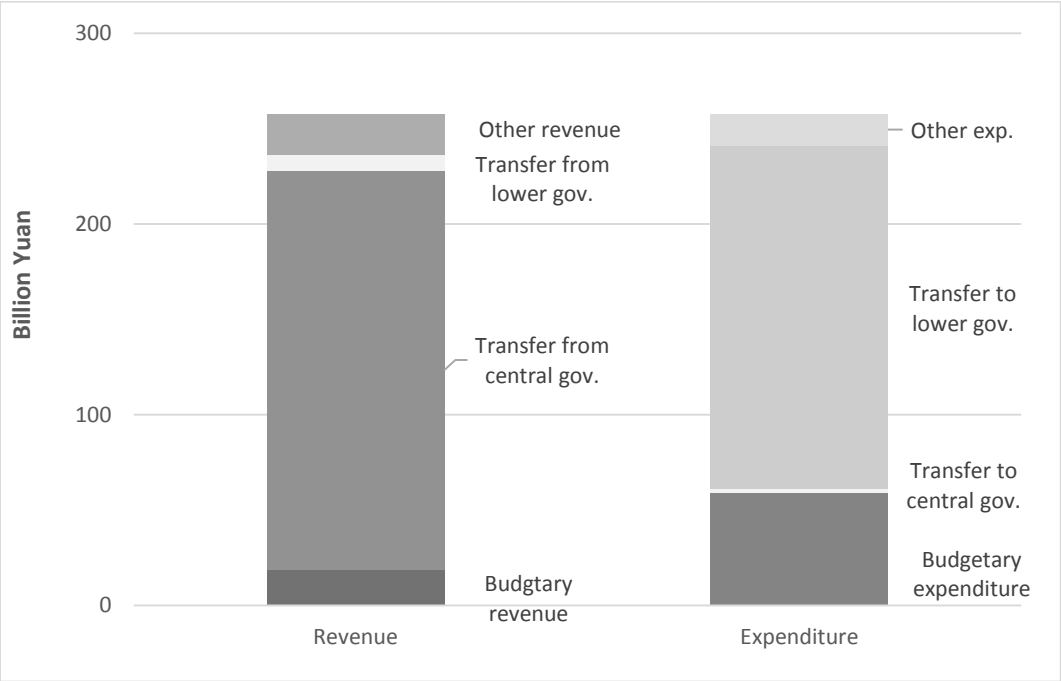
The Chinese financial system is characterized by substantial intergovernmental transfers. Intergovernmental transfers are used all over the world to meet vertical fiscal gaps, to equalize across regions and address economic externalities. Since the implementation of RTFR, revenue is separated from expenditure and subsequent fiscal reforms further cut down the tax base of local authorities considerably. On the other hand, local governments are the main players responsible for economic development and public service delivery. As a result, while the share of the central government in national revenue stabilizes at 50–55 percent of the total revenue, the central government's share in national expenditures has fallen steadily to less than 20 percent since 2009 (*China Statistical Yearbook* [NBS various years[b]). The average ratio of provincial expenditure to revenue ranges between 1 and 3, implying that for every 1 Yuan collected as taxes and fees, the province government appropriates 1–3 Yuan in expenditure. This leads to a huge deficiency in rural finance, which could adversely affect the ability of poorer local government to deliver an adequate level of public goods and services under their expenditure mandate.

Transfers from the central and provincial governments naturally become the main instrument to help offset the revenue loss for prefecture and county governments (World Bank 2007a). Figure 4.3 illustrates that more than one-third of the national budget is actually in the form of transfer from central to local government. It is not surprising to see that the level of transfer is higher in China than in industrialized and many developing countries, and is growing rapidly (Bahl and Wallace 2004).

The central government transfer supported a considerable portion of the province budget (Table 4.3, column 2). It is estimated that transfers supported more than 40 percent of consolidated subnational expenditures in the 1990s, and it rose to around 45 percent in recent years (Figure 4.3). At the sub-province level, particularly at the prefecture and county levels, transfer from higher-level government is also an important funding source to ensure the delivery of the myriad responsibilities assigned to local government. This is especially the case in the lagging regions in the west and southwest parts of China, where more than half of province finance was actually supported by transfers from the central government (Table 4.3, column 3).

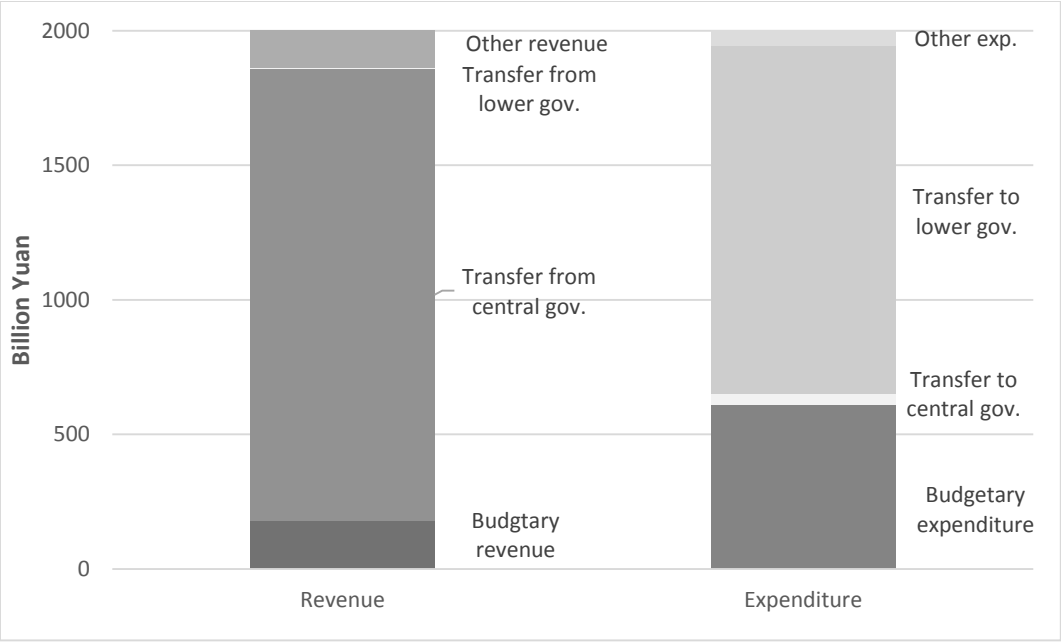
In the balance sheet of provincial government, central government transfers represented more than half of the available resources in most provinces (Table 4.3, column 4). On the other hand, provincial governments also release large amount of funds to the prefecture and county governments (Table 4.3, column 5). Take Anhui and Guizhou provinces as an example: the provincial government collected tax and fees, which was only a small portion of the total revenue for the province, and transfers from the central government was the predominant source of government revenue in 2012 (Figures 4.5a and 4.5b). In comparison, transfers from the provincial government to the lower-level government accounted for 65–70 percent of the provincial level government's expenditure. A similar pattern is repeated at the prefecture and lower levels of government, with the lower levels receiving more than half of the total budget.

Figure 4.5a Provincial-level budget of Anhui province in billion Yuan, 2012



Source: Authors' calculation from Anhui Public Finance Final Table (Anhui Bureau of Finance 2013).

Figure 4.5b Provincial-level budget of Guizhou province in billion Yuan, 2012



Source: Authors' calculation from Guizhou Public Finance Final Table (Guizhou Bureau of Finance 2013).

Poor regions usually depend heavily on transfers from higher-level government, which usually provides more than 60 percent of the total government budget. Even in provinces with dynamic economies, central transfer remains an important source to support province spending. In Guangdong

province, about one-third of government revenue came from central transfers, and almost half of the provincial government's expenditure was transferred to lower-level governments.

The central government transferred US$550 billion to local government in 2012 in the form of direct transfers and tax refunds (from the split of tax revenue between central and local governments), of which nearly 90 percent was direct transfers (Table 4.5). Two types of transfers are used: general transfers are used to equalize across regions and specific transfers are used to achieve specific national priorities and policies (such as health, education, or environmental protection). The general transfer is calculated based on a complicated formula and is positively related to the province's fiscal gap between revenue and expenditure (Shen, Jin, and Zou 2012). Special transfers are designed for specific purposes, such as agricultural development and environmental protection. In many cases, the total level of transfers is determined from a pool of fixed amounts and allocated by the MOF according to function and region using a certain formula (Shen, Jin, and Zou 2012).

Table 4.5 Structure of transfers from central to local government

Variable	2007	2008	2009	2010	2011	2012
Transfer and tax return	100	100	100	100	100	100
Transfer	77.3	81.4	82.9	84.6	87.4	88.7
General	39.3	38.0	39.6	40.9	45.9	47.2
Special transfer	38.0	43.3	43.3	43.6	41.5	41.5
Tax refund	22.7	18.6	17.1	15.4	12.6	11.3
Share in transfer (%)						
General public services				0.7	0.6	0.5
Public security			1.4	2.2	1.9	1.7
Economic affairs						
Agriculture, forestry and water	6.8	8.1	13.6	12.9	12.5	13.7
Industry, commerce and finance				4.8	4.2	3.3
Transport				4.1	8.5	7.7
Social services						
Education		5.9	6.0	6.7	6.5	6.7
Health	4.5	4.2	5.1	5.2	4.8	4.9
Social protection	14.0	12.8	12.0	12.3	12.1	12.8
Environmental protection	5.3	5.2	4.7	5.0	4.4	4.8
Housing				2.7	4.2	5.4

Source: Authors' calculation from National Finance Final Accounts (MOF various years).

Social services made up 37 percent of the central government transfer, of which about one-third was allocated to social protection (US$63 billion), followed by education, community development, and health. Only about a quarter of the central to local government transfer was used for economic development, more than half of which went to agriculture. The total transfer to agriculture reached US$75 billion, amounting to about 40 percent of the national PAE.

Local governments' heavy reliance on central government transfer varies across functions (Figure 4.3). In general, transfers supported more than half of noncentral spending for environmental protection and housing, and transfers covered more than 40 percent of local expenditure in activities related to social protection, agriculture, and transport. At the province level, transfers to prefecture and county governments is the dominant source of funding for vital functions like agriculture, health, and social protection. In many provinces, large amounts of agricultural subsidies overshadow other types of agricultural investment, partly because subsidies are usually directly transferred from central and provincial governments.

This large-scale transfer scheme has been criticized for many reasons. The current level of transfer payment is still far from sufficient to fully offset the revenue reduction after the reform (Shen, Jin, and Zou 2012; Xu, Luo, and Zhang 2007; World Bank 2007a). Consequently, empirical studies have revealed inefficient use of fiscal transfers and misaligned resource allocation with local prioritization, as well as precision targeting (Duan and Zhang 2009; World Bank 2007a, 2007b).

Fragmented Budget

The budget process is plagued by fragmentation and managed by multiple government agencies. The National Development and Reform Commission (NDRC) and the Ministry of Science and Technology mainly determine the capital budget, while the Ministry of Finance (MOF) manages the recurrent budget, with the NDRC and MOF having the greatest decision making power in rural development (Wong 2007, World Bank 2007a). More than a dozen line ministries and agencies are involved in agricultural and rural outlays (Table 4.6). Many newly implemented agricultural and rural development programs involve other government agencies, and the complex, hierarchical administrative structure introduces additional heterogeneity in program management and implementation. Take agriculture, for example, agricultural activities could be financed by the central government, the local government, or jointly financed (World Bank 2007b). At the central government level, the Ministry of Agriculture's budget comes from a number of ministries, commissions, departments, and bureaus. At the lower government level, it is common to see agriculture-support funds come from multiple sources sharing similar goals.

Table 4.6 Major ministries and departments related to central "San Nong" expenditure

Ministry	Key Departments	Responsibility
Ministry of Finance	Dept. of Agriculture	Manage and allocate funds for poverty alleviation and disaster relief
	State Office for Comprehensive Agricultural Development	Organize and implement agriculture integrated development and manage expenditures for integrated development
National Development and Reform Commission	Dept. of Regional Economy	Balance regional development; establish development planning for old revolutionary, less developed, border, and poverty areas; work for food planning
	Dept. of Rural Economy	Manage important problems with agriculture and rural development; balance agriculture, forestry, irrigation, and meteorology planning and development
Ministry of Agriculture		Oversee agriculture and rural development
Ministry of Water Resources	Dept. of Rural Irrigation	Organize and implement policies related to rural irrigation; construct a rural irrigation infrastructure and service network; oversee water supply and conservation in rural areas
	Dept. of Water and Soil Conservation	Organize and supervise policies related to environmental protection of nature; implement integrated development of the natural environment
Ministry of Science and Technology	Dept. of Rural and Social Development	Organize and implement technology planning and policies related to agriculture and rural development

Table 4.6 Continued

Ministry	Key Departments	Responsibility
Ministry of Education	Dept. of Basic Education	Organize and implement nine-year compulsory education; reduce illiteracy and semi-illiteracy
Ministry of Health	Dept. of Grassroots Health and Maternal and Infant Health	Organize and implement policies related to rural health
Ministry of Civil Affairs	Dept. of Social Welfare	Organize and implement policies related to the elderly, handicapped, orphans, five guarantees, and other low-income groups
	Dept. of Relief	Manage and distribute materials and capital for natural disasters; implement *dibao* and *tekun* institutions
Ministry of Human Resources and Social Security	Dept. of Rural Social Security	Manage rural social security
	Dept. of Disaster Relief	Manage rural disaster relief
Ministry of Housing and Urban-Rural Development	Leading Group of Between County and Rural Roads	Standardize and rebuild roads between counties and rural areas
	Dept. of Rural and Urban Planning	Organize and establish policies related to rural construction
Ministry of Transport	Leading Group of County and Rural Road	Design and upgrade county and rural roads
Ministry of Commerce		Promote rural consumption
Ministry of Environmental Protection		Oversee natural resource conservation
Ministry of Land and Resources		Monitor and protect land use
State Forestry Administration		Manage forestry planning
State Council Leading Group Office of Poverty Alleviation and Development		Design and coordinate economic development strategy in poor areas
National Population and Family Planning Commission		Oversee health and family planning
China Meteorological Administration		Provide weather forecasting, coordinate coping with weather events

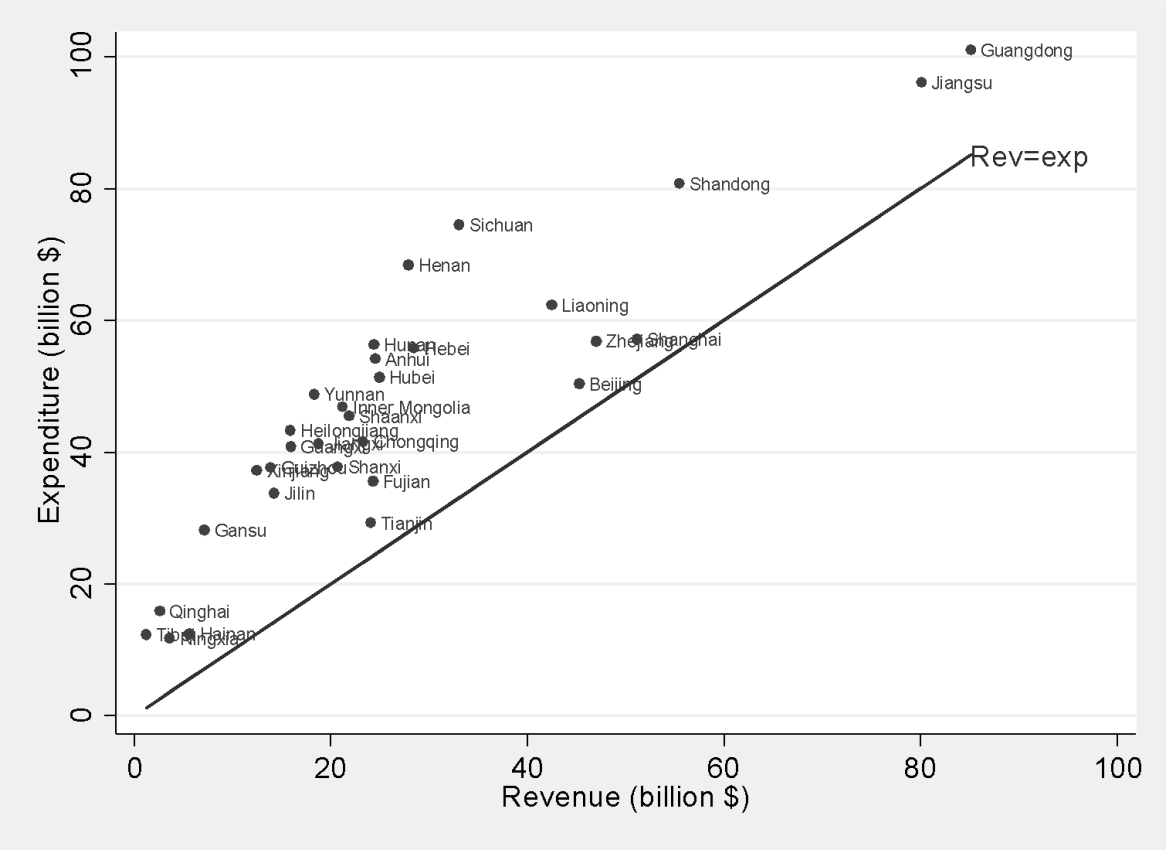
Source: Authors' compilation from sources cited.

As a result, expenditures of different functions related to agricultural and rural development are scattered in several expenditure categories and managed by more than a dozen line ministries and agencies, highlighting the fragmentation of the budget in planning and implementation. For example, poverty reduction agencies invested 30 billion Yuan to improve rural infrastructure, which is about the same amount as rural drinking water managed by water agencies. Rural roads are sponsored by funding under agriculture and transfers from agencies in charge of road transport, and the latter rose briskly to surpass the former. Rural housing is another big-ticket item; valued at 50 billion Yuan in 2012, it almost tripled in three years. Fragmentation, duplication, and poor coordination in the budget process have substantially undermined the effectiveness and transparency of resource allocation, calling for better interagency integration and coordination.

Regional Disparity

The transfer system is supposed to correct the imbalances between revenue and expenditure and to equalize resources across regions, but the distribution of the transfers are still relatively regressive and favor the richer provinces (Persson and Eriksson 2006). Given the uneven fiscal decentralization between spending needs, and fiscal conditions at local levels, the huge variation in the level of province expenditure is associated with the capacity of local revenue generation and the level of central transfer (Figure 4.6).

Figure 4.6 Regional disparity in China, 2012



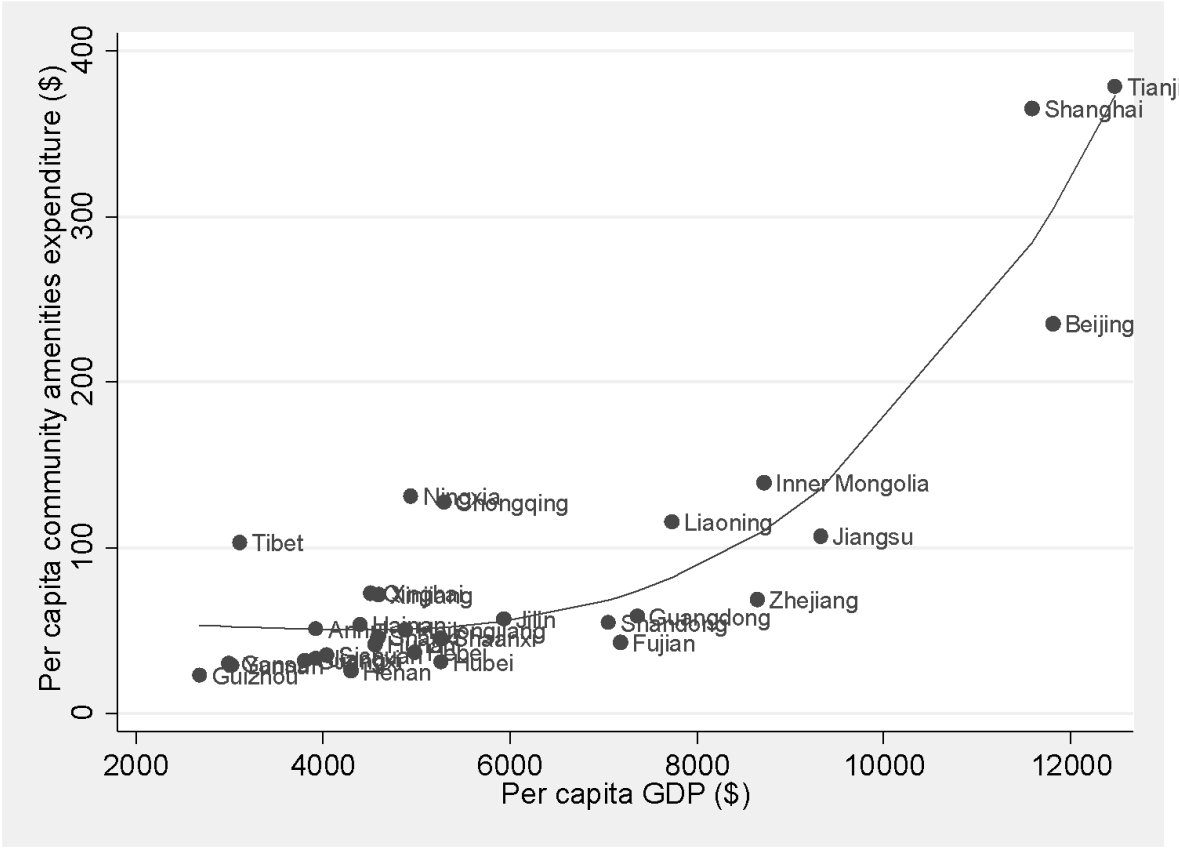
Source: Authors' calculation from Chinese Statistical Yearbook (NBS 2013).

Spending disparities across localities translates into large disparities in the level, quality, and access of service provision. It has been suggested that the mismatch of resources and spending responsibility at the local government level has contributed to the inequalities between rural and urban areas and across provinces because of resource inequality (World Bank 2002, 2005, 2012). This is especially challenging in the poor regions with unfavorable biophysical conditions and lagging socioeconomic infrastructure, where the total expenditures are almost all used to cover personnel costs. As a result, critical social services like health and education are not sufficiently provided for by the local government due to a weak tax base and a lack of capacity, further exacerbating the inequality between rural and urban areas and across local jurisdictions.

The regional divergence in service provision and spending patterns between poorer inland provinces and the wealthier coastal provinces varies according to the funding mechanism. Figures 4.7a–c compare the relationship between expenditures on three functions and income level, proxied by per capita GDP. Community amenities is almost entirely the responsibility of local government, so it is not

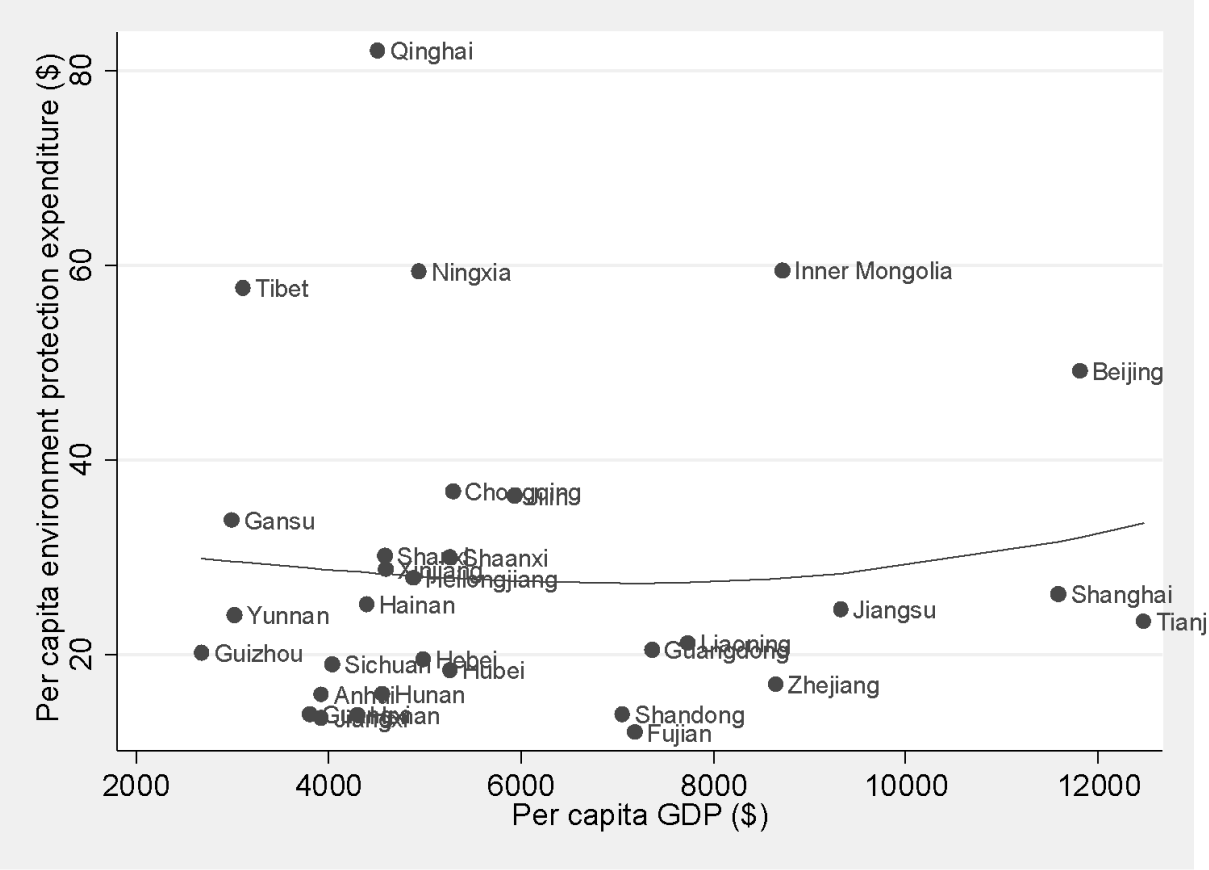
surprising to observe a positive correlation between local economic development and the level of expenditure on this function. On the other end of spectrum, two-thirds of local governments' spending on environmental protection was covered by transfers from central government, which displayed a far smaller regional variation. The fiscal burden of agricultural expenditure was split almost evenly by local revenue and central transfer, resulting in a remarkable redistribution effect, where spending on agriculture, water, and poverty reduction favored less developed inland and western provinces. The results show that the fiscal transfer has partially achieved the policy objective of being more progressive and equalizing in some government functions such as environmental protection (Persson and Eriksson 2006; World Bank 2012). It is important to recognize that although the large amount of transfers can partially mitigate regional differences in some functions, huge inequalities persist in many areas of public spending (OECD 2006; World Bank 2005).

Figure 4.7a Per capita expenditure on community amenities and GDP, 2012



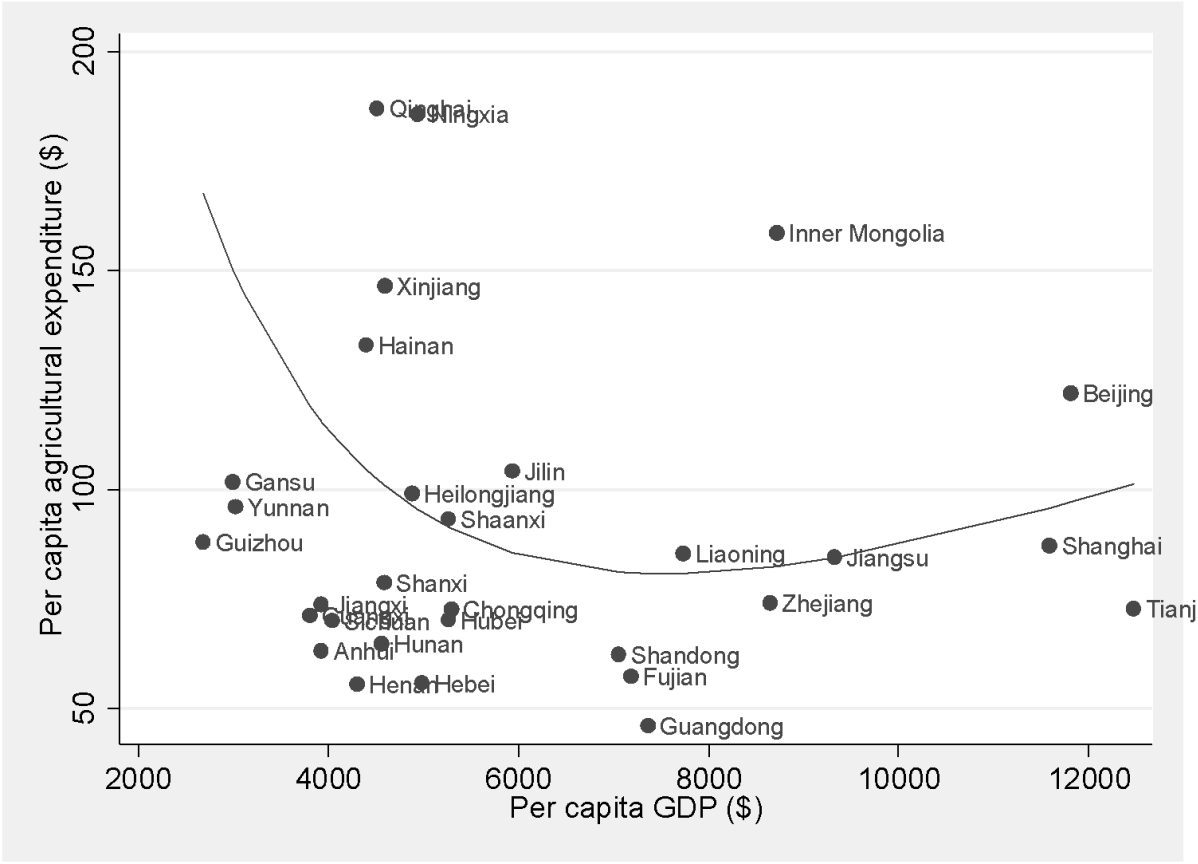
Source: Authors' calculation from Chinese Statistics Yearbook (NBS 2013).

Figure 4.7b Per capita expenditure on environmental protection and GDP, 2012



Source: Authors' calculation from Chinese Statistics Yearbook (NBS 2013).

Figure 4.7c Per capita expenditure on agriculture and GDP, 2012



Source: Authors' calculation from Chinese Statistics Yearbook (NBS 2013).

Because local governments are largely self-financed and deficits are prohibited, the provision of social services is subject to the local fiscal condition because local governments in China are also developers of physical infrastructure and agricultural and industrial development projects. These financial responsibilities can exceed local finance capacity, forcing local officials to prioritize more visible infrastructure projects over social services with delayed impacts. The persistent budgetary pressure on local governments implies potential mismatched revenues and expenditure assignments, leading to implementation bias against poor populations and projects with delayed impacts, compromising the equalizing effect (Ma 2009; World Bank 2002).

5. CONCLUSION AND POLICY IMPLICATIONS

Under recent policy directives, China has broadened the scope of its agricultural policy by increasing public spending to solve issues such as food security and rural–urban inequality. This paper examined the definition, composition, and pattern of public expenditure in China, with special attention to the agricultural sector.

Agricultural expenditure in China expanded rapidly, far exceeding the growth rate of total government expenditure. Some unique features of Chinese agricultural expenditure are identified, such as high decentralization and substantial intergovernmental transfer. The highly decentralized and hierarchical administrative system caused fragmentation in budget and implementation, resulting in rampant inefficiencies. Public expenditure also exhibits considerable regional disparity.

China's budget reform is far from complete, as ineffectiveness and inefficiencies are rampant in the highly decentralized and hierarchical administrative system. It is recognized that the reform and its implementation will be a long-term effort to improve public-sector performance and balance multiple development objectives for agriculture and rural areas. Based on the analysis, several policy recommendations can be extracted.

First, the spending assignments need to be redefined to match local financial capacity with expenditure responsibilities at different levels of government to reflect coherent development strategies. Currently, there is no formal, legal arrangement of expenditure responsibilities at the subnational level, resulting in serious sector fragmentation, efficiency loss, poor implementation, and under-provision of essential public services (Dabla-Norris 2005). In the agricultural sector, coordination in policy design has remained limited due to the lack of a formal integration mechanism. Given the crucial role of local government in PAE, it is important to ensure continuous support to agriculture through a combination of funds consolidated across different ministerial development plans and efficient transfers for local governments.

Second, fiscal resources needed to be prioritized across activities to ensure the optimal use of public funds. Agricultural subsidy policy should be reconsidered to effectively achieve the policy objectives of increasing grain production and maintaining environmental sustainability while abiding by World Trade Organization commitments. One option is to scale down input subsides with better targeting, and instead expand income-support programs that are decoupled from production decisions to supplement farmers' income with optional conditions. Decoupled payment is a better policy option because it is non-distortive and won't cause efficiency loss (Yu and Jensen 2010).

Finally, huge regional and provincial variations imply that the current expenditure and transfer system has yielded uneven development outcomes. The widening fiscal gaps between urban and rural and across provinces call for reforms in the design of the fiscal system to address disparities and promote equality. Investment in improving rural infrastructure and access to essential services is one way to reduce the inequality. Additional reforms in the intergovernmental transfer system can improve economic efficiency in resource allocation and promote equalization in the fiscal capacity of local governments.

There is a huge knowledge gap in the systematic recording of public investment data in rural areas. Improving the availability, accessibility, and timeliness of information calls for increased transparency in tracking and monitoring government expenditures with disaggregated details. The current definition of agricultural spending is not a precise measurement of resources allocated to agricultural production. An accurate assessment of government expenditure in agriculture has been complicated by data limitations, the lack of a systematic expenditure classification, and the application of different definitions of public spending in agriculture by various statistical sources. Policy analysis at the subnational level is also greatly compromised by the lack of detailed expenditure data and inconsistent reporting in key areas.

REFERENCES

Anhui Bureau of Statistics and Anhui Survey Office of the National Statistics Bureau. 2013. *Anhui Statistical Yearbook*. Beijing: China Statistics Press.

Anhui Bureau of Finance. Various years. *Anhui Public Finance Final Table.* Hefei.

Bahl, R., and S. Wallace. 2004. *Intergovernmental Transfers: The Vertical Sharing Dimension*. International Studies Program Working Paper Series. Atlanta: Georgia State University.

Chan, J. 1996. "Budget Accounting in China: Continuity and Change." *Research in Governmental Nonprofit Accounting* 9: 147–74.

Ministry of Water Resources. Various years. *China Water Conservancy Yearbook*. Beijing: China Waterpower Press.

Dabla-Norris, E. 2005. *Issues in Intergovernmental Fiscal Relations in China.* Working Paper 05/30. Washington, DC: International Monetary Fund.

Deng, S., and J. Peng. 2011. "Reforming the Budgeting Process in China." *OECD Journal on Budgeting* 1: 75–89.

Duan, H., and J. V. Zhang. 2009. "Fiscal Transfer and Local Public Expenditure in China: A Cross-Country Study of Shanxi Province." Paper presented at the Annual Meeting of American Political Science Association, September 3–6, Toronto, Canada.

Fan, S., and J. Brzeska. 2010. "Production, Productivity, and Public Investment East Asian Agriculture." In *Handbook of Agricultural Economics*, vol. 4, edited by P. Pingali and R. Evenson. Amsterdam: North-Holland.

Fan, S., L. Zhang, and X. Zhang. 2004. "Reforms, Investment, and Poverty in Rural China." *Economic Development and Cultural Change* 52 (2): 395–421.

FAO (Food and Agriculture Organization of the United Nations). 2012. *The State of Food and Agriculture: Investing in Agriculture for a Better Future*. Rome.

Guizhou Bureau of Statistics and Guizhou Survey Office of the National Bureau of Statistics. 2013. *Guizhou Statistical Yearbook*. Beijing: China Statistics Press.

Guizhou Bureau of Finance. 2013. *Guizhou Public Finance Final Table*. Guiyang.

Heilongjiang Bureau of Statistics and Heilongjiang Survey Office of the National Bureau of Statistics. 2013. *Heilongjiang Statistical Yearbook.* Beijing: China Statistics Press.

Henan Bureau of Statistics and Henan Survey Office of the National Bureau of Statistics. 2013. *Henan Statistical Yearbook*. Beijing: China Statistics Press.

IFPRI (International Food Policy Research Institute). 2013. "Statistics of Public Expenditure for Economic Development (SPEED) Database." Accessed July 10, 2014. www.ifpri.org/book-39/ourwork/programs/priorities-public-investment/speed-database.

IMF (International Monetary Fund). 2001. *Government Finance Statistics Manual.* Washington, DC.

Jin, H., Y. Qian, and B. Weingast. 2005. "Regional Decentralization and Fiscal Incentives: Federalism, Chinese Style." *Journal of Public Economics* 89 (9–10): 1719–1742.

Ma, J. 2009. "If You Can't Budget, How Can You Govern? A Study of China's State Capacity." *Public Administration and Development* 29: 9–20.

MOF (Ministry of Finance of the People's Republic of China). Various years. *The National Finance Final Account.* Accessed July 10, 2014. www.mof.gov.cn/zhengwuxinxi/caizhengshuju/index_1.htm.

Mogues, T., B. Yu, S. Fan and L. McBride. 2012. *The Impacts of Public investment in and for Agriculture.* Discussion Paper 01217. Washington, DC: International Food Policy Research Institute.

Montalvo, J. G., and M. Ravallion. 2010. "The Pattern of Growth and Poverty Reduction in China." *Journal of Comparative Economics* 38 (1): 2–16.

NBS (National Bureau of Statistics of the People's Republic of China). Various years (a). *China Agricultural Statistical Yearbook.* Department of Rural Surveys. Beijing: China Statistics Press.

———. Various years (b). *China Statistical Yearbook.* Beijing: China Statistics Press.

———. Various years (c). *China Statistical Yearbook on Science and Technology*. Beijing: China Statistics Press.

OECD (The Organisation for Economic Co-operation and Development). 2006. *Challenges for China's Public Spending: Toward Greater Effectiveness and Equity*. Paris.

Persson, P., and A. Eriksson. 2006. *From Blind Pursuit of Growth to Balanced Development? An Analysis of the Political Logic of Fiscal Intergovernmental Transfers in China 1998-2003*. Minor Field Study Series, Volume 94. Stockholm, Sweden: Department of Economics, Stockholm School of Economics.

Shah, A. 2004. *Fiscal Decentralization in Developing and Transition Economies: Progress, Problems and the Promise.* Policy Research Working Paper No. 3282. Washington, DC: World Bank.

Shen, C., J. Jin, and H. Zou. 2012. "Fiscal Decentralization in China: History, Impact, Challenges and Next Steps." *Annals of Economics and Finance* 13 (1): 1–51.

Wong, C. 2007. "Budget Reform in China." *OECD Journal on Budgeting* 1: 1–24.

World Bank. 2002. *China: National Development and Sub-national Finance, A Review of Provincial Expenditures.* Report No. 22951-CHA. Washington, DC.

_____. 2005. *Public Expenditure and the Role of Government in the Chinese Health Sector.* China Rural Health Study Briefing Note No. 5. Washington, DC.

_____. 2007a. *China: Improving Rural Public Finance for the Harmonious Society.* Report No. 41579-CN. Washington, DC.

_____. 2007b. *China: Public Services for Building the New Socialist Countryside.* Report No. 40221-CN. Washington, DC.

_____. 2012. *China 2030: Building a Modern, Harmonious, and Creative Society.* Washington, DC.

Xu, J., R. Luo, and L. Zhang. 2009. "The Impacts of Rural Tax-for-Fee Reform on Village Finance: Follow-Up Survey on 100 Villages in China." *Chinese Soft Science* 11: 11–18.

Yu, W., and H. G. Jensen. 2010. "China's Agricultural Policy Transition: Impacts of Recent Reforms and Future Scenarios." *Journal of Agricultural Economics* 61 (2): 343–368.

Zhang, Y., and B. Brümmer. 2011. "Productivity Change and the Effects of Policy Reform in China's Agriculture since 1979." *Asian-Pacific Economic Literature* 25 (2): 131–150

RECENT IFPRI DISCUSSION PAPERS

For earlier discussion papers, please go to www.ifpri.org/pubs/pubs.htm#dp.
All discussion papers can be downloaded free of charge.

1406. *Fertility, agricultural labor supply, and production.* Bjorn Van Campenhout, 2014.

1405. *Impact simulation of ECOWAS rice self-sufficiency policy*. Ismaël Fofana, Anatole Goundan, and Léa Vicky Magne Domgho, 2014.

1404. *Political economy of state interventions in the Bangladesh food-grain sector.* Nurul Islam, 2014.

1403. *Loan demand and rationing among small-scale farmers in Nigeria.* Aderibigbe S. Olomola and Kwabena Gyimah-Brempong, 2014.

1402. *Revisiting the labor demand curve: The wage effects of immigration and women's entry into the US labor force, 1960–2010.* Alan de Brauw and Joseph R. D. Russell, 2014.

1401. *Improving the food policy process: lessons from capacity strengthening of parliamentarians in Ghana*. Jagdeep S. Chhokar, Suresh Chandra Babu, and Shashidhara Kolavalli, 2014.

1400. *Business operations of agrodealers and their participation in the loan market in Nigeria*. Aderibigbe S. Olomola, 2014.

1399. Irrigation Potential in Nigeria: Some Perspectives Based on Factor Endowments, Tropical Nature, and Patterns in Favorable Areas. Hiroyuki Takeshima and Margaret Adesugba, 2014.

1398. *Droughts, distress, and policies for drought proofing agriculture in Bihar, India.* Avinash Kishore, Pramond Kumar Joshi, and Divya Pandey , 2014.

1397. Aligning public expenditure for agricultural development priorities under rapid transformation: The case of China. Bingxin Yu, Kevin Chen, and Haisen Zhang, 2014.

1396. *Public account and coding system in Kenya: The trend and pattern of agricultural expenditure*. Bingxin Yu and Haisen Zhang, 2014.

1395. *Analysis of agricultural public expenditures in Nigeria: Examination at the federal, state, and local government levels*. Aderibigbe Olomola, Tewodaj Mogues, Tolulope Olofinbiyi, Chinedum Nwoko, Edet Udoh, Reuben Alabi, Justice Onu, Sileshi Woldeyohannes, 2014.

1394. *International rice trade and security stocks: Prospects for an expanded Asian international rice reserve.* Paul A. Dorosh and Abigail Childs, 2014.

1393. *The US agricultural act of 2014: Overview and analysis*. Carl Zulauf and David Orden, 2014.

1392. *The changing landscape of agriculture in Ghana: Drivers of farm mechanization and its impacts on cropland expansion and intensification*. Nazaire Houssou and Antony Chapoto, 2014.

1391. *Beyond agriculture versus nonagriculture: Decomposing sectoral growth–poverty linkages in five African countries.* Paul Dorosh and James Thurlow, 2014.

1390. *Agriculture, incomes, and gender in Latin America by 2050: An assessment of climate change impacts and household resilience for Brazil, Mexico, and Peru.* Lykke E. Andersen, Clemens Breisinger, Daniel Mason-D'Croz, Luis Carlos Jemio, Claudia Ringler, Richard Robertson, Dorte Verner, and Manfred Wiebelt, 2014.

1389. *Does rice farming shape individualism and innovation?: A response to Talhelm et al. (2014).* Jianqing Ruan, Zhuan Xie, and Xiaobo Zhang, 2014.

1388. *On food security stocks, peace clauses, and permanent solutions after Bali.* Eugenio Diaz-Bonilla, 2014.

1387. *Economics of tractor ownership under rainfed agriculture with applications in Ghana*. Nazaire Houssou, Xinshen Diao, and Shashidhara Kolavalli, 2014.

1386. *Land rights knowledge and conservation in rural Ethiopia: Mind the gender gap*. Agnes R. Quisumbing and Neha Kumar, 2014.

1385. *The patterns of patents in* China. Zhuan Xie and Xiaobo Zhang, 2014.

1384. *Understanding the rapid reduction of undernutrition in Nepal, 2001–2011*. Derek D. Headey and John Hoddinott.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

www.ifpri.org

IFPRI HEADQUARTERS

2033 K Street, NW
Washington, DC 20006-1002 USA
Tel.: +1-202-862-5600
Fax: +1-202-467-4439
Email: ifpri@cgiar.org

IFPRI BEIJING OFFICE

Institute of Agricultural Economics, CAAS
No. 176 mail box
No. 12, Zhongguancun Nandajie
Beijing, 10081 China
Email: ifpri-Beijing@cgiar.org